## SIEMENS

## Data sheet

## 6ES7214-1BG40-0XB0



SIMATIC S7-1200, CPU 1214C, compact CPU, AC/DC/relay, onboard I/O: 14 DI 24 V DC; 10 DO relay 2 A; 2 AI 0-10 V DC, Power supply: AC 85-264 V AC at 47-63 Hz, Program/data memory 100 KB

Figures	similar
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General information	
Product type designation	CPU 1214C AC/DC/relay
Firmware version	V4.5
Engineering with	
<ul> <li>Programming package</li> </ul>	STEP 7 V17 or higher
Supply voltage	
Rated value (AC)	
• 120 V AC	Yes
• 230 V AC	Yes
permissible range, lower limit (AC)	85 V
permissible range, upper limit (AC)	264 V
Line frequency	
<ul> <li>permissible range, lower limit</li> </ul>	47 Hz
<ul> <li>permissible range, upper limit</li> </ul>	63 Hz
Input current	
Current consumption (rated value)	100 mA at 120 V AC; 50 mA at 240 V AC
Current consumption, max.	300 mA at 120 V AC; 150 mA at 240 V AC
Inrush current, max.	20 A; at 264 V
l²t	0.8 A <sup>2</sup> ·s
Output current	
for backplane bus (5 V DC), max.	1 600 mA; Max. 5 V DC for SM and CM
Encoder supply	
24 V encoder supply	
• 24 V	20.4 to 28.8V
Power loss	
Power loss, typ.	14 W
Memory	
Work memory	
<ul> <li>integrated</li> </ul>	100 kbyte
expandable	No
Load memory	
integrated	4 Mbyte
<ul> <li>Plug-in (SIMATIC Memory Card), max.</li> </ul>	with SIMATIC memory card
Backup	
• present	Yes
maintenance-free	Yes
<ul> <li>without battery</li> </ul>	Yes

Address         0.08 pix / instruction           for word operations, typ.         1.7 pix / instruction           CPU-bioleds         2.3 pix / instruction           VNINDer of blocks (lotal)         DBs, FCS, FBs, counters and timers. The maximum number of addressable blocks ranges from 1 to 6535. There is no restriction, the entire working memory and be used           OB         Limited only by RAM for code           Pate areas and their referinity         Referine only by RAM for code           Pate areas and their referinity         Referine only area (not. times, counters, flags), max.           Pate areas and their referinity         Referine only area (not. times, counters, flags), max.           Pate areas and their referinity         Referine only area (not. times, counters, flags), max.           Pate areas and their referinity         Referine only area (not. times, counters, flags), max.           Address area         If Mayle, Priority class 1 (program cycle): 16 KB, priority class 2 to 26. 6 KB           Address area         Development           • per priority class, max.         3 comm. modules, 1 signal board, 8 signal modules           • Instruction per day, max.         3 comm. modules, 1 signal board, 8 signal modules           • Outputs, adjustable         1 kkyle           • Device to per day, max.         3 comm. modules, 1 signal board, 8 signal modules           • Time day         Clock	CPU processing times	
for word operations, typ.         17 / us/instruction           for fording point attimute, typ.         2.3 µs/instruction           CPU-blocks         DBs, FCs, FCs, FEs, counters and timers. The maximum number of active working memory can be used           CPU-blocks         DBs, FCs, FCs, FEs, counters and timers. The maximum number of active working memory can be used           CPU-blocks         Limited only by RAM for code           State areas and their retentivity         Limited only by RAM for code           Reference         Frequence           • per priority class, max.         8 kbyte, Size of bit memory address area           Local data         Frequence           • optics, adjustable         1 kbyte           • Database ordinguration         Limited only byte           Number of modules per system, max.         3 comm. modules, 1 signal board, 8 signal modules           There of algo inputs         480 h; Typical           • Database ordinguration         480 h; Typical           Number of modules per system, max.         14           Surenordalgo inputs         6; HSC (Hyh Speed Coun		0.08 us: / instruction
