Technical specifications (continued)

	6ES7 211-0AA23-0XB0	6ES7 211-0BA23-0XB0	6ES7 212-1AB23-0XB0	6ES7 212-1BB23-0XB0
Permissible potential difference				
between different circuits	500 V DC between 24 V DC and 5 V DC	500 V DC between 24 V DC and 5 V DC; 1500 V AC between 24 V DC and 230 V AC	500 V DC between 24 V DC and 5 V DC	500 V DC between 24 V DC and 5 V DC; 1500 V AC between 24 V DC and 230 V AC
Environmental requirements				
Environmental conditions	For further environmental conditions, see "Automation System S7-200, System Manual"	For further environmental conditions, see "Automation System S7-200, System Manual"	For further environmental conditions, see "Automation System S7-200, System Manual"	For further environmental conditions, see "Automation System S7-200, System Manual"
Operating termperature				
• vertical installation, min.	0 °C	0 °C	0 °C	0 °C
• vertical installation, max.	45 °C	45 °C	45 °C	45 °C
• horizontal installation, min.	0 °C	0 °C	0 °C	0 °C
• horizontal installation, max.	55 °C	55 °C	55 °C	55 °C
Air pressure				
• permissible range, min.	860 hPa	860 hPa	860 hPa	860 hPa
• permissible range, max.	1,080 hPa	1,080 hPa	1,080 hPa	1,080 hPa
Relative humidity				
• Operation, min.	5%	5%	5%	5%
• Operation, max.	95%; RH stressing level 2 in accordance with IEC 1131-2	95%; RH stressing level 2 in accordance with IEC 1131-2	95%; RH stressing level 2 in accordance with IEC 1131-2	95%; RH stressing level 2 in accordance with IEC 1131-2
Degree and class of protection				
• IP 20	Yes	Yes	Yes	Yes
Dimensions and weight				
Width	90 mm	90 mm	90 mm	90 mm
Height	80 mm	80 mm	80 mm	80 mm
Depth	62 mm	62 mm	62 mm	62 mm
Weights				
Weight, approx.	270 g	310 g	270 g	310 g

	6ES7 214-1AD23-0XB0	6ES7 214-1BD23-0XB0	6ES7 214-2AD23-0XB0	6ES7 214-2BD23-0XB0	6ES7 216-2AD23-0XB0	6ES7 216-2BD23-0XB0
Supply voltages						
Rated value						
• DC 24 V	Yes		Yes		Yes	
• permissible range, lower limit (DC)	20.4 V		20.4 V		20.4 V	
• permissible range, upper limit (DC)	28.8 V		28.8 V		28.8 V	
• AC 120 V		Yes		Yes		Yes
• AC 230 V		Yes		Yes		Yes
• permissible range, lower limit (AC)		85 V		85 V		85 V
• permissible range, upper limit (AC)		264 V		264 V		264 V
• permissible frequency range, lower limit		47 Hz		47 Hz		47 Hz
• permissible frequency range, upper limit		63 Hz		63 Hz		63 Hz
Voltages and currents						
Load voltage L+						
• Rated value (DC)	24 V	24 V	24 V	24 V	24 V	24 V
• permissible range, lower limit (DC)	20.4 V	5 V	20.4 V	5 V	20.4 V	5 V
• permissible range, upper limit (DC)	28.8 V	30 V	28.8 V	30 V	28.8 V	30 V

Technical specifications (continued)

