3/2 Introduction

3/4 Central processing units
3/4 Standard CPUs
3/4 CPU 1211C
3/8 CPU 1212C
3/12 CPU 1214C
3/16 CPU 1215C
3/20 CPU 1217C
3/23 SIPLUS standard CPUs
3/23 SIPLUS CPU 1211C
3/26 SIPLUS CPU 1212C
3/29 SIPLUS CPU 1214C
3/33 SIPLUS CPU 1215C
3/37 Fail-safe CPUs
3/37 CPU 1214 FC, CPU 1215 FC

3/41 I/O modules
3/41 Digital modules
3/41 SM 1221 digital input modules
3/44 SB 1221 digital input modules
3/46 SM 1222 digital output modules
3/49 SB 1222 digital output modules
3/51 SM 1223 digital input/output modules
3/55 SB 1223 digital input/output modules
3/58 SIPLUS digital modules
3/58 SIPLUS SM 1221 digital input modules
3/60 SIPLUS SB 1221 digital input modules
3/61 SIPLUS SM 1222 digital output modules
3/64 SIPLUS SB 1222 digital output modules
3/65 SIPLUS SM 1223 digital input/output modules
3/68 SIPLUS SB 1223 digital input/output modules
3/70 Analog modules
3/70 SM 1231 analog input modules
3/73 SB 1231 analog input modules
3/75 SM 1232 analog output modules
3/78 SB 1232 analog output modules
3/80 SM 1234 analog input/output modules
3/82 SM 1231 thermocouple modules
3/85 SB 1231 thermocouple signal boards
3/87 SM 1231 RTD signal modules
3/90 SB 1231 RTD signal boards
3/92 SIPLUS analog modules
3/92 SIPLUS SM 1231 analog input modules
3/93 SIPLUS SM 1232 analog output modules
3/94 SIPLUS SB 1232 analog output modules
3/96 SIPLUS SM 1234 analog input/output modules
3/98 SIPLUS SM 1231 thermocouple modules
3/99 SIPLUS SM 1231 RTD signal modules

3/100 Special modules
3/100 SM 1278 4xIO-Link Master
3/101 SIM 1274 simulators
3/102 Battery Board BB 1297
3/103 SIWAREX WP241
3/105 SIWAREX WP231
3/107 Communication
3/107 CM 1241 communication modules
3/109 CB 1241 communication board RS 485
3/110 CM 1242-5
3/112 CM 1243-2
3/113 CM 1243-5
3/115 CSM 1277 unmanaged
3/117 CP 1243-1
3/120 CP 1242-7 V2 GPRS modules
3/123 CP 1243-7 LTE modules
3/126 CP 1243-1 DNP3
3/128 CP 1243-1 IEC
3/130 SIMATIC RF120C
3/132 SIPLUS communication
3/132 SIPLUS CM 1241 communication modules
3/133 SIPLUS CB 1241 communication board RS 485
3/134 SIPLUS CM 1242-5 communication modules
3/135 SIPLUS CM 1243-5 communication modules
3/136 SIPLUS NET CSM 1277
3/137 Fail-safe I/O modules
3/137 SM 1226 fail-safe digital input
3/139 SM 1226 fail-safe digital output
3/140 SM 1226 fail-safe relay output

3/141 Power supplies
3/141 1-phase, 24 V DC (for S7-1200)
3/143 SIPLUS PM 1207 power supplies

3/145 Operator control and monitoring
3/145 SIMATIC HMI Basic Panels (2nd Generation)
3/146 SIMATIC HMI Basic Panels (1st Generation)
3/147 SIPLUS Basic Panels (2nd generation)
3/149 SIPLUS Basic Panels (1st Generation)
3/151 Comfort Panels – Standard
3/152 SIPLUS Comfort Panels

3/156 Add-on products from third-party manufacturers
3/156 SIMATIC S7-1200 CM CANopen

Brochures

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

www.siemens.com/simatic/printmaterial

Overview

- The new modular miniature controller from the SIMATIC S7 family
- Comprising:
  - Controller with integrated PROFINET IO controller interface for communication between SIMATIC controllers, HMI, programming device or other automation components
  - Communication module with PROFIBUS DP master interface
  - Communication module PROFIBUS DP slave interface
  - GPRS module for connection to GSM/G mobile phone networks
  - 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
  - Signal boards for direct use in a controller
  - Signal modules for expansion of controllers by input/output channels
  - Communication modules for expansion of controllers with additional communications interfaces
  - Accessories, e.g. power supply, switch module or SIMATIC Memory Card
- The miniature controller that offers maximum automation at minimum cost.
- Extremely simple installation, programming and operation.
- Large-scale integration, space-saving, powerful.
- Suitable for small to medium-size automation engineering applications.
- Can be used both for simple controls and for complex automation tasks.
- All CPUs can be used in stand-alone mode, in networks and within distributed structures.
- Suitable for applications where programmable controllers would not have been economically viable in the past.
- With exceptional real-time performance and powerful communication options.

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 specifications SIMATIC 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 data	The technical data of the standard product applies except for the ambient conditions.
Ambient conditions	
Extended ambient conditions	
• Relative to ambient temperature-atmospheric pressure-installation altitude	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m)
Relative humidity	
• With condensation, max.	100 %; Relative humidity, incl. condensation / frost permitted (no commissioning under condensation conditions)
Resistance	
• against biologically active substances / conformity with EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!
• against chemically active substances / conformity with EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!
• against mechanically active substances / conformity with EN 60721-3-3	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!

CPU 1211C

Overview

- The clever compact solution
- With 10 integral input/outputs
- Expandable by:
  - 1 signal board (SB) or communication board (CB)
  - Max. 3 communication modules (CM)

Technical specifications

Article number	**6ES7211-1BE40-0XB0** CPU 1211C, AC/DC/RELAY, 6DI/4DO/2AI	**6ES7211-1AE40-0XB0** CPU 1211C, DC/DC/DC, 6DI/4DO/2AI	**6ES7211-1HE40-0XB0** CPU 1211C, DC/DC/RELAY, 6DI/4DO/2AI
Product type designation			
General information			
Engineering with			
• Programming package	STEP 7 V13 SP1 or higher	STEP 7 V13 SP1 or higher	STEP 7 V13 SP1 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		L+ minus 4 V DC min.	L+ minus 4 V DC min.
Power losses			
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.	0.085 µs; / instruction	0.085 µs; / instruction	0.085 µs; / instruction
for word operations, typ.	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	2.5 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

Technical specifications (continued)

Article number	**6ES7211-1BE40-0XB0** CPU 1211C, AC/DC/RELAY, 6DI/4DO/2AI	**6ES7211-1AE40-0XB0** CPU 1211C, DC/DC/DC, 6DI/4DO/2AI	**6ES7211-1HE40-0XB0** CPU 1211C, DC/DC/RELAY, 6DI/4DO/2AI
Time of day			
Clock			
• Hardware clock (real-time clock)	Yes	Yes	Yes
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			
Integrated channels (AI)	2; 0 to 10 V	2; 0 to 10 V	2; 0 to 10 V
Input ranges			
• Voltage	Yes	Yes	Yes
1st interface			
Interface type	PROFINET	PROFINET	PROFINET
Physics	Ethernet	Ethernet	Ethernet
Functionality			
• PROFINET IO Device	Yes	Yes	Yes
• PROFINET IO Controller	Yes	Yes	Yes
Communication functions			
S7 communication			
• supported	Yes	Yes	Yes
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
Number of connections			
• overall	16; dynamically	16; dynamically	16; dynamically
Integrated Functions			
Number of counters	3	3	3
Counter frequency (counter) max.	100 kHz	100 kHz	100 kHz
Frequency meter	Yes	Yes	Yes
controlled positioning	Yes	Yes	Yes
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 in 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
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

CPU 1211C

3

Ordering data	Article No.
CPU 1211C	
Compact CPU, AC/DC/relay; integral 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 1 analog input, ±10 V with 12 bits or 0 ... 20 mA with 11 bits	**6ES7231-4HA30-0XB0**
Thermocouple signal board SB 1231 1 input +/- 80 mV, resolution 15 bits + sign, thermocouples type J, K	**6ES7231-5QA30-0XB0**
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**
SB 1232 signal board 1 analog output, ±10 V with 12 bits or 0 to 20 mA with 11 bits	**6ES7232-4HA30-0XB0**
Communication board CB 1241 RS 485 for point-to-point connection, with 1 RS 485 interface	**6ES7241-1CH30-1XB0**
Digital input simulator Simulator Module SIM 1274 (optional) 8 input switches, for CPU 1211C / CPU 1212C	**6ES7274-1XF30-0XA0**
Analog input simulator Simulator Module SIM 1274 (optional) 2 potentiometers	**6ES7274-1XA30-0XA0**

Ordering data

	Article No.
SIMATIC Memory Card (optional)	
4 MB	**6ES7954-8LC02-0AA0**
12 MB	**6ES7954-8LE02-0AA0**
24 MB	**6ES7954-8LF02-0AA0**
256 MB	**6ES7954-8LL02-0AA0**
2 GB	**6ES7954-8LP01-0AA0**
Terminal block (spare part)	
for CPU 1211C/1212C	
For DI, with 14 screws, tin-plated; 4 units	**6ES7292-1AH30-0XA0**
For DO, with 8 screws, tin-plated; 4 units	**6ES7292-1AP30-0XA0**
For AI, with 3 screws, tin-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 V13 SP1	
Target system: SIMATIC S7-1200, S7-1500, S7-300, S7-400, WinAC Requirement: Windows 7 Professional SP1 (64-bit), Windows 7 Enterprise SP1 (64-bit), Windows 7 Ultimate SP1 (64-bit), Windows 8.1 (64-bit), Windows 8.1 Professional (64-bit), Windows 8.1 Enterprise (64-bit), Windows Server 2008 R2 StdE (full installation), Windows Server 2012 StdE (full installation) Available in: German, English, Chinese, Italian, French, Spanish	
STEP 7 Professional V13 SP1, floating license	**6ES7822-1AA03-0YA5**
STEP 7 Professional V13 SP1, floating license, software download incl. license key [1]	**6ES7822-1AE03-0YA5**
Email address required for delivery	
STEP 7 Basic V13 SP1, floating license	**6ES7822-0AA03-0YA5**
STEP 7 Basic V13 SP1, floating license, software download incl. license key [1]	**6ES7822-0AE03-0YA5**
Email address required for delivery	

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

CPU 1212C

Overview

- The superior compact solution
- With 14 integral input/outputs
- Expandable by:
  - 1 signal board (SB) 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/6DO/2AI	**6ES7212-1AE40-0XB0** CPU 1212C, DC/DC/DC, 8DI/6DO/2AI	**6ES7212-1HE40-0XB0** CPU 1212C, DC/DC/RELAY, 8DI/6DO/2AI
Product type designation			
General information			
Engineering with			
• Programming package	STEP 7 V13 SP1 or higher	STEP 7 V13 SP1 or higher	STEP 7 V13 SP1 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		L+ minus 4 V DC min.	L+ minus 4 V DC min.
Power losses			
Power loss, typ.	11 W	9 W	9 W
Memory			
Work memory			
• Integrated	75 kbyte	75 kbyte	75 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.	0.085 µs; / instruction	0.085 µs; / instruction	0.085 µs; / instruction
for word operations, typ.	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	2.5 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

Technical specifications (continued)

Article number	**6ES7212-1BE40-0XB0** CPU 1212C, AC/DC/RELAY, 8DI/6DO/2AI	**6ES7212-1AE40-0XB0** CPU 1212C, DC/DC/DC, 8DI/6DO/2AI	**6ES7212-1HE40-0XB0** CPU 1212C, DC/DC/RELAY, 8DI/6DO/2AI
Time of day			
Clock			
• Hardware clock (real-time clock)	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			
Integrated channels (AI)	2; 0 to 10 V	2; 0 to 10 V	2; 0 to 10 V
Input ranges			
• Voltage	Yes	Yes	Yes
1st interface			
Interface type	PROFINET	PROFINET	PROFINET
Physics	Ethernet	Ethernet	Ethernet
Functionality			
• PROFINET IO Device	Yes	Yes	Yes
• PROFINET IO Controller	Yes	Yes	Yes
Communication functions			
S7 communication			
• supported	Yes	Yes	Yes
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
Number of connections			
• overall	16; dynamically	16; dynamically	16; dynamically
Integrated Functions			
Number of counters	4	4	4
Counter frequency (counter) max.	100 kHz	100 kHz	100 kHz
Frequency meter	Yes	Yes	Yes
controlled positioning	Yes	Yes	Yes
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 in 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

3

Technical specifications (continued)

Article number	6ES7212-1BE40-0XB0 CPU 1212C, AC/DC/RELAY, 8DI/6DO/2AI	6ES7212-1AE40-0XB0 CPU 1212C, DC/DC/DC, 8DI/6DO/2AI	6ES7212-1HE40-0XB0 CPU 1212C, DC/DC/RELAY, 8DI/6DO/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.	425 g	370 g	385 g

Ordering data

	Article No.
CPU 1212C	
Compact CPU, AC/DC/relay; integral 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	**6ES7212-1BE40-0XB0**
Compact CPU, DC/DC/DC; 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	**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), 1 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**

	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 1 analog input, ±10 V with 12 bits or 0 ... 20 mA with 11 bits	**6ES7231-4HA30-0XB0**
Thermocouple signal board SB 1231 1 input +/- 80 mV, resolution 15 bits + sign, thermocouples type J, K	**6ES7231-5QA30-0XB0**
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**
SB 1232 signal board 1 analog output, ±10 V with 12 bits or 0 to 20 mA with 11 bits	**6ES7232-4HA30-0XB0**
Communication board CB 1241 RS 485 for point-to-point connection, with 1 RS 485 interface	**6ES7241-1CH30-1XB0**

Ordering data

	Article No.
Digital input simulator Simulator Module SIM 1274 (optional)	
8 input switches, for CPU 1211C / CPU 1211C	**6ES7274-1XF30-0XA0**
Analog input simulator Simulator Module SIM 1274 (optional)	
2 potentiometers	**6ES7274-1XA30-0XA0**
SIMATIC Memory Card (optional)	
4 MB	**6ES7954-8LC02-0AA0**
12 MB	**6ES7954-8LE02-0AA0**
24 MB	**6ES7954-8LF02-0AA0**
256 MB	**6ES7954-8LL02-0AA0**
2 GB	**6ES7954-8LP01-0AA0**
Extension cable for two-tier configuration	**6ES7290-6AA30-0XA0**
for connecting digital/analog signal modules; length 2 m	
Starter box CPU 1212C AC/DC/relay	**6ES7212-1BD34-4YB0**
Complete offer SIMATIC S7-1200, starter box, comprising: CPU 1212C AC/DC/relay, simulator, STEP 7 BASIC CD, manual CD, info material, in Systainer	
Terminal block (spare part)	
for CPU 1211C/1212C	
For DI, with 14 screws, tin-plated; 4 units	**6ES7292-1AH30-0XA0**
For DO, with 8 screws, tin-plated; 4 units	**6ES7292-1AP30-0XA0**
For AI, with 3 screws, tin-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 V13 SP1	
Target system: SIMATIC S7-1200, S7-1500, S7-300, S7-400, WinAC Requirement: Windows 7 Professional SP1 (64-bit), Windows 7 Enterprise SP1 (64-bit), Windows 7 Ultimate SP1 (64-bit), Windows 8.1 (64-bit), Windows 8.1 Professional (64 bit), Windows 8.1 Enterprise (64-bit), Windows Server 2008 R2 StdE (full installation), Windows Server 2012 StdE (full installation) Available in: German, English, Chinese, Italian, French, Spanish	
STEP 7 Professional V13 SP1, floating license	**6ES7822-1AA03-0YA5**
STEP 7 Professional V13 SP1, floating license, software download incl. license key[1]	**6ES7822-1AE03-0YA5**
Email address required for delivery	
STEP 7 Basic V13 SP1, floating license	**6ES7822-0AA03-0YA5**
STEP 7 Basic V13 SP1, floating license, software download incl. license key[1]	**6ES7822-0AE03-0YA5**
Email address required for delivery	

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

CPU 1214C

Overview

- The compact high-performance CPU
- With 24 integral input/outputs
- Expandable by:
  - 1 signal board (SB) 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/10DO/2AI	**6ES7214-1AG40-0XB0** CPU 1214C, DC/DC/DC, 14DI/10DO/2AI	**6ES7214-1HG40-0XB0** CPU 1214C, DC/DC/RELAY, 14DI/10DO/2AI
Product type designation			
General information			
Engineering with			
• Programming package	STEP 7 V13 SP1 or higher	STEP 7 V13 SP1 or higher	STEP 7 V13 SP1 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		L+ minus 4 V DC min.	L+ minus 4 V DC min.
Power losses			
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.	0.085 µs; / instruction	0.085 µs; / instruction	0.085 µs; / instruction
for word operations, typ.	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	2.5 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

Technical specifications (continued)

Article number	**6ES7214-1BG40-0XB0** CPU 1214C, AC/DC/RELAY, 14DI/10DO/2AI	**6ES7214-1AG40-0XB0** CPU 1214C, DC/DC/DC, 14DI/10DO/2AI	**6ES7214-1HG40-0XB0** CPU 1214C, DC/DC/RELAY, 14DI/10DO/2AI
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 clock)	Yes	Yes	Yes
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			
Integrated channels (AI)	2; 0 to 10 V	2; 0 to 10 V	2; 0 to 10 V
Input ranges			
• Voltage	Yes	Yes	Yes
1st interface			
Interface type	PROFINET	PROFINET	PROFINET
Physics	Ethernet	Ethernet	Ethernet
Functionality			
• PROFINET IO Device	Yes	Yes	Yes
• PROFINET IO Controller	Yes	Yes	Yes
Communication functions			
S7 communication			
• supported	Yes	Yes	Yes
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
Number of connections			
• overall	16; dynamically	16; dynamically	16; dynamically
Integrated Functions			
Number of counters	6	6	6
Counter frequency (counter) max.	100 kHz	100 kHz	100 kHz
Frequency meter	Yes	Yes	Yes
controlled positioning	Yes	Yes	Yes
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 in 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

3

Technical specifications (continued)

Article number	6ES7214-1BG40-0XB0 CPU 1214C, AC/DC/RELAY, 14DI/10DO/2AI	6ES7214-1AG40-0XB0 CPU 1214C, DC/DC/DC, 14DI/10DO/2AI	6ES7214-1HG40-0XB0 CPU 1214C, DC/DC/RELAY, 14DI/10DO/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; integral 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 (relay), 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 1 analog input, ±10 V with 12 bits or 0 ... 20 mA with 11 bits	**6ES7231-4HA30-0XB0**
Thermocouple signal board SB 1231 1 input +/- 80 mV, resolution 15 bits + sign, thermocouples type J, K	**6ES7231-5QA30-0XB0**
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**
SB 1232 signal board 1 analog output, ±10 V with 12 bits or 0 to 20 mA with 11 bits	**6ES7232-4HA30-0XB0**
Communication board CB 1241 RS 485 for point-to-point connection, with 1 RS 485 interface	**6ES7241-1CH30-1XB0**

Ordering data

	Article No.
Digital input simulator Simulator Module SIM 1274 (optional)	
14 input switches, for CPU 1214C / CPU 1215C	**6ES7274-1XH30-0XA0**
Analog input simulator Simulator Module SIM 1274 (optional)	
2 potentiometers	**6ES7274-1XA30-0XA0**
SIMATIC Memory Card (optional)	
4 MB	**6ES7954-8LC02-0AA0**
12 MB	**6ES7954-8LE02-0AA0**
24 MB	**6ES7954-8LF02-0AA0**
256 MB	**6ES7954-8LL02-0AA0**
2 GB	**6ES7954-8LP01-0AA0**
Extension cable for two-tier configuration	**6ES7290-6AA30-0XA0**
for connecting digital/analog signal modules; length 2 m	
Terminal block (spare part)	
for CPU 1214C	
For DI, with 20 screws, tin-plated; 4 units	**6ES7292-1AV30-0XA0**
For DO, with 12 screws, tin-plated; 4 units	**6ES7292-1AM30-0XA0**
For AI, with 3 screws, tin-plated; 4 units	**6ES7292-1BC30-0XA0**
RJ45 cable grip	
4 items per pack	
Single port	**6ES7290-3AA30-0XA0**
Front flap set (spare part)	
for CPU 1214C	**6ES7291-1AB30-0XA0**

	Article No.
STEP 7 Professional / Basic V13 SP1	
Target system: SIMATIC S7-1200, S7-1500, S7-300, S7-400, WinAC Requirement: Windows 7 Professional SP1 (64-bit), Windows 7 Enterprise SP1 (64-bit), Windows 7 Ultimate SP1 (64-bit), Windows 8.1 (64-bit), Windows 8.1 Professional (64-bit), Windows 8.1 Enterprise (64-bit), Windows Server 2008 R2 StdE (full installation), Windows Server 2012 StdE (full installation) Available in: German, English, Chinese, Italian, French, Spanish	
STEP 7 Professional V13 SP1, floating license	**6ES7822-1AA03-0YA5**
STEP 7 Professional V13 SP1, floating license, software download incl. license key[1]	**6ES7822-1AE03-0YA5**
Email address required for delivery	
STEP 7 Basic V13 SP1, floating license	**6ES7822-0AA03-0YA5**
STEP 7 Basic V13 SP1, floating license, software download incl. license key[1]	**6ES7822-0AE03-0YA5**
Email address required for delivery	

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

CPU 1215C

Overview

- The compact high-performance CPU
- With 24 integral input/outputs
- Expandable by:
  - 1 signal board (SB) 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/10DO/2AI/2AO	**6ES7215-1AG40-0XB0** CPU 1215C, DC/DC/DC, 14DI/10DO/2AI/2AO	**6ES7215-1HG40-0XB0** CPU 1215C, DC/DC/RLY, 14DI/10DO/2AI/2AO
Product type designation			
General information			
Engineering with			
• Programming package	STEP 7 V13 SP1 or higher	STEP 7 V13 SP1 or higher	STEP 7 V13 SP1 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		L+ minus 4 V DC min.	L+ minus 4 V DC min.
Power losses			
Power loss, typ.	12 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.	0.085 µs; / instruction	0.085 µs; / instruction	0.085 µs; / instruction
for word operations, typ.	1.7 µs; / instruction	1.5 µs; / instruction	1.7 µs; / instruction
for floating point arithmetic, typ.	2.5 µs; / instruction	2.5 µs; / instruction	2.5 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

Technical specifications (continued)

Article number	**6ES7215-1BG40-0XB0** CPU 1215C, AC/DC/RLY, 14DI/10DO/2AI/2AO	**6ES7215-1AG40-0XB0** CPU 1215C, DC/DC/DC, 14DI/10DO/2AI/2AO	**6ES7215-1HG40-0XB0** CPU 1215C, DC/DC/RLY, 14DI/10DO/2AI/2AO
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 clock)	Yes	Yes	Yes
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			
Integrated channels (AI)	2; 0 to 10 V	2	2; 0 to 10 V
Input ranges			
• Voltage	Yes	Yes	Yes
Analog outputs			
Integrated channels (AO)	2; 0 to 20 mA	2; 0 to 20 mA	2; 0 to 20 mA
Output ranges, voltage			
• 0 to 10 V		Yes	
Output ranges, current			
• 0 to 20 mA	Yes	Yes	Yes
1st interface			
Interface type	PROFINET	PROFINET	PROFINET
Physics	Ethernet	Ethernet	Ethernet
Functionality			
• PROFINET IO Device	Yes	Yes	Yes
• PROFINET IO Controller	Yes	Yes	Yes
Communication functions			
S7 communication			
• supported	Yes	Yes	Yes
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
Number of connections			
• overall	16; dynamically	16; dynamically	16; dynamically
Integrated Functions			
Number of counters	6	6	6
Counter frequency (counter) max.	100 kHz	100 kHz	100 kHz
Frequency meter	Yes	Yes	Yes
controlled positioning	Yes	Yes	Yes
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 in 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

3

Technical specifications (continued)

Article number	6ES7215-1BG40-0XB0 CPU 1215C, AC/DC/RLY, 14DI/10DO/2AI/2AO	6ES7215-1AG40-0XB0 CPU 1215C, DC/DC/DC, 14DI/10DO/2AI/2AO	6ES7215-1HG40-0XB0 CPU 1215C, DC/DC/RLY, 14DI/10DO/2AI/2AO
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; integral 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	
Thermocouple signal board SB 1231	**6ES7231-5QA30-0XB0**
1 input +/- 80 mV, resolution 15 bits + sign, thermocouples type J, K	
RTD signal board SB 1231	**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	
Communication board CB 1241 RS 485	**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 of an S7-1200 CPU in FW version 3.0 or higher; battery (CR 1025) is not included	

Ordering data

	Article No.
Digital input simulator Simulator Module SIM 1274 (optional)	
14 input switches, for CPU 1214C / CPU 1215C	**6ES7274-1XH30-0XA0**
Analog input simulator Simulator Module SIM 1274 (optional)	
2 potentiometers	**6ES7274-1XA30-0XA0**
SIMATIC Memory Card (optional)	
4 MB	**6ES7954-8LC02-0AA0**
12 MB	**6ES7954-8LE02-0AA0**
24 MB	**6ES7954-8LF02-0AA0**
256 MB	**6ES7954-8LL02-0AA0**
2 GB	**6ES7954-8LP01-0AA0**
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	
For DI, with 20 screws, tin-plated; 4 units	**6ES7292-1AV30-0XA0**
For DO, with 12 screws, tin-plated; 4 units	**6ES7292-1AM30-0XA0**
For analog units, with 6 screws, gold-plated; 4 units	**6ES7292-1BF30-0XB0**
Front flap set (spare part)	
for CPU 1215C	**6ES7291-1AC30-0XA0**
RJ45 cable grip	
4 items per pack	
Single port	**6ES7290-3AA30-0XA0**
Dual port	**6ES7290-3AB30-0XA0**

	Article No.
STEP 7 Professional / Basic V13 SP1	
Target system: SIMATIC S7-1200, S7-1500, S7-300, S7-400, WinAC Requirement: Windows 7 Professional SP1 (64-bit), Windows 7 Enterprise SP1 (64-bit), Windows 7 Ultimate SP1 (64-bit), Windows 8.1 (64-bit), Windows 8.1 Professional (64-bit), Windows 8.1 Enterprise (64-bit), Windows Server 2008 R2 StdE (full installation), Windows Server 2012 StdE (full installation) Available in: German, English, Chinese, Italian, French, Spanish	
STEP 7 Professional V13 SP1, floating license	**6ES7822-1AA03-0YA5**
STEP 7 Professional V13 SP1, floating license, software download incl. license key[1]	**6ES7822-1AE03-0YA5**
Email address required for delivery	
STEP 7 Basic V13 SP1, floating license	**6ES7822-0AA03-0YA5**
STEP 7 Basic V13 SP1, floating license, software download incl. license key[1]	**6ES7822-0AE03-0YA5**
Email address required for delivery	