for facility point arithmetic, typ.       2.3 µs; / instruction         CPU-blocks       DBs, FCS, FEB, counters and times. The maximum number of adabted block register from 1 to GGS. There is no restriction, the entire working memory can be used         CB       • Number of blocks (ctal)         CB       • Limited only by FRAM for code         Data areas and Their retent/vity       • Retrive data area (incl. timers, counters, flags), max.         Flag       • Size, max.       0 & kbyte, Size of bit memory address area         Local data       • 6 kbyte, Phothy class 1 (program cycle): 16 KB, priority class 2 to 26: 6 KB.         Address area       • 6 kbyte, Phothy class 1 (program cycle): 16 KB, priority class 2 to 26: 6 KB.         Process image       • 1 kbyte         • nputs, adjustable       1 kbyte         • Outputs, adjustable       1 kbyte         • Clock       • 6 advolds por system, max.         Clock       • 1 advolds por system, max.         • Barkup time       430 hr, Typical         • Barkup time       430 hr, Typical         • Barkup time       430 hr, Typical         • Or which inputs usable for technological functions       5 (res input)         • Or signal Tort       5 V DC at 1 mA         • Or signal Tort       5 V DC at 1 mA         • for signal Tort       5 V DC at 1 mA		
CPUEbooks         DBs. FCb. FBs, counters and times. The maximum number of addressable blocks ranges from 1 to e5535. There is no restriction, the entire working memory can be used           OB         • Number, max.         Limited only by RAM for code           Data areas and their retentivity         14 kbyte           Fleg         • Number, max.         Limited only by RAM for code           Data areas and their retentivity         14 kbyte           • Retentive data area (nct. times, counters, tlags), max.         16 kbyte. Size of bit memory address area           Decid data         • per priority class, max.           FRedess area         • Per priority class, max.           Process image         • nortules per system, max.           • Ordules per system, max.         3 comm. modules, 1 signal board. 8 signal modules           Process image         • hordules per system, max.           • Backup time         480 h; Typical           • Boardware clock (real-time)         Yes           • Backup time         480 simoth at 25 °C           Digital inputs         14; Integrated           • of which inputs usable of technological functions         6; HisC (High Speed Counting)           Sourcestraik input         Yes           Number of aginal inputs         14; Integrated           • of which inputs usable of technological functions         5 V		
Number of blocks (total)         DBs, FCS, FBs, counters and times. The maximum number of addressable block anges from 1 to 65505. There is no restriction, the entire working memory can be used           OB         Extensive data area (not. times, counters, tags), max.         Limited only by RAM for code           Data areas and their retentivity         Extensive data area (not. times, counters, tags), max.         14 kbyte           Flig         •         Size, max.         8 kbyte. Size of bit memory address area           Local data         •         per priority class, max.         16 kbyte. Size of bit memory address area           Local data         •         per priority class, max.         1 kbyte           •         Number of data area (not. times, counters, tags), max.         1 kbyte           •         Process image         •           •         per priority class, max.         1 kbyte           •         Outputs, adjustable         1 kbyte           •         Dackup time         4 site ins not add addit inputs		
Automater, max.       Limited only by RAM for code         Data areas and their rotentivity       Id kbyte         Petentive data area (ind. inners, counters, flags), max.       14 kbyte         Filig       Id kbyte; Priority class 1 (program cycle): 16 KB, priority class 2 to 28: 6 KB         Addrass area       Id kbyte; Priority class 1 (program cycle): 16 KB, priority class 2 to 28: 6 KB         Addrass area       Process image         Inputs, adjustable       1 kbyte         • Outputs, adjustable       1 kbyte         • Barkup imme       3 comm. modules, 1 signal board, 8 signal modules         • Digital inputs       1 4 10000000000000000000000000000000000	Number of blocks (total)	addressable blocks ranges from 1 to 65535. There is no restriction, the