	6ES7 214-1AD23-0XB0	6ES7 214-1BD23-0XB0	6ES7 214-2AD23-0XB0	6ES7 214-2BD23-0XB0	6ES7 216-2AD23-0XB0	6ES7 216-2BD23-0XB0
Load voltage L1						
• Rated value (AC)		100 V; 100 to 230 V AC		100 V; 100 to 230 V AC		100 V; 100 to 230 V AC
• permissible range, lower limit (AC)		5 V		5 V		5 V
• permissible range, upper limit (AC)		250 V		250 V		250 V
• permissible frequency range, lower limit		47 Hz		47 Hz		47 Hz
• permissible frequency range, upper limit		63 Hz		63 Hz		63 Hz
Current consumption						
Inrush current, max.	12 A; at 28.8 V	20 A; at 264 V	12 A; at 28.8 V	20 A; at 264 V	10 A; at 28.8 V	20 A; at 264 V
from supply voltage L+, max.	700 mA; 110 to 700 mA, output current for expansion modules (DC 5 V) 660 mA		900 mA; 120 to 900 mA, output current for expansion modules (DC 5 V) 660 mA		1,050 mA; 150 to 1050 mA output current for expansion modules (DC 5 V) 1000 mA	
from supply voltage L1, max.		200 mA; 30 to 100 mA (240 V), 60 to 200 mA (120 V); output current for expansion modules (DC 5 V) 600 mA		220 mA; 35 to 100 mA (240 V), 70 to 220 mA (120 V); output current for expansion modules (DC 5 V) 600 mA		320 mA; 40 to 160 mA (240 V), 80 to 320 mA (120 V); output current for expansion modules (DC 5 V) 1000 mA
Backup battery						
• Backup time, max.	100 h; (min. 70 h at 40 °C); 200 days (typ.) with optional battery module	100 h; (min. 70 h at 40 °C); 200 days (typ.) with optional battery module	100 h; (min. 70 h at 40 °C); 200 days (typ.) with optional battery module	100 h; (min. 70 h at 40 °C); 200 days (typ.) with optional battery module	100 h; (min. 70 h at 40 °C); 200 days (typ.) with optional battery module	100 h; (min. 70 h at 40 °C); 200 days (typ.) with optional battery module
Memory						
Memory						
• Number of memory modules (optional)	1; pluggable memory module, content identical with integral EEPROM; can additionally store recipes, data logs and other files	1; pluggable memory module, content identical with integral EEPROM; can additionally store recipes, data logs and other files	1; pluggable memory module, content identical with integral EEPROM; can additionally store recipes, data logs and other files	1; pluggable memory module, content identical with integral EEPROM; can additionally store recipes, data logs and other files	1; pluggable memory module, content identical with integral EEPROM; can additionally store recipes, data logs and other files	1; pluggable memory module, content identical with integral EEPROM; can additionally store recipes, data logs and other files
• Data and program memory						
- Data memory, max.	8 KByte	8 KByte	10 KByte	10 KByte	10 KByte	10 KByte
- Program memory, max.	12 KByte; 8 KB on active run-time edit	12 KByte; 8 KB on active run-time edit	16 KByte; 12 KB for active run-time edit	16 KByte; 12 KB for active run-time edit	24 KByte; 16 KB with active run-time edit	24 KByte; 16 KB with active run-time edit

Technical specifications (continued)

	6ES7 214-1AD23-0XB0	6ES7 214-1BD23-0XB0	6ES7 214-2AD23-0XB0	6ES7 214-2BD23-0XB0	6ES7 216-2AD23-0XB0	6ES7 216-2BD23-0XB0
Backup						
• present	Yes; Program: complete program maintenance-free in integral EEPROM, programmable via CPU; Data: entire DB1 loaded by PG/PC maintenance-free in integrated EEPROM, current values of the DB 1 in the RAM, retentive memory bits, times, counters etc. maintenance-free via high-performance capacitor; optional battery for long-term buffering	Yes; Program: complete program maintenance-free in integral EEPROM, programmable via CPU; Data: entire DB1 loaded by PG/PC maintenance-free in integrated EEPROM, current values of the DB 1 in the RAM, retentive memory bits, times, counters etc. maintenance-free via high-performance capacitor; optional battery for long-term buffering	Yes; Program: complete program maintenance-free in integral EEPROM, programmable via CPU; Data: entire DB1 loaded by PG/PC maintenance-free in integrated EEPROM, current values of the DB 1 in the RAM, retentive memory bits, times, counters etc. maintenance-free via high-performance capacitor; optional battery for long-term buffering	Yes; Program: complete program maintenance-free in integral EEPROM, programmable via CPU; Data: entire DB1 loaded by PG/PC maintenance-free in integrated EEPROM, current values of the DB 1 in the RAM, retentive memory bits, times, counters etc. maintenance-free via high-performance capacitor; optional battery for long-term buffering	Yes; Program: complete program maintenance-free in integral EEPROM, programmable via CPU; Data: entire DB1 loaded by PG/PC maintenance-free in integrated EEPROM, current values of the DB 1 in the RAM, retentive memory bits, times, counters etc. maintenance-free via high-performance capacitor; optional battery for long-term buffering	Yes; Program: complete program maintenance-free in integral EEPROM, programmable via CPU; Data: entire DB1 loaded by PG/PC maintenance-free in integrated EEPROM, current values of the DB 1 in the RAM, retentive memory bits, times, counters etc. maintenance-free via high-performance capacitor; optional battery for long-term buffering
CPU/processing times						
for bit operations, max.	0.22 µs	0.22 µs	0.22 µs	0.22 µs	0.22 µs	0.22 µs
Times/counters and their remanence						
S7 counter						
• Number	256	256	256	256	256	256
• of which remanent with battery						
- adjustable	Yes; via high-performance capacitor or battery	Yes; via high-performance capacitor or battery	Yes; via high-performance capacitor or battery	Yes; via high-performance capacitor or battery	Yes; via high-performance capacitor or battery	Yes; via high-performance capacitor or battery
- lower limit	1	1	1	1	1	1
- upper limit	256	256	256	256	256	256
• Counting range						
- lower limit	0	0	0	0	0	0
- upper limit	32,767	32,767	32,767	32,767	32,767	32,767
S7 times						
• Number	256	256	256	256	256	256
• of which remanent with battery						
- adjustable	Yes; via high-performance capacitor or battery	Yes; via high-performance capacitor or battery	Yes; via high-performance capacitor or battery	Yes; via high-performance capacitor or battery	Yes; via high-performance capacitor or battery	Yes; via high-performance capacitor or battery
- upper limit	64	64	64	64	64	64
• Time range						
- lower limit	1 ms	1 ms	1 ms	1 ms	1 ms	1 ms
- upper limit	54 min; 4 times, 1 ms to 30 s 16 times, 10 ms to 5 min 236 times, 100 ms to 54 min	54 min; 4 times, 1 ms to 30 s 16 times, 10 ms to 5 min 236 times, 100 ms to 54 min	54 min; 4 times, 1 ms to 30 s 16 times, 10 ms to 5 min 236 times, 100 ms to 54 min	54 min; 4 times, 1 ms to 30 s 16 times, 10 ms to 5 min 236 times, 100 ms to 54 min	54 min; 4 times, 1 ms to 30 s 16 times, 10 ms to 5 min 236 times, 100 ms to 54 min	54 min; 4 times, 1 ms to 30 s 16 times, 10 ms to 5 min 236 times, 100 ms to 54 min