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

CPU 1217C

Overview

- The compact high-performance CPU
- With 24 integrated I/Os
- Expandable by:
  - 1 Signal Board (SB) 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
Product type designation	
General information	
Engineering with	
• Programming package	STEP 7 V13 SP1 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 losses	
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.	0.085 µs; / Operation
for word operations, typ.	1.5 µs; / Operation
for floating point arithmetic, typ.	2.5 µs; / Operation
Data areas and their retentivity	
Flag	
• Number, max.	8 kbyte; Size of bit memory address area
Address area	
I/O address area	
• Inputs	1 024 byte
• Outputs	1 024 byte

Article number	**6ES7217-1AG40-0XB0** CPU 1217C, DC/DC/DC, 14DI/10DQ/2AI/2AQ
Process image	
• Inputs, adjustable	1 kbyte
• Outputs, adjustable	1 kbyte
Time of day	
Clock	
• Hardware clock (real-time clock)	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	
Integrated channels (AI)	2; 0 to 10 V
Input ranges	
• Voltage	Yes
Analog outputs	
Integrated channels (AO)	2; 0 to 20 mA
Output ranges, current	
• 0 to 20 mA	Yes
1st interface	
Interface type	PROFINET
Physics	Ethernet
Functionality	
• PROFINET IO Device	Yes
• PROFINET IO Controller	Yes
Communication functions	
S7 communication	
• supported	Yes
Open IE communication	
• TCP/IP	Yes
• ISO-on-TCP (RFC1006)	Yes
• UDP	Yes

Technical specifications (continued)

Article number	**6ES7217-1AG40-0XB0**
	CPU 1217C, DC/DC/DC, 14DI/10DQ/2AI/2AQ
Web server	
• supported	Yes
Number of connections	
• overall	16; dynamically
Integrated Functions	
Number of counters	6
Counter frequency (counter) max.	1 MHz
Frequency meter	Yes
controlled positioning	Yes
PID controller	Yes
Number of alarm inputs	4
Number of pulse outputs	4
Limit frequency (pulse)	1 MHz
Ambient conditions	
Ambient temperature in 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.	500 g

Ordering data

	Article No.
CPU 1217C	
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 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	
Thermocouple signal board SB 1231	**6ES7231-5QA30-0XB0**
1 input +/- 80 mV, resolution 15 bits + sign, thermocouples type J, K	
RTD signal board SB 1231	**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	

CPU 1217C

Ordering data	Article No.
Communication board CB 1241 RS 485	**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 of an S7-1200 CPU in FW version 3.0 or higher; battery (CR 1025) is not included	
Digital input simulator Simulator Module SIM 1274 (optional)	
14 input switches, for CPU 1217C	**6ES7274-1XH30-0XA0**
Analog input simulator Simulator Module SIM 1274 (optional)	
2 potentiometers	**6ES7274-1XA30-0XA0**
SIMATIC Memory Card (optional)	
4 MB	**6ES7954-8LC02-0AA0**
12 MB	**6ES7954-8LE02-0AA0**
24 MB	**6ES7954-8LF02-0AA0**
256 MB	**6ES7954-8LL02-0AA0**
2 GB	**6ES7954-8LP01-0AA0**
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-plated; 4 units	**6ES7292-1AK30-0XA0**
for DI, with 10 screws, tin-plated; 4 units	**6ES7292-1AR30-0XA0**
for DO, with 18 screws, tin-plated; 4 units	**6ES7292-1AT30-0XA0**
For analog units, with 6 screws, gold-plated; 4 units	**6ES7292-1BF30-0XB0**

	Article No.
RJ45 cable grip	
4 items per pack	
Dual port	**6ES7290-3AB30-0XA0**
STEP 7 Professional / Basic V13 SP1	
Target system: SIMATIC S7-1200, S7-1500, S7-300, S7-400, WinAC Requirement: Windows 7 Professional SP1 (64-bit), Windows 7 Enterprise SP1 (64-bit), Windows 7 Ultimate SP1 (64-bit), Windows 8.1 (64-bit), Windows 8.1 Professional (64-bit), Windows 8.1 Enterprise (64-bit), Windows Server 2008 R2 StdE (full installation), Windows Server 2012 StdE (full installation) Available in: German, English, Chinese, Italian, French, Spanish	
STEP 7 Professional V13 SP1, floating license	**6ES7822-1AA03-0YA5**
STEP 7 Professional V13 SP1, floating license, software download incl. license key[1)]	**6ES7822-1AE03-0YA5**
Email address required for delivery	
STEP 7 Basic V13 SP1, floating license	**6ES7822-0AA03-0YA5**
STEP 7 Basic V13 SP1, floating license, software download incl. license key[1)]	**6ES7822-0AE03-0YA5**
Email address required for delivery	

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

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**	**6AG1211-1AE31-2XB0**
Based on	**6ES7211-1AE31-0XB0**	**6ES7211-1AE31-0XB0**
	SIPLUS S7-1200 CPU1211 DC/DC/DC	SIPLUS S7-1200 CPU1211 DC/DC/DC
Ambient conditions		
Ambient temperature in 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
Extended ambient conditions		
• Relative to ambient temperature-atmospheric pressure-installation altitude	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m)	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m)
• At cold restart, min.	0 °C	-25 °C
Relative humidity		
- With condensation, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
Resistance		
- against biologically active substances / conformity with EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!
- against chemically active substances / conformity with EN 60721-3-3	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!
- against mechanically active substances / conformity with EN 60721-3-3	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!

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 in 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
Extended ambient conditions		
• Relative to ambient temperature-atmospheric pressure-installation altitude	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m)	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m)
• At cold restart, min.	0 °C	-25 °C
Relative humidity		
- With condensation, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
Resistance		
- against biologically active substances / conformity with EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!
- against chemically active substances / conformity with EN 60721-3-3	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!
- against mechanically active substances / conformity with EN 60721-3-3	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!

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 in 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
Extended ambient conditions		
• Relative to ambient temperature-atmospheric pressure-installation altitude	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m)	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m)
• At cold restart, min.	0 °C	-25 °C
Relative humidity		
- With condensation, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
Resistance		
- against biologically active substances / conformity with EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!
- against chemically active substances / conformity with EN 60721-3-3	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!
- against mechanically active substances / conformity with EN 60721-3-3	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!

Ordering data

	Article No.
SIPLUS CPU 1211C compact CPU, AC/DC/relay	
(Extended temperature range and medial exposure)	
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 medial exposure (conformal coating); ambient temperature -20 ... +60 °C	**6AG1211-1BE31-4XB0**
• for areas with extreme medial exposure (conformal coating); ambient temperature -40 ... +70 °C	**6AG1211-1BE31-2XB0**
SIPLUS CPU 1211C compact CPU, DC/DC/DC	
(Extended temperature range and medial exposure)	
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 medial exposure (conformal coating); ambient temperature -20 ... +60 °C	**6AG1211-1AE31-4XB0**
• for areas with extreme medial exposure (conformal coating); ambient temperature -40 ... +70 °C	**6AG1211-1AE31-2XB0**

	Article No.
SIPLUS CPU 1211C compact CPU, DC/DC/relay	
(Extended temperature range and medial exposure)	
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 medial exposure (conformal coating); ambient temperature -20 ... +60 °C	**6AG1211-1HE31-4XB0**
• for areas with extreme medial exposure (conformal coating); ambient temperature -40 ... +70 °C	**6AG1211-1HE31-2XB0**
Accessories	
Digital input/output SIPLUS signal board SB 1223	
(Extended temperature range and medial exposure)	
2 inputs, 24 V DC, IEC type 1 current sinking 2 transistor outputs 24 V DC, 0.5 A, 5 W Can be used as HSC at up to 30 kHz	
• Suitable for areas with extraordinary medial exposure (conformal coating)	**6AG1223-0BD30-4XB0**
• Ambient temperature -25 ... +55 °C	**6AG1223-0BD30-5XB0**
SIPLUS SB 1232 analog output signal board	
(Extended temperature range and medial exposure)	
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**
Communication Board SIPLUS CB 1241 RS 485	
(extended temperature range and exposure to media)	
for point-to-point connection, with 1 RS 485 interface	**6AG1241-1CH30-5XB1**
Additional accessories	See SIMATIC S7-1200 CPU 1211C, page 3/6

SIPLUS CPU 1212C

Overview

- The superior compact solution
- With 14 integral input/outputs
- Expandable with:
  - 1 signal board (SB) or communication board (CB); not possible with: 6AG1212-1AE31-2XB0, 6AG1212-1BE31-2XB0, 6AG1212-1HE31-2XB0
  - 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	**6AG1212-1AE31-4XB0**	**6AG1212-1AE31-2XB0**
Based on	**6ES7212-1AE31-0XB0**	**6ES7212-1AE31-0XB0**
	SIPLUS S7-1200 CPU1212 DC/DC/DC	SIPLUS S7-1200 CPU1212 DC/DC/DC
Ambient conditions		
Ambient temperature in 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
Extended ambient conditions		
• Relative to ambient temperature-atmospheric pressure-installation altitude	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m)	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m)
• At cold restart, min.	0 °C	-25 °C
Relative humidity		
- With condensation, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
Resistance		
- against biologically active substances / conformity with EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!
- against chemically active substances / conformity with EN 60721-3-3	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!
- against mechanically active substances / conformity with EN 60721-3-3	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!

Technical specifications (continued)

Article number	**6AG1212-1BE31-4XB0**	**6AG1212-1BE31-2XB0**
Based on	**6ES7212-1BE31-0XB0**	**6ES7212-1BE31-0XB0**
	SIPLUS S7-1200 CPU1212 AC/DC/RLY	SIPLUS S7-1200 CPU1212 AC/DC/RLY
Ambient conditions		
Ambient temperature in 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
Extended ambient conditions		
• Relative to ambient temperature-atmospheric pressure-installation altitude	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m)	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m)
• At cold restart, min.	0 °C	-25 °C
Relative humidity		
- With condensation, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
Resistance		
- against biologically active substances / conformity with EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!
- against chemically active substances / conformity with EN 60721-3-3	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!
- against mechanically active substances / conformity with EN 60721-3-3	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!

Article number	**6AG1212-1HE31-4XB0**	**6AG1212-1HE31-2XB0**
Based on	**6ES7212-1HE31-0XB0**	**6ES7212-1HE31-0XB0**
	SIPLUS S7-1200 CPU1212 DC/DC/RLY	SIPLUS S7-1200 CPU1212 DC/DC/RLY
Ambient conditions		
Ambient temperature in 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
Extended ambient conditions		
• Relative to ambient temperature-atmospheric pressure-installation altitude	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m)	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m)
• At cold restart, min.	0 °C	-25 °C
Relative humidity		
- With condensation, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
Resistance		
- against biologically active substances / conformity with EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!
- against chemically active substances / conformity with EN 60721-3-3	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!
- against mechanically active substances / conformity with EN 60721-3-3	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!

SIPLUS CPU 1212C

3

Ordering data	Article No.
SIPLUS CPU 1212C compact CPU, AC/DC/relay	
(Extended temperature range and medial exposure)	
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 8 digital inputs, 6 digital outputs (relay), 2 analog inputs Expandable with up to 3 communication modules, 2 signal modules, and 1 signal board/communication board Digital inputs usable as HSC with 100 kHz	
• for areas with extreme medial exposure (conformal coating); ambient temperature -20 ... +60 °C	**6AG1212-1BE31-4XB0**
• For areas with extreme medial exposure (conformal coating); ambient temperature -40 ... +70 °C	**6AG1212-1BE31-2XB0**
SIPLUS CPU 1212C compact CPU, DC/DC/DC	
(Extended temperature range and medial exposure)	
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 8 digital inputs, 6 digital outputs, 2 analog inputs Expandable with up to 3 communication modules, 2 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 medial exposure (conformal coating); ambient temperature -20 ... +60 °C	**6AG1212-1AE31-4XB0**
• for areas with extreme medial exposure (conformal coating); ambient temperature -40 ... +70 °C	**6AG1212-1AE31-2XB0**
SIPLUS CPU 1212C compact CPU, DC/DC/relay	
(Extended temperature range and medial exposure)	
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 8 digital inputs, 6 digital outputs (relay), 2 analog inputs Expandable with up to 3 communication modules, 2 signal modules and 1 signal board/communication board Digital inputs usable as HSC with 100 kHz	
• for areas with extreme medial exposure (conformal coating); ambient temperature -20 ... +60 °C	**6AG1212-1HE31-4XB0**
• for areas with extreme medial exposure (conformal coating); ambient temperature -40 ... +70 °C	**6AG1212-1HE31-2XB0**
Accessories	
Digital input/output SIPLUS signal board SB 1223	
(Extended temperature range and medial exposure)	
2 inputs, 24 V DC, IEC type 1 current sinking 2 transistor outputs 24 V DC, 0.5 A, 5 W Can be used as HSC at up to 30 kHz	
• Suitable for areas with extraordinary medial exposure (conformal coating)	**6AG1223-0BD30-4XB0**
• Ambient temperature -25 ... +55 °C	**6AG1223-0BD30-5XB0**
SIPLUS SB 1232 analog output signal board	
(Extended temperature range and medial exposure)	
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**
Communication Board SIPLUS CB 1241 RS 485	
(Extended temperature range and exposure to media)	
for point-to-point connection, with 1 RS 485 interface	**6AG1241-1CH30-5XB1**
Additional accessories	See SIMATIC S7-1200 CPU 1212C, page 3/10

3

Overview

- The compact high-performance CPU
- With 24 integrated I/Os
- Expandable with:
  - 1 signal board (SB) or communication board (CB); not possible with: 6AG1214-1AG31-2XB0, 6AG1214-1BG31-2XB0, 6AG1214-1HG31-2XB0
  - 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	**6AG1214-1AG31-4XB0**	**6AG1214-1AG31-5XB0**	**6AG1214-1AG31-2XB0**
Based on	**6ES7214-1AG31-0XB0**	**6ES7214-1AG31-0XB0**	**6ES7214-1AG31-0XB0**
	SIPLUS S7-1200 CPU1214 DC/DC/DC	SIPLUS S7-1200 CPU1214 DC/DC/DC	SIPLUS S7-1200 CPU1214 DC/DC/DC
Ambient conditions			
Ambient temperature in operation			
• Min.	-20 °C; = Tmin; startup @ 0 °C	-40 °C; = Tmin; startup @ -25 °C	-40 °C; = Tmin; startup @ -25 °C
• max.	60 °C; = Tmax	60 °C; = Tmax	70 °C; = Tmax; > +60 °C Number of simultaneously controllable inputs and outputs max. 50%; no signal board can be used
Extended ambient conditions			
• Relative to ambient temperature-atmospheric pressure-installation altitude	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m)	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m)	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m)
• At cold restart, min.	0 °C	-25 °C	-25 °C
Relative humidity			
- With condensation, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
Resistance			
- against biologically active substances / conformity with EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!
- against chemically active substances / conformity with EN 60721-3-3	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!
- against mechanically active substances / conformity with EN 60721-3-3	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!

3

Technical specifications (continued)

Article number	**6AG1214-1BG31-4XB0**	**6AG1214-1BG31-5XB0**	**6AG1214-1BG31-2XB0**
Based on	**6ES7214-1BG31-0XB0**	**6ES7214-1BG31-0XB0**	**6ES7214-1BG31-0XB0**
	SIPLUS S7-1200 CPU1214 AC/DC/RLY	SIPLUS S7-1200 CPU1214 AC/DC/RLY	SIPLUS S7-1200 CPU1214 AC/DC/RLY
Ambient conditions			
Ambient temperature in operation			
• Min.	-20 °C; = Tmin; startup @ 0 °C	-40 °C; = Tmin; startup @ -25 °C	-40 °C; = Tmin; startup @ -25 °C
• max.	60 °C; = Tmax	60 °C	70 °C; = Tmax; > +60 °C Number of simultaneously controllable inputs and outputs max. 50%; no signal board can be used
Extended ambient conditions			
• Relative to ambient temperature-atmospheric pressure-installation altitude	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m)	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m)	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m)
• At cold restart, min.	0 °C	-25 °C	-25 °C
Relative humidity			
- With condensation, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
Resistance			
- against biologically active substances / conformity with EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!
- against chemically active substances / conformity with EN 60721-3-3	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!
- against mechanically active substances / conformity with EN 60721-3-3	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!

3

Technical specifications (continued)

Article number	6AG1214-1HG31-4XB0	6AG1214-1HG31-5XB0	6AG1214-1HG31-2XB0
Based on	6ES7214-1HG31-0XB0	6ES7214-1HG31-0XB0	6ES7214-1HG31-0XB0
	SIPLUS S7-1200 CPU1214 DC/DC/RLY	SIPLUS S7-1200 CPU1214 DC/DC/RLY	SIPLUS S7-1200 CPU1214 DC/DC/RLY
Ambient conditions			
Ambient temperature in operation			
• Min.	-20 °C; = Tmin; startup @ 0 °C	-40 °C; = Tmin; startup @ -25 °C	-40 °C; = Tmin; startup @ -25 °C
• max.	60 °C; = Tmax	60 °C; = Tmax	70 °C; = Tmax; > +60 °C Number of simultaneously controllable inputs and outputs max. 50%; no signal board can be us ed
Extended ambient conditions			
• Relative to ambient temperature-atmospheric pressure-installation altitude	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m)	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m)	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m)
• At cold restart, min.	0 °C	-25 °C	-25 °C
Relative humidity			
- With condensation, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
Resistance			
- against biologically active substances / conformity with EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!
- against chemically active substances / conformity with EN 60721-3-3	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!
- against mechanically active substances / conformity with EN 60721-3-3	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!

SIPLUS CPU 1214C

3

Ordering data	Article No.
SIPLUS CPU 1214C compact CPU, AC/DC/relay	
(Extended temperature range and medial exposure)	
Integrated program and data memory of 50 KB, load memory of 2 MB Wide-range alternating voltage supply 85 ... 264 V AC Boolean execution times of 0.1 ms per operation 14 digital inputs, 10 digital outputs (relay), 2 analog inputs Expandable with 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 medial exposure (conformal coating); ambient temperature -20 ... +60 °C	**6AG1214-1BG31-4XB0**
• for areas with extreme medial exposure (conformal coating); ambient temperature -40 ... +60 °C	**6AG1214-1BG31-5XB0**
• for areas with extreme medial exposure (conformal coating); ambient temperature -40 ... +70 °C	**6AG1214-1BG31-2XB0**
SIPLUS CPU 1214C compact CPU, DC/DC/DC	
(Extended temperature range and medial exposure)	
Integrated program and data memory of 50 KB, load memory of 2 MB Power supply 24 V DC Boolean execution times of 0.1 ms per operation 14 digital inputs, 10 digital outputs, 2 analog inputs Expandable with 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 medial exposure (conformal coating); ambient temperature -20 ... +60 °C	**6AG1214-1AG31-4XB0**
• for areas with extreme medial exposure (conformal coating); ambient temperature -40 ... +60 °C	**6AG1214-1AG31-5XB0**
• for areas with extreme medial exposure (conformal coating); ambient temperature -40 ... +70 °C	**6AG1214-1AG31-2XB0**
SIPLUS CPU 1214C compact CPU, DC/DC/relay	
(Extended temperature range and medial exposure)	
Integrated program and data memory of 50 KB, load memory of 2 MB Power supply 24 V DC Boolean execution times of 0.1 ms per operation 14 digital inputs, 10 digital outputs (relay), 2 analog inputs Expandable with 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 medial exposure (conformal coating); ambient temperature -20 ... +60 °C	**6AG1214-1HG31-4XB0**
• for areas with extreme medial exposure (conformal coating); ambient temperature -40 ... +60 °C	**6AG1214-1HG31-5XB0**
• for areas with extreme medial exposure (conformal coating); ambient temperature -40 ... +70 °C	**6AG1214-1HG31-2XB0**
Accessories	
SIPLUS digital input/output signal board SB 1223	
(Extended temperature range and medial exposure)	
2 inputs, 24 V DC, IEC type 1 current sinking 2 transistor outputs 24 V DC, 0.5 A, 5 W Can be used as HSC at up to 30 kHz	
• Suitable for areas with extraordinary medial exposure (conformal coating)	**6AG1223-0BD30-4XB0**
• Ambient temperature -25 ... +55 °C	**6AG1223-0BD30-5XB0**
SIPLUS SB 1232 analog output signal board	
(Extended temperature range and medial exposure)	
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**
Communication Board SIPLUS CB 1241 RS 485	
(Extended temperature range and exposure to media)	
for point-to-point connection, with 1 RS 485 interface	**6AG1241-1CH30-5XB1**
Additional accessories	See SIMATIC S7-1200 CPU 1214C, page 3/14

Overview

- The compact high-performance CPU
- With 24 integrated I/Os
- Expandable with:
  - 1 signal board (SB) or communication board (CB); not possible with: 6AG1215-1AG31-2XB0, 6AG1215-1BG31-2XB0, 6AG1215-1HG31-2XB0
  - 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	6AG1215-1AG31-4XB0	6AG1215-1AG31-5XB0	6AG1215-1AG31-2XB0
Based on	6ES7215-1AG31-0XB0	6ES7215-1AG31-0XB0	6ES7215-1AG31-0XB0
	SIPLUS S7-1200 CPU1215 DC/DC/DC	SIPLUS S7-1200 CPU1215 DC/DC/DC	SIPLUS S7-1200 CPU1215 DC/DC/DC
Ambient conditions			
Ambient temperature in operation			
• Min.	-20 °C; = Tmin; startup @ 0 °C	-40 °C; = Tmin; startup @ -25 °C	-40 °C; = Tmin; startup @ -25 °C
• max.	60 °C; = Tmax	60 °C; = Tmax	70 °C; = Tmax; > +60 °C Number of simultaneously controllable inputs and outputs max. 50%; no signal board can be used
Extended ambient conditions			
• Relative to ambient temperature-atmospheric pressure-installation altitude	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m)	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m)	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m)
• At cold restart, min.	0 °C	-25 °C	-25 °C
Relative humidity			
- With condensation, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
Resistance			
- against biologically active substances / conformity with EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!
- against chemically active substances / conformity with EN 60721-3-3	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!
- against mechanically active substances / conformity with EN 60721-3-3	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!

3

Technical specifications (continued)

Article number	6AG1215-1BG31-4XB0	6AG1215-1BG31-5XB0	6AG1215-1BG31-2XB0
Based on	6ES7215-1BG31-0XB0	6ES7215-1BG31-0XB0	6ES7215-1BG31-0XB0
	SIPLUS S7-1200 CPU1215 AC/DC/RLY	SIPLUS S7-1200 CPU1215 AC/DC/RLY	SIPLUS S7-1200 CPU1215 AC/DC/RLY
Ambient conditions			
Ambient temperature in operation			
• Min.	-20 °C; = Tmin; startup @ 0 °C	-40 °C; = Tmin; startup @ -25 °C	-40 °C; = Tmin; startup @ -25 °C
• max.	60 °C; = Tmax	60 °C; = Tmax	70 °C; = Tmax; > +60 °C Number of simultaneously controllable inputs and outputs max. 50%; no signal board can be used
Extended ambient conditions			
• Relative to ambient temperature-atmospheric pressure-installation altitude	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m)	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m)	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m)
• At cold restart, min.	0 °C	-25 °C	-25 °C
Relative humidity			
- With condensation, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
Resistance			
- against biologically active substances / conformity with EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!
- against chemically active substances / conformity with EN 60721-3-3	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!
- against mechanically active substances / conformity with EN 60721-3-3	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!

Technical specifications (continued)

Article number	6AG1215-1HG31-4XB0	6AG1215-1HG31-5XB0	6AG1215-1HG31-2XB0
Based on	6ES7215-1HG31-0XB0	6ES7215-1HG31-0XB0	6ES7215-1HG31-0XB0
	SIPLUS S7-1200 CPU1215 DC/DC/RLY	SIPLUS S7-1200 CPU1215 DC/DC/RLY	SIPLUS S7-1200 CPU1215 DC/DC/RLY
Ambient conditions			
Ambient temperature in operation			
• Min.	-20 °C; = Tmin; startup @ 0 °C	-40 °C; = Tmin; startup @ -25 °C	-40 °C; = Tmin; startup @ -25 °C
• max.	60 °C; = Tmax	60 °C	70 °C; = Tmax; > +60 °C Number of simultaneously controllable inputs and outputs max. 50%; no signal board can be used
Extended ambient conditions			
• Relative to ambient temperature-atmospheric pressure-installation altitude	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m)	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m)	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m)
• At cold restart, min.	0 °C	-25 °C	-25 °C
Relative humidity			
- With condensation, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
Resistance			
- against biologically active substances / conformity with EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!
- against chemically active substances / conformity with EN 60721-3-3	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!
- against mechanically active substances / conformity with EN 60721-3-3	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!