Data areas and their rotentivity         14 kbyte           Retentive data area (incl. timers, counters, flags), max.         14 kbyte           Flag         8 kbyte: Size of bit memory address area           Local data         -           - per priority class, max.         16 kbyte: Priority class 1 (program cycle): 16 KB, priority class 2 to 26: 6 KB           Address area         -           Process image         -           - inputs, adjustable         1 kbyte           - unputs, adjustable         1 kbyte           - unputs, adjustable         1 kbyte           - Mardware cock (real-time)         Yes           - Backup time         480 h; Typical           - Backup time         480 h; Typical           - Deviation per day, max.         14 (Integrated           - of which inputs usable for technological functions         Yes           - Got which inputs usable for technological functions         14 (Integrated           - of which inputs usable for technological functions         Yes           - Tor is simultaneously controllable inputs         14           all mounting positions         14           - or is simultaneously controllable inputs         14           all mounting positions         -           athor to 't', min.         0.2 ms, 0.4 ms, 0.8	OB	
Retentive data area (incl. timers, counters, flegs), max.       14 kbyte         Flag       5kc, max.       8 kbyte; Size of bit memory address area         Local data       16 kbyte; Priority class 1 (program cycle): 16 KB, priority class 2 to 28: 6 KB         Address area       Process image         • Inputs, adjustable       1 kbyte         • Outputs, adjustable       1 kbyte         • Outputs, adjustable       1 kbyte         • Cordputs, adjustable       1 kbyte         • Outputs, adjustable       1 kbyte         • Cordputs, adjustable       1 kbyte         • Clock       Yes         • Hardware clock (real-time)       4 Somm.         • Backup time       480 hr. Typical         • Deviation per day, max.       14 integrated         • Outputs inputs       14: Integrated         • Or which inputs usable for technological functions       5 KBC (High Speed Counting)         • Source/arik input       Yes         Number of simultaneousity controllable inputs       14	Number, max.	Limited only by RAM for code
Fing       8 kbyte; Size of bit memory address area         Local data       8 kbyte; Size of bit memory address area         Local data       16 kbyte; Pirority class 1 (program cycle); 16 KB, priority class 2 to 26: 6 KB         Address area       16 kbyte; Pirority class 1 (program cycle); 16 KB, priority class 2 to 26: 6 KB         Process image       1 kbyte         • Inputs, adjustable       1 kbyte         • Unputs, adjustable       1 kbyte         • Inputs, adjustable       1 kbyte         • Input support (real-time)       Yes         • Backup time       480 h; Typical         • Deviation per day, max.       480 signal modules         • Or which inputs usable for technological functions       6; HSC (High Speed Counting)         • or digital inputs       14: Integrated         • or bit modules (for rated value of input woltage)       for in signal "1"         • or signal "1"	Data areas and their retentivity	
• Size, max.       8 kbyte; Size of bit memory address area         Local data       • per priority class, max.         • defress area       • Repriority class, max.         Process image       • Inputs, adjustable         • Inputs, adjustable       1 kbyte         • Outputs, adjustable       1 kbyte         • Cloubls, adjustable       1 kbyte         • Mumber of modules per system, max.       3 comm. modules, 1 signal board, 8 signal modules         Time of day       • Hardware clock (real-time)         • Hardware clock (real-time)       Yes         • Backup time       480 h; Typical         • Deviation per day, max.       260 s/month at 25 °C         Digital inputs       14, Integrated         • of which inputs usable for technological functions       9 kHSC (High Speed Counting)         Source/sink input       Yes         Number of simultaneously controllable inputs       14         Input day       14         Input delay (for rated value of input voltage)       5 VDC at 1 mA         • for signal °C       5 VDC at 1 mA         • for signal °T       5 VD C at 2.5 mA         Input delay (for rated value of input voltage)       0 2 ms, 0.4 ms, 0.8 ms, 1.6 ms, 3.2 ms, 6.4 ms and 12.8 ms, selectable         in groupsiof four       0.2 ms       0	Retentive data area (incl. timers, counters, flags), max.	14 kbyte