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Technical specifications (continued)

	6ES7 214-1AD23-0XB0	6ES7 214-1BD23-0XB0	6ES7 214-2AD23-0XB0	6ES7 214-2BD23-0XB0	6ES7 216-2AD23-0XB0	6ES7 216-2BD23-0XB0
Data areas and their remanence						
Flag						
• Number, max.	32 Byte	32 Byte	32 Byte	32 Byte	32 Byte	32 Byte
• Remanence available	Yes; M0.0 to M31.7	Yes; M0.0 to M31.7	Yes; M0.0 to M31.7	Yes; M0.0 to M31.7	Yes; M0.0 to M31.7	Yes; M0.0 to M31.7
• of which remanent with battery	0 to 255, via high-performance capacitor or battery, adjustable	0 to 255, via high-performance capacitor or battery, adjustable	0 to 255, via high-performance capacitor or battery, adjustable	0 to 255, via high-performance capacitor or battery, adjustable	0 to 255, via high-performance capacitor or battery, adjustable	0 to 255, via high-performance capacitor or battery, adjustable
• of which remanent without battery	0 to 112 in EEPROM, adjustable	0 to 112 in EEPROM, adjustable	0 to 112 in EEPROM, adjustable	0 to 112 in EEPROM, adjustable	0 to 112 in EEPROM, adjustable	0 to 112 in EEPROM, adjustable
Hardware configuration						
Connectable programming devices/PCs	SIMATIC PG/PC, Standard PC	SIMATIC PG/PC, Standard PC	SIMATIC PG/PC, Standard PC	SIMATIC PG/PC, Standard PC	SIMATIC PG/PC, Standard PC	SIMATIC PG/PC, Standard PC
Expansion devices, max.	7; Only expansion modules of the S7-22x series may be used (due to limited output current, the use of expansion modules may be subject to restrictions.)					
Extension of distributed I/O						
• Analog inputs/outputs, max.	35; max. 28 inputs and 7 outputs (EM) or max. 0 inputs and 14 outputs (EM)	35; max. 28 inputs and 7 outputs (EM) or max. 0 inputs and 14 outputs (EM)	38; two on board inputs and one output, in addition; max. 28 inputs and 7 outputs (EM) or max. 0 inputs and 14 outputs (EM)	38; two on board inputs and one output, in addition; max. 28 inputs and 7 outputs (EM) or max. 0 inputs and 14 outputs (EM)	35; max. 28 inputs and 7 outputs (EM) or max. 0 inputs and 14 outputs (EM)	35; max. 28 inputs and 7 outputs (EM) or max. 0 inputs and 14 outputs (EM)
• Digital inputs/outputs, max.	168; max. 94 inputs and 74 outputs (CPU+EM)	168; max. 94 inputs and 74 outputs (CPU+EM)	168; max. 94 inputs and 74 outputs (CPU+EM)	168; max. 94 inputs and 74 outputs (CPU+EM)	148; max. 128 inputs and 120 outputs (CPU+EM)	148; max. 128 inputs and 120 outputs (CPU+EM)
• AS interface inputs/outputs max.	62; AS-Interface A/B-slaves (CP 243-2)	62; AS-Interface A/B-slaves (CP 243-2)	62; AS-Interface A/B-slaves (CP 243-2)	62; AS-Interface A/B-slaves (CP 243-2)	62; AS-Interface A/B-slaves (CP 243-2)	62; AS-Interface A/B-slaves (CP 243-2)
Connection point						
pluggable I/O terminals	Yes	Yes	Yes	Yes	Yes	Yes
1st interface						
Type of interface	Integral RS 485 interface	Integral RS 485 interface	Integral RS 485 interface	Integral RS 485 interface	Integral RS 485 interface	Integral RS 485 interface
Physics	RS 485	RS 485	RS 485	RS 485	RS 485	RS 485
Functionality						
• MPI	Yes; as MPI slave for data exchange with MPI masters (S7-300/S7-400-CPUs, OPs, TDs, Push Button Panels); S7-200-internal CPU/CPU communication is possible in the MPI network with restrictions; transmission rates: 19.2/187.5 kbit/s					
• PPI	Yes; with PPI protocol for program functions, HMI functions (TD 200, OP), S7-200-internal CPU/CPU communication; transmission rates 9.6/19.2/187.5 kbit/s					
• serial data exchange	Yes; as a freely programmable interface with an interrupt option for serial data transmission with external units with ASCII protocol baud rates: 0.3/0.6/1.2/2.4/4.8/9.6/19.2/38.4 kbit/s; at 1.2 to 38.4 kbit/s, the PC/PPI cable can be used as an RS232/RS485 converter					