SIPLUS CPU 1215C

3

Ordering data	Article No.
SIPLUS CPU 1215C compact CPU, AC/DC/relay	
(Extended temperature range and medial exposure)	
Integrated program and data memory 100 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 medial exposure (conformal coating); ambient temperature -20 ... +60 °C	**6AG1215-1BG31-4XB0**
• for areas with extreme medial exposure (conformal coating); ambient temperature -40 ... +60 °C	**6AG1215-1BG31-5XB0**
• for areas with extreme medial exposure (conformal coating); ambient temperature -40 ... +70 °C	**6AG1215-1BG31-2XB0**
SIPLUS CPU 1215C compact CPU, DC/DC/DC	
(Extended temperature range and medial exposure)	
Integrated program and data memory 100 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 medial exposure (conformal coating); ambient temperature -20 ... +60 °C	**6AG1215-1AG31-4XB0**
• for areas with extreme medial exposure (conformal coating); ambient temperature -40 ... +60 °C	**6AG1215-1AG31-5XB0**
• for areas with extreme medial exposure (conformal coating); ambient temperature -40 ... +70 °C	**6AG1215-1AG31-2XB0**

Ordering data	Article No.
SIPLUS CPU 1215C compact CPU, DC/DC/relay	
(Extended temperature range and medial exposure)	
Integrated program and data memory 100 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 medial exposure (conformal coating); ambient temperature -20 ... +60 °C	**6AG1215-1HG31-4XB0**
• for areas with extreme medial exposure (conformal coating); ambient temperature -40 ... +60 °C	**6AG1215-1HG31-5XB0**
• for areas with extreme medial exposure (conformal coating); ambient temperature -40 ... +70 °C	**6AG1215-1HG31-2XB0**
Accessories	
Digital input/output SIPLUS signal board SB 1223	
(extended temperature range and medial exposure)	
2 inputs, 24 V DC, IEC type 1 current sinking 2 transistor outputs 24 V DC, 0.5 A, 5 W Can be used as HSC at up to 30 kHz	
• Suitable for areas with extraordinary medial exposure (conformal coating)	**6AG1223-0BD30-4XB0**
• Ambient temperature -25 ... +55 °C	**6AG1223-0BD30-5XB0**
SIPLUS SB 1232 analog output signal board	
(Extended temperature range and medial exposure)	
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)	
for point-to-point connection, with 1 RS 485 interface	**6AG1241-1CH30-5XB1**
Additional accessories	See SIMATIC S7-1200 CPU 1215C, page 3/18

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 1214 FC	CPU 1215 FC
Variants	DC/DC/DC, DC/DC/relay	DC/DC/DC, DC/DC/relay
Main memory, integrated	100 KB	125 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

Technical specifications

Article number	**6ES7214-1AF40-0XB0** CPU 1214 FC, DC/DC/DC, 14DI/10DO/2AI	**6ES7214-1HF40-0XB0** CPU 1214 FC, DC/DC/ RELAY, 14DI/10DO/2AI	**6ES7215-1AF40-0XB0** CPU 1215 FC, DC/DC/DC, 14DI/10DO/2AI/2AO	**6ES7215-1HF40-0XB0** CPU 1215 FC, DC/DC/ RLY,14DI/10DO/2AI/2AO
Product type designation				
General information				
Engineering with				
• Programming package	STEP 7 V13 SP1 or higher	STEP 7 V13 SP1 or higher	STEP 7 V13 SP1 or higher	STEP 7 V13 SP1 or higher
Supply voltage				
Rated value (DC)				
• 24 V DC	Yes	Yes	Yes	Yes
Encoder supply				
24 V encoder supply				
• 24 V	L+ minus 4 V DC min.	L+ minus 4 V DC min.	L+ minus 4 V DC min.	L+ minus 4 V DC min.

3

Technical specifications (continued)

Article number	**6ES7214-1AF40-0XB0** CPU 1214 FC, DC/DC/DC, 14DI/10DO/2AI	**6ES7214-1HF40-0XB0** CPU 1214 FC, DC/DC/ RELAY, 14DI/10DO/2AI	**6ES7215-1AF40-0XB0** CPU 1215 FC, DC/DC/DC, 14DI/10DO/2AI/2AO	**6ES7215-1HF40-0XB0** CPU 1215 FC, DC/DC/ RLY,14DI/10DO/2AI/2AO
Power losses				
Power loss, typ.	12 W	12 W	12 W	12 W
Memory				
Work memory				
• Integrated	125 kbyte	125 kbyte	150 kbyte	150 kbyte
Load memory				
• Integrated	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
Backup				
• without battery	Yes	Yes	Yes	Yes
CPU processing times				
for bit operations, typ.	0.08 µs; / instruction	0.08 µs; / Operation	0.08 µs; / Operation	0.08 µs; / Operation
for word operations, typ.	1.7 µs; / instruction	1.7 µs; / Operation	1.7 µs; / Operation	1.7 µs; / Operation
for floating point arithmetic, typ.	2.3 µs; / Operation	2.3 µs; / Operation	2.3 µs; / Operation	2.3 µs; / Operation
Address area				
I/O address area				
• Inputs	1 024 byte	1 024 byte	1 024 byte	1 024 byte
• Outputs	1 024 byte	1 024 byte	1 024 byte	1 024 byte
Process image				
• Inputs, adjustable	1 024 byte	1 024 byte	1 024 kbyte	1 024 kbyte
• Outputs, adjustable	1 024 byte	1 024 byte	1 024 kbyte	1 024 kbyte
Time of day				
Clock				
• Hardware clock (real-time clock)	Yes	Yes	Yes	Yes
Digital inputs				
Number of digital inputs	14	14	14	14
• of which, inputs usable for technological functions	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	10	10; Relays	10	10; Relays
• of which high-speed outputs	4; 100 kHz Pulse Train Output		4; 100 kHz Pulse Train Output	
Analog inputs				
Integrated channels (AI)	2; 0 to 10 V	2; 0 to 10 V	2; 0 to 10 V	2; 0 to 10 V
Input ranges				
• Voltage	Yes; 0 to 10 V	Yes; 0 to 10 V	Yes	Yes
Analog outputs				
Integrated channels (AO)			2; 0 to 20 mA	2; 0 to 20 mA
1st interface				
Interface type	PROFINET	PROFINET	PROFINET	PROFINET
Physics	Ethernet	Ethernet	Ethernet, 2-port switch, 2*RJ45	Ethernet, 2-port switch, 2*RJ45
Functionality				
• PROFINET IO Device	Yes	Yes	Yes	Yes
• PROFINET IO Controller	Yes	Yes	Yes	Yes
Communication functions				
S7 communication				
• supported	Yes	Yes	Yes	Yes
Open IE communication				
• TCP/IP	Yes	Yes	Yes	Yes
• ISO-on-TCP (RFC1006)	Yes	Yes	Yes	Yes
• UDP	Yes	Yes	Yes	Yes
Web server				
• supported	Yes	Yes	Yes	Yes

Technical specifications (continued)

Article number	**6ES7214-1AF40-0XB0** CPU 1214 FC, DC/DC/DC, 14DI/10DO/2AI	**6ES7214-1HF40-0XB0** CPU 1214 FC, DC/DC/ RELAY, 14DI/10DO/2AI	**6ES7215-1AF40-0XB0** CPU 1215 FC, DC/DC/DC, 14DI/10DO/2AI/2AO	**6ES7215-1HF40-0XB0** CPU 1215 FC, DC/DC/ RLY,14DI/10DO/2AI/2AO
Integrated Functions				
Number of counters	6	6	6	6
Counter frequency (counter) max.	100 kHz	100 kHz	100 kHz	100 kHz
Frequency meter	Yes	Yes	Yes	Yes
controlled positioning	Yes	Yes	Yes	Yes
PID controller	Yes	Yes	Yes	Yes
Number of alarm inputs	4	4	4	4
Number of pulse outputs	4	4	4	4
Limit frequency (pulse)	100 kHz		100 kHz	
Ambient conditions				
Ambient temperature in operation				
• Min.	0 °C	0 °C	0 °C	0 °C
• max.	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
Configuration				
programming				
Programming language				
- LAD	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
- SCL	Yes	Yes	Yes	Yes
Dimensions				
Width	110 mm	110 mm	130 mm	130 mm
Height	100 mm	100 mm	100 mm	100 mm
Depth	75 mm	75 mm	75 mm	75 mm
Weights				
Weight, approx.	415 g	435 g	520 g	530 g

Ordering data

	Article No.
CPU 1214 FC	
Fail-safe 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; 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; 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	**6ES7214-1HF40-0XB0**

CPU 1214 FC, CPU 1215 FC

Ordering data	Article No.
CPU 1215 FC	
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	**6ES7215-1AF40-0XB0**
Fail-safe compact CPU, DC/DC/relay; 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 (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	
Digital input simulator Simulator Module SIM 1274 (optional)	
14 input switches, for CPU 1214C / CPU 1215C	**6ES7274-1XH30-0XA0**
Analog input simulator Simulator Module SIM 1274 (optional)	
2 potentiometers	**6ES7274-1XA30-0XA0**
SIMATIC memory card (optional)	
4 MB	**6ES7954-8LC02-0AA0**
12 MB	**6ES7954-8LE02-0AA0**
24 MB	**6ES7954-8LF02-0AA0**
256 MB	**6ES7954-8LL02-0AA0**
2 GB	**6ES7954-8LP01-0AA0**
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 CPU 1214 FC, CPU 1215 FC	
• For DI, with 20 screws, tin-plated; 4 units	**6ES7292-1AV30-0XA0**
• For DO, with 12 screws, tin-plated; 4 units	**6ES7292-1AM30-0XA0**
for CPU 1214 FC	
• For AI, with 3 screws, tin-plated; 4 units	**6ES7292-1BC30-0XA0**
for CPU 1215 FC	
• For analog units, with 6 screws, gold-plated; 4 units	**6ES7292-1BF30-0XB0**
Front flap set (spare part)	
for CPU 1214 FC	**6ES7291-1AB30-0XA0**
for CPU 1215 FC	**6ES7291-1AC30-0XA0**
RJ45 cable grip	
4 items per pack	
Single port	**6ES7290-3AA30-0XA0**
Dual port	**6ES7290-3AB30-0XA0**
STEP 7 Safety Basic V13 SP1	
Task: Engineering tool for configuring fail-safe user programs for SIMATIC S7-1200 FC **Requirement:** STEP 7 Basic V13 SP1 and higher	
Floating license for 1 user, software and documentation on DVD, license key on USB stick	**6ES7833-1FB13-0YA5**
Floating license for 1 user, software, documentation and license key for download[1]; email address required for delivery	**6ES7833-1FB13-0YH5**
STEP 7 Safety Advanced V13 SP1	
Task: Engineering tool for configuring fail-safe user programs for SIMATIC S7-1200 FC, S7-1500F, S7-300F, S7-400F, WinAC RTX F, ET 200SP F Controller, ET 200SP, ET 200S, ET 200M, ET 200iSP, ET 200pro, ET 200eco **Requirement:** STEP 7 Professional V13 SP1	
Floating license for 1 user, software and documentation on DVD, license key on USB stick	**6ES7833-1FA13-0YA5**
Floating license for 1 user, software, documentation and license key for download[1]; email address required for delivery	**6ES7833-1FA13-0YH5**

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

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**	**6ES7221-1BH32-0XB0**
	DIGITAL INPUT SM 1221, 8DI, 24V DC	DIGITAL INPUT SM 1221, 16DI, 24V DC
Product type designation		
Supply voltage		
Rated value (DC)		
• 24 V DC	Yes	Yes
permissible range, lower limit (DC)	20.4 V	20.4 V
permissible range, upper limit (DC)	28.8 V	28.8 V
Input current		
from 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
Power losses		
Power loss, typ.	1.5 W	2.5 W
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

3

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
Input voltage		
• Type of input voltage	DC	DC
• 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 VDC at 2.5 mA	15 VDC 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; Typical	4 mA; Typical
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
Cable length		
• shielded, max.	500 m	500 m
• Unshielded, max.	300 m	300 m
Digital outputs		
Number of digital outputs	0	0
short-circuit protection	No	No
Interrupts/diagnostics/ status information		
Alarms		
• Alarms	Yes	Yes
• Diagnostic alarm	Yes	Yes
Diagnostic messages		
• Diagnostic functions	Yes	Yes
• Monitoring the supply voltage	Yes	Yes
Diagnostics indication LED		
• for status of the inputs	Yes	Yes
• for maintenance	Yes	Yes
• Status indicator digital input (green)	Yes	Yes
Galvanic isolation		
Galvanic isolation digital inputs		
• between the channels, in groups of	2	4
Degree and class of protection		
Degree of protection to EN 60529		
• IP20	Yes	Yes
Standards, approvals, certificates		
CE mark	Yes	Yes
CSA approval	Yes	Yes
cULus	Yes	Yes
FM approval	Yes	Yes
RCM (formerly C-TICK)	Yes	Yes
Marine approval		
• Marine approval		Yes

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
Ambient conditions		
Free fall		
• Drop height, max. (in packaging)	0.3 m; five times, in dispatch package	0.3 m; five times, in dispatch package
Ambient temperature in operation		
• Permissible temperature range	-20 °C to +60 °C horizontal mounting, -20 °C to 50 °C vertical mounting, 95% humidity, non-condensing	
• Min.	-20 °C	-20 °C
• max.	60 °C	60 °C
• Permissible temperature change	5°C to 55°C, 3°C / minute	5°C to 55°C, 3°C / minute
Storage/transport temperature		
• Min.	-40 °C	-40 °C
• max.	70 °C	70 °C
Air pressure acc. to IEC 60068-2-13		
• Storage/transport, min.	660 hPa	660 hPa
• Storage/transport, max.	1 080 hPa	1 080 hPa
Relative humidity		
• Permissible range (without condensation) at 25 °C	95 %	95 %
Connection method		
required front connector	Yes	Yes
Mechanics/material		
Type of housing (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 8/16-channel digital signal modules	
with 7 screws, zinc-plated; 4 pcs.	**6ES7292-1AG30-0XA0**
Front flap set (spare part)	
for 8/16-channel signal modules	**6ES7291-1BA30-0XA0**

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
Product type designation		
Input current		
from backplane bus 5 V DC, typ.	50 mA	50 mA
Output voltage		
Power supply to the transmitters		
• Supply current, max.	4 mA; per channel	4 mA; per channel
Power losses		
Power loss, typ.	1 W	1 W
Digital inputs		
Number of digital inputs	4; Current-sourcing	4; Current-sourcing
• In groups of	1	1
Input characteristic curve in accordance with IEC 61131, type 1	Yes	
Input characteristic curve in accordance with IEC 61131, type 2		Yes
Number of simultaneously controllable inputs		
all mounting positions		
- up to 40 °C, max.	4	4
Input voltage		
• Type of input voltage	DC	DC
• Rated value (DC)	5 V	24 V
• for signal "0"	0 to 1 V	0 to 5 V
• for signal "1"	2 to 6 V	
Input current		
• for signal "0", max. (permissible quiescent current)	3 mA	2 mA
• for signal "1", min.	6 mA	5.8 mA
• for signal "1", typ.		14 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
- at "0" to "1", max.	2 µs	2.5 µs
for interrupt inputs		
- Parameterizable	Yes	Yes
for counter/technological functions		
- Parameterizable	Yes	Yes

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
Cable length		
• shielded, max.	50 m; shielded, twisted pair	50 m; Standard input: 500 m, high-speed counters: 50 m
Digital outputs		
Number of digital outputs	0	0
short-circuit protection	No	No
Interrupts/diagnostics/ status information		
Alarms		
• Alarms	Yes	Yes
Diagnostic messages		
• Diagnostic functions	Yes	Yes
Diagnostics indication LED		
• for status of the inputs	Yes	Yes
Degree and class of protection		
Degree of protection to EN 60529		
• IP20	Yes	Yes
Standards, approvals, certificates		
Marine approval		
• Germanischer Lloyd (GL)	Yes	Yes
Ambient conditions		
Free fall		
• Drop height, max. (in packaging)	0.3 m; five times, in dispatch package	0.3 m; five times, in dispatch package
Ambient temperature in operation		
• Permissible temperature range	0 °C to 55 °C horizontal installation, 0 °C to 45 °C vertical installation	-20 °C to +60 °C horizontal mounting, -20 °C to 50 °C vertical mounting, 95% humidity, non-condensing
• Min.	0 °C	-20 °C
• max.	55 °C	60 °C
Storage/transport temperature		
• Min.	-40 °C	-40 °C
• max.	70 °C	70 °C
Air pressure acc. to IEC 60068-2-13		
• Storage/transport, min.	660 hPa	660 hPa
• Storage/transport, max.	1 080 hPa	1 080 hPa
Relative humidity		
• Permissible range (without condensation) at 25 °C	95 %	95 %
Mechanics/material		
Type of housing (front)		
• plastic	Yes	Yes
Dimensions		
Width	38 mm	38 mm
Height	62 mm	62 mm
Depth	21 mm	21 mm
Weights		
Weight, approx.	40 g	40 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**

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**	**6ES7222-1BH32-0XB0**	**6ES7222-1HF32-0XB0**	**6ES7222-1HH32-0XB0**	**6ES7222-1XF32-0XB0**
	DIGITAL OUTPUT SM1222, 8 DO, 24V DC	DIGITAL OUTPUT SM1222, 16 DO, 24V DC	DIGITAL OUTPUT SM 1222, 8 DO, RELAY	DIGITAL OUTPUT SM1222, 16 DO, RELAY	DIGITAL OUTPUT SM 1222, 8 DO, CHANGEOVER
Product type designation					
Supply voltage					
permissible range, lower limit (DC)	20.4 V	20.4 V	20.4 V	20.4 V	20.4 V
permissible range, upper limit (DC)	28.8 V	28.8 V	28.8 V	28.8 V	28.8 V
Input current					
from backplane bus 5 V DC, max.	120 mA	140 mA	120 mA	135 mA	140 mA
Digital inputs					
• from load voltage L+ (without load), max.			11 mA/relay coil	11 mA/relay coil	16.7 mA/relay coil
Power losses					
Power loss, typ.	1.5 W	2.5 W	4.5 W	8.5 W	5 W
Digital inputs					
Number of digital inputs	0	0	0	0	0
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			
• for signal "1" permissible range, max.			2 A	2 A	2 A
• for signal "0" residual current, max.	10 µA	10 µA			

Technical specifications (continued)

Article number	**6ES7222-1BF32-0XB0** DIGITAL OUTPUT SM1222, 8 DO, 24V DC	**6ES7222-1BH32-0XB0** DIGITAL OUTPUT SM1222, 16 DO, 24V DC	**6ES7222-1HF32-0XB0** DIGITAL OUTPUT SM 1222, 8 DO, RELAY	**6ES7222-1HH32-0XB0** DIGITAL OUTPUT SM1222, 16 DO, RELAY	**6ES7222-1XF32-0XB0** DIGITAL OUTPUT SM 1222, 8 DO, CHANGEOVER
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
Aggregate current of 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
Relay outputs					
• Number of relay outputs			8	16	8
• Rated input 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					
• Alarms	Yes	Yes	Yes	Yes	Yes
• Diagnostic alarm	Yes	Yes	Yes	Yes	Yes
Diagnostic messages					
• Diagnostic functions	Yes	Yes	Yes	Yes	Yes
• Monitoring the supply voltage	Yes	Yes	Yes	Yes	
Diagnostics indication LED					
• For status of the outputs	Yes	Yes	Yes	Yes	Yes
• for maintenance	Yes	Yes	Yes	Yes	Yes
• Status indicator digital output (green)	Yes	Yes	Yes	Yes	Yes
Galvanic isolation digital outputs					
• between the channels			Relays	Relays	Relays
• between the channels, in groups of	1	1	2	4	1
• between the channels and the 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
Permissible potential difference					
between different circuits			750 V AC for 1 minute	750 V AC for 1 minute	750 V AC for 1 minute
Degree and class of protection					
Degree of protection 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					
• Marine approval	Yes	Yes	Yes	Yes	Yes

Technical specifications (continued)

Article number	6ES7222-1BF32-0XB0 DIGITAL OUTPUT SM1222, 8 DO, 24V DC	6ES7222-1BH32-0XB0 DIGITAL OUTPUT SM1222, 16 DO, 24V DC	6ES7222-1HF32-0XB0 DIGITAL OUTPUT SM 1222, 8 DO, RELAY	6ES7222-1HH32-0XB0 DIGITAL OUTPUT SM1222, 16 DO, RELAY	6ES7222-1XF32-0XB0 DIGITAL OUTPUT SM 1222, 8 DO, CHANGEOVER
Ambient conditions					
Free fall					
• Drop height, max. (in packaging)	0.3 m; five times, in dispatch package	0.3 m; five times, in dispatch package	0.3 m; five times, in dispatch package	0.3 m; five times, in dispatch package	0.3 m; five times, in dispatch package
Ambient temperature in operation					
• Permissible temperature range	-20 °C to +60 °C horizontal mounting, -20 °C to 50 °C vertical mounting, 95% humidity, non-condensing	-20 °C to +60 °C horizontal mounting, -20 °C to 50 °C vertical mounting, 95% humidity, non-condensing	-20 °C to +60 °C horizontal mounting, -20 °C to 50 °C vertical mounting, 95% humidity, non-condensing	-20 °C to +60 °C horizontal mounting, -20 °C to 50 °C vertical mounting, 95% humidity, non-condensing	-20 °C to +60 °C horizontal mounting, -20 °C to 50 °C vertical mounting, 95% humidity, non-condensing
• 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
• Permissible temperature change	5°C to 55°C, 3°C / minute	5°C to 55°C, 3°C / minute	5°C to 55°C, 3°C / minute	5°C to 55°C, 3°C / minute	5°C to 55°C, 3°C / minute
Storage/transport temperature					
• Min.	-40 °C	-40 °C	-40 °C	-40 °C	-40 °C
• max.	70 °C	70 °C	70 °C	70 °C	70 °C
Air pressure acc. to IEC 60068-2-13					
• Storage/transport, min.	660 hPa	660 hPa	660 hPa	660 hPa	660 hPa
• Storage/transport, max.	1 080 hPa	1 080 hPa	1 080 hPa	1 080 hPa	1 080 hPa
Relative humidity					
• Permissible range (without condensation) at 25 °C	95 %	95 %	95 %	95 %	95 %
Connection method					
required front connector	Yes	Yes	Yes	Yes	Yes
Mechanics/material					
Type of housing (front)					
• plastic	Yes	Yes	Yes	Yes	Yes
Dimensions					
Width	45 mm	45 mm	45 mm	45 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.	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**

	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 8/16-channel digital signal modules	
with 7 screws, zinc-plated; 4 pcs.	**6ES7292-1AG30-0XA0**
Front flap set (spare part)	
for 8/16-channel signal modules	**6ES7291-1BA30-0XA0**

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
Product type designation		
Input current		
from backplane bus 5 V DC, typ.	50 mA	50 mA
Output voltage		
Power supply to the transmitters		
• Supply current, max.	4 mA; per channel	4 mA; per channel
Power losses		
Power loss, typ.	1 W	1 W
Digital inputs		
Number of digital inputs	0	0
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	1	1
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	5 Ω	10 Ω
Output voltage		
• Rated value (DC)	5 V	24 V
• for signal "0", max.	0.4 V	0.1 V; with 10 kOhm load
• for signal "1", min.	L+ (-0.5 V)	20 V
• for signal "1", max.	6 V	
Output current		
• for signal "1" rated value	0.1 A	0.1 A
• for signal "1" permissible range, max.	0.11 A	
• for signal "0" residual current, max.		10 µA
Cable length		
• shielded, max.	50 m	50 m

SB 1222 digital output modules

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
Interrupts/diagnostics/ status information		
Alarms		
• Alarms	Yes	Yes
Diagnostic messages		
• Diagnostic functions	Yes	Yes
Diagnostics indication LED		
• For status of the outputs	Yes	Yes
Degree and class of protection		
Degree of protection to EN 60529		
• IP20	Yes	Yes
Standards, approvals, certificates		
Marine approval		
• Germanischer Lloyd (GL)	Yes	Yes
Ambient conditions		
Free fall		
• Drop height, max. (in packaging)	0.3 m; five times, in dispatch package	0.3 m; five times, in dispatch package
Ambient temperature in operation		
• Permissible temperature range	0 °C to 55 °C horizontal installation, 0 °C to 45 °C vertical installation	-20 °C to +60 °C horizontal mounting, -20 °C to 50 °C vertical mounting, 95% humidity, non-condensing
• Min.	0 °C	-20 °C
• max.	55 °C	60 °C
Storage/transport temperature		
• Min.	-40 °C	-40 °C
• max.	70 °C	70 °C
Air pressure acc. to IEC 60068-2-13		
• Storage/transport, min.	660 hPa	660 hPa
• Storage/transport, max.	1 080 hPa	1 080 hPa
Relative humidity		
• Permissible range (without condensation) at 25 °C	95 %	95 %
Mechanics/material		
Type of housing (front)		
• plastic	Yes	Yes
Dimensions		
Width	38 mm	38 mm
Height	62 mm	62 mm
Depth	21 mm	21 mm
Weights		
Weight, approx.	40 g	40 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**

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 DO	DIGITAL I/O SM 1223, 16DI/16DO	DIGITAL I/O SM 1223, 8DI/8DO	DIGITAL I/O SM 1223, 16DI/16DO	DIGITAL I/O SM 1223, 8DI AC/ 8DO RLY
Product type designation					
Supply voltage					
Rated value (DC)					
• 24 V DC	Yes	Yes	Yes	Yes	Yes
permissible range, lower limit (DC)	20.4 V	20.4 V	20.4 V	20.4 V	20.4 V
permissible range, upper limit (DC)	28.8 V	28.8 V	28.8 V	28.8 V	28.8 V
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 losses					
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 (AC)					120/230V AC
• Rated value (DC)	24 V	24 V	24 V	24 V	
• 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 VDC at 2.5 mA	15 VDC at 2.5 mA	15 VDC at 2.5 mA	15 VDC at 2.5 mA	79 V AC at 2.5 mA

3

Technical specifications (continued)

Article number	6ES7223-1BH32-0XB0 DIGITAL I/O SM 1223, 8 DI / 8 DO	6ES7223-1BL32-0XB0 DIGITAL I/O SM 1223, 16DI/16DO	6ES7223-1PH32-0XB0 DIGITAL I/O SM 1223, 8DI/8DO	6ES7223-1PL32-0XB0 DIGITAL I/O SM 1223, 16DI/16DO	6ES7223-1QH32-0XB0 DIGITAL I/O SM 1223, 8DI AC/ 8DO 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; Typical	4 mA; Typical	4 mA; Typical	4 mA; Typical	9 mA; Typical
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" rated value	0.5 A	0.5 A			
• 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
Aggregate current of 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 input 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

Technical specifications (continued)

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 DO	DIGITAL I/O SM 1223, 16DI/16DO	DIGITAL I/O SM 1223, 8DI/8DO	DIGITAL I/O SM 1223, 16DI/16DO	DIGITAL I/O SM 1223, 8DI AC/ 8DO RLY
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					
• Alarms	Yes	Yes	Yes	Yes	Yes
• Diagnostic alarm	Yes	Yes	Yes	Yes	Yes
Diagnostic messages					
• Diagnostic functions	Yes	Yes	Yes	Yes	Yes
• Monitoring the supply voltage	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
• for maintenance	Yes	Yes	Yes	Yes	Yes
• Status indicator digital output (green)	Yes	Yes	Yes	Yes	Yes
• Status indicator digital input (green)	Yes	Yes	Yes	Yes	Yes
Galvanic isolation					
Galvanic isolation digital inputs					
• between the channels, in groups of	2	2	2	2	2
Galvanic isolation digital outputs					
• between the channels			Relays	Relays	Relays
• between the channels, in groups of	1	1	2	4	2
• between the channels and the 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
Permissible potential difference					
between different circuits			750 V AC for 1 minute	750 V AC for 1 minute	750 V AC for 1 minute
Degree and class of protection					
Degree of protection 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					
• Marine approval	Yes		Yes	Yes	Yes
Ambient conditions					
Free fall					
• Drop height, max. (in packaging)	0.3 m; five times, in dispatch package	0.3 m; five times, in dispatch package	0.3 m; five times, in dispatch package	0.3 m; five times, in dispatch package	0.3 m; five times, in dispatch package
Ambient temperature in operation					
• Permissible temperature range	-20 °C to +60 °C horizontal mounting, -20 °C to 50 °C vertical mounting, 95% humidity, non-condensing	-20 °C to +60 °C horizontal mounting, -20 °C to 50 °C vertical mounting, 95% humidity, non-condensing	-20 °C to +60 °C horizontal mounting, -20 °C to 50 °C vertical mounting, 95% humidity, non-condensing	-20 °C to +60 °C horizontal mounting, -20 °C to 50 °C vertical mounting, 95% humidity, non-condensing	-20 °C to +60 °C horizontal mounting, -20 °C to 50 °C vertical mounting, 95% humidity, non-condensing