Local data       16 kbyte: Priority class 1 (program cycle): 16 KB, priority class 2 to 26: 6 KB         Address area       16 kbyte: Priority class 1 (program cycle): 16 KB, priority class 2 to 26: 6 KB         Process image       1 kbyte         • Inputs, adjustable       1 kbyte         • Inputs, adjustable       1 kbyte         • Inputs, adjustable       1 kbyte         Hardware configuration       1         Number of modules per system, max.       3 comm. modules, 1 signal board, 8 signal modules         Time of day       Clock         • Or day       Clock         • Or which inputs usable for technological functions       6: HSC (High Speed Counting)         Sources/sink input       Yes         • of which inputs usable for technological functions       6: HSC (High Speed Counting)         Sources/sink input       Yes         • of which inputs usable for technological functions       6: HSC (High Speed Counting)         Sources/sink input       Yes         • of which inputs usable for technological functions       6: HSC (High Speed Counting)         for isignal "0"       5 V DC at 1 mA         • for signal "0"       5 V DC at 1 mA         • for signal "1"       15 V DC at 2.5 mA         Input deay (for rated value of input voltage)       0.2 ms, 0.4 ms, 0.8 ms, 1.6 ms, 3.2 ms, 6.4	Flag	
• per priority class, max.     16 kbyte: Priority class 1 (program cycle): 16 KB, priority class 2 to 28: 6 KB  Address area  Process image     • Inputs, adjustable     • Ikbyte     • Outputs, adjustable     • Ikbyte     • Outputs, adjustable     • Ikbyte Hardware configuration Number of modules per system, max.     • Somm. modules, 1 signal board, 8 signal modules  The of day Clock     • Flardware clock (real-time)     • Backup time     • Deviation per day, max.     • Backup time     • Deviation per day, max.     • So simonth at 25 °C Digital inputs     • Orking and the per day of the per day of the per day.     • Orking and the per day of the per day.     • Orking and the per day of the per day of the per day of the per day.     • Orking and the per day of the per day.     • Orking and the per day of the per day.     • Orking and the per day of the per day.     • Orking and the per day of the per day.     • Orking and the per day of the per day.     • Orking and the per day of the per day.     • Orking and the per day of the per day.     • Orking and the per day of the per day.     • Orking and the per day of the per day.     • Orking and the per day of the per day.     • Orking and the per day.     • Orking a	• Size, max.	8 kbyte; Size of bit memory address area
KB       KB         Address area         Process image         • Inputs, adjustable       1 kbyte         • Outputs, adjustable       1 kbyte         • Outputs, adjustable       1 kbyte         Hardware configuration       3 comm. modules, 1 signal board, 8 signal modules         Time of day       Clock         Clock       480 h; Typical         • Beackup time       480 h; Typical         • Of which inputs usable for technological functions       6; HSC (High Speed Counting)         Source/sink input       Yes         All mounting positions	Local data	
Process image         • inputs, adjustable         • Inputs, adjustable         Hardware configuration         Number of modules per system, max.         Clock         • Hardware clock (real-time)         • Backup time         • Of which inputs usable for technological functions         Source/sink input         Ves         Number of simultaneously controllable inputs         all mouning positions	• per priority class, max.	
• Inputs, adjustable       1 kbyte         • Outputs, adjustable       1 kbyte         • Unputs, adjustable       1 kbyte         Hardware configuration       3 comm. modules, 1 signal board, 8 signal modules         Time of day       Clock         • Hardware clock (real-time)       Yes         • Backup time       480 k; Typical         • Bevelup time       490 k; Typical         • Bevelup time       490 k; Typical         • Bevelup time       490 k; Typical         • Borkup time       640 k; Typical         • Borkup time       640 k; Typical         • Borkup time       640 k; Typical         • Or which inputs usable for technological functions       64 KSC (High Speed Counting)         Source/sink input       Yes         Number of simultaneously controllable inputs       14         Input voltage	Address area	
• Outputs, adjustable     1 kbyte       Hardware configuration     3 comm. modules, 1 signal board, 8 signal modules       Time of day     7       Clock     Yes       • Backup time     480 h; Typical       • Deviation per day, max.     ±60 simonth at 25 °C       Digital inputs     14; Integrated       • of which inputs usable for technological functions     6; HSC (High Speed Counting)       Source/sink input     Yes       Number of digital onyuts     14; Integrated       • of which inputs usable for technological functions     6; HSC (High Speed Counting)       Source/sink input     Yes       Number of adjusta     14       all mounting positions	Process image	