Technical specifications (continued)

	6ES7 214-1AD23-0XB0	6ES7 214-1BD23-0XB0	6ES7 214-2AD23-0XB0	6ES7 214-2BD23-0XB0	6ES7 216-2AD23-0XB0	6ES7 216-2BD23-0XB0
MPI						
• Transmission speeds, max.	187.5 kBit/s	187.5 kBit/s	187.5 kBit/s	187.5 kBit/s	187.5 kBit/s	187.5 kBit/s
• Transmission speeds, min.	19.2 kBit/s	19.2 kBit/s	19.2 kBit/s	19.2 kBit/s	19.2 kBit/s	19.2 kBit/s
2nd interface						
Type of interface			Integated RS 485 interface	Integrated RS 485 interface	Integrated RS 485 interface	Integrated RS 485 interface
Physics			RS 485	RS 485	RS 485	RS 485
Functionality						
• MPI			Yes; as MPI slave for data exchange with MPI masters (S7-300/ S7-400-CPUs, OPs, TDs, Push Button Panels); S7-200-internal CPU/CPU communication is possible in the MPI network with restrictions; transmission rates: 19.2/187.5 kbit/s			
• PPI			Yes; with PPI protocol for program functions, HMI functions (TD 200, OP), S7-200-internal CPU/CPU communication; transmission rates 9.6/19.2/187.5 kbit/s			
• serial data exchange			Yes; as a freely programmable interface with an interrupt option for serial data transmission with external units with ASCII protocol baud rates: 0.3/0.6/1.2/2.4/4.8/9.6/19.2/38.4 kbit/s; at 1.2 to 38.4 kbit/s, the PC/PPI cable can be used as an RS232/RS485 converter			
MPI						
• Transmission speed, max.			187.5 kBit/s	187.5 kBit/s	187.5 kBit/s	187.5 kBit/s
• Transmission speed, min.			19.2 kBit/s	19.2 kBit/s	19.2 kBit/s	19.2 kBit/s
CPU/programming						
Programming language						
• LAD	Yes	Yes	Yes	Yes	Yes	Yes
• FUP	Yes	Yes	Yes	Yes	Yes	Yes
• AWL	Yes	Yes	Yes	Yes	Yes	Yes
Operational stocks	Bit logic instructions, compare instructions, timer instructions, counter instructions, clock instructions, integer math instructions, floating-point math instructions, numeric functions, move instructions, table instructions, logic instructions, shift and rotate instructions, conversion instructions, program control instructions, interrupt and communications instructions, logic stack instructions					
User program protection/password protection	Yes; 3-stage password protection	Yes; 3-stage password protection	Yes; 3-stage password protection	Yes; 3-stage password protection	Yes; 3-stage password protection	Yes; 3-stage password protection
Program processing	free cycle (OB 1), interrupt-controller, time-controlled (1 to 255 ms)	free cycle (OB 1), interrupt-controller, time-controlled (1 to 255 ms)	free cycle (OB 1), interrupt-controller, time-controlled (1 to 255 ms)	free cycle (OB 1), interrupt-controller, time-controlled (1 to 255 ms)	free cycle (OB 1), interrupt-controller, time-controlled (1 to 255 ms)	free cycle (OB 1), interrupt-controller, time-controlled (1 to 255 ms)
Program organization	1 OB, 1 DB, 1 SDB subroutines with/without parameter transfer	1 OB, 1 DB, 1 SDB subroutines with/without parameter transfer	1 OB, 1 DB, 1 SDB subroutines with/without parameter transfer	1 OB, 1 DB, 1 SDB subroutines with/without parameter transfer	1 OB, 1 DB, 1 SDB subroutines with/without parameter transfer	1 OB, 1 DB, 1 SDB subroutines with/without parameter transfer
Number of subroutines, max.	64	64	64	64	64	64