Technical specifications (continued)

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 DO	DIGITAL I/O SM 1223, 16DI/16DO	DIGITAL I/O SM 1223, 8DI/8DO	DIGITAL I/O SM 1223, 16DI/16DO	DIGITAL I/O SM 1223, 8DI AC/ 8DO RLY
Ambient temperature in operation (continued)					
• 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
• Permissible temperature change	5°C to 55°C, 3°C / minute	5°C to 55°C, 3°C / minute	5°C to 55°C, 3°C / minute	5°C to 55°C, 3°C / minute	5°C to 55°C, 3°C / minute
Storage/transport temperature					
• Min.	-40 °C	-40 °C	-40 °C	-40 °C	-40 °C
• max.	70 °C	70 °C	70 °C	70 °C	70 °C
Air pressure acc. to IEC 60068-2-13					
• Storage/transport, min.	660 hPa	660 hPa	660 hPa	660 hPa	660 hPa
• Storage/transport, max.	1 080 hPa	1 080 hPa	1 080 hPa	1 080 hPa	1 080 hPa
Relative humidity					
• Permissible range (without condensation) at 25 °C	95 %	95 %	95 %	95 %	95 %
Connection method					
required front connector	Yes	Yes	Yes	Yes	Yes
Mechanics/material					
Type of housing (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

Ordering data

	Article No.
SM 1223 digital input/output signal module	
8 inputs, 24 V DC, IEC type 1 current sinking; 8 24 V DC transistor outputs, 0.5 A, 5 W	**6ES7223-1BH32-0XB0**
16 inputs, 24 V DC, IEC type 1 current sinking; 16 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**

	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 8/16-channel digital signal modules	
with 7 screws, zinc-plated; 4 pcs.	**6ES7292-1AG30-0XA0**
Front flap set (spare part)	
for 8/16-channel signal modules	**6ES7291-1BA30-0XA0**
for 32-channel signal modules	**6ES7291-1BB30-0XA0**

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 DO	**6ES7223-3AD30-0XB0** SIGNAL BOARD SB 1223, 2DI/2DQ 5V 200KHZ	**6ES7223-3BD30-0XB0** SIGNAL BOARD SB 1223, 2DI/2DQ 24V 200KHZ
Product type designation			
Supply voltage			
permissible range, lower limit (DC)	20.4 V		
permissible range, upper limit (DC)	28.8 V		
Input current			
from backplane bus 5 V DC, typ.	50 mA	50 mA	50 mA
Output voltage			
Power supply to the transmitters			
• Supply current, max.	4 mA; per channel	4 mA; per channel	4 mA; per channel
Power losses			
Power loss, typ.	1 W	1 W	1 W
Digital inputs			
Number of digital inputs	2; Current-sinking	2; Current-sourcing	2; Current-sourcing
• In groups of	1	1	1
Input characteristic curve in accordance with IEC 61131, type 1	Yes	Yes	Yes
Number of simultaneously controllable inputs			
all mounting positions			
- up to 40 °C, max.	2	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	0 to 1 V	0 to 5 V
• for signal "1"		2 to 6 V	
Input current			
• for signal "0", max. (permissible quiescent current)	1 mA	3 mA	2 mA
• for signal "1", min.		6 mA	5.8 mA
• for signal "1", typ.	0.5 A		14 mA

3

Technical specifications (continued)

Article number	6ES7223-0BD30-0XB0 SIGNAL BOARD SB1223, 2 DI/2 DO	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; 0.2 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
- at "0" to "1", max.	2 µs	2 µs	2.5 µs
- at "1" to "0", max.	10 µs		
for interrupt inputs			
- Parameterizable	Yes	Yes	Yes
for counter/technological functions			
- Parameterizable	Yes	Yes	Yes
Cable length			
• shielded, max.	500 m	50 m	Standard input: 500 m, high-speed counters: 50 m
• 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	1	1
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	5 Ω	10 Ω
Output voltage			
• Rated value (DC)	24 V	5 V	24 V
• for signal "0", max.	0.1 V; with 10 kOhm load	0.4 V	0.1 V; with 10 kOhm load
• for signal "1", min.	20 V	L+ (-0.5 V)	20 V
• for signal "1", max.		6 V	
Output current			
• for signal "1" rated value	0.5 A	0.1 A	0.1 A
• for signal "1" permissible range, max.		0.11 A	
• for signal "0" residual current, max.	10 µA		10 µA
Cable length			
• shielded, max.	500 m	50 m	50 m
• Unshielded, max.	150 m		
Interrupts/diagnostics/ status information			
Alarms			
• Alarms	Yes	Yes	Yes
Diagnostic messages			
• Diagnostic functions	Yes	Yes	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 to EN 60529			
• IP20	Yes	Yes	Yes
Standards, approvals, certificates			
Marine approval			
• Germanischer Lloyd (GL)	Yes	Yes	Yes

Technical specifications (continued)

Article number	**6ES7223-0BD30-0XB0** SIGNAL BOARD SB1223, 2 DI/2 DO	**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			
• Drop height, max. (in packaging)	0.3 m; five times, in dispatch package	0.3 m; five times, in dispatch package	0.3 m; five times, in dispatch package
Ambient temperature in operation			
• Permissible temperature range	0 °C to 55 °C horizontal installation, 0 °C to 45 °C vertical installation	0 °C to 55 °C horizontal installation, 0 °C to 45 °C vertical installation	0 °C to 55 °C horizontal installation, 0 °C to 45 °C vertical installation
• Min.	0 °C	0 °C	0 °C
• max.	55 °C	55 °C	55 °C
Storage/transport temperature			
• Min.	-40 °C	-40 °C	-40 °C
• max.	70 °C	70 °C	70 °C
Air pressure acc. to IEC 60068-2-13			
• Storage/transport, min.	660 hPa	660 hPa	660 hPa
• Storage/transport, max.	1 080 hPa	1 080 hPa	1 080 hPa
Relative humidity			
• Permissible range (without condensation) at 25 °C	95 %	95 %	95 %
Mechanics/material			
Type of housing (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	40 g	40 g

Ordering data

	Article No.
SB 1223 digital input/output signal board	
2 inputs, 24 V DC, IEC type 1 current sinking; 2 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**

3

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				
• Drop height, max. (in packaging)	0.3 m; five times, in dispatch package	0.3 m; five times, in dispatch package	0.3 m; five times, in dispatch package	0.3 m; five times, in dispatch package
Ambient temperature in operation				
• Min.	-40 °C; = Tmin; startup @ -25 °C	-20 °C; = Tmin; startup @ 0 °C	-40 °C; = Tmin; startup @ -25 °C	-20 °C; = Tmin; startup @ 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
Storage/transport temperature				
• Min.	-40 °C	-40 °C	-40 °C	-40 °C
• max.	70 °C	70 °C	70 °C	70 °C
Extended ambient conditions				
• Relative to ambient temperature-atmospheric pressure-installation altitude	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m)	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m)	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m)	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m)
Relative humidity				
- With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)

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

Ordering data

	Article No.
Digital input SIPLUS signal module SM 1221	
(extended temperature range and medial exposure)	
8 inputs, 24 V DC, isolated, current sourcing/sinking	
• Suitable for areas with extraordinary medial exposure (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 medial exposure (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 module, page 3/43

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 taken 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 SB1221 4DI/5VDC	SIPLUS S7-1200 SB1221 4DI/24VDC
Ambient conditions		
Free fall		
• Drop height, max. (in packaging)	0.3 m; five times, in dispatch package	0.3 m; five times, in dispatch package
Ambient temperature in operation		
• Min.	-25 °C; = Tmin	-25 °C; = Tmin
• max.	55 °C; = Tmax	55 °C; = Tmax
Ambient temperature during storage/transportation		
• Min.	-40 °C	-40 °C
• max.	70 °C	70 °C
Extended ambient conditions		

• Relative to ambient temperature-atmospheric pressure-installation altitude	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) //
	Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) //
	Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m)	

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

Ordering data

	Article No.
SIPLUS SB 1221 Signal Board digital input module	
(extended temperature range and medial exposure)	
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 module SB 1221, page 3/45

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				
• Drop height, max. (in packaging)	0.3 m; five times, in dispatch package	0.3 m; five times, in dispatch package	0.3 m; five times, in dispatch package	0.3 m; five times, in dispatch package
Ambient temperature in operation				
• Min.	-40 °C; = Tmin; startup @ -25 °C	-20 °C; = Tmin; startup @ 0 °C	-40 °C; = Tmin; startup @ -25 °C	-20 °C; = Tmin; startup @ 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
Storage/transport temperature				
• Min.	-40 °C	-40 °C	-40 °C	-40 °C
• max.	70 °C	70 °C	70 °C	70 °C
Extended ambient conditions				
• Relative to ambient temperature-atmospheric pressure-installation altitude	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m)	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m)	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m)	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m)
Relative humidity				
- With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)

3

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

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				
• Drop height, max. (in packaging)	0.3 m; five times, in dispatch package	0.3 m; five times, in dispatch package	0.3 m; five times, in dispatch package	0.3 m; five times, in dispatch package
Ambient temperature in operation				
• Min.	-40 °C; = Tmin; startup @ -25 °C	-20 °C; = Tmin; startup @ 0 °C	-40 °C; = Tmin; startup @ -25 °C	-20 °C; = Tmin; startup @ 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
• Permissible temperature change	5°C to 55°C, 3°C / minute			
Storage/transport temperature				
• Min.	-40 °C	-40 °C	-40 °C	-40 °C
• max.	70 °C	70 °C	70 °C	70 °C
Extended ambient conditions				
• Relative to ambient temperature-atmospheric pressure-installation altitude	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m)	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m)	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m)	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m)
• At cold restart, min.	-25 °C			
Relative humidity				
- With condensation, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)			
- With condensation, tested in accordance with IEC 60068-2-38, max.		100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)

Technical specifications (continued)

Article number	**6AG1222-1HF32-2XB0**	**6AG1222-1HF32-4XB0**	**6AG1222-1HH32-2XB0**	**6AG1222-1HH32-4XB0**
Based on	6ES7222-1HF32-0XB0 SIPLUS S7-1200 SM 1222 8DQ RLY	6ES7222-1HF32-0XB0 SIPLUS S7-1200 SM 1222 8DQ RLY	6ES7222-1HH32-0XB0 SIPLUS S7-1200 SM 1222 16DQ RLY	6ES7222-1HH32-0XB0 SIPLUS S7-1200 SM 1222 16DQ RLY
Resistance				
- against biologically active substances / conformity with EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!
- against chemically active substances / conformity with EN 60721-3-3	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!
- against mechanically active substances / conformity with EN 60721-3-3	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!

Ordering data

	Article No.
Digital output SIPLUS signal module SM 1222	
(Extended temperature range and medial exposure)	
8 outputs, 24 V DC; 0.5 A, 5 W, isolated	
• Suitable for areas with extraordinary medial exposure (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 medial exposure (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 medial exposure (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 medial exposure (conformal coating)	**6AG1222-1HH32-4XB0**
• -25 ... +70 °C, from +60 … +70°C number of simultaneously controllable inputs and outputs max. 50 %	**6AG1222-1HH32-2XB0**

	Article No.
Accessories	See SIMATIC S7-1200 SM 1222 digital output module, page 3/48

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 SB1222 4DQ/5VDC	SIPLUS S7-1200 SB1222 4DQ/24VDC
Ambient conditions		
Free fall		
• Drop height, max. (in packaging)	0.3 m; five times, in dispatch package	0.3 m; five times, in dispatch package
Ambient temperature in operation		
• Min.	-25 °C; = Tmin	-25 °C; = Tmin
• max.	55 °C; = Tmax	55 °C; = Tmax
Ambient temperature during storage/transportation		
• Min.	-40 °C	-40 °C
• max.	70 °C	70 °C
Extended ambient conditions		
• Relative to ambient temperature-atmospheric pressure-installation altitude	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m)	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m). For "F-Systems" applications max. +2000 m above sea level permissible
Relative humidity		
- With condensation, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	
Resistance		
- against biologically active substances / conformity with EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!	
- against chemically active substances / conformity with EN 60721-3-3	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!	
- against mechanically active substances / conformity with EN 60721-3-3	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!	

Ordering data

	Article No.
SIPLUS SB 1222 Signal Board digital output module	
(extended temperature range and medial exposure)	
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 3/50

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				
• Drop height, max. (in packaging)	0.3 m; five times, in dispatch package	0.3 m; five times, in dispatch package	0.3 m; five times, in dispatch package	0.3 m; five times, in dispatch package
Ambient temperature in operation				
• Min.	-40 °C; = Tmin; startup @ -25 °C	-20 °C; = Tmin; startup @ 0 °C	-40 °C; = Tmin; startup @ -25 °C	-20 °C; = Tmin; startup @ 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
• Permissible temperature change	5°C to 55°C, 3°C / minute			
Storage/transport temperature				
• Min.	-40 °C	-40 °C	-40 °C	-40 °C
• max.	70 °C	70 °C	70 °C	70 °C
Extended ambient conditions				
• Relative to ambient temperature-atmospheric pressure-installation altitude	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m)	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m)	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m)	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m)
• At cold restart, min.	-25 °C			
Relative humidity				
- With condensation, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)			
- With condensation, tested in accordance with IEC 60068-2-38, max.		100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)

3

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

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				
• Drop height, max. (in packaging)	0.3 m; five times, in dispatch package	0.3 m; five times, in dispatch package	0.3 m; five times, in dispatch package	0.3 m; five times, in dispatch package
Ambient temperature in operation				
• Min.	-40 °C; = Tmin; startup @ -25 °C	-20 °C; = Tmin; startup @ 0 °C	-40 °C; = Tmin; startup @ -25 °C	-20 °C; = Tmin; s tartup @ 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
Storage/transport temperature				
• Min.	-40 °C	-40 °C	-40 °C	-40 °C
• max.	70 °C	70 °C	70 °C	70 °C
Extended ambient conditions				
• Relative to ambient temperature-atmospheric pressure-installation altitude	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m)	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m)	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m)	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m)
Relative humidity				
- With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)

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

Ordering data

	Article No.
SIPLUS digital input/output signal module SM 1223	
(Extended temperature range and medial exposure)	
8 inputs, 24 V DC, IEC type 1 current sinking 8 transistor outputs, 24 V DC, 0.5 A, 5 W	
• Suitable for areas with extraordinary medial exposure (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	
• Suitable for areas with extraordinary medial exposure (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	
• Suitable for areas with extraordinary medial exposure (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	
• Suitable for areas with extraordinary medial exposure (conformal coating)	**6AG1223-1PL32-4XB0**
• -25 ... +70 °C, from +60 … +70 °C number of simultaneously controllable inputs and outputs max. 50 %	**6AG1223-1PL32-2XB0**

	Article No.
Accessories	See SIMATIC S7-1200 digital input/output SM 1223, page 3/54

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 SB1223 2DI / 2DO	SIPLUS S7-1200 SB1223 2DI/2DO	SIPLUS S7-1200 SB1223 2DI/2DQ, 5VDC	SIPLUS S7-1200 SB1223 2DI/2DQ, 24VDC
Ambient conditions				
Free fall				
• Drop height, max. (in packaging)	0.3 m; five times, in dispatch package	0.3 m; five times, in dispatch package	0.3 m; five times, in dispatch package	0.3 m; five times, in dispatch package
Ambient temperature in operation				
• Min.	0 °C	-25 °C	0 °C	-25 °C
• max.	55 °C	55 °C	55 °C	55 °C
Storage/transport temperature				
• Min.	-40 °C	-40 °C	-40 °C	-40 °C
• max.	70 °C	70 °C	70 °C	70 °C
Extended ambient conditions				
• Relative to ambient temperature-atmospheric pressure-installation altitude	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m)			
Relative humidity				
- With condensation, max.	100 %; Relative humidity, incl. condensation / frost permitted (no commissioning under condensation conditions)			
Resistance				
- against biologically active substances / conformity with EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!			
- against chemically active substances / conformity with EN 60721-3-3	Yes; Class 3C4 incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!			
- against mechanically active substances / conformity with EN 60721-3-3	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!			

Ordering data	Article No.
SIPLUS digital input/output signal board SB 1223	
(extended temperature range and medial exposure)	
2 inputs, 24 V DC, IEC type 1 current sinking; 2 transistor outputs 24 V DC, 0.5 A, 5 W; can be used as HSC at up to 30 kHz	
• Suitable for areas with extraordinary medial exposure (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	**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.
Accessories	See SIMATIC S7-1200 digital input/ output SB 1223, page 3/57

SM 1231 analog input modules

Overview

- Analog inputs for SIMATIC S7-1200
- With extremely short conversion times
- For connecting analog sensors without additional amplifiers
- For solving even more complex automation tasks

Technical specifications

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
Product type designation			
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
Power losses			
Power loss, typ.	1.5 W	1.5 W	1.8 W
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 frequency for current input (destruction limit), max.	± 35 V	± 35 V	± 35 V
permissible input voltage for voltage input (destruction limit), max.	35 V	35 V	35 V
permissible input current for voltage input (destruction limit), max.	40 mA	40 mA	40 mA
permissible input current for current input (destruction limit), max.	40 mA	40 mA	40 mA
Cycle time (all channels) max.	625 µs	625 µs	625 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	Yes
Input ranges (rated values), voltages			
• -1.25 V to +1.25 V			Yes
• -10 V to +10 V	Yes	Yes	Yes
• Input resistance (-10 V to +10 V)	≥9 MOhm	≥9 MOhm	≥9 MOhm
• -2.5 V to +2.5 V	Yes	Yes	Yes
• Input resistance (-2.5 V to +2.5 V)	≥9 MOhm	≥9 MOhm	≥9 MOhm
• -5 V to +5 V	Yes	Yes	Yes
• Input resistance (-5 V to +5 V)	≥9 MOhm	≥9 MOhm	≥9 MOhm

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
Input ranges (rated values), currents			
• 0 to 20 mA	Yes	Yes	Yes
• Input resistance (0 to 20 mA)	280 Ω	280 Ω	
• 4 mA to 20 mA	Yes		Yes
Thermocouple (TC)			
Temperature compensation			
- Parameterizable		No	
Analog outputs			
Number of analog outputs	0	0	0
Analog value creation			
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 area, (+/-)	0.1 %	0.1 %	0.1 %
• Current, relative to input area, (+/-)	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			
• Alarms	Yes	Yes	Yes
• Diagnostic alarm	Yes	Yes	Yes
Diagnostic messages			
• Diagnostic functions	Yes	Yes	Yes
• 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
Galvanic isolation analog outputs			
• between the channels and the power supply of the electronics	No	No	No
Degree and class of protection			
Degree of protection to EN 60529			
• IP20	Yes	Yes	Yes

SM 1231 analog input modules

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
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			
• Marine approval	Yes	Yes	Yes
Highest safety class achievable in safety mode			
• SIL according to IEC 61508		none	none
Ambient conditions			
Free fall			
• Drop height, max. (in packaging)	0.3 m; five times, in dispatch package	0.3 m; five times, in dispatch package	0.3 m; five times, in dispatch package
Ambient temperature in operation			
• Permissible temperature range	-20 °C to +60 °C horizontal mounting, -20 °C to 50 °C vertical mounting, 95% humidity, non-condensing	-20 °C to +60 °C horizontal mounting, -20 °C to 50 °C vertical mounting, 95% humidity, non-condensing	-20 °C to +60 °C horizontal mounting, -20 °C to 50 °C vertical mounting, 95% humidity, non-condensing
• Min.	-20 °C	-20 °C	-20 °C
• max.	60 °C	60 °C	60 °C
Storage/transport temperature			
• Min.	-40 °C	-40 °C	-40 °C
• max.	70 °C	70 °C	70 °C
Air pressure acc. to IEC 60068-2-13			
• Operation, min.	795 hPa	795 hPa	795 hPa
• Operation, max.	1 080 hPa	1 080 hPa	1 080 hPa
• Storage/transport, min.	660 hPa	660 hPa	660 hPa
• Storage/transport, max.	1 080 hPa	1 080 hPa	1 080 hPa
Relative humidity			
• Permissible range (without condensation) at 25 °C	95 %	95 %	95 %
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
Connection method			
required front connector	Yes	Yes	Yes
Mechanics/material			
Type of housing (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**

	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 8/16-channel analog signal modules	
with 7 screws, gold-plated; 4 pcs.	**6ES7292-1BG30-0XA0**
Front flap set (spare part)	
for 8/16-channel signal modules	**6ES7291-1BA30-0XA0**

Overview

- Analog input module for the SIMATIC S7-1200
- With extremely short conversion times
- For the connection of analog sensors without additional amplifiers
- For the solution of more complex automation tasks as well
- Can be plugged directly into the CPU

Technical specifications

Article number	**6ES7231-4HA30-0XB0**
	SIGNAL BOARD SB 1231, 1 AI
Product type designation	
Supply voltage	
Rated value (DC)	
• 24 V DC	Yes
Input current	
from backplane bus 5 V DC, typ.	55 mA
Power losses	
Power loss, typ.	0.4 W
Analog inputs	
Number of analog inputs	1; Current or voltage differential inputs
permissible input frequency 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
• Input resistance (-10 V to +10 V)	≥9 MOhm
• -2.5 V to +2.5 V	Yes
• Input resistance (-2.5 V to +2.5 V)	≥9 MOhm
• -5 V to +5 V	Yes
• Input resistance (-5 V to +5 V)	≥9 MOhm
Input ranges (rated values), currents	
• 0 to 20 mA	Yes
• Input resistance (0 to 20 mA)	≥ 250 Ohm
Analog outputs	
Number of analog outputs	0

Article number	**6ES7231-4HA30-0XB0**
	SIGNAL BOARD SB 1231, 1 AI
Analog value creation	
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	
• Alarms	Yes
• Diagnostic alarm	Yes
Diagnostic messages	
• Diagnostic functions	Yes
• Wire break	No
Diagnostics indication LED	
• for status of the inputs	Yes
• for maintenance	Yes
Degree and class of protection	
Degree of protection to EN 60529	
• IP20	Yes
Standards, approvals, certificates	
CE mark	Yes
CSA approval	Yes
FM approval	Yes
RCM (formerly C-TICK)	Yes

3

Technical specifications (continued)

Article number	**6ES7231-4HA30-0XB0**
	SIGNAL BOARD SB 1231, 1 AI
Ambient conditions	
Free fall	
• Drop height, max. (in packaging)	0.3 m; five times, in dispatch package
Ambient temperature in operation	
• Permissible temperature range	0 °C to 55 °C horizontal installation, 0 °C to 45 °C vertical installation
• Min.	0 °C
• max.	55 °C
Storage/transport temperature	
• 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	
• Permissible range (without condensation) at 25 °C	95 %
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	
Type of housing (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**

Overview

- Analog outputs for SIMATIC S7-1200
- With 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, 2AO	**6ES7232-4HD32-0XB0** ANALOG OUTPUT SM 1232, 4AO
Product type designation		
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
Power losses		
Power loss, typ.	1.5 W	1.5 W
Analog inputs		
Number of analog inputs	0	0
Thermocouple (TC)		
Temperature compensation		
- Parameterizable	No	No
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
Analog value creation		
Measurement principle	Differential	Differential
Integration and conversion time/ resolution per channel		
• Resolution (incl. overrange)	Voltage: 14 bits; Current : 13 bits	Voltage: 14 bits; Current : 13 bits
• Integration time, parameterizable	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

3

Technical specifications (continued)

Article number	6ES7232-4HB32-0XB0 ANALOG OUTPUT SM 1232, 2AO	6ES7232-4HD32-0XB0 ANALOG OUTPUT SM 1232, 4AO
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 area, (+/-)	0.3 %	0.3 %
• Current, relative to output area, (+/-)	0.3 %	0.3 %
Interference voltage suppression for f = n x (f1 +/- 1 %), f1 = interference frequency		
• common mode voltage, max.	12 V	12 V
Interrupts/diagnostics/ status information		
Alarms		
• Alarms	Yes	Yes
• Diagnostic alarm	Yes	Yes
Diagnostic messages		
• Diagnostic functions	Yes	Yes
• 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 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
Highest safety class achievable in safety mode		
• SIL according to IEC 61508	none	none
Ambient conditions		
Free fall		
• Drop height, max. (in packaging)	0.3 m; five times, in dispatch package	0.3 m; five times, in dispatch package
Ambient temperature in operation		
• Permissible temperature range	-20 °C to +60 °C horizontal mounting, -20 °C to 50 °C vertical mounting, 95% humidity, non-condensing	-20 °C to +60 °C horizontal mounting, -20 °C to 50 °C vertical mounting, 95% humidity, non-condensing
• Min.	-20 °C	-20 °C
• max.	60 °C	60 °C
Storage/transport temperature		
• Min.	-40 °C	-40 °C
• max.	70 °C	70 °C
Air pressure acc. to IEC 60068-2-13		
• Operation, min.	795 hPa	795 hPa
• Operation, max.	1 080 hPa	1 080 hPa
• Storage/transport, min.	660 hPa	660 hPa
• Storage/transport, max.	1 080 hPa	1 080 hPa
Relative humidity		
• Permissible range (without condensation) at 25 °C	95 %	95 %
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

Technical specifications (continued)

Article number	**6ES7232-4HB32-0XB0** ANALOG OUTPUT SM 1232, 2AO	**6ES7232-4HD32-0XB0** ANALOG OUTPUT SM 1232, 4AO
Connection method		
required front connector	Yes	Yes
Mechanics/material		
Type of housing (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 8/16-channel analog signal modules	
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 8/16-channel signal modules	**6ES7291-1BA30-0XA0**

SB 1232 analog output modules

Overview

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

Technical specifications

Article number	**6ES7232-4HA30-0XB0** SIGNAL BOARD SB 1232, 1 AO
Product type designation	
Input current	
from backplane bus 5 V DC, typ.	15 mA
Output voltage	
Power supply to the transmitters	
• Supply current, max.	25 mA
Power losses	
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.	10 m; shielded, twisted pair
Analog value creation	
Measurement principle	Differential
Integration and conversion time/ resolution per channel	
• Resolution (incl. overrange)	V/12 bits, I/11 bits
Smoothing of measured values	
• Parameterizable	Yes
Errors/accuracies	
Temperature error (relative to output range), (+/-)	25 °C ±0.5%, to 55 °C ±1%