Hardware configuration         Number of modules per system, max.       3 comm. modules, 1 signal board, 8 signal modules         Time of day         Clock       - <ul> <li>Hardware clock (real-time)</li> <li>Yes</li> <li>Backup time</li> <li>480 h; Typical</li> <li>Deviation per day, max.</li> <li>260 s/month at 25 °C</li> </ul> Digital inputs       14; Integrated <ul> <li>of which inputs usable for technological functions</li> <li>Bick (High Speed Counting)</li> </ul> Source/sink input       Yes         Number of Simultaneous/s controllable inputs       6; HSC (High Speed Counting)         Source/sink input       Yes         Number of simultaneous/s controllable inputs       14         all mounting positions       - <ul> <li>up to 40°C, max.</li> <li>14</li> </ul> Input totage <ul> <li>or signal '''</li> <li>5 VDC at 1 mA</li> <li>or signal '''</li> <li>5 VDC at 2.5 mA</li> </ul> Input delay (for rated value of input voltage)       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 <ul> <li>parameterizable</li> <li>yes</li> <li>for interrupt inputs&lt;</li></ul>	<ul> <li>Inputs, adjustable</li> </ul>	
Number of modules per system, max.       3 comm. modules, 1 signal board, 8 signal modules         Time of day         Clock       • HardWare clock (real-time)       Yes         • Backup time       480 h; Typical         • Deviation per day, max.       ±60 s/month at 25 °C         Digital inputs       14; Integrated         • of which inputs usable for technological functions       FiRC (High Speed Counting)         Source/sink input       Yes         Number of simultaneously controllable inputs       14         all mounting positions       -         - of value (DC)       24 V         • for signal *0*       5 V DC at 1 mA         • for signal *0*       5 V DC at 2.5 mA         Input delay (for rated value of input voltage)       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.       12.8 ms         for technological functions       -         - parameterizable       Yes         for technological functions       -         - parameterizable       Yes         for technological functions       -         - parameterizable       Yes         for technological functions       -         - parameterizable       Single phase: 3 @ 100 kHz & 3 @ 30 kHz, differen	Outputs, adjustable	1 kbyte
Time of day         Clock <ul> <li>Hardware clock (real-time)</li> <li>Backup time</li> <li>Backup time</li> <li>Deviation per day, max.</li> <li>Deviation per day, max.</li> <li>Source/sink input</li> </ul> Yes           Number of digital inputs         14; Integrated <ul> <li>of which inputs usable for technological functions</li> <li>Simultaneously controllable inputs</li> <li>all mounting positions</li></ul>	Hardware configuration	
Clock <ul> <li>Hardware clock (real-time)</li> <li>Hardware clock (real-time)</li></ul>	Number of modules per system, max.	3 comm. modules, 1 signal board, 8 signal modules
• Hardware clock (real-time)       Yes         • Backup time       480 h; Typical         • Deviation per day, max.       ±60 s/month at 25 °C <b>Digital inputs</b> 14; Integrated         • of which inputs usable for technological functions       6; HSC (High Speed Counting)         Source/sink input       Yes         Number of simultaneously controllable inputs       14         all mounting positions	Time of day	
<ul> <li>Backup time 480 h; Typical 25 °C</li> <li>Digital inputs 50 s/month at 25 °C</li> <li>Digital inputs 50 s/month at 25 °C</li> <li>Digital inputs 50 s/month at 25 °C</li> <li>Digital inputs 0 sable for technological functions 6; HSC (High Speed Counting)</li> <li>Source/sink input Yes</li> <li>Number of simultaneously controllable inputs 41</li> <li>Input voltage 70 °C, max. 14</li> <li>Input delay (for rated value (DC) 24 V</li> <li>for signal "1", 15 V DC at 2.5 mA</li> <li>Input delay (for rated value of input voltage)</li> <li>for standard inputs 71 °C, "1", min. 72.8 ms</li> <li>at "0" to "1", min. 72.8 ms</li> <li>for interrupt inputs 72.8 ms</li> <li>for interrupt inputs 72.8 ms</li> <li>parameterizable 72.8 ms</li> <li>for interrupt inputs 72.8 ms</li> <li>parameterizable 72.8 ms</li> <li>materizable 72.8 ms</li> <li>materizable 72.8 ms</li> <li>materizable 72.8 ms</li> <li>parameterizable 72.8 ms</li> <li>parameterizable 72.8 ms</li> <li>materizable 7</li></ul>		