Technical specifications (continued)

	6ES7 214-1AD23-0XB0	6ES7 214-1BD23-0XB0	6ES7 214-2AD23-0XB0	6ES7 214-2BD23-0XB0	6ES7 216-2AD23-0XB0	6ES7 216-2BD23-0XB0
Digital inputs						
Number of digital inputs	14	14	14	14	24	24
Cable length						
• Cable length, shielded, max.	500 m; Standard input: 500m, fast counter: 50m	500 m; Standard input: 500m, fast counter: 50m	500 m; Standard input: 500m, fast counter: 50m	500 m; Standard input: 500m, fast counter: 50m	500 m; Standard input: 500m, fast counter: 50m	500 m; Standard input: 500m, fast counter: 50m
• Cable length unshielded, max.	300 m; not for high-speed signals	300 m; not for high-speed signals	300 m; not for high-speed signals	300 m; not for high-speed signals	300 m; not for high-speed signals	300 m; not for high-speed signals
m/p-reading	Yes; optionally, per group	Yes; optionally, per group	Yes; optionally, per group	Yes; optionally, per group	Yes; optionally, per group	Yes; optionally, per group
Input voltage						
• Rated value, DC	24 V	24 V	24 V	24 V	24 V	24 V
• for signal "0"	0 to 5 V	0 to 5 V	0 to 5 V; 0 to 1V (I0.3 to I0.5)	0 to 5 V; 0 to 1V (I0.3 to I0.5)	0 to 5 V	0 to 5 V
• for signal "1"	min. 15 V	min. 15 V	min. 15 V; at least 4V (I0.3 to I0.5)	min. 15 V; at least 4V (I0.3 to I0.5)	min. 15 V	min. 15 V
Input current						
• for signal "1", typ.	2.5 mA	2.5 mA	2.5 mA; 8 mA for I0.3 to I0.5	2.5 mA; 8 mA for I0.3 to I0.5	2.5 mA	2.5 mA
Input delay (for rated value of input voltage)						
• for standard inputs						
- programmable	Yes; all	Yes; all	Yes; all	Yes; all	Yes; all	Yes; all
- at " to "1", min.	0.2 ms	0.2 ms	0.2 ms	0.2 ms	0.2 ms	0.2 ms
- at "0" to "1", max.	12.8 ms	12.8 ms	12.8 ms	12.8 ms	12.8 ms	12.8 ms
• for interrupt inputs						
- programmable	Yes; E0.0 to E0.3	Yes; E0.0 to E0.3	Yes; E0.0 to E0.3	Yes; E0.0 to E0.3	Yes; E0.0 to E0.3	Yes; E0.0 to E0.3
• for counter/technological functions						
- programmable	Yes; (E0.0 to E1.5) 30 kHz	Yes; (E0.0 to E1.5) 30 kHz	Yes; (E0.0 to E1.5) up to 200 kHz	Yes; (E0.0 to E1.5) up to 200 kHz	Yes; (E0.0 to E1.5) 30 kHz	Yes; (E0.0 to E1.5) 30 kHz

Technical specifications (continued)