Article number	**6ES7232-4HA30-0XB0** SIGNAL BOARD SB 1232, 1 AO
Interrupts/diagnostics/ status information	
Alarms	
• Alarms	Yes
Diagnostic messages	
• Diagnostic functions	Yes
Diagnostics indication LED	
• For status of the outputs	Yes
Degree and class of protection	
Degree of protection 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	
• Drop height, max. (in packaging)	0.3 m; five times, in dispatch package
Ambient temperature in operation	
• Permissible temperature range	0 °C to 55 °C horizontal installation, 0 °C to 45 °C vertical installation
• Min.	0 °C
• max.	55 °C
Storage/transport temperature	
• Min.	-40 °C
• max.	70 °C
Air pressure acc. to IEC 60068-2-13	
• Storage/transport, min.	660 hPa
• Storage/transport, max.	1 080 hPa
Relative humidity	
• Permissible range (without condensation) at 25 °C	95 %
Pollutant concentrations	
- SO2 at RH < 60% without condensation	S02: < 0.5 ppm; H2S: < 0.1 ppm; RH < 60% condensation-free

Technical specifications (continued)

Article number	**6ES7232-4HA30-0XB0**
	SIGNAL BOARD SB 1232, 1 AO
Mechanics/material	
Type of housing (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**

SM 1234 analog input/output modules

Overview

- Analog inputs and outputs for the SIMATIC S7-1200
- With 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/2AO
Product type designation	
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
Power losses	
Power loss, typ.	2 W
Analog inputs	
Number of analog inputs	4; Current or voltage differential inputs
permissible input frequency 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.	625 µs
Input ranges	
• Voltage	Yes; ±10V, ±5V, ±2.5V
• Current	Yes; 4 to 20 mA, 0 to 20 mA
• Thermocouple	No
• Resistance thermometer	No
• Resistance	No
Input ranges (rated values), voltages	
• -10 V to +10 V	Yes
• Input resistance (-10 V to +10 V)	≥9 MOhm
• -2.5 V to +2.5 V	Yes
• Input resistance (-2.5 V to +2.5 V)	≥9 MOhm
• -5 V to +5 V	Yes
• Input resistance (-5 V to +5 V)	≥9 MOhm

Article number	**6ES7234-4HE32-0XB0**
	ANALOG I/O SM 1234, 4AI/2AO
Input ranges (rated values), currents	
• 0 to 20 mA	Yes
• Input resistance (0 to 20 mA)	280 Ω
• 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
Analog value creation	
Measurement principle	Differential
Integration and conversion time/ resolution per channel	
• Resolution (incl. overrange)	Voltage: 14 bits; Current : 13 bits
• 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
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

Technical specifications (continued)

Article number	6ES7234-4HE32-0XB0
	ANALOG I/O SM 1234, 4AI/2AO
Basic error limit (operational limit at 25 °C)	
• Voltage, relative to input area, (+/-)	0.1 %
• Current, relative to input area, (+/-)	0.1 %
• Voltage, relative to output area, (+/-)	0.3 %
• Current, relative to output area, (+/-)	0.3 %
Interference voltage suppression for f = n x (f1 +/- 1 %), f1 = interference frequency	
• common mode voltage, max.	12 V
Interrupts/diagnostics/ status information	
Alarms	
• Alarms	Yes
• Diagnostic alarm	Yes
Diagnostic messages	
• Diagnostic functions	Yes
• 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
Galvanic isolation analog outputs	
• between the channels and the power supply of the electronics	No
Degree and class of protection	
Degree of protection to EN 60529	
• IP20	Yes
Standards, approvals, certificates	
CE mark	Yes
CSA approval	Yes
FM approval	Yes
RCM (formerly C-TICK)	Yes
Marine approval	
• Marine approval	Yes

Article number	6ES7234-4HE32-0XB0
	ANALOG I/O SM 1234, 4AI/2AO
Highest safety class achievable in safety mode	
• SIL according to IEC 61508	none
Ambient conditions	
Free fall	
• Drop height, max. (in packaging)	0.3 m; five times, in dispatch package
Ambient temperature in operation	
• Permissible temperature range	-20 °C to +60 °C horizontal mounting, -20 °C to 50 °C vertical mounting, 95% humidity, non-condensing
• Min.	-20 °C
• max.	60 °C
Storage/transport temperature	
• 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	
• Permissible range (without condensation) at 25 °C	95 %
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	
Type of housing (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 8/16-channel analog signal modules	
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 8/16-channel signal modules	**6ES7291-1BA30-0XA0**

SM 1231 thermocouple modules

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**	**6ES7231-5QF32-0XB0**
	S7-1200, ANALOG INPUT SM 1231 TC, 4 AI	S7-1200, ANALOG INPUT SM 1231 TC, 8 AI
Product type designation		
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
Power losses		
Power loss, typ.	1.5 W	1.5 W
Analog inputs		
Number of analog inputs	4; Thermocouples	8; Thermocouples
permissible input frequency for current input (destruction limit), max.	± 35 V	± 35 V
Technical unit for temperature measurement adjustable	Degrees Celsius/degrees Fahrenheit	Degrees Celsius/degrees Fahrenheit
Input ranges		
• 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 resistance (-80 mV to +80 mV)	>= 1 MOhm	>= 1 MOhm
Input ranges (rated values), thermoelements		
• 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)		
• permissible input voltage for voltage input (destruction limit), max.	+-35 V	+-35 V
Temperature compensation		
- Parameterizable	No	No

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 outputs		
Number of analog outputs	0	0
Analog value creation		
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
Analog value generation (in isochronous mode)		
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 area), (+/-)	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		
• Alarms	Yes	Yes
• Diagnostic alarm	Yes	Yes
Diagnostic messages		
• Diagnostic functions	Yes; Can be read out	Yes; Can be read out
• 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 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
Highest safety class achievable in safety mode		
• SIL according to IEC 61508	none	none

SM 1231 thermocouple modules

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
Ambient conditions		
Free fall		
• Drop height, max. (in packaging)	0.3 m; five times, in dispatch package	0.3 m; five times, in dispatch package
Ambient temperature in operation		
• Permissible temperature range	-20 °C to +60 °C horizontal mounting, -20 °C to 50 °C vertical mounting, 95% humidity, non-condensing	-20 °C to +60 °C horizontal mounting, -20 °C to 50 °C vertical mounting, 95% humidity, non-condensing
• Min.	-20 °C	-20 °C
• max.	60 °C	60 °C
Storage/transport temperature		
• Min.	-40 °C	-40 °C
• max.	70 °C	70 °C
Air pressure acc. to IEC 60068-2-13		
• Operation, min.	795 hPa	795 hPa
• Operation, max.	1 080 hPa	1 080 hPa
• Storage/transport, min.	660 hPa	660 hPa
• Storage/transport, max.	1 080 hPa	1 080 hPa
Relative humidity		
• Permissible range (without condensation) at 25 °C	95 %	95 %
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		
Type of housing (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**

	Article No.
Accessories	
Terminal block (spare part)	
for 8/16-channel analog signal modules; with 7 screws, gold-plated; 4 units	**6ES7292-1BG30-0XA0**
for 32-channel analog signal modules; 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 8/16-channel signal modules	**6ES7291-1BA30-0XA0**

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
Product type designation	
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 losses	
Power loss, typ.	0.5 W
Analog inputs	
Number of analog inputs	1; Thermocouples
permissible input frequency for current input (destruction limit), max.	± 35 V
Technical unit for temperature measurement adjustable	Degrees Celsius/degrees Fahrenheit
Input ranges	
• Thermocouple	Yes; J, K; voltage range ±80 MV
• Resistance thermometer	No
• Resistance	No
Input ranges (rated values), voltages	
• -80 mV to +80 mV	Yes
• Input resistance (-80 mV to +80 mV)	>= 1 MOhm
Input ranges (rated values), thermoelements	
• Type J	Yes
• Input resistance (type J)	1200 °C
• Type K	Yes
• Input resistance (Type K)	1372 °C
Thermocouple (TC)	
• permissible input voltage for voltage input (destruction limit), max.	+-35 V
Temperature compensation	
- Parameterizable	No
Analog outputs	
Number of analog outputs	0
Analog value creation	
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

Article number	**6ES7231-5QA30-0XB0**
	SIGNAL BOARD SB 1231 TC, 1 AI
Analog value generation (in isochronous mode)	
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 area), (+/-)	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	
• Alarms	Yes
• Diagnostic alarm	Yes
Diagnostic messages	
• Diagnostic functions	Yes; Can be read out
• Wire break	Yes
Diagnostics indication LED	
• for status of the inputs	Yes
• for maintenance	Yes
Degree and class of protection	
Degree of protection 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	
• Drop height, max. (in packaging)	0.3 m; five times, in dispatch package
Ambient temperature in operation	
• Permissible temperature range	0 °C to 55 °C horizontal installation, 0 °C to 45 °C vertical installation
• Min.	0 °C
• max.	55 °C
Storage/transport temperature	
• 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

Technical specifications (continued)

Article number	**6ES7231-5QA30-0XB0**
	SIGNAL BOARD SB 1231 TC, 1 AI
Relative humidity	
• Permissible range (without condensation) at 25 °C	95 %
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	
Type of housing (front)	
• plastic	Yes
Dimensions	
Width	38 mm
Height	62 mm
Depth	21 mm
Weights	
Weight, approx.	35 g

Ordering data

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

Overview

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

Technical specifications

Article number	**6ES7231-5PD32-0XB0**	**6ES7231-5PF32-0XB0**
	S7-1200, ANALOG INPUT SM 1231 RTD, 4 AI	S7-1200, ANALOG INPUT SM 1231 RTD, 8 AI
Product type designation		
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
Power losses		
Power loss, typ.	1.5 W	1.5 W
Analog inputs		
Number of analog inputs	4; Resistance thermometer	8; Resistance thermometer
permissible input frequency for current input (destruction limit), max.	± 35 V	± 35 V
Technical unit for temperature measurement adjustable	Degrees Celsius/degrees Fahrenheit	Degrees Celsius/degrees Fahrenheit
Input ranges		
• 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
• Input resistance (Cu 10)	10 Ω	10 Ω
• Ni 100	Yes	Yes
• Input resistance (Ni 100)	100 Ω	100 Ω
• Ni 1000	Yes	Yes
• Input resistance (Ni 1000)	1 000 Ω	1 000 Ω
• LG-Ni 1000	Yes	Yes
• Input resistance (LG-Ni 1000)	1 000 Ω	1 000 Ω
• Ni 120	Yes	Yes
• Input resistance (Ni 120)	120 Ω	120 Ω
• Ni 200	Yes	Yes
• Input resistance (Ni 200)	200 Ω	200 Ω
• Ni 500	Yes	Yes
• Input resistance (Ni 500)	500 Ω	500 Ω
• Pt 100	Yes	Yes
• Input resistance (Pt 100)	100 Ω	100 Ω
• Pt 1000	Yes	Yes
• Input resistance (Pt 1000)	1 000 Ω	1 000 Ω
• Pt 200	Yes	Yes
• Input resistance (Pt 200)	200 Ω	200 Ω
• Pt 500	Yes	Yes
• Input resistance (Pt 500)	500 Ω	500 Ω

3

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
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
Analog outputs		
Number of analog outputs	0	0
Analog value creation		
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 area), (+/-)	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		
• Alarms	Yes	Yes
• Diagnostic alarm	Yes	Yes
Diagnostic messages		
• Diagnostic functions	Yes; Can be read out	Yes; Can be read out
• 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 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
Highest safety class achievable in safety mode		
• SIL according to IEC 61508	none	none

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
Ambient conditions		
Free fall		
• Drop height, max. (in packaging)	0.3 m; five times, in dispatch package	0.3 m; five times, in dispatch package
Ambient temperature in operation		
• Permissible temperature range	-20 °C to +60 °C horizontal mounting, -20 °C to 50 °C vertical mounting, 95% humidity, non-condensing	-20 °C to +60 °C horizontal mounting, -20 °C to 50 °C vertical mounting, 95% humidity, non-condensing
• Min.	-20 °C	-20 °C
• max.	60 °C	60 °C
Storage/transport temperature		
• Min.	-40 °C	-40 °C
• max.	70 °C	70 °C
Air pressure acc. to IEC 60068-2-13		
• Operation, min.	795 hPa	795 hPa
• Operation, max.	1 080 hPa	1 080 hPa
• Storage/transport, min.	660 hPa	660 hPa
• Storage/transport, max.	1 080 hPa	1 080 hPa
Relative humidity		
• Permissible range (without condensation) at 25 °C	95 %	95 %
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		
Type of housing (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

Ordering data

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

	Article No.
Accessories	
Terminal block (spare part)	
for 8/16-channel analog signal modules; with 7 screws, gold-plated; 4 units	**6ES7292-1BG30-0XA0**
for 32-channel analog signal modules; 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 8/16-channel signal modules	**6ES7291-1BA30-0XA0**

SB 1231 RTD signal boards

Overview

- For the convenient recording of temperatures with great accuracy
- 1 input with 16-bit resolution
- Common resistance-type temperature detectors 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
Product type designation	
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 losses	
Power loss, typ.	0.5 W
Analog inputs	
Number of analog inputs	1; Resistance thermometer
permissible input frequency for current input (destruction limit), max.	± 35 V
Technical unit for temperature measurement adjustable	Degrees Celsius/degrees Fahrenheit
Input ranges	
• Thermocouple	No
• Resistance thermometer	Yes; Platinum (Pt)
• Resistance	Yes; 150 Ω, 300 Ω, 600 Ω
Input ranges (rated values), voltages	
• Input resistance (-80 mV to +80 mV)	>= 10 MOhm
Input ranges (rated values), resistance thermometer	
• Pt 100	Yes
• Input resistance (Pt 100)	100 Ω
• Pt 1000	Yes
• Input resistance (Pt 1000)	1 000 Ω
• Pt 200	Yes
• Input resistance (Pt 200)	200 Ω
• Pt 500	Yes
• Input resistance (Pt 500)	500 Ω
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
Analog value creation	
Measurement principle	integrating

Article number	**6ES7231-5PA30-0XB0**
	SIGNAL BOARD SB 1231 RTD
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 area), (+/-)	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	
• Alarms	Yes
• Diagnostic alarm	Yes
Diagnostic messages	
• Diagnostic functions	Yes; Can be read out
• Wire break	Yes
Diagnostics indication LED	
• for status of the inputs	Yes
• for maintenance	Yes
Degree and class of protection	
Degree of protection 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	
• Drop height, max. (in packaging)	0.3 m; five times, in dispatch package
Ambient temperature in operation	
• Permissible temperature range	0 °C to 55 °C horizontal installation, 0 °C to 45 °C vertical installation
• Min.	0 °C
• max.	55 °C
Storage/transport temperature	
• Min.	-40 °C
• max.	70 °C

Technical specifications (continued)

Article number	**6ES7231-5PA30-0XB0** SIGNAL BOARD SB 1231 RTD
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	
• Permissible range (without condensation) at 25 °C	95 %
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	
Type of housing (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**

SIPLUS SM 1231 analog input modules

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	
• Drop height, max. (in packaging)	0.3 m; five times, in dispatch package
Ambient temperature in operation	
• Min.	-20 °C; = Tmin; startup @ 0 °C
• max.	60 °C; = Tmax
Storage/transport temperature	
• Min.	-40 °C
• max.	70 °C
Extended ambient conditions	

• Relative to ambient temperature-atmospheric pressure-installation altitude	Tmin ... Tmax
	at 1080 hPa ... 795 hPa
	(-1000 m ... +2000 m) //
	Tmin ... (Tmax - 10K)
	at 795 hPa ... 658 hPa
	(+2000 m ... +3500 m) //
	Tmin ... (Tmax - 20K)
	at 658 hPa ... 540 hPa
	(+3500 m ... +5000 m)

Relative humidity	
- With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)

Article number	**6AG1231-4HD32-4XB0**
Based on	**6ES7231-4HD32-0XB0**
	SIPLUS S7-1200 SM 1231 4AI 13BIT
Resistance	
- against biologically active substances / conformity with EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!
- against chemically active substances / conformity with EN 60721-3-3	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!
- against mechanically active substances / conformity with EN 60721-3-3	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!

Ordering data

	Article No.
SIPLUS SM 1231 analog input signal module	
(extended temperature range and medial exposure)	
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 3/72

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	
• Drop height, max. (in packaging)	0.3 m; five times, in dispatch package
Ambient temperature in operation	
• Min.	-20 °C; = Tmin; startup @ 0 °C
• max.	60 °C; = Tmax
Storage/transport temperature	
• Min.	-40 °C
• max.	70 °C
Extended ambient conditions	

• Relative to ambient temperature-atmospheric pressure-installation altitude	Tmin ... Tmax
	at 1080 hPa ... 795 hPa
	(-1000 m ... +2000 m) //
	Tmin ... (Tmax - 10K)
	at 795 hPa ... 658 hPa
	(+2000 m ... +3500 m) //
	Tmin ... (Tmax - 20K)
	at 658 hPa ... 540 hPa
	(+3500 m ... +5000 m)

Relative humidity	
- With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)

Article number	**6AG1232-4HB32-4XB0**
Based on	**6ES7232-4HB32-0XB0** SIPLUS S7-1200 SM 1232 2AQ 13BIT
Resistance	
- against biologically active substances / conformity with EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!
- against chemically active substances / conformity with EN 60721-3-3	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!
- against mechanically active substances / conformity with EN 60721-3-3	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!

Ordering data

	Article No.
SIPLUS SM 1232 analog output signal modules	
(extended temperature range and medial exposure)	
Ambient temperature range 0 ... +55 °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 3/77

SIPLUS SB 1232 analog output modules

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 SB1232 1AO	SIPLUS S7-1200 SB1232 1AO
Ambient conditions		
Free fall		
• Drop height, max. (in packaging)	0.3 m; five times, in dispatch package	0.3 m; five times, in dispatch package
Ambient temperature in operation		
• Min.	0 °C; = Tmin	-25 °C; = Tmin
• max.	55 °C; = Tmax	55 °C; = Tmax
Storage/transport temperature		
• Min.	-40 °C	-40 °C
• max.	70 °C	70 °C
Extended ambient conditions		
• Relative to ambient temperature-atmospheric pressure-installation altitude	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m)	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m)
Relative humidity		
- With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
Resistance		
- against biologically active substances / conformity with EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!
- against chemically active substances / conformity with EN 60721-3-3	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3C4 incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!
- against mechanically active substances / conformity with EN 60721-3-3	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!

Ordering data	Article No.
SIPLUS SB 1232 analog output signal board	
(extended temperature range and medial exposure)	
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 3/79

SIPLUS SM 1234 analog input/output modules

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		
• Drop height, max. (in packaging)	0.3 m; five times, in dispatch package	0.3 m; five times, in dispatch package
Ambient temperature in operation		
• Min.	-40 °C; = Tmin; startup @ -25 °C	-20 °C; = Tmin; startup @ 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
Storage/transport temperature		
• Min.	-40 °C	-40 °C
• max.	70 °C	70 °C
Extended ambient conditions		
• Relative to ambient temperature-atmospheric pressure-installation altitude	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m)	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m)
Relative humidity		
- With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
Resistance		
- against biologically active substances / conformity with EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!
- against chemically active substances / conformity with EN 60721-3-3	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!
- against mechanically active substances / conformity with EN 60721-3-3	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!

Ordering data	Article No.
SIPLUS SM 1234 analog input/ output signal modules	
(extended temperature range and medial exposure)	
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 3/81

SIPLUS SM 1231 thermocouple modules

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

Order 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		
• Drop height, max. (in packaging)	0.3 m; five times, in dispatch package	0.3 m; five times, in dispatch package
Ambient temperature in operation		
• Min.	-20 °C; = Tmin; startup @ 0 °C	-20 °C; = Tmin; startup @ 0 °C
• max.	60 °C; = Tmax	60 °C; = Tmax
Ambient temperature during storage/transportation		
• Min.	-40 °C	-40 °C
• max.	70 °C	70 °C
Extended ambient conditions		
• Relative to ambient temperature-atmospheric pressure-installation altitude	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m)	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m)
Relative humidity		
- With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
Resistance		
- against biologically active substances / conformity with EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!
- against chemically active substances / conformity with EN 60721-3-3	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!
- against mechanically active substances / conformity with EN 60721-3-3	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!

Ordering data

	Article No.
SM 1231 thermocouple module	
(extended temperature range and medial exposure)	
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 3/84

Overview

- For the convenient recording of temperatures with great accuracy
- 4 inputs
- Most popular resistance temperature detectors 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	**6AG1231-5PD32-2XB0**	**6AG1231-5PF32-2XB0**
Based on	**6ES7231-5PD32-0XB0**	**6ES7231-5PF32-0XB0**
	SIPLUS S7-1200 SM1231 4AI	SIPLUS S7-1200 SM1231 RTD 8AI
Ambient conditions		
Free fall		
• Drop height, max. (in packaging)	0.3 m; five times, in dispatch package	0.3 m; five times, in dispatch package
Ambient temperature in operation		
• Min.	-25 °C; = Tmin	-25 °C; = Tmin
• max.	70 °C; = Tmax	70 °C; = Tmax
Storage/transport temperature		
• Min.	-40 °C	-40 °C
• max.	70 °C	70 °C
Extended ambient conditions		
• Relative to ambient temperature-atmospheric pressure-installation altitude	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m)	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m)
Relative humidity		
- With condensation, max.	100 %; Relative humidity, incl. condensation / frost permitted (no commissioning under condensation conditions)	100 %; Relative humidity, incl. condensation / frost permitted (no commissioning under condensation conditions)
Resistance		
- against biologically active substances / conformity with EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!
- against chemically active substances / conformity with EN 60721-3-3	Yes; Class 3C4 incl. salt spray. The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3C4 incl. salt spray. The supplied connector covers must remain on the unused interfaces during operation!
- against mechanically active substances / conformity with EN 60721-3-3	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!

Ordering data

	Article No.
SIPLUS RTD signal module SM 1231	
(extended temperature range and medial exposure)	
4 inputs for resistance temperature detectors Pt10/50/100/200/500/1000, Ni100/120/200/500/1000, Cu10/50/100, LG-Ni1000; resistance 150/300/600 Ohm, resolution 15 bits + sign	**6AG1231-5PD32-2XB0**
8 inputs for resistance temperature detectors Pt10/50/100/200/500/1000, Ni100/120/200/500/1000, Cu10/50/100, LG-Ni1000; resistance 150/300/600 Ohm, resolution 15 bits + sign	**6AG1231-5PF32-2XB0**

	Article No.
Accessories	See SIMATIC S7-1200 RTD signal module SM 1231, page 3/89

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

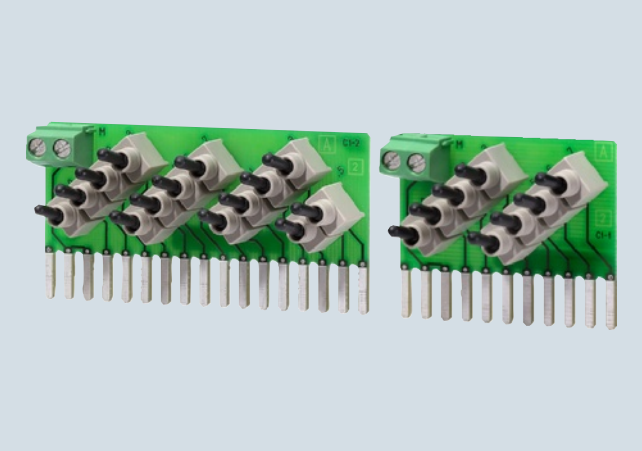
Article number	**6ES7278-4BD32-0XB0**
	S7-1200, 4 X IO-LINK MASTER
Product type designation	
Supply voltage	
Rated value (DC)	
• 24 V DC	Yes
permissible range, upper limit (DC)	28.8 V
Power losses	
Power loss, typ.	1 W
Interrupts/diagnostics/ status information	
Diagnostic messages	
• Diagnostic functions	Yes
Degree and class of protection	
Degree of protection to EN 60529	
• IP20	Yes
Standards, approvals, certificates	
FM approval	Yes
RCM (formerly C-TICK)	Yes

Article number	**6ES7278-4BD32-0XB0**
	S7-1200, 4 X IO-LINK MASTER
Ambient conditions	
Free fall	
• Drop height, max. (in packaging)	0.3 m; five times, in dispatch package
Ambient temperature in operation	
• Permissible temperature range	-20 °C to +60 °C horizontal mounting, -20 °C to 50 °C vertical mounting, 95% humidity, non-condensing
• Permissible temperature change	5°C to 55°C, 3°C / minute
Storage/transport temperature	
• Min.	-40 °C
• max.	70 °C
Air pressure acc. to IEC 60068-2-13	
• Storage/transport, min.	660 hPa
• Storage/transport, max.	1 080 hPa
Relative humidity	
• Permissible range (without condensation) at 25 °C	95 %
Connection method	
required front connector	Yes
Mechanics/material	
Type of housing (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**

Overview



- Simulator modules 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
Product type designation		
Supply voltage		
Rated value (DC)		
• 24 V DC	Yes	Yes
Digital inputs		
Number of digital inputs	8	14
Digital outputs		
Number of digital outputs	0	0
Degree and class of protection		
Degree of protection 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 (optional)	
with 8 input switches, for CPU 1211C / CPU 1212C	**6ES7274-1XF30-0XA0**
with 14 input switches, for CPU 1214C / CPU 1215C	**6ES7274-1XH30-0XA0**
with 14 input switches, for CPU 1217C	**6ES7274-1XK30-0XA0**
Analog input simulator SIM 1274 simulator module (optional)	
2 potentiometers	**6ES7274-1XA30-0XA0**

Battery Board BB 1297

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
Product type designation	
Interrupts/diagnostics/ status information	
Alarms	
• Alarms	Yes
Diagnostic messages	
• Diagnostic functions	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 to EN 60529	
• IP20	Yes
Standards, approvals, certificates	
CE mark	Yes
CSA approval	Yes
FM approval	Yes
RCM (formerly C-TICK)	Yes
Marine approval	
• Marine approval	Yes
• Germanischer Lloyd (GL)	Yes
• American Bureau of Shipping (ABS)	Yes
• Bureau Veritas (BV)	Yes
• Det Norske Veritas (DNV)	Yes
• Lloyds Register of Shipping (LRS)	Yes

Article number	6ES7297-0AX30-0XA0 BATTERY BOARD BB 1297 F. CPU 12XX
Ambient conditions	
Free fall	
• Drop height, max. (in packaging)	0.3 m; five times, in dispatch package
Ambient temperature in operation	
• Min.	-20 °C
• max.	60 °C
Storage/transport temperature	
• 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	
• Permissible range (without condensation) at 25 °C	95 %
Mechanics/material	
Type of housing (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 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	**6ES7297-0AX30-0XA0**