<ul> <li>Backup time 480 h; Typical 25 °C</li> <li>Digital Inputs 25 °C</li> <li>Digital Inputs 490 s/month at 25 °C</li> <li>Source/sink input 490 s/month at 25 °C</li> <li>Source/sink input 50 s/month at 25 °C</li> <li>Number of signal routing positions 61 set 490 s/month at 25 °C</li> <li>Number of signal routing positions 14</li> <li>Input voltage 70 set 490 set 4</li></ul>	Hardware clock (real-time)	Yes
Deviation per day, max. ±60 s/month at 25 °C      Pligital inputs      Number of digital inputs     of which inputs usable for technological functions     Source/sink input     Yes      Number of simultaneously controllable inputs     all mounting positions		480 h; Typical
Number of digital inputs       14; Integrated         • of which inputs usable for technological functions       6; HSC (High Speed Counting)         Source/sink input       Yes         Number of simultaneously controllable inputs       14         all mounting positions		±60 s/month at 25 °C
Number of digital inputs       14; Integrated         • of which inputs usable for technological functions       6; HSC (High Speed Counting)         Source/sink input       Yes         Number of simultaneously controllable inputs       14         all mounting positions	Digital inputs	
• of which inputs usable for technological functions       6; HSC (High Speed Counting)         Source/sink input       Yes         Number of simultaneously controllable inputs       all mounting positions         -up to 40 °C, max.       14         Input voltage       • Rated value (DC)         • Fasted value (DC)       24 V         • for signal "0"       5 V DC at 1 mA         • for signal "1"       15 V DC at 2.5 mA         Input delay (for rated value of input voltage)       • for signal "1"         for standard inputs       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", min.       0.2 ms         - at "0" to "1", max.       12.8 ms         for iterupt inputs       -         - parameterizable       Yes         for technological functions       -         - parameterizable       Yes         for technological functions       -         - parameterizable       Yes         for technological functions       -         - parameterizable       Single phase: 3 @ 100 kHz & 3 @ 30 kHz, differential: 3 @ 80 kHz & 3 @ 30 kHz         Cable length       • Single phase: 3 @ 100 kHz & 3 @ 30 kHz, differential: 3 @ 80 kHz & 3 @ 30 kHz         Cable length       Single phase: 3 @ 100 kHz & 3 @ 30 kHz, d		14; Integrated
Source/sink input       Yes         Number of simultaneously controllable inputs       all mounting positions	5	-
all mounting positions       14         Input voltage       24 V         • Rated value (DC)       24 V         • for signal "0"       5 V DC at 1 mA         • for signal "1"       15 V DC at 2.5 mA         Input delay (for rated value of input voltage)       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", min.       0.2 ms         - at "0" to "1", max.       12.8 ms         for interrupt inputs       -         - parameterizable       Yes         for technological functions       -         - parameterizable       Yes         for technological functions       -         - parameterizable       Single phase: 3 @ 100 kHz & 3 @ 30 kHz, differential: 3 @ 80 kHz & 3 @ 30 kHz         Cable length       -         • shielded, max.       300 m; 50 m for technological functions: No         Digital outputs       10; Relays         Switching capacity of the outputs       10; Relays         Switching capacity of the outputs       2 A         • on lamp load, max.       30 W with DC, 200 W with AC         Output delay with resistive load       -		
	Number of simultaneously controllable inputs	
Input voltage         • Rated value (DC)       24 V         • for signal "0"       5 V DC at 1 mA         • for signal "1"       15 V DC at 2.5 mA         Input delay (for rated value of input voltage)	all mounting positions	