	6ES7 214-1AD23-0XB0	6ES7 214-1BD23-0XB0	6ES7 214-2AD23-0XB0	6ES7 214-2BD23-0XB0	6ES7 216-2AD23-0XB0	6ES7 216-2BD23-0XB0
Digital outputs						
Number of digital outputs	10; Transistor	10; Relay	10; Transistor	10; Relay	16; Transistor	16; Relay
Cable length, shielded, max.	500 m	500 m	500 m	500 m	500 m	500 m
Cable length unshielded, max.	150 m	150 m	150 m	150 m	150 m	150 m
Short-circuit protection of the output	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	No; to be provided externally
Limitation of inductive shutdown voltage to	1 W		1 W		1 W	
Switching capacity of the outputs						
• with resistive load, max.	0.75 A	2 A	0.75 A	2 A	0.75 A	2 A
• on lamp load, max.	5 W	200 W; 30 W DC, 200 W AC	5 W	200 W; 30 W DC, 200 W AC	5 W	200 W; 30 W DC, 200 W AC
Output voltage						
• for signal "1", min.	20 V DC	L+/L1	L+ minus 0.4 V (5V/20.4V for A0.0 to A0.4; 20.4 V A0.5 to A1.1)	L+/L1	20 V DC	L+/L1
Output current						
• for signal "1" rated value	750 mA	2 A	750 mA	2 A	750 mA	2 A
• for signal "0" residual current, max.	10 µA	0 mA	10 µA	0 mA	10 µA	0 mA
Output delay with resistive load						
• "0" to "1", max.	15 µs; of the standard outputs, max. (A0.2 to A1.1) 2 µs; of the pulse outputs, max. (A0.0 to A0.1) 2 µs	10 ms; all outputs	15 µs; of the standard outputs, max. (A0.2 to A1.1) 15 µs; of the pulse outputs, max. (A0.0 to A0.1) 0.5 µs	10 ms; all outputs	15 µs; of the standard outputs, max. (A0.2 to A1.1) 2 µs; of the pulse outputs, max. (A0.0 to A0.1) 2 µs	10 ms; all outputs
• "1" to "0", max.	130 µs; of the standard outputs, max. (A0.2 to A1.1) 10 µs; of the pulse outputs, max. (A0.0 to A0.1) 10 µs	10 ms; all outputs	130 µs; of the standard outputs, max. (A0.2 to A1.1) 130 µs; of the pulse outputs, max. (A0.0 to A0.1) 1.5 µs	10 ms; all outputs	130 µs; of the standard outputs, max. (A0.2 to A1.1) 10 µs; of the pulse outputs, max. (A0.0 to A0.1) 10 µs	10 ms; all outputs
Parallel switching of 2 outputs						
• for increased power	Yes	No	Yes	No	Yes	No
Switching frequency						
• of the pulse outputs, with resistive load, max.	20 kHz; A0.0 to A0.1	1 Hz	100 kHz; A0.0 to A0.1	1 Hz	20 kHz; A0.0 to A0.1	1 kHz
Aggregate current of the outputs (per group)						
• horizontal installation - up to 55 °C, max.	6 A	10 A	3.75 A	10 A	6 A	10 A
• up to 40 °C, max.	6 A	10 A	3.75 A	10 A	6 A	10 A
Relay outputs						
Number of operating cycles		10,000,000; mechanically 10 million, at rated load voltage 100,000		10,000,000; mechanically 10 million, at rated load voltage 100,000		10,000,000; mechanically 10 million, at rated load voltage 100,000

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Technical specifications (continued)

	6ES7 214-1AD23-0XB0	6ES7 214-1BD23-0XB0	6ES7 214-2AD23-0XB0	6ES7 214-2BD23-0XB0	6ES7 216-2AD23-0XB0	6ES7 216-2BD23-0XB0
Analog inputs						
Number of analog potentiometers	2; Analog potentiometer; resolution 8 bit	2; Analog potentiometer; resolution 8 bit	2; Analog potentiometer; resolution 8 bit	2; Analog potentiometer; resolution 8 bit	2; Analog potentiometer; resolution 8 bit	2; Analog potentiometer; resolution 8 bit
Encoder supply						
24 V encoder supply						
• 24 V	Yes; permissible range: 15.4 to 28.8 V	Yes; permissible range: 20.4 bis 28.8 V	Yes; permissible range: 15.4 to 28.8 V	Yes; permissible range: 20.4 bis 28.8 V	Yes; permissible range: 15.4 to 28.8 V	Yes; permissible range: 20.4 bis 28.8 V
• Short-circuit protection	Yes; electronic at 280 mA	Yes; electronic at 280 mA	Yes; electronic at 280 mA	Yes; electronic at 280 mA	Yes; electronic at 400 mA	Yes; electronic at 400 mA
• Output current, max.	280 mA	280 mA	280 mA	280 mA	400 mA	400 mA
Encoder						
Connectable encoders						
• 2-wire BEROS	Yes	Yes	Yes	Yes	Yes	Yes
• permissible quiescent current (2-wire BEROS), max.	1 mA	1 mA	1 mA	1 mA	1 mA	1 mA
Integrated Functions						
Number of counters	6; high-speed counters (each 30 kHz), 32 bit (incl. sign), usable as forward/backward counter or for connection of 4 incremental encoders with 2 pulse series offset by 90° (max. 20 kHz (A/B counters)); parameterizable enable and reset input; Interrupt options (incl.calling subroutine with any content) on reaching setpoint; change counting direction etc.		6; high-speed counters (2 to 200 kHz and 4 to 30 kHz), 32 bit (incl. sign), usable as forward/backward counter or for connection of 2 incremental encoders with 2 pulse series offset by 90° (max. 1 to 100 kHz and 3 to 20 kHz (A/B counters)); parameterizable enable and reset input; Interrupt options (incl.calling subroutine with any content) on reaching setpoint; change counting direction etc.		6; high-speed counters (each 30 kHz), 32 bit (incl. sign), usable as forward/backward counter or for connection of 4 incremental encoders with 2 pulse series offset by 90° (max. 20 kHz (A/B counters)); parameterizable enable and reset input; Interrupt options (incl.calling subroutine with any content) on reaching setpoint; change counting direction etc.	
Counter frequency (counter) max.	30 kHz	30 kHz	200 kHz	200 kHz	30 kHz	30 kHz
Number of alarm inputs	4; 4 rising edges and/or 4 falling edges	4; 4 rising edges and/or 4 falling edges	4; 4 rising edges and/or 4 falling edges	4; 4 rising edges and/or 4 falling edges	4; 4 rising edges and/or 4 falling edges	4; 4 rising edges and/or 4 falling edges
Number of pulse outputs	2; high-speed outputs, 20 kHz, with interrupt option; pulse-width and frequency modulation option					
Limit frequency (pulse)	20 kHz	20 kHz	20 kHz	20 kHz	20 kHz	20 kHz
Isolation						
Isolation, digital outputs						
• between the channels	Yes; Optocoupler	Yes; Relay	Yes; Optocoupler	Yes; Relay	Yes; Optocoupler	Yes; Relay
• between the channels, in groups of	5		5			
Galvanic isolation, digital inputs						
• between the channels	Yes	Yes	Yes	Yes	Yes	Yes; Optocoupler
Permissible potential difference						
between different circuits	500 V DC between 24 V DC and 5 V DC	500 V DC between 24 V DC and 5 V DC; 1500 V AC between 24 V DC and 230 V AC	500 V DC between 24 V DC and 5 V DC	500 V DC between 24 V DC and 5 V DC; 1500 V AC between 24 V DC and 230 V AC	500 V DC between 24 V DC and 5 V DC	500 V DC between 24 V DC and 5 V DC; 1500 V AC between 24 V DC and 230 V AC