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 • Operator Panel (not from the SIMATIC Basic series) • Automation systems from other manufacturers (possible with limitations)	Directly via SIMATIC bus Via Ethernet (Modbus TCP/IP) or RS 485 (Modbus RTU)
Communication interfaces	• SIMATIC S7-1200 backplane bus • RS 485 (Modbus RTU) • Ethernet (Modbus TCP/IP & SIWATOOL)
Commissioning of the scale	PC configuration software SIWATOOL (Ethernet) or Operator Panel (Modbus / S7-1200)
Calibration approval	MID according to OIML R50 (available soon)
Internal resolution	up to 4 million parts
Number of measurements/second (internal)	100
Updating time for material flow rate	100 ms
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
Zeroing function	On command or automatic set to zero
Load cells	Strain gauges in 4-wire or 6-wire system

SIWAREX WP241	
Load cell excitation	
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 mesaurement 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
Ex approvals	• ATEX Zone 2 • UL • FM available soon
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 DIN EN 60529; IEC 60529	IP20
Climatic requirements $T_{min\ (IND)}$ ... $T_{max\ (IND)}$ (operating temperature)	
Vertical installation	-10 ... +55 °C (14 ... 131 °F)
Horizontal installation	-10 ... +40 °C (14 ... 104 °F)
EMC requirements according to	EN 45501
Dimensions	70 x 75 x 100 mm (2.76 x 2.95 x 3.94 inches)

SIWAREX WP241

3

Ordering data	Article No.
SIWAREX WP241 **Electronic weighing system for scales in SIMATIC S7-1200**	**7MH4960-4AA01**
SIWAREX S7-1200 device manual Available in a range of languages Free download on the Internet at: http://www.siemens.com/weighing	
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	
Configuration package SIWAREX WP241 on CD-ROM for TIA Portal V12 • "Ready for Use" software for operating a scale with SIWAREX WP241 and a touch panel (in a variety of languages) • SIWATOOL V7.0 calibration tool • Device manuals (PDF files in a variety of languages)	**7MH4960-4AK01**
Ethernet cable patch cord 2 m (7 ft) For connecting SIWAREX WP241 to a PC (SIWATOOL), SIMATIC CPU, panel, etc.	**6XV1850-2GH20**

	Article No.
Accessories	
SIWAREX JB junction box, aluminum housing For connecting up to 4 load cells in parallel, and for connecting several junction boxes	**7MH4710-1BA**
SIWAREX JB junction box, stainless steel housing For connecting up to 4 load cells in parallel	**7MH4710-1EA**
Ex interface, type SIWAREX IS With ATEX approval, but **without UL and FM approvals**, for intrinsically-safe connection of load cells, including device manual Suitable for the SIWAREX U, CS, MS, FTA, FTC, M, CF and WP231 weighing modules Approved for use in the EU	
• Short-circuit current < 199 mA DC	**7MH4710-5BA**
• Short-circuit current < 137 mA DC	**7MH4710-5CA**
Cables (optional)	
Cable Li2Y 1 x 2 x 0.75 ST + 2 x (2 x 0.34 ST) – CY, orange sheath To connect SIWAREX U, CS, MS, FTA, FTC, M, CF, WP231, WP241 and WP321 to the junction box (JB), extension box (EB) and Ex interface (Ex I) or between two JBs, for fixed laying, occasional bending permitted, approx. 10.8 mm (0.43 inch) outer diameter, for ambient temperature -40 ... +80 °C (-104 ... +176 °F)	**7MH4702-8AG**
Cable Li2Y 1 x 2 x 0.75 ST + 2 x (2 x 0.34 ST) – CY, blue sheath To connect SIWAREX U, CS, MS, FTA, FTC, M, CF, WP231, WP241 and WP321 to the junction box (JB), extension box (EB) and Ex interface (Ex I) or between two JBs, for fixed laying, occasional bending permitted, approx. 10.8 mm (0.43 inch) outer diameter, for ambient temperature -40 ... +80 °C (-104 ... +176 °F)	**7MH4702-8AF**
Ground terminal for connecting the load cell cable shield to the grounded DIN rail	**6ES5728-8MA11**

Overview

SIWAREX WP231 is a versatile 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 • Operator panel • Automation systems from other manufacturers (possible with limitations)	Directly via SIMATIC bus Via Ethernet (Modbus TCP/IP) or RS 485 (Modbus RTU)
Communication interfaces	• SIMATIC S7-1200 backplane bus • RS 485 • Ethernet
Connection of remote displays (via RS 485)	Display for weight value
Adjustment of scale settings	PC configuration software SIWATOOL (Ethernet) 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
Filters	• Low-pass filter 0.1 ... 50 Hz • Mean value filter
Weighing functions	
Weight values	• Gross • Net • Tare
Limit values	• Min/max • Empty
Zero-setting function	Per command
Tare function	Per command
Tare specification	Per command
Load cells	Strain gages in 4-wire or 6-wire system

SIWAREX WP231	
Load cell powering	
Supply voltage (regulated via feedback)	4.85 V DC
Permissible load impedance	
• 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
Ex approvals	• ATEX Zone 2 • UL • FM available soon
Auxiliary power supply	
Rated voltage	24 V DC
Max. current consumption	200 mA
Max. power consumption SIMATIC Bus	3 mA
IP degree of protection to DIN EN 60529; IEC 60529	IP20
Climatic requirements $T_{min\ (IND)}$ ... $T_{max\ (IND)}$ (operating temperature)	
Vertical installation	-10 ... +55 °C (14 ... 131 °F)
Horizontal installation	-10 ... +40 °C (14 ... 104 °F)
EMC requirements according to	EN 45501
Dimensions	70 x 75 x 100 mm (2.76 x 2.95 x 3.94 inches)

SIWAREX WP231

3

Ordering data	Article No.
SIWAREX WP231 **Weighing electronics for scales in SIMATIC S7-1200**	**7MH4960-2AA01**
SIWAREX S7-1200 device manual Available in a range of languages Free download from the Internet at: http://www.siemens.com/weighing	
SIWAREX WP231 "Ready for Use" Complete software package for non-automatic scale (for S7-1200 and a directly connected operator panel) Free download from the Internet at: http://www.siemens.com/weighing	
Configuration package SIWAREX WP231 on CD-ROM for TIA Portal V11 • "Ready for use" software for operating a scale with SIWAREX WP231 and a touch panel (in a variety of languages) • SIWATOOL V7.0 calibration tool • Device manuals (PDF files in a variety of languages)	**7MH4960-2AK01**
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: www.siebert-group.com/en Detailed information is available from the manufacturer.	

	Article No.
Accessories	
SIWAREX JB junction box, aluminum housing For connecting up to 4 load cells in parallel, and for connecting several junction boxes	**7MH4710-1BA**
SIWAREX JB junction box, stainless steel housing For connecting up to 4 load cells in parallel	**7MH4710-1EA**
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, type SIWAREX IS With ATEX approval, but **without UL and FM approvals**, for intrinsically-safe connection of load cells, including device manual Suitable for the SIWAREX U, CS, MS, FTA, FTC, M, CF and WP231 weighing modules Approved for use in the EU	
• Short-circuit current < 199 mA DC	**7MH4710-5BA**
• Short-circuit current < 137 mA DC	**7MH4710-5CA**
Cables (optional)	
Cable Li2Y 1 x 2 x 0.75 ST + 2 x (2 x 0.34 ST) – CY, orange sheath To connect SIWAREX U, CS, MS, FTA, FTC, M, CF, WP231, WP241 and WP321 to the junction box (JB), extension box (EB) and Ex interface (Ex I) or between two JBs, for fixed laying, occasional bending permitted, approx. 10.8 mm (0.43 inch) outer diameter, for ambient temperature -40 ... +80 °C (-104 ... +176 °F)	**7MH4702-8AG**
Cable Li2Y 1 x 2 x 0.75 ST + 2 x (2 x 0.34 ST) – CY, blue sheath To connect SIWAREX U, CS, MS, FTA, FTC, M, CF, WP231, WP241 and WP321 to the junction box (JB), extension box (EB) and Ex interface (Ex I) or between two JBs, for fixed laying, occasional bending permitted, approx. 10.8 mm (0.43 inch) outer diameter, for ambient temperature -40 ... +80 °C (-104 ... +176 °F)	**7MH4702-8AF**
Ground terminal for connecting the load cell cable shield to the grounded DIN rail	**6ES5728-8MA11**

Overview

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

Technical specifications

Article number	**6ES7241-1CH32-0XB0**	**6ES7241-1AH32-0XB0**
	COMMUNICATION MODULE CM 1241, RS422/485	COMMUNICATION MODULE CM 1241, RS 232
Product type designation		
Supply voltage		
Rated value (DC)		
• 24 V DC	Yes	Yes
permissible range, lower limit (DC)	20.4 V	20.4 V
permissible range, upper limit (DC)	28.8 V	28.8 V
Input current		
Current consumption, max.		220 mA; From L5+; logic
Power losses		
Power loss, typ.	1.2 W	1.1 W
Interfaces		
Number of interfaces	1	1
Interface physics, RS 232C (V.24)		Yes
Interface physics, RS 422/RS 485 (X.27)	Yes	
Point-to-point		
• Cable length, max.	1 000 m	10 m
Integrated protocol driver		
- ASCII	Yes; Available as library function	
- USS	Yes; Available as library function	
Ambient conditions		
Free fall		
• Drop height, max. (in packaging)	0.3 m; five times, in dispatch package	0.3 m; five times, in dispatch package
Ambient temperature in operation		
• Permissible temperature range	-20 °C to +60 °C horizontal mounting, -20 °C to 50 °C vertical mounting, 95% humidity, non-condensing	-20 °C to +60 °C horizontal mounting, -20 °C to 50 °C vertical mounting, 95% humidity, non-condensing
• Permissible temperature change	5°C to 55°C, 3°C / minute	5°C to 55°C, 3°C / minute
Storage/transport temperature		
• Min.	-40 °C	-40 °C
• max.	70 °C	70 °C

Technical specifications (continued)

Article number	**6ES7241-1CH32-0XB0** COMMUNICATION MODULE CM 1241, RS422/485	**6ES7241-1AH32-0XB0** COMMUNICATION MODULE CM 1241, RS 232
Air pressure acc. to IEC 60068-2-13		
• Operation, min.	795 hPa	795 hPa
• Operation, max.	1 080 hPa	1 080 hPa
• Storage/transport, min.	660 hPa	660 hPa
• Storage/transport, max.	1 080 hPa	1 080 hPa
Relative humidity		
• Permissible range (without condensation) at 25 °C	95 %	95 %
Software		
Runtime software		
Target system		
- S7-1200	Yes	Yes
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 RS422/485 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**

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, RS 485
Product type designation	
Input current	
from backplane bus 5 V DC, typ.	50 mA
Power losses	
Power loss, typ.	1.5 W
Interrupts/diagnostics/status information	
Diagnostic messages	
• Diagnostic functions	Yes
Diagnostics indication LED	
• For status of the outputs	Yes
Degree and class of protection	
Degree of protection to EN 60529	
• IP20	Yes
Standards, approvals, certificates	
CE mark	Yes
FM approval	Yes
RCM (formerly C-TICK)	Yes

Article number	**6ES7241-1CH30-1XB0**
	COMMUNICATION BOARD CB 1241, RS 485
Ambient conditions	
Free fall	
• Drop height, max. (in packaging)	0.3 m; five times, in dispatch package
Ambient temperature in operation	
• Permissible temperature range	0 °C to 55 °C horizontal installation, 0 °C to 45 °C vertical installation
• Permissible temperature change	5°C to 55°C, 3°C / minute
Storage/transport temperature	
• 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	
• Permissible range (without condensation) at 25 °C	95 %
Pollutant concentrations	
- SO2 at RH < 60% without condensation	S02: < 0.5 ppm; H2S: < 0.1 ppm; RH < 60% condensation-free
Mechanics/material	
Type of housing (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 RS 485 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**

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 Kbit/s to 12 Mbit/s
- Compact industry-standard enclosure in S7-1200 design for mounting on a standard mounting 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 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 (RS 485)
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 for DC at 5 V typical	0.15 A
Active power loss	0.75 W
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

Article number	6GK7242-5DX30-0XE0
Product type designation	CM 1242-5
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
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 V11 (TIA Portal) or higher

Ordering data	Article No.
SIPLUS CM 1242-5 communication module Communication module for electrical connection of SIMATIC S7-1200 to PROFIBUS as a DPV1 master	**6AG1242-5DX30-2XE0**
Accessories	
PROFIBUS FastConnect connection plug RS 485 With 90° cable outlet; insulation displacement technology, max. transmission rate 12 Mbit/s	
• Without PG interface	**6ES7972-0BA52-0XA0**
• With PG interface	**6ES7972-0BB52-0XA0**
PROFIBUS 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 order information for software in the IK PI catalog.

3

Overview

CM 1243-2 communication module for S7-1200

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-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 are also accessible via process image transfer.

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 (see Accessories and Catalog IC 10) 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.

Security information

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

Configuration

Configuration of the CM 1243-2 requires STEP 7 version V11+SP2 and/or STEP 7 V12 or higher.

For STEP 7 V11+ SP2 or higher, the additional Hardware Support Package for CM 1243-2 is required. This is available via the Industry Online Support Portal, see http://support.automation.siemens.com/WW/view/en/54164095.

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/STEP7.

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.

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	**3RK7243-2AA30-0XB0**
Accessories	
DCM 1271 data decoupling module • With screw terminals • Removable terminals • Dimensions (W x H x D / mm): 30 x 100 x 75	**3RK7271-1AA30-0AA0**
5-pin screw terminal (spare part) For AS-i master CM 1243-2 and AS-i data decoupling unit DCM 1271 • With screw terminals	**3RK1901-3MA00**
3-pin screw terminal (spare part) for AS-i DCM 1271 data decoupling module for connecting the power supply unit • With screw terminals	**3RK1901-3MB00**
Manuals Manual AS-i master CM 1243-2 and AS-i DCM 1271 data decoupling module for SIMATIC S7-1200 See https://support.industry.siemens.com/cs/ww/en/ps/15805/man	

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 the connection of programming devices and operator panels with a PROFIBUS interface to the S7-1200
- Module replacement without PG supported
- Support of all standard baud rates from 9.6 Kbit/s to 12 Mbit/s
- Compact industry-standard enclosure in S7-1200 design for mounting on a standard mounting 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 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 (RS 485)
• 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
Relative positive tolerance for DC at 24 V	20 %
Relative negative tolerance for DC at 24 V	20 %
Consumed current	
• from external supply voltage for DC at 24 V typical	0.1 A
Active power loss	2.4 W
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

Article number	**6GK7243-5DX30-0XE0**
Product type designation	CM 1243-5
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
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

3

Technical specifications (continued)

Article number	6GK7243-5DX30-0XE0
Product type designation	CM 1243-5
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 V11 (TIA Portal) or higher

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 RS 485	
With 90° cable outlet; insulation displacement technology, max. transmission rate 12 Mbit/s	
• Without PG interface	**6ES7972-0BA52-0XA0**
• With PG interface	**6ES7972-0BB52-0XA0**
PROFIBUS 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 order information for software in the IK PI catalog.

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 mounting rail
- Low-cost solution for implementing small, local Ethernet networks
- Connection without any problems using RJ45 standard 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	CSM 1277
Transmission rate	
Transfer rate	10 Mbit/s, 100 Mbit/s
Interfaces	
No. of electrical/optical connections	
• for network components or terminal equipment maximum	4
Number of electrical connections	
• for network components or terminal equipment	4
Type of electrical connection	
• for network components or terminal equipment	RJ45 port
Interfaces 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	19.2 ... 28.8 V
Product component fusing at power supply input	Yes
Fuse protection type at input for supply voltage	0.5 A / 60 V
Consumed current maximum	0.07 A
Active power loss	
• for DC at 24 V	1.6 W
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

Article number	**6GK7277-1AA10-0AA0**
Product type designation	CSM 1277
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
• switch-managed	No
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
Certificate of suitability	EN 61000-6-2, EN 61000-6-4
• CE marking	Yes
• C-Tick	Yes
• KC approval	No
Marine classification association	
• American Bureau of Shipping Europe Ltd. (ABS)	No
• Bureau Veritas (BV)	No
• Det Norske Veritas (DNV)	No
• Germanische Lloyd (GL)	No
• Lloyds Register of Shipping (LRS)	No
• Nippon Kaiji Kyokai (NK)	No
• Polski Rejestr Statkow (PRS)	No
MTBF at 40 °C	273 y

CSM 1277 unmanaged

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 Mbit/s; 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**
Accessories	
IE FC TP Trailing Cable 2 x 2 (Type C)	**6XV1840-3AH10**
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 1000 m, minimum order quantity 20 m	
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	**6GK1901-1FC000AA0**
For connecting Industrial Ethernet FC cables and TP cords; graduated prices for 10 and 50 units or more	
IE TP Cord RJ45/RJ45	
• TP cord preassembled with 2 RJ45 connectors; length: 0.5 m	**6XV1850-2GE50**
• TP cable 4 x 2 with 2 RJ45 connectors; length: 0.5 m	**6XV1870-3QE50**

Overview

The CP 1243-1 communications processor is used for connecting a SIMATIC S7-1200 to the TeleControl Server Basic control center software via Ethernet, 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
- Clearly laid out LED signaling for fast and easy diagnostics
- Compact industrial enclosure in S7-1200 design for mounting on a standard mounting 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 for DC at 5 V typical	0.25 A
Active power loss	1.25 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	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 S7 communication	
Number of possible connections for S7 communication	
• Note	like CPU

3

Technical specifications (continued)

Article number	6GK7243-1BX30-0XE0
Product type designation	CP 1243-1
Performance data telecontrol	
Suitability for use	
• Node station	No
• substation	Yes
• TIM control center	No
Control center connection	to be used with Telecontrol Server Basic
Control center connection by means of a permanent connection	supported
Control center connection Note	Connection to Scada system via Telecontrol Server Basic
Protocol is supported	
• DNP3	No
• IEC 60870-5	No
Product function data buffering if connection is aborted	Yes
• Note	64,000 values
Number of data points per station maximum	200
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 V13 Update 2 + HSP (TIA Portal) or higher
Product functions Security	
Firewall version	stateful inspection
Product function with VPN connection	IPSec
Type of encryption algorithms with VPN connection	AES-256, AES-192, AES-128, 3DES-168
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 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
time synchronization	
• from control station	Yes

Ordering data

	Article No.
Communication processor CP 1243-1	
Communications processor for connection of SIMATIC S7-1200 to TeleControl Server Basic or for secure connection via IP-based networks	**6GK7243-1BX30-0XE0**
Accessories	
TeleControl Server Basic V3.0	
Software for 8 to 5000 stations; Single License for one installation; OPC (UA) server for GPRS and Ethernet/Internet communication with SIMATIC S7-1200 and SIMATIC S7-200 (GPRS only); connection management to remote stations; routing for connections between S7 stations; German and English operator interface; for Windows 7 Professional 32/64-bit + Service Pack 1 Windows 7 Enterprise 32/64-bit + Service Pack 1 Windows 7 Ultimate 32/64-bit + Service Pack 1 Windows Server 2008 32-bit + Service Pack 2 Windows Server 2008 R2 Standard 64-bit Service Pack 1	
• **TeleControl Server Basic 8 V3** Connection management for 8 SIMATIC S7-1200 or S7-200 stations	**6NH9910-0AA21-0AA0**
• **TeleControl Server Basic 32 V3** Connection management for 32 SIMATIC S7-1200 or S7-200 stations	**6NH9910-0AA21-0AF0**
• **TeleControl Server Basic 64 V3** Connection management for 64 SIMATIC S7-1200 or S7-200 stations	**6NH9910-0AA21-0AB0**
• **TeleControl Server Basic 256 V3** Connection management for 256 SIMATIC S7-1200 or S7-200 stations	**6NH9910-0AA21-0AC0**
• **TeleControl Server Basic 1000 V3** Connection management for 1000 SIMATIC S7-1200 or S7-200 stations	**6NH9910-0AA21-0AD0**
• **TeleControl Server Basic 5000 V3** Connection management for 5000 SIMATIC S7-1200 or S7-200 stations	**6NH9910-0AA21-0AE0**
• **TeleControl Server Basic UPGR V3** Upgrade package from Version V2.x to V3 for all license sizes	**6NH9910-0AA21-0GA0**

Ordering data

	Article No.
Compact Switch Module CSM 1277	See page 3/115
IE FC RJ45 Plugs	
RJ45 connector for Industrial Ethernet with a rugged metal enclosure and integrated insulation displacement contacts for connecting Industrial Ethernet FC installation cables	
IE FC RJ45 Plug 180	
180° cable outlet; 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 1000 m, minimum order quantity 20 m	**6XV1840-2AH10**
IE FC Stripping Tool	
Pre-adjusted stripping tool for fast stripping of Industrial Ethernet FC cables	**6GK1901-1GA00**
STEP7 Basic Engineering Software V13 SP1 (TIA Portal)	See Chapter 11, page 11/6

CP 1242-7 V2 GPRS modules

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 Kbit/s in the downlink and 43 Kbit/s in the uplink
- GPRS mode with fixed IP addresses and dynamic IP addresses with standard mobile phone contract
- Time synchronization on the basis of 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 standard mounting 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
• for GPRS transmission 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
Wireless technology	
Type of mobile wireless service	
• is supported	SMS, GPRS
• Note	GPRS (Multislot Class 10)
Type of mobile network is supported	GSM
Operating frequency	850 MHz, 900 MHz, 1800 MHz, 1900 MHz
Transmit power	
• at operating frequency 900 MHz	2 W
• at operating frequency 1800 MHz	1 W
• at operating frequency 1900 MHz	1 W
Supply voltage, current consumption, power loss	
Type of voltage of the supply voltage	DC
Supply voltage external	24 V
Relative positive tolerance for DC at 24 V	20 %
Relative negative tolerance for DC at 24 V	20 %
Consumed current	
• from external supply voltage for DC at 24 V typical	0.1 A
• from external supply voltage for DC at 24 V maximum	0.22 A
Active power loss	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

Technical specifications (continued)

Article number	6GK7242-7KX31-0XE0
Product type designation	CP 1242-7 V2
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
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
Control center connection by means of a permanent connection	supported
Control center connection by means of demand-oriented connection	supported
Control center connection 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
• Note	64,000 values
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 V13 SP1 or higher
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 station	Yes

Ordering data

	Article No.
Communications processor CP 1242-7 V2[1]	
Communication processor CP 1242-7 GPRS V2 for connecting SIMATIC S7-1200 to TeleControl Server Basic via GSM/GPRS mobile radio network	6GK7242-7KX31-0XE0
Accessories	
TeleControl Server Basic V3.0	
Software for 8 to 5000 stations; Single License for one installation; OPC (UA) server for GPRS and Ethernet/Internet communication with SIMATIC S7-1200 and SIMATIC S7-200 (GPRS only); connection management to remote stations; routing for connections between S7 stations; German and English operator interface; for Windows 7 Professional 32/64-bit + Service Pack 1 Windows 7 Enterprise 32/64-bit + Service Pack 1 Windows 7 Ultimate 32/64-bit + Service Pack 1 Windows Server 2008 32-bit + Service Pack 2 Windows Server 2008 R2 Standard 64-bit Service Pack 1	
• **TeleControl Server Basic 8 V3** Connection management for 8 SIMATIC S7-1200 or S7-200 stations	6NH9910-0AA21-0AA0
• **TeleControl Server Basic 32 V3** Connection management for 32 SIMATIC S7-1200 or S7-200 stations	6NH9910-0AA21-0AF0
• **TeleControl Server Basic 64 V3** Connection management for 64 SIMATIC S7-1200 or S7-200 stations	6NH9910-0AA21-0AB0
• **TeleControl Server Basic 256 V3** Connection management for 256 SIMATIC S7-1200 or S7-200 stations	6NH9910-0AA21-0AC0
• **TeleControl Server Basic 1000 V3** Connection management for 1000 SIMATIC S7-1200 or S7-200 stations	6NH9910-0AA21-0AD0
• **TeleControl Server Basic 5000 V3** Connection management for 5000 SIMATIC S7-1200 or S7-200 stations	6NH9910-0AA21-0AE0
• **TeleControl Server Basic UPGR V3** Upgrade package from Version V2.x to V3 for all license sizes	6NH9910-0AA21-0GA0

[1] Note national approvals under http://www.siemens.com/mobilenetwork-approvals

CP 1242-7 V2 GPRS modules

Ordering data	Article No.
ANT794-4MR antenna Omnidirectional antenna for GSM (2G), UMTS (3G) and LTE (4G) networks; weather-resistant 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 900/1800/1900 MHz; weather-resistant for indoor/outdoor use, 1.2 m cable with fixed connection to antenna; SMA connector, incl. assembly adhesive tape	**6NH9870-1AA00**
STEP 7 Basic Engineering Software V13 SP1 (TIA Portal) Target system: SIMATIC S7-1200, S7-1500, S7-300, S7-400, WinAC Requirement: Windows 7 Professional (64 bit), Windows 7 Enterprise (64 bit), Windows 7 Ultimate SP1 (64 bit), Windows 8.1 (64 bit), Windows 8.1 Professional (64 bit), Windows 8.1 Enterprise (64 bit), Windows Server 2008 R2 StdE (full installation), Windows Server 2012 StdE (full installation) Form of delivery: German, English, Chinese, Italian, French, Spanish	
• STEP 7 Basic V13, Floating License	**6ES7822-0AA03-0YA5**
• STEP 7 Basic V13, Trial License	**6ES7822-0AA03-0YA7**
• Upgrade STEP 7 Basic V12 to STEP 7 Professional Basic V13, Floating License	**6ES7822-0AA03-0YE5**

Ordering data	Article No.
Software Update Service For a period of 12 months and for a fixed price, the customer is automatically provided with all upgrades and service packs for each installed software package. The contract is automatically extended by a further year unless canceled at least 12 weeks prior to expiration. Requires the current software version.	
• STEP 7 Basic V1x, Software Update Service Standard, 1 year	**6ES7822-0AA00-0YL0**
• STEP 7 Basic V1x, Software Update Service Compact, 1 year;	**6ES7822-0AA00-0YM0**

Overview

CP 1243-7 LTE is used to connect the S7-1200 to a mobile wireless network of the 4th Generation LTE (Long Term Evolution). 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 buildup 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 standard mounting rail
- Temperature range in operation: -20°C to +70°C
- Installation on standard mounting rails
- 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