Rated value (DC)     24 V     for signal "0"     5 V DC at 1 mA     for signal "1"     15 V DC at 2.5 mA     Input delay (for rated value of input voltage)     for standard inputs         — parameterizable         … or to "1", min.         … 0.2 ms         … at "0" to "1", max.         12.8 ms     for interrupt inputs         — parameterizable         … or to "1", max.         12.8 ms     for interrupt inputs         — parameterizable         … or to "1", max.         12.8 ms     for interrupt inputs         — parameterizable         … or to "1", max.         12.8 ms     for interrupt inputs         — parameterizable         … or to "1", max.         12.8 ms     for interrupt inputs         — parameterizable         … or to "1", max.         12.8 ms     for interrupt inputs         — parameterizable         … or to "1", max.         12.8 ms     for interrupt inputs         — parameterizable         … or to "1", max.         12.8 ms     for interrupt inputs         — parameterizable         … or to "1", max.         12.8 ms     for interrupt inputs         — parameterizable         … or to "1", max.         12.8 ms     for interrupt inputs         … or parameterizable         … or to "1", max.         12.8 ms     for interrupt inputs         … or parameterizable         … or an or to "1", max.         12.8 ms     for interrupt inputs         … or parameterizable         … or an or to "1", max.         10; Relays     Suitching capacity of the outputs         … with resistive load, max.         30 W with DC, 200 W with AC         Output delay with resistive load		14
• for signal "0"5 V DC at 1 mA• for signal "1"15 V DC at 2.5 mAInput delay (for rated value of input voltage) for standard inputs0.2 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", min.0.2 ms- at "0" to "1", max.12.8 msfor interrupt inputs parameterizableYesfor technological functions parameterizableSingle phase: 3 @ 100 kHz & 3 @ 30 kHz, differential: 3 @ 80 kHz & 3 @ 30 kHzCable length-• shielded, max.500 m; 50 m for technological functions @ 30 kHz• unshielded, max.500 m; 50 m for technological functions @ 30 kHzNumber of digital outputs10; RelaysSwitching capacity of the outputs2 A 30 W with DC, 200 W with ACOutput delay with resistive load2 A 30 W with DC, 200 W with AC	Input voltage	
• for signal "1"         15 V DC at 2.5 mA           Input delay (for rated value of input voltage)         for standard inputs           - parameterizable         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", min.         0.2 ms           - at "0" to "1", max.         12.8 ms           for interrupt inputs         -           - parameterizable         Yes           for technological functions         -           - parameterizable         Yes           for technological functions         -           - parameterizable         Single phase: 3 @ 100 kHz & 3 @ 30 kHz, differential: 3 @ 80 kHz & 3 @ 30 kHz           Cable length         -           • shielded, max.         300 m; 50 m for technological functions           • unshielded, max.         300 m; for technological functions: No           Digital outputs         10; Relays           Switching capacity of the outputs         10; Relays           Switching capacity of the outputs         2 A           • with resistive load, max.         2 A           • on lamp load, max.         30 W with DC, 200 W with AC	Rated value (DC)	24 V
Input delay (for rated value of input voltage)         for standard inputs	• for signal "0"	5 V DC at 1 mA
for standard inputs       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", min.       0.2 ms         at "0" to "1", max.       12.8 ms         for interrupt inputs	• for signal "1"	15 V DC at 2.5 mA
- parameterizable0.2 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", min.0.2 ms- at "0" to "1", max.12.8 msfor interrupt inputs parameterizableYesfor technological functions parameterizableSingle phase: 3 @ 100 kHz & 3 @ 30 kHz, differential: 3 @ 80 kHz & 3 @ 30 kHzCable length-• shielded, max.500 m; 50 m for technological functions • unshielded, max.500 m; for technological functions300 m; for technological functions• unshielded, max.500 m; 50 m for technological functions • unshielded, max.Switching capacity of the outputs10; RelaysSwitching capacity of the outputs2 A• with resistive load, max.2 A• on lamp load, max.30 W with DC, 200 W with ACOutput delay with resistive load-	Input delay (for rated value of input voltage)	
in groups of four - at "0" to "1", min. - at "0" to "1", max. - at "0" to "1", max. 12.8 ms for interrupt inputs - parameterizable Yes for technological functions - parameterizable Single phase: 3 @ 100 kHz & 3 @ 30 kHz, differential: 3 @ 80 kHz & 3 @ 30 kHz Cable length • shielded, max. • unshielded, max. • unshielded, max. So0 m; 50 m for technological functions • unshielded, max. 300 m; for technological functions • unshielded, max. • unsh	for standard inputs	
		in groups of four
for interrupt inputs         — parameterizable       Yes         for technological functions         — parameterizable       Single phase: 3 @ 100 kHz & 3 @ 30 kHz, differential: 3 @ 80 kHz & 3 @ 30 kHz         Cable length       • shielded, max.         • shielded, max.       500 m; 50 m for technological functions         • unshielded, max.       300 m; for technological functions: No         Digital outputs       10; Relays         Number of digital outputs       10; Relays         Switching capacity of the outputs       2 A         • on lamp load, max.       30 W with DC, 200 W with AC         Output delay with resistive load       10		
— parameterizable       Yes         for technological functions       Single phase: 3 @ 100 kHz & 3 @ 30 kHz, differential: 3 @ 80 kHz & 3 @ 30 kHz         — parameterizable       Single phase: 3 @ 100 kHz & 3 @ 30 kHz, differential: 3 @ 80 kHz & 3 @ 30 kHz         Cable length       (@ 30 kHz)         • shielded, max.       500 m; 50 m for technological functions         • unshielded, max.       300 m; for technological functions: No         Digital outputs       10; Relays         Number of digital outputs       10; Relays         Switching capacity of the outputs       2 A         • with resistive load, max.       30 W with DC, 200 W with AC         Output delay with resistive load		12.8 ms
for technological functions         — parameterizable       Single phase: 3 @ 100 kHz & 3 @ 30 kHz, differential: 3 @ 80 kHz & 3 @ 30 kHz         Cable length       • shielded, max.         • shielded, max.       500 m; 50 m for technological functions         • unshielded, max.       300 m; for technological functions: No         Digital outputs       10; Relays         Switching capacity of the outputs       10; Relays         • with resistive load, max.       2 A         • on lamp load, max.       30 W with DC, 200 W with AC         Output delay with resistive load       10		
— parameterizableSingle phase: 3 @ 100 kHz & 3 @ 30 kHz, differential: 3 @ 80 kHz & 3 @ 30 kHzCable length• shielded, max.• shielded, max.500 m; 50 m for technological functions 300 m; for technological functions: NoDigital outputs300 m; for technological functions: NoNumber of digital outputs10; RelaysSwitching capacity of the outputs2 A 30 W with DC, 200 W with ACOutput delay with resistive load30 W with DC, 200 W with AC		Yes
@ 30 kHz         Cable length         • shielded, max.         • unshielded, max.         300 m; 50 m for technological functions         • unshielded, max.         300 m; for technological functions: No         Digital outputs         Number of digital outputs         Switching capacity of the outputs         • with resistive load, max.         2 A         • on lamp load, max.         Output delay with resistive load		
<ul> <li>shielded, max.</li> <li>unshielded, max.</li> <li>300 m; 50 m for technological functions</li> <li>300 m; for technological functions: No</li> </ul> Digital outputs           Digital outputs         10; Relays           Switching capacity of the outputs         10; Relays           • with resistive load, max.         2 A           • on lamp load, max.         30 W with DC, 200 W with AC		
• unshielded, max.       300 m; for technological functions: No         Digital outputs       10; Relays         Number of digital outputs       10; Relays         Switching capacity of the outputs       2 A         • with resistive load, max.       300 W with DC, 200 W with AC         Output delay with resistive load       4		
Digital outputs       10; Relays         Number of digital outputs       10; Relays         Switching capacity of the outputs       2 A         • with resistive load, max.       2 A         • on lamp load, max.       30 W with DC, 200 W with AC         Output delay with resistive load		-
Number of digital outputs       10; Relays         Switching capacity of the outputs       • with resistive load, max.         • with resistive load, max.       2 A         • on lamp load, max.       30 W with DC, 200 W with AC         Output delay with resistive load		300 m; for technological functions: No
Switching capacity of the outputs         • with resistive load, max.         • on lamp load, max.         Output delay with resistive load		
• with resistive load, max.       2 A         • on lamp load, max.       30 W with DC, 200 W with AC         Output delay with resistive load	· ·	10; Relays
on lamp load, max. 30 W with DC, 200 W with AC Output delay with resistive load		
Output delay with resistive load		
		30 W with DC, 200 W with AC
• "0" to "1", max. 10 ms; max.		
	• "0" to "