Technical specifications (continued)

	6ES7 214-1AD23-0XB0	6ES7 214-1BD23-0XB0	6ES7 214-2AD23-0XB0	6ES7 214-2BD23-0XB0	6ES7 216-2AD23-0XB0	6ES7 216-2BD23-0XB0
Environmental requirements						
Environmental conditions	For further environmental conditions, see "Automation System S7-200, System Manual"					
Operating termperature						
• vertical installation, min.	0 °C	0 °C	0 °C	0 °C	0 °C	0 °C
• vertical installation, max.	45 °C	45 °C	45 °C	45 °C	45 °C	45 °C
• horizontal installation, min.	0 °C	0 °C	0 °C	0 °C	0 °C	0 °C
• horizontal installation, max.	55 °C	55 °C	55 °C	55 °C	55 °C	55 °C
Air pressure						
• permissible range, min.	860 hPa	860 hPa	860 hPa	860 hPa	860 hPa	860 hPa
• permissible range, max.	1,080 hPa	1,080 hPa	1,080 hPa	1,080 hPa	1,080 hPa	1,080 hPa
Relative humidity						
• Operation, min.	5%	5%	5%	5%	5%	5%
• Operation, max.	95%; RH stressing level 2 in accordance with IEC 1131-2	95%; RH stressing level 2 in accordance with IEC 1131-2	95%; RH stressing level 2 in accordance with IEC 1131-2	95%; RH stressing level 2 in accordance with IEC 1131-2	95%; RH stressing level 2 in accordance with IEC 1131-2	95%; RH stressing level 2 in accordance with IEC 1131-2
Degree and class of protection						
• IP 20	Yes	Yes	Yes	Yes	Yes	Yes
Dimensions and weight						
Width	120.5 mm	120.5 mm	140 mm	140 mm	196 mm	196 mm
Height	80 mm	80 mm	80 mm	80 mm	80 mm	80 mm
Depth	62 mm	62 mm	62 mm	62 mm	62 mm	62 mm
Weights						
Weight, approx.	360 g	410 g	390 g	440 g	550 g	660 g

CPU 221, CPU 222, CPU 224, CPU 224 XP, CPU 226

Ordering data		Order No.
CPU 221		
Compact CPU, main memory 4 KB, power supply 24 V DC, 6 DI/4 DO integrated	A)	**6ES7 211-0AA23-0XB0**
Compact CPU, main memory 4 KB, power supply 100 V to 230 V AC, 6 DI/4 DO integrated, relay outputs	A)	**6ES7 211-0BA23-0XB0**
CPU 222		
Compact CPU, expandable, main memory 4 KB, power supply 24 V DC, 8 DI/6 DO integrated	A)	**6ES7 212-1AB23-0XB0**
Compact CPU, expandable, main memory 4 KB, power supply 100 V to 230 V AC, 8 DI/6 DO integrated, relay outputs	A)	**6ES7 212-1BB23-0XB0**
CPU 224		
Compact CPU, expandable, main memory 8/12 KB program, 8 KB data, power supply 24 V DC, 14 DI/10 DO integrated	A)	**6ES7 214-1AD23-0XB0**
Compact CPU, expandable, main memory 8/12 KB program, 8 KB data, power supply 100 V to 230 V AC, 14 DI/10 DO integrated, relay outputs	A)	**6ES7 214-1BD23-0XB0**
CPU 224 XP		
Compact CPU, expandable, main memory 12/16 KB program, 10 KB data, power supply 24 V DC, 14 DI/10 DO/ 2 AI/1 AO integrated	A)	**6ES7 214-2AD23-0XB0**
Compact CPU, expandable, main memory 12/16 KB program, 10 KB data, power supply 100 V to 230 V AC, 14 DI/10 DO (relay outputs)/ 2 AI/1 AO integrated	A)	**6ES7 214-2BD23-0XB0**
CPU 226		
Compact CPU, expandable, main memory 16/24 KB program, 10 KB data, power supply 24 V DC, 24 DI/16 DO integrated	A)	**6ES7 216-2AD23-0XB0**
Compact CPU, expandable, main memory 16/24 KB program, 10 KB data, power supply 100 V to 230 V AC, 24 DI/16 DO integrated, relay outputs	A)	**6ES7 216-2BD23-0XB0**
S7-200 True Power Box		
Complete package, comprising CPU 222, STEP 7 Micro/WIN V4, simulator, intelligent USB/PPI multi-master cable, manual; delivered in a practical box		
German	C)	**6ES7 298-0AA20-0AA3**
English	C)	**6ES7 298-0AA20-0BA3**