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
• for LTE transmission 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, GPRS	SMS, GPRS
• Note	GPRS (Multislot Class 10)	GPRS (Multislot Class 10)
Type of mobile network is supported	GSM, UMTS, LTE	GSM, UMTS, LTE
Operating frequency		
• for LTE transmission	800 MHz, 1800 MHz, 2600 MHz	700 MHz, 1700 MHz

Article number	**6GK7243-7KX30-0XE0**	**6GK7243-7SX30-0XE0**
Product type designation	CP 1243-7 LTE EU	CP 1243-7 LTE US
Supply voltage, current consumption, power loss		
Type of voltage of the supply voltage	DC	DC
Supply voltage external	24 V	24 V
Relative positive tolerance for DC at 24 V	20 %	20 %
Relative negative tolerance for DC at 24 V	20 %	20 %
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

3

Technical specifications (continued)

Article number	6GK7243-7KX30-0XE0	6GK7243-7SX30-0XE0
Product type designation	CP 1243-7 LTE EU	CP 1243-7 LTE US
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
Control center connection by means of a permanent connection	supported	supported
Control center connection by means of demand-oriented connection	supported	supported
Control center connection 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
Product function data buffering if connection is aborted	Yes	Yes
• Note	64,000 values	64,000 values
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 V13 SP1 or higher	STEP 7 Basic/ Professional V13 SP1 + HSP or higher

Article number	6GK7243-7KX30-0XE0	6GK7243-7SX30-0XE0
Product type designation	CP 1243-7 LTE EU	CP 1243-7 LTE US
Product functions Security		
Firewall version	stateful inspection	stateful inspection
Product function with VPN connection	IPSec	IPSec
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 station	Yes	Yes

Ordering data

	Article No.
Communication processor CP 1243-7 LTE	
Communication processor for connecting SIMATIC S7-1200 to the TeleControl Server Basic via the LTE mobile wireless network	
• **CP 1243-7 LTE EU** Frequencies in European band: 700, 1700 MHz	**6GK7243-7KX30-0XE0**
Frequencies in European band: 700, 1700 MHz	
• **CP 1243-7 LTE US** Frequencies in North American band: 800, 1800, 2600 MHz	**6GK7243-7SX30-0XE0**

	Article No.
Accessories	
TeleControl Server Basic V3.0	
Software for 8 to 5000 stations; Single License for one installation; OPC (UA) server for GPRS and Ethernet/Internet communication with SIMATIC S7-1200 and SIMATIC S7-200 (GPRS only); connection management to remote stations; routing for connections between S7 stations; German and English operator interface; for Windows 7 Professional 32/64-bit + Service Pack 1 Windows 7 Enterprise 32/64-bit + Service Pack 1 Windows 7 Ultimate 32/64-bit + Service Pack 1 Windows Server 2008 32-bit + Service Pack 2 Windows Server 2008 R2 Standard 64-bit Service Pack 1	
• **TeleControl Server Basic 8 V3** Connection management for 8 SIMATIC S7-1200 or S7-200 stations	**6NH9910-0AA21-0AA0**
• **TeleControl Server Basic 32 V3** Connection management for 32 SIMATIC S7-1200 or S7-200 stations	**6NH9910-0AA21-0AF0**
• **TeleControl Server Basic 64 V3** Connection management for 64 SIMATIC S7-1200 or S7-200 stations	**6NH9910-0AA21-0AB0**
• **TeleControl Server Basic 256 V3** Connection management for 256 SIMATIC S7-1200 or S7-200 stations	**6NH9910-0AA21-0AC0**
• **TeleControl Server Basic 1000 V3** Connection management for 1000 SIMATIC S7-1200 or S7-200 stations	**6NH9910-0AA21-0AD0**
• **TeleControl Server Basic 5000 V3** Connection management for 5000 SIMATIC S7-1200 or S7-200 stations	**6NH9910-0AA21-0AE0**
• **TeleControl Server Basic UPGR V3** Upgrade package from Version V2.x to V3 for all license sizes	**6NH9910-0AA21-0GA0**

CP 1243-1 DNP3

Overview

The CP 1243-1 DNP3 communications processor is used to connect a SIMATIC S7-1200 to a control center system via the DNP3 protocol and has the following characteristics:

- Support for the established DNP3 telecontrol protocol for standardized linking of the SIMATIC S7-1200 to WinCC, PCS 7, or other commercially available control center systems
- Data transfer of measured values, control variables, or alarms optimized for telecontrol systems
- Automatic sending of alert emails
- Clearly laid out LED signaling for fast and easy diagnostics
- Compact industrial enclosure in S7-1200 design for mounting on a standard mounting rail
- Fast commissioning thanks to easy configuration using STEP 7
- Data buffering of up to 64,000 values ensures a secure database even with temporary connection failures

Technical specifications

Article number	**6GK7243-1JX30-0XE0**
Product type designation	CP 1243-1 DNP3
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 for DC at 5 V typical	0.25 A
Active power loss	1.25 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	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 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

Technical specifications (continued)

Article number	**6GK7243-1JX30-0XE0**
Product type designation	CP 1243-1 DNP3
Performance data telecontrol	
Suitability for use	
• Node station	No
• substation	Yes
• TIM control center	No
Control center connection	control center with DNP3 function
Control center connection by means of a permanent connection	supported
Control center connection Note	Connection to Scada system using DNP3 services
Protocol is supported	
• DNP3	Yes
• IEC 60870-5	No
Product function data buffering if connection is aborted	Yes
• Note	64,000 values
Number of data points per station maximum	200
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 V12 SP1 (TIA Portal) or higher
Product functions Time	
Protocol is supported NTP	No
time synchronization	
• from control station	Yes

Ordering data

	Article No.
CP 1243-1 DNP3 communications processor	
Communications processor for connecting SIMATIC S7-1200 to a control center via the DNP3 protocol	**6GK7243-1JX30-0XE0**
Accessories	
Compact Switch Module CSM 1277	See page 3/115
IE FC RJ45 Plugs	
RJ45 connector for Industrial Ethernet with a rugged metal enclosure and integrated insulation displacement contacts for connecting Industrial Ethernet FC installation cables	
180° cable outlet; for network components and CPs/CPUs with Industrial Ethernet interface	
• 1 pack = 1 unit	**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 1000 m, minimum order quantity 20 m	**6XV1840-2AH10**
IE FC Stripping Tool	
Pre-adjusted stripping tool for fast stripping of Industrial Ethernet FC cables	**6GK1901-1GA00**
STEP 7 Basic Engineering Software V13 SP1 (TIA Portal)	See Chapter 11, page 11/6

CP 1243-1 IEC

Overview

The CP 1243-1 IEC communications processor is used to connect a SIMATIC S7-1200 to a control center system via the IEC 60870 protocol and has the following characteristics:

- Support for the established communication standard in accordance with IEC 60870-5-104 for standardized linking of the SIMATIC S7-1200 to WinCC, PCS 7, or other commercially available control center systems
- Data transfer of measured values, control variables, or alarms optimized for telecontrol systems
- Automatic sending of alert emails
- Clearly laid out LED signaling for fast and easy diagnostics
- Compact industrial enclosure in S7-1200 design for mounting on a standard mounting rail
- Fast commissioning thanks to easy configuration using STEP 7
- Data buffering of up to 64,000 values ensures a secure database even with temporary connection failures

Technical specifications

Article number	**6GK7243-1PX30-0XE0**
Product type designation	CP 1243-1 IEC
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 for DC at 5 V typical	0.25 A
Active power loss	1.25 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	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 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

Technical specifications (continued)

Article number	**6GK7243-1PX30-0XE0**
Product type designation	CP 1243-1 IEC
Performance data telecontrol	
Suitability for use	
• Node station	No
• substation	Yes
• TIM control center	No
Control center connection	control center with IEC 60870-5 function
Control center connection by means of a permanent connection	supported
Control center connection Note	Connection to Scada system using IEC 60870-5
Protocol is supported	
• DNP3	No
• IEC 60870-5	Yes
Product function data buffering if connection is aborted	Yes
• Note	64,000 values
Number of data points per station maximum	200
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 V13 (TIA Portal) or higher
Product functions Time	
Protocol is supported NTP	No
time synchronization	
• from control station	Yes

Ordering data

	Article No.
CP 1243-1 IEC communications processor	
Communications processor for connecting SIMATIC S7-1200 to a control center via the IEC 60870-5-104 protocol	**6GK7243-1PX30-0XE0**
Accessories	
CSM 1277 compact switch module	See page 3/115
IE FC RJ45 plugs	
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 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 the Industrial Ethernet FC cables	**6GK1901-1GA00**
STEP 7 Basic Engineering Software V13 (TIA Portal)	See Chapter 11, page 11/6

SIMATIC RF120C

Overview

SIMATIC RF120C communication module

The SIMATIC RF120C is a communication module for direct connection of SIMATIC identification systems to the SIMATIC S7-1200. The readers of all RFID systems as well as the MV400 code reading systems 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, MOBY D/U, MV
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	
• for DC Rated value	24 V
• for DC	20 ... 30 V
Consumed current for 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
Resistance against vibration	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
Cable 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	Library with functions
Type of computer-mediated communication	acyclic communication
Standards, specifications, approvals	
Certificate of suitability	CE, FCC, cULus, KCC, C-Tick
MTBF	196 y

Ordering data

	Article No.
SIMATIC RF120C communications 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, CMG approval, 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, CMG approval, suitable for cable carriers, straight reader connector	
2 m	**6GT2891-4FH20**
5 m	**6GT2891-4FH50**
10 m	**6GT2891-4FN10**
20 m	**6GT2891-4FN20**
50 m	**6GT2891-4FN50**
2 m, plug angled at reader	**6GT2891-4JH20**
5 m, plug angled at reader	**6GT2891-4JH50**
10 m, plug angled at reader	**6GT2891-4JN10**
Reader adapter cable for MOBY D Material PUR, CMG approval, suitable for cable carriers, 2 m. A cable of the type 6GT2091-4L... is also required.	**6GT2691-4FH20**
DVD "RFID Systems Software & Documentation"	**6GT2080-2AA20**

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	**6AG1241-1AH32-2XB0**
Based on	**6ES7241-1AH32-0XB0** SIPLUS S7-1200 CM1241 RS 232
Ambient conditions	
Free fall	
• Drop height, max. (in packaging)	0.3 m; five times, in dispatch package
Ambient temperature in operation	
• Min.	-40 °C; = Tmin; startup @ -25 °C
• max.	70 °C; = Tmax
Storage/transport temperature	
• Min.	-40 °C
• max.	70 °C
Extended ambient conditions	
• Relative to ambient temperature-atmospheric pressure-installation altitude	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m)

Article number	**6AG1241-1AH32-2XB0**
Based on	**6ES7241-1AH32-0XB0** SIPLUS S7-1200 CM1241 RS 232
Relative humidity	
- With condensation, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
- With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
Resistance	
- against biologically active substances / conformity with EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!
- against chemically active substances / conformity with EN 60721-3-3	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!
- against mechanically active substances / conformity with EN 60721-3-3	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!

Ordering data

	Article No.
SIPLUS CM 1241 communication module	
(extended temperature range and medial exposure)	
Ambient temperature -25 ... +70° C	
Communication module for point-to-point connection, with one RS 485 interface	**6AG1241-1CH32-2XB0**
Communication module for point-to-point connection, with one RS 232 interface	**6AG1241-1AH32-2XB0**
Suitable for areas with extraordinary medial exposure (conformal coating)	
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 3/108

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.

Ordering data

	Article No.
SIPLUS CB 1241 RS 485 communication board for point-to-point connection, with 1 RS 485 interface	**6AG1241-1CH30-5XB1**
Accessories	See SIMATIC CB 1241 RS 485 communication board, page 3/109

SIPLUS CM 1242-5 communication modules

Overview

DP-M	DP-S	FMS	PG/OP	S7
	●			

The SIPLUS 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 Kbit/s to 12 Mbit/s
- Compact industry-standard enclosure in S7-1200 design for mounting on a standard mounting 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 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 if condensation present.
Biologically active substances, compliance with EN 60721-3-3	Class 3B2 mold and fungal spores (excluding fauna). The supplied plug covers must remain in place over the unused interfaces during operation!
Chemically active substances, compliance with EN 60721-3-3	Class 3C4 incl. salt spray in accordance with EN60068-2-52 (degree of severity 3). The supplied plug covers must remain in place over the unused interfaces during operation!
Mechanically active substances, compliance with EN 60721-3-3	Class 3S4 incl. sand, dust. The supplied plug covers must remain in place over the unused interfaces during operation!
Air pressure (depending on the highest positive temperature range specified)	1 080 ... 795 hPa (-1 000 ... +2 000 m) see ambient temperature range 795 ... 658 hPa (+2 000 ... +3 500 m) derating 10 K 658 ... 540 hPa (+3 500 ... +5 000 m) derating 20 K

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

Ordering data

	Article No.
SIPLUS CM 1242-5 communication module (extended temperature range and medial exposure) Communication module for electrical connection of SIMATIC S7-1200 to PROFIBUS as a DPV1 slave	**6AG1242-5DX30-2XE0**
Accessories	See SIMATIC S7-1200 communication module CM 1242-5, page 3/111

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 the connection of programming devices and operator panels with a PROFIBUS interface to the S7-1200
- Module replacement without PG supported
- Support of all standard baud rates from 9.6 Kbit/s to 12 Mbit/s
- Compact industry-standard enclosure in S7-1200 design for mounting on a standard mounting 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 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 number	**6AG1 243-5DX30-2XE0**
Article number 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 if condensation present.
Biologically active substances, compliance with EN 60721-3-3	Class 3B2 mold and fungal spores (excluding fauna). The supplied plug covers must remain in place over the unused interfaces during operation!
Chemically active substances, compliance with EN 60721-3-3	Class 3C4 incl. salt spray in accordance with EN60068-2-52 (degree of severity 3). The supplied plug covers must remain in place over the unused interfaces during operation!
Mechanically active substances, compliance with EN 60721-3-3	Class 3S4 incl. sand, dust. The supplied plug covers must remain in place over the unused interfaces during operation!
Air pressure (depending on the highest positive temperature range specified)	1 080 ... 795 hPa (-1 000 ... +2 000 m) see ambient temperature range 795 ... 658 hPa (+2 000 ... +3 500 m) derating 10 K 658 ... 540 hPa (+3 500 ... +5 000 m) derating 20 K

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

Ordering data

	Article No.
SIPLUS CM 1243-5 communication module (extended temperature range and medial exposure) 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 3/114

SIPLUS NET CSM 1277

Overview

- Unmanaged switch for connection of SIPLUS S7-1200 to an Industrial Ethernet network with a line, tree or star topology
- Multiplication of Ethernet interfaces on a SIPLUS S7-1200 for additional connection of up to three programming devices, operator controls, and further Ethernet nodes
- Simple, space-saving mounting on the SIPLUS S7-1200 rail
- Low-cost solution for implementing small, local Ethernet networks
- Problem-free connection using RJ45 standard connectors
- 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 number	**6AG1 277-1AA10-4AA0**
Article number based on	**6GK7 277-1AA10-0AA0**
Ambient temperature range	0 … +60 °C

Technical specifications

Article number	**6AG1277-1AA10-4AA0**
Based on	**6GK7277-1AA10-0AA0**
Product-type designation	SIPLUS CSM 1277
Permitted ambient conditions	
Ambient temperature	
• during operating	0 °C 60 °C
• during storage	-40 °C 70 °C
• during transport	-40 °C 70 °C

Ambient condition relating to ambient temperature - air pressure - installation altitude	0 ... +60°C
	at 1080 hPa ... 795 hPa
	(-1000 m ... +2000 m) //
	0 ... +50°C at 795 hPa ... 658 hPa
	(+2000 m ... +3500 m) //
	0 ... +40°C at 658 hPa ... 540 hPa
	(+3500 m ... +5000 m)

Resistance to biologically active substances conformity in accordance with EN 60721-3-3	Compliant with EN 60721-3-3, Class 3B2 mold and fungal spores (except fauna); the supplied plug covers must remain in place on the unused interfaces during operation.
Resistance to chemically active substances conformity in accordance with EN 60721-3-3	Compliant with EN 60721-3-3, Class 3C4 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.
Resistance to mechanically active substances conformity in accordance with EN 60721-3-3 note	Compliant with EN 60721-3-3, Class 3S4 incl. sand, dust; the supplied plug covers must remain in place on the unused interfaces during operation.

Ordering data

	Article No.
SIPLUS NET CSM 1277 compact switch module (extended temperature range and medial exposure) Unmanaged switch for connection of SIPLUS S7-1200 and up to three further nodes to Industrial Ethernet with 10/100 Mbit/s; 4 x RJ45 ports; external 24 V DC power supply, LED diagnostics, S7-1200 module including electronic Manual on CD-ROM	**6AG1 277-1AA10-4AA0**
Accessories	See CSM 1277 unmanaged, page 3/116

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
Product type designation	
Supply voltage	
Rated value (DC)	
• 24 V DC	Yes
permissible range, lower limit (DC)	20.4 V
permissible range, upper limit (DC)	28.8 V
Input current	
from backplane bus 5 V DC, max.	155 mA
Digital inputs	
• from load voltage L+ (without load), max.	130 mA
Power losses	
Power loss, typ.	7 W
Digital inputs	
Number of digital inputs	16
horizontal installation	
- up to 50 °C, max.	16
vertical installation	
- up to 40 °C, max.	16
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
Cable length	
• shielded, max.	200 m
• Unshielded, max.	200 m
Diagnostics indication LED	
• for status of the inputs	Yes

Article number	**6ES7226-6BA32-0XB0** DIGITAL INPUT SM 1226, F-DI 16X 24VDC
Standards, approvals, certificates	
CE mark	Yes
cULus	Yes
FM approval	Yes
Ambient conditions	
Free fall	
• Drop height, max. (in packaging)	0.3 m; five times, in dispatch package
Ambient temperature in operation	
• Min.	0 °C
• max.	55 °C
• Permissible temperature change	5°C to 55°C, 3°C / minute
Storage/transport temperature	
• Min.	-40 °C
• max.	70 °C
Air pressure acc. to IEC 60068-2-13	
• Storage/transport, min.	660 hPa
• Storage/transport, max.	1 080 hPa
Relative humidity	
• Permissible range (without condensation) at 25 °C	95 %
Mechanics/material	
Type of housing (front)	
• plastic	Yes
Dimensions	
Width	70 mm
Height	100 mm
Depth	75 mm
Weights	
Weight, approx.	250 g

SM 1226 fail-safe digital input

3

Ordering data

	Article No.
SM 1226 fail-safe digital input signal modules 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	**6ES7 226-6BA32-0XB0**
Accessories	
STEP 7 Safety Basic V13 SP1 **Task:** Engineering tool for configuring fail-safe user programs for SIMATIC S7-1200 FC **Requirement:** STEP 7 Basic V13 SP1 and higher	
Floating license for 1 user, software and documentation on DVD, license key on USB stick	**6ES7833-1FB13-0YA5**
Floating license for 1 user, software, documentation and license key for download[1]; email address required for delivery	**6ES7833-1FB13-0YH5**

	Article No.
STEP 7 Safety Advanced V13 SP1 **Task:** Engineering tool for configuring fail-safe user programs for SIMATIC S7-1200 FC, S7-1500F, S7-300F, S7-400F, WinAC RTX F, ET 200SP F Controller, ET 200SP, ET 200S, ET 200M, ET 200iSP, ET 200pro, ET 200eco **Requirement:** STEP 7 Professional V13 SP1	
Floating license for 1 user, software and documentation on DVD, license key on USB stick	**6ES7833-1FA13-0YA5**
Floating license for 1 user, software, documentation and license key for download[1]; email address required for delivery	**6ES7833-1FA13-0YH5**

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

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
Product type designation	
Supply voltage	
Rated value (DC)	
• 24 V DC	Yes
permissible range, lower limit (DC)	20.4 V
permissible range, upper limit (DC)	28.8 V
Input current	
from backplane bus 5 V DC, max.	125 mA
Digital inputs	
• from load voltage L+ (without load), max.	170 mA
Power losses	
Power loss, typ.	8 W
Digital outputs	
Number of digital outputs	4
• In groups of	1
short-circuit protection	Yes
Output voltage	
• Rated value (DC)	24 V
Output current	
• for signal "1" rated value	2 A
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

Article number	**6ES7226-6DA32-0XB0** DIGITAL OUTPUT SM 1226, F-DQ 4X 24VDC
Ambient conditions	
Free fall	
• Drop height, max. (in packaging)	0.3 m; five times, in dispatch package
Ambient temperature in operation	
• Min.	0 °C
• max.	55 °C
• Permissible temperature change	5°C to 55°C, 3°C / minute
Storage/transport temperature	
• Min.	-40 °C
• max.	70 °C
Air pressure acc. to IEC 60068-2-13	
• Storage/transport, min.	660 hPa
• Storage/transport, max.	1 080 hPa
Relative humidity	
• Permissible range (without condensation) at 25 °C	95 %
Mechanics/material	
Type of housing (front)	
• plastic	Yes
Dimensions	
Width	70 mm
Height	100 mm
Depth	75 mm
Weights	
Weight, approx.	270 g

Ordering data

	Article No.
SM 1226 fail-safe digital output signal module 4 outputs; 24 V DC, current sourcing/sinking	**6ES7226-6DA32-0XB0**

	Article No.
Accessories	
STEP 7 Safety Basic V13 SP1	See Fail-safe digital input, page 3/138
STEP 7 Safety Advanced V13 SP1	See Fail-safe digital input, page 3/138

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

Technical specifications

Article number	**6ES7226-6RA32-0XB0** DIGITAL OUTPUT SM 1226, F-DQ 2X RELAY
Product type designation	
Supply voltage	
Rated value (DC)	
• 24 V DC	Yes
permissible range, lower limit (DC)	20.4 V
permissible range, upper limit (DC)	28.8 V
Input current	
from backplane bus 5 V DC, max.	120 mA
Digital inputs	
• from load voltage L+ (without load), max.	300 mA
Power losses	
Power loss, typ.	10 W
Output voltage	
• Rated value (DC)	5 V DC to 30 V DC
• Rated value (AC)	5 V AC to 250 V AC
Relay outputs	
• Number of relay outputs	2
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

Article number	**6ES7226-6RA32-0XB0** DIGITAL OUTPUT SM 1226, F-DQ 2X RELAY
Ambient conditions	
Free fall	
• Drop height, max. (in packaging)	0.3 m; five times, in dispatch package
Ambient temperature in operation	
• Min.	0 °C
• max.	55 °C
• Permissible temperature change	5°C to 55°C, 3°C / minute
Storage/transport temperature	
• Min.	-40 °C
• max.	70 °C
Air pressure acc. to IEC 60068-2-13	
• Storage/transport, min.	660 hPa
• Storage/transport, max.	1 080 hPa
Relative humidity	
• Permissible range (without condensation) at 25 °C	95 %
Mechanics/material	
Type of housing (front)	
• plastic	Yes
Dimensions	
Width	70 mm
Height	100 mm
Depth	75 mm
Weights	
Weight, approx.	300 g

Ordering data

	Article No.
SM 1226 fail-safe relay output signal module 2 relay outputs	**6ES7226-6RA32-0XB0**

	Article No.
Accessories	
STEP 7 Safety Basic V13 SP1	See Fail-safe digital input, page 3/138
STEP 7 Safety Advanced V13 SP1	See Fail-safe digital input, page 3/138

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 GL facilitate 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
Supply voltage	
• 1 with AC Rated value	120 V
• 2 with AC Rated value	230 V
• Note	Automatic range selection
Input voltage	
• 1 with AC	85 ... 132 V
• 2 with AC	176 ... 264 V
Wide-range input	No
Overvoltage resistance	2.3 × Vin rated, 1.3 ms
Mains buffering at Iout rated, min.	20 ms; at Vin = 93/187 V
Rated line frequency	50 ... 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 60898)	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 Vout 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 Vout (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
Active power supplied 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

3

Technical specifications (continued)

Article number	6EP1332-1SH71
Product	S7-1200 PM1207
Power supply, type	24 V/2.5 A
Efficiency	
Efficiency at Vout rated, Iout rated, approx.	83 %
Power loss at Vout rated, Iout rated, approx.	12 W
Closed-loop control	
Dynamic mains compensation (Vin rated ±15 %), max.	0.3 %
Dynamic load smoothing (Iout: 50/100/50 %), Uout ± 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 Uout acc. to EN 60950-1 and EN 50178
Protection class	Class I
Leakage current	
• maximum	3.5 mA
CE mark	Yes
UL/CSA approval	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
Certificate of suitability IECEx	No
Certificate of suitability NEC Class 2	No
FM approval	Class I, Div. 2, Group ABCD, T4
CB approval	Yes
Marine approval	GL, ABS, BV, DNV, 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
Weight, approx.	0.3 kg
Product property of the enclosure housing for side-by-side mounting	Yes
Installation	Snaps onto DIN rail EN 60715 35x7.5/15, wall mounting
Other information	Specifications at rated input voltage and ambient temperature +25 °C (unless otherwise specified)

Ordering data

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

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 from 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 number	**6AG1332-1SH71-4AA0**	**6AG1332-1SH71-7AA0**
Article number based on	**6EP1332-1SH71**	
Ambient temperature range	0 ... +60° C	-25 ... +70° C
Conformal coating	Coating of the printed circuit boards and the electronic components	
Technical data	The technical data of the standard product applies except for the ambient conditions.	
Ambient conditions		
Relative humidity	100%, condensation/frost permissible. No commissioning if condensation present.	
Biologically active substances, compliance with EN 60721-3-3	Class 3B2 mold spores, fungal spores (excluding fauna). The supplied plug covers must remain in place over the unused interfaces during operation!	
Chemically active substances, compliance with EN 60721-3-3	Class 3C4 incl. salt spray in accordance with EN60068-2-52 (degree of severity 3). The supplied plug covers must remain in place over the unused interfaces during operation!	
Mechanically active substances, compliance with EN 60721-3-3	Class 3S4 incl. sand, dust. The supplied plug covers must remain in place over the unused interfaces during operation!	
Air pressure (depending on the highest positive temperature range specified)	1080 ... 795 hPa (-1000 ... +2000 m) see ambient temperature range 795 ... 658 hPa (+2000 ... +3500 m) derating 10 K 658 ... 540 hPa (+3500 ... +5000 m) derating 20 K	

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

SIPLUS PM 1207 power supplies

Technical specifications

	SIPLUS PM 1207
Article No.	**6AG1332-1SH71-7AA0** **6AG1332-1SH71-4AA0**
Article No. based on	**6EP1332-1SH71**
Input voltage, nominal value • Range	120/230 V AC (auto-switching) 85…132 V / 176...264 V AC
Mains buffering	> 20 ms (at 93/187 V)
Line frequency, nominal • Range	50/60 Hz 47 … 63 Hz
Input current, nominal value • Inrush current (25 °C) • Recommended circuit-breaker	1.2/0.67 A <13 A 16 A Charact. B, 10 A Charact. C
Output voltage, nominal value • Tolerance • Residual ripple • Adjustment	24 V DC ± 3% < 150 mVpp No
Output current, nominal value	2.5 A (derating: 1.5 A from 60 °C)
Efficiency at nominal values, approx.	83%
Parallel operation	Yes, 2 units
Electronic short-circuit protection	Yes, automatic restart
Radio interference suppression (EN 55022)	Class B
Operating display	Green LED for "24 V o.k."
Supply-harmonics limitation (EN 61000-3-2)	Not applicable
Degree of protection (EN 60529)	IP20
Protection class	Class 1
Electric isolation	SELV acc. to EN 60950 and EN 50178
Ambient temperature	0 … +60 °C -25 ... 70 °C
Transport and storage temperature	-25 … +85 °C
Installation	Standard rail EN 60715 35x7.5/15
Dimensions (W x H x D) in mm	70 x 100 x 75
Weight, approx.	0.3 kg
Certifications	CE

Ordering data

	Article No.
SIPLUS PM 1207 power supply	
(extended temperature range and medial exposure)	
Input 120/230 V AC, output 24 V DC, 2.5 A; derating from + 55 °C to + 70 °C at 1.2 A output current	
Ambient temperature -25 ... +70 °C	**6AG1332-1SH71-7AA0**
Ambient temperature 0 ... +60 °C	**6AG1332-1SH71-4AA0**

Overview

SIMATIC HMI Basic Panels, 2nd generation

With their fully developed HMI basic functions, 2nd generation SIMATIC HMI Basic Panels are the ideal entry level series for simple HMI applications.

The device family offers panels with 4", 7", 9" and 12" widescreen displays, as well as combined key and touch operation.

The innovative high-resolution widescreen displays with 64 000 colors are also suitable for upright installation, and they can be dimmed down to 100 %. The innovative operator interface with improved usability opens up a diverse range of options thanks to new controls and graphics. The new USB interface enables the connection of keyboard, mouse or barcode scanner, and supports the simple archiving of data on a USB stick.

The integrated Ethernet or RS 485/422 interface (version-specific) enables simple connection to the controller.

For further information, refer to:
www.siemens.com/basic-panels

Note:

For selected SIMATIC HMI Basic Panels, it is possible to customize the appearance of the panel using the customer name or customer logo, as well as to change the membrane color scheme in accordance with the customer's corporate design. This is even possible for small quantities.

Ordering data

	Article No.
SIMATIC HMI Basic Panels, Key and Touch	
SIMATIC HMI KTP400 Basic	**6AV2123-2DB03-0AX0**
SIMATIC HMI KTP700 Basic	**6AV2123-2GB03-0AX0**
SIMATIC HMI KTP700 Basic DP	**6AV2123-2GA03-0AX0**
SIMATIC HMI KTP900 Basic	**6AV2123-2JB03-0AX0**
SIMATIC HMI KTP1200 Basic	**6AV2123-2MB03-0AX0**
SIMATIC HMI KTP1200 Basic DP	**6AV2123-2MA03-0AX0**
Starter kits	
Starter kit SIMATIC S7-1200 + KP300 Basic mono PN	**6AV6651-7HA01-3AA4**
Starter Kit SIMATIC S7-1200 + KTP400 Basic	**6AV6651-7KA01-3AA4**
Starter Kit SIMATIC S7-1200 + KTP700 Basic Starter kits with an S7-1200 consist of: • the respective SIMATIC HMI Basic Panel SIMATIC HMI KP300 Basic mono PN SIMATIC HMI KTP400 Basic SIMATIC HMI KTP700 Basic • SIMATIC S7-1200 CPU 1212C AC/DC/Rly • SIMATIC S7-1200 Simulator Module SIM 12 • SIMATIC STEP 7 BASIC CD • SIMATIC S7-1200 HMI Manual Collection CD • Ethernet CAT5 cable, 2 m	**6AV6651-7DA01-3AA4**
Starter kit LOGO! + KP300 Basic mono PN	**6AV2132-0HA00-0AA1**
Starter kit LOGO! + KTP400 Basic	**6AV2132-0KA00-0AA1**
Starter kit LOGO! + KTP700 Basic Starter kits with a LOGO! consist of: • the respective SIMATIC HMI Basic Panel SIMATIC HMI KP300 Basic mono PN SIMATIC HMI KTP400 Basic SIMATIC HMI KTP700 Basic • LOGO! 12/24 RCE • LOGO! POWER 24 V 1.3 A • LOGO! SOFT COMFORT V7 • WINCC BASIC (TIA Portal) • Ethernet CAT5 cable, 2 m	**6AV2132-3GB00-0AA1**
Documentation You can find the manual for the Basic Panels on the Internet at:	http://support.automation.siemens.com
Accessories	See Catalog ST 80 / ST PC or Industry Mall

3

Overview

- Ideal entry-level series from 3" to 15" for operating and monitoring compact machines and systems
- Clear process representation thanks to use of pixel-graphics displays
- Intuitive operation using Touch and tactile function keys
- Equipped with all the necessary basic functions such as alarm logging, recipe management, plots, vector graphics, and language switching
- Simple connection to the controller via integral Ethernet interface or separate version with RS 485/422
- Faster commissioning thanks to integrated diagnostics viewer and IP setting for SIMATIC S7-1200 and S7-1500 PLCs

Ordering data

	Article No.
SIMATIC HMI Basic Panels (1st Generation)	
SIMATIC HMI Basic Panels, Key and Touch	
• SIMATIC HMI KTP400 Basic mono PN	**6AV6647-0AA11-3AX0**
• SIMATIC HMI KTP400 Basic color PN	**6AV6647-0AK11-3AX0**
• SIMATIC HMI KTP600 Basic mono PN	**6AV6647-0AB11-3AX0**
• SIMATIC HMI KTP600 Basic color DP	**6AV6647-0AC11-3AX0**
• SIMATIC HMI KTP600 Basic color PN	**6AV6647-0AD11-3AX0**
• SIMATIC HMI KTP1000 Basic color DP	**6AV6647-0AE11-3AX0**
• SIMATIC HMI KTP1000 Basic color PN	**6AV6647-0AF11-3AX0**
SIMATIC HMI Basic Panels, Key	
• SIMATIC HMI KP300 Basic mono PN	**6AV6647-0AH11-3AX0**
• SIMATIC HMI KP400 Basic color PN	**6AV6647-0AJ11-3AX0**
SIMATIC HMI Basic Panels, Touch	
• SIMATIC HMI TP1500 Basic color PN	**6AV6647-0AG11-3AX0**
Documentation	
You can find the manual for the Basic Panels on the Internet at:	http://support.automation.siemens.com
Accessories	See Catalog ST 80 / ST PC or Industry Mall

Overview

With their fully developed HMI basic functions, 2nd generation SIPLUS Basic Panels are the ideal entry level series for simple HMI applications.

The device family offers panels with 4", 7", 9" and 12" displays, as well as combined key and touch operation.

The innovative high-resolution widescreen displays with 64 000 colors are also suitable for upright installation, and they can be dimmed down to 100 %. The innovative operator interface with improved usability opens up a diverse range of options thanks to new controls and graphics. The new USB interface enables the connection of keyboard, mouse or barcode scanner, and supports the simple archiving of data on a USB stick.

The integrated Ethernet or RS 485/422 interface (version-specific) enables simple connection to the controller.

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.

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

Technical specifications

Article number	**6AG1123-2DB03-2AX0**	**6AG1123-2GB03-2AX0**	**6AG1123-2JB03-2AX0**
Based on	**6AV2123-2DB03-0AX0**	**6AV2123-2GB03-0AX0**	**6AV2123-2JB03-0AX0**
	SIPLUS HMI KTP400 BASIC	SIPLUS HMI KTP700 BASIC	SIPLUS HMI KTP900 BASIC
Ambient conditions			
Ambient temperature in operation			
• Operation (vertical installation)			
- For vertical installation, min.	-20 °C	-20 °C	-20 °C
- For vertical installation, max.	50 °C	50 °C	50 °C
Extended ambient conditions			
• Relative to ambient temperature-atmospheric pressure-installation altitude	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m)	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m)	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m)
Relative humidity			
- With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
Resistance			
- against biologically active substances / conformity with EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!
- against chemically active substances / conformity with EN 60721-3-3	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!
- against mechanically active substances / conformity with EN 60721-3-3	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!

SIPLUS Basic Panels (2nd generation)

Ordering data	Article No.
SIMATIC HMI Basic Panels, Key and Touch	
SIMATIC HMI KTP400 Basic For areas subject to exceptional medial exposure (conformal coating); ambient temperature -25 ... +50 °C	**6AG1123-2DB03-2AX0**
SIMATIC HMI KTP700 Basic For areas subject to exceptional medial exposure (conformal coating); ambient temperature -25 ... +50 °C	**6AG1123-2GB03-2AX0**
SIMATIC HMI KTP900 Basic For areas subject to exceptional medial exposure (conformal coating); ambient temperature -25 ... +50 °C	**6AG1123-2JB03-2AX0**

	Article No.
Accessories	See Catalog ST 80 / ST PC or Industry Malll

Overview

- Ideal entry-level series of 3.8 inches to 15 inches for operating and monitoring compact machines and systems
- Clear process representation through the use of full-graphic displays
- Intuitive operation via touch and tactile function keys
- Equipped with all the necessary basic functions such as reporting, recipe management, curve representation, vector graphics, and language selection
- Easy connection to the controller via integrated Ethernet interface or a separate version with RS 485/422

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.

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

Technical specifications

Article number	**6AG1647-0AH11-2AX0**	**6AG1647-0AA11-2AX0**	**6AG1647-0AD11-2AX0**
Based on	**6AV6647-0AH11-3AX0**	**6AV6647-0AA11-3AX0**	**6AV6647-0AD11-3AX0**
	SIPLUS HMI KP300 BASIC MONO PN 3,6"	SIPLUS KTP400 BASIC MONO PN 3,8"	SIPLUS KTP600 BASIC COLOR PN
Ambient conditions			
Ambient temperature in operation			
• Operation (vertical installation)			
- For vertical installation, min.	-25 °C	-10 °C	-25 °C
- For vertical installation, max.	60 °C	50 °C	60 °C
Extended ambient conditions			
• Relative to ambient temperature-atmospheric pressure-installation altitude	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m)	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m)	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m)
Relative humidity			
- With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
Resistance			
- against biologically active substances / conformity with EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!
- against chemically active substances / conformity with EN 60721-3-3	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!
- against mechanically active substances / conformity with EN 60721-3-3	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!

3

Technical specifications (continued)

Article number	6AG1647-0AE11-4AX0	6AG1647-0AF11-4AX0	6AG1647-0AG11-4AX0
Based on	6AV6647-0AE11-3AX0	6AV6647-0AF11-3AX0	6AV6647-0AG11-3AX0
	SIPLUS HMI KTP1000 BASIC COLOR DP 10,4"	SIPL6AV6647-0AF11-3AX0US KTP1000 BASIC COLOR DP 10,4"	SIPLUS HMI TP1500 BASIC COLOR PN 15"
Ambient conditions			
Ambient temperature in operation			
• Operation (vertical installation)	0 °C to +50 °C	0 °C to +50 °C	0 °C to +50 °C
- For vertical installation, min.	0 °C	0 °C	0 °C
- For vertical installation, max.	50 °C	50 °C	50 °C
Extended ambient conditions			
• Relative to ambient temperature-atmospheric pressure-installation altitude	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m)	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m)	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m)
Relative humidity			
- With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
Resistance			
- against biologically active substances / conformity with EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!
- against chemically active substances / conformity with EN 60721-3-3	Yes; Class 3C4 incl. salt spray. The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3C4 incl. salt spray. The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3C4 incl. salt spray. The supplied connector covers must remain on the unused interfaces during operation!
- against mechanically active substances / conformity with EN 60721-3-3	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!

Ordering data

	Article No.
SIPLUS HMI KP300 Basic mono PN For areas with extreme medial exposure (conformal coating); ambient temperature -25 ... +60 °C	**6AG1647-0AH11-2AX0**
SIPLUS HMI KTP400 Basic mono PN For areas with extreme medial exposure (conformal coating); ambient temperature -10 ... +60 °C	**6AG1647-0AA11-2AX0**
SIPLUS HMI KTP600 Basic color PN For areas with extreme medial exposure (conformal coating); ambient temperature -25 ... +60 °C	**6AG1647-0AD11-2AX0**

	Article No.
SIPLUS HMI KTP1000 Basic color DP For areas with extreme medial exposure (conformal coating); ambient temperature 0 ... +50 °C	**6AG1647-0AE11-4AX0**
SIPLUS HMI KTP1000 Basic color PN For areas with extreme medial exposure (conformal coating); ambient temperature 0 ... +50 °C	**6AG1647-0AF11-4AX0**
SIPLUS HMI TP1500 Basic color PN For areas with extreme medial exposure (conformal coating); ambient temperature 0 ... +50 °C	**6AG1647-0AG11-4AX0**
Accessories	See Catalog ST 80 / ST PC or Industry Mall

Overview

SIMATIC HMI Comfort Panels

- Excellent HMI functionality for demanding applications
- Widescreen TFT displays with 4", 7", 9", 12", 15", 19" and 22" diagonals (all 16 million colors) with up to 40% more visualization area as compared to the predecessor devices
- Integrated high-end functionality with archives, scripts, PDF/Word/Excel viewer, Internet Explorer, Media Player and Web Server
- Dimmable displays from 0 to 100% via PROFIenergy, via the HMI project or via a controller
- Modern industrial design, cast aluminum fronts for 7" upwards
- Upright installation for all touch devices
- Optimal selection option: seven touch and five key versions are available
- Data security in the event of a power failure for the device and for the SIMATIC HMI Memory Card
- Innovative service and commissioning concept through second SD card (automatic backup)
- Maximum performance with short screen refresh times
- Suitable for extremely harsh industrial environments thanks to extended approvals such as ATEX 2/22 and marine approvals
- Wide range of communication options: PROFIBUS and PROFINET onboard; 2 x PROFINET with integrated switch for 7" models or larger; plus 1 x PROFINET with Gigabit support for 15" models or larger
- All versions can be used as an OPC UA client or as an OPC DA server
- Key-operated devices with LED in every function key and new text input mechanism, similar to the keypads of mobile phones
- All keys have a service life of 2 million operations
- Configuring with the WinCC engineering software of the TIA Portal

Customized device designs:
For selected SIMATIC HMI Basic Panels, it is possible to customize the appearance of the panel using the customer name or customer logo, as well as to change the membrane color scheme in accordance with the customer's corporate design. This is even possible for small quantities.

Ordering data

	Article No.
SIMATIC HMI Comfort Panels, Key and Touch	
SIMATIC HMI KTP400 Comfort	**6AV2124-2DC01-0AX0**
SIMATIC HMI Comfort Panels, Touch	
SIMATIC HMI TP700 Comfort	**6AV2124-0GC01-0AX0**
SIMATIC HMI TP900 Comfort	**6AV2124-0JC01-0AX0**
SIMATIC HMI TP1200 Comfort	**6AV2124-0MC01-0AX0**
SIMATIC HMI TP1500 Comfort	**6AV2124-0QC02-0AX0**
SIMATIC HMI TP1900 Comfort	**6AV2124-0UC02-0AX0**
SIMATIC HMI TP2200 Comfort	**6AV2124-0XC02-0AX0**
SIMATIC HMI Comfort Panels, Key	
SIMATIC HMI KP400 Comfort	**6AV2124-1DC01-0AX0**
SIMATIC HMI KP700 Comfort	**6AV2124-1GC01-0AX0**
SIMATIC HMI KP900 Comfort	**6AV2124-1JC01-0AX0**
SIMATIC HMI KP1200 Comfort	**6AV2124-1MC01-0AX0**
SIMATIC HMI KP1500 Comfort	**6AV2124-1QC02-0AX0**
Starter kits for SIMATIC HMI Comfort Panels Consisting of: the respective SIMATIC HMI Comfort Panel, SIMATIC WinCC Comfort, Ethernet cable, 2 m SIMATIC HMI memory card 2 GB 10 protective films for touch screen devices	
Starter kit for SIMATIC HMI KTP400 Comfort, Key and Touch	**6AV2181-4DB20-0AX0**
Starter kit for SIMATIC HMI TP700 Comfort, Touch	**6AV2181-4GB00-0AX0**
Starter kit for SIMATIC HMI TP900 Comfort, Touch	**6AV2181-4JB00-0AX0**
Starter kit for SIMATIC HMI TP1200 Comfort, Touch	**6AV2181-4MB00-0AX0**
Starter kit for SIMATIC HMI TP1500 Comfort, Touch	**6AV2181-4QB00-0AX0**
Starter kit for SIMATIC HMI TP1900 Comfort, Touch	**6AV2181-4UB00-0AX0**
Starter kit for SIMATIC HMI TP2200 Comfort, Touch	**6AV2181-4XB00-0AX0**
Starter kit for SIMATIC HMI KP400 Comfort, Key	**6AV2181-4DB10-0AX0**
Starter kit for SIMATIC HMI KP700 Comfort, Key	**6AV2181-4GB10-0AX0**
Starter kit for SIMATIC HMI KP900 Comfort, Key	**6AV2181-4JB10-0AX0**
Starter kit for SIMATIC HMI KP1200 Comfort, Key	**6AV2181-4MB10-0AX0**
Starter kit for SIMATIC HMI KP1500 Comfort, Key	**6AV2181-4QB10-0AX0**
Accessories	See Catalog ST 80 / ST PC or Industry Mall

3

Overview

- Excellent HMI functionality for demanding applications
- Widescreen TFT displays with 4", 7", 9", 12", 15", 19" and 22" diagonals (all 16 million colors) with up to 40% more visualization area as compared to the predecessor devices
- Integrated high-end functionality with archives, scripts, PDF/Word/Excel viewer, Internet Explorer, Media Player
- Dimmable displays from 0 to 100% via PROFIenergy, via the HMI project or via a controller
- Modern industrial design, cast aluminum fronts for 7" upwards
- Upright installation for all touch devices
- Optimal selection option: seven touch and five key versions are available
- Data security in the event of a power failure for the device and for the SIMATIC HMI Memory Card
- Innovative service and commissioning concept through second SD card (automatic backup)
- Easy project transfer via standard cable (standard Ethernet cable, standard USB cable)
- Maximum performance with short screen refresh times
- Suitable for extremely harsh industrial environments thanks to extended approvals such as ATEX 2/22
- Wide range of communication options: PROFIBUS and PROFINET onboard; 2x PROFINET with integrated switch for 7" models or larger; plus 1 additional PROFINET with Gigabit support for 15" models or larger
- All variants can be used as an OPC UA client or as an OPC DA server
- Key-operated devices with LED in every function key and new text input mechanism, similar to the keypads of mobile phones
- Key-operated devices with stamped keys for optimum tactile feedback
- All keys have a service life of 2 million operations
- Configuring with the WinCC engineering software of the TIA Portal

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	6AG1124-2DC01-4AX0	6AG1124-0GC01-4AX0	6AG1124-0JC01-4AX0	6AG1124-0MC01-4AX0
Based on	6AV2124-2DC01-0AX0	6AV2124-0GC01-0AX0	6AV2124-0JC01-0AX0	6AV2124-0MC01-0AX0
	SIPLUS HMI KTP400 COMFORT	SIPLUS HMI TP700 COMFORT	SIPLUS HMI TP900 COMFORT	SIPLUS HMI TP1200 COMFORT
Ambient conditions				
Ambient temperature in operation				
• Operation (vertical installation)				
- For vertical installation, min.	0 °C; = Tmin	0 °C; = Tmin	0 °C; = Tmin	0 °C; = Tmin
- For vertical installation, max.	50 °C; = Tmax	50 °C; = Tmax	50 °C; = Tmax	50 °C; = Tmax
Extended ambient conditions				
• Relative to ambient temperature-atmospheric pressure-installation altitude	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m)	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m)	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m)	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m)
Relative humidity				
- With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
Resistance				
- against biologically active substances / conformity with EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!
- against chemically active substances / conformity with EN 60721-3-3	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!
- against mechanically active substances / conformity with EN 60721-3-3	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!

Technical specifications (continued)

Article number	6AG1124-1DC01-4AX0	6AG1124-1GC01-4AX0	6AG1124-1JC01-4AX0	6AG1124-1MC01-4AX0	6AG1124-1QC02-4AX0
Based on	6AV2124-1DC01-0AX0	6AV2124-1GC01-0AX0	6AV2124-1JC01-0AX0	6AV2124-1MC01-0AX0	6AV2124-1QC02-0AX0
	SIPLUS HMI KP400 COMFORT	SIPLUS HMI KP700 COMFORT	SIPLUS HMI KP900 COMFORT	SIPLUS HMI KP1200 COMFORT	SIPLUS HMI KP1500 COMFORT
Ambient conditions					
Ambient temperature in operation					
• Operation (vertical installation)					
- For vertical installation, min.	0 °C; = Tmin	0 °C; = Tmin	0 °C; = Tmin	0 °C; = Tmin	0 °C; = Tmin
- For vertical installation, max.	50 °C; = Tmax	50 °C; = Tmax	50 °C; = Tmax	50 °C; = Tmax	50 °C; = Tmax
Extended ambient conditions					
• Relative to ambient temperature-atmospheric pressure-installation altitude	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m)	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m)	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m)	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m)	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m)
Relative humidity					
- With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
Resistance					
- against biologically active substances / conformity with EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!
- against chemically active substances / conformity with EN 60721-3-3	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!
- against mechanically active substances / conformity with EN 60721-3-3	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!

Technical specifications (continued)

Article number	**6AG1124-0QC02-4AX0**	**6AG1124-0UC02-4AX0**	**6AG1124-0XC02-4AX0**
Based on	**6AV2124-0QC02-0AX0**	**6AV2124-0UC02-0AX0**	**6AV2124-0XC02-0AX0**
	SIPLUS HMI TP1500 COMFORT	SIPLUS HMI TP1900 COMFORT	SIPLUS HMI TP2200 COMFORT
Ambient conditions			
Ambient temperature in operation			
• Operation (vertical installation)			
- For vertical installation, min.	0 °C; = Tmin	0 °C; = Tmin	0 °C; = Tmin
- For vertical installation, max.	50 °C; = Tmax	45 °C; = Tmax	45 °C; = Tmax
Extended ambient conditions			
• Relative to ambient temperature-atmospheric pressure-installation altitude	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m)	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m)	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m)
Relative humidity			
- With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
Resistance			
- against biologically active substances / conformity with EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!
- against chemically active substances / conformity with EN 60721-3-3	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!
- against mechanically active substances / conformity with EN 60721-3-3	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!

Ordering data

	Article No.
SIPLUS HMI Comfort Panels, Keys and Touch	
SIPLUS HMI KP400 Comfort	**6AG1124-2DC01-4AX0**
SIPLUS HMI Comfort Panels, Touch	
SIPLUS HMI TP700 Comfort	**6AG1124-0GC01-4AX0**
SIPLUS HMI TP900 Comfort	**6AG1124-0JC01-4AX0**
SIPLUS HMI TP1200 Comfort	**6AG1124-0MC01-4AX0**
SIPLUS HMI TP1500 Comfort	**6AG1124-0QC02-4AX0**
SIPLUS HMI TP1900 Comfort	**6AG1124-0UC02-4AX0**
SIPLUS HMI TP2200 Comfort	**6AG1124-0XC02-4AX0**

	Article No.
SIPLUS HMI Comfort Panels, Keys	
SIPLUS HMI KP400 Comfort	**6AG1124-1DC01-4AX0**
SIPLUS HMI KP700 Comfort	**6AG1124-1GC01-4AX0**
SIPLUS HMI KP900 Comfort	**6AG1124-1JC01-4AX0**
SIPLUS HMI KP1200 Comfort	**6AG1124-1MC01-4AX0**
SIPLUS HMI KP1500 Comfort	**6AG1124-1QC02-4AX0**
Accessories	See Catalog ST 80 / ST PC or Industry Mall

SIMATIC S7-1200 CM CANopen

Overview

Overview

For connecting CANopen components to the SIMATIC S7-1200, the CM CANopen communication module from the HMS Industrial Networks AB company is available for use together with system and IO components of the S7-1200 automation system

Note:

The CM CANopen module is an HMS product and can only be obtained through HMS.

Application

CANopen is a widely used industrial bus system and can be used for a variety of different applications. The module allows simple and cost-effective connection of CANopen applications to SIMATIC.

- Control of hydraulic valves/axes in vehicles
- Control of motors in packaging machines or conveyors
- Capturing of angular encoder positions in wind turbines
- Capturing of control devices on machines, e.g. joysticks
- Capturing the measured data of path encoders, inclinometers or angular encoders, e.g. for tower cranes and gantry cranes

The CM CANopen module has the following properties:

- Interface module for CANopen (master/slave) for SIMATIC S7-1200
- Connection of up to 16 CANopen slave stations in the master mode
- 256 bytes of input data and 256 bytes of output data per module
- Connection of up to 3 modules per CPU
- 3 LEDs for module, network and I/O status diagnostics
- Possible integration of the module into the hardware catalog of the TIA Portal configuration suite
- Supports Transparent CAN 2.0A for processing customer-specific protocols
- CANopen implementation according to communication profiles CiA 301 Rev. 4.2 and CiA 302 Rev. 4.1 (Master)

More information

The CANopen bus can be configured via any commercially available CANopen configuration tool. The HMS company also supplies suitable "CM CANopen Configuration Studio" software with the product. The configuration is saved directly on the module by means of a USB connection. Routing via PROFIBUS/PROFINET is not possible.

Preprogrammed function blocks are available for easier PLC programming in the TIA Portal.

For further information, please contact HMS directly:

http://www.hms-networks.com/can-for-s7-1200

Ordering and Support

Please note that ordering and support for the module are exclusively carried out via HMS. Please contact HMS directly should you have any questions concerning this module. The relevant contact details can be found on the Internet at

http://www.hms-networks.com/can-for-s7-1200

Exemption from liability/Use of hyperlinks

Siemens has prepared this description with great care. It is not possible, however, for Siemens to verify that the data supplied by external companies is complete, correct or up to date. The possibility that individual items of information might be incorrect, incomplete, or not up-to-date cannot therefore be ruled out. Unless compulsory by law, Siemens accepts no liability for the usability of the data or of the product for the user per se.

This article contains third-party Web addresses. Siemens is not responsible for the contents of these Web sites, nor does Siemens adopt these Web sites and their contents, as Siemens does not control the presented information and cannot be held responsible for the content and information they contain. You therefore use these links at your own risk.