A) Subject to export regulations: AL: N and ECCN: EAR99H

C) Subject to export regulations: AL: N and ECCN: EAR99T

		Order No.
MC 291 memory module, EEPROM		
for CPU 221/222//224/224 XP/226		
64 KB	A)	**6ES7 291-8GF23-0XA0**
256 KB	A)	**6ES7 291-8GH23-0XA0**
Grounding clamp		**6ES5 728-8MA11**
10 units		
Front flap set	A)	**6ES7 291-3AX20-0XA0**
contains various cover flaps for CPUs and EMs; spare part		
SIM 274 simulator (optional)		
with 8 terminals for CPU 221/222	A)	**6ES7 274-1XF00-0XA0**
with 14 terminals for CPU 224/ 224 XP	A)	**6ES7 274-1XH00-0XA0**
with 24 terminals for CPU 226	A)	**6ES7 274-1XK00-0XA0**
Pluggable terminal block (spare part)		
With 12 terminals (for CPU 22x)	A)	**6ES7 292-1AE20-0AA0**
With 18 terminals (for CPU 224/ 224 XP)	A)	**6ES7 292-1AG20-0AA0**
With 14 terminals (for CPU 226)	A)	**6ES7 292-1AF20-0AA0**
Intelligent RS 232/PPI multi-master cable	A)	**6ES7 901-3CB30-0XA0**
For connecting devices with an RS 232 interface to SIMATIC S7-200 or the PPI network; master in the multi-master PPI network		
Intelligent USB/PPI multi-master cable	A)	**6ES7 901-3DB30-0XA0**
For connecting devices with an USB interface to SIMATIC S7-200 or the PPI network; master in the multi-master PPI network		
MPI cable		**6ES7 901-0BF00-0AA0**
5 m; for connecting the S7-200 to MPI		
Backplane bus expansion cable	A)	**6ES7 290-6AA20-0XA0**
For interconnection of the two rows of modules with double-tier configuration, for CPU 222/224/224 XP/226		
Optional battery module	A)	**6ES7 291-8BA20-0XA0**
Optional combined clock and battery module	A)	**6ES7 297-1AA23-0XA0**
only for CPU 221/222		

Overview SIPLUS CPU 224

- The compact high-performance CPU
- With 24 inputs/outputs on board
- Expandable with up to 7 expansion modules

	SIPLUS CPU 224	
Order No.	**6AG1 214-1AD23-2XB0**	**6AG1 214-1BD23-2XB0**
Order No. based on	**6ES7 214-1AD23-0XB0**	**6ES7 214-1BD23-0XB0**
Ambient temperature range	-25 to +70 °C; -25 to +55 °C (for applications with cUL approval), condensation permissible	
Ambient conditions	Suitable for extraordinary medial load (for example by chloric and sulphuric atmospheres).	
Conformity with standard for electronic devices on rail vehicles (EN 50155, temperature T1, category 1)	Yes	Yes
Approvals	CE, cUL	
Technical data	The technical data are identical with the technical data of the based on modules..	

Overview SIPLUS CPU 224 XP

- The power CPU
- With 24 digital and 3 analog inputs/outputs onboard
- Expandable with up to 7 expansion modules

	SIPLUS CPU 224 XP	
Order No.	**6AG1 214-2AD23-2XB0**	**6AG1 214-2BD23-2XB0**
Order No. based on	**6ES7 214-2AD23-0XB0**	**6ES7 214-2BD23-0XB0**
Ambient temperature range	-25 to +70 °C; -25 to +55 °C (for applications with cUL approval), condensation permissible	
Ambient conditions	Suitable for extraordinary medial load (for example by chloric and sulphuric atmospheres).	
Conformity with standard for electronic devices on rail vehicles (EN 50155, temperature T1, category 1)	No	No
Approvals	CE	
Technical data	The technical data are identical with the technical data of the based on modules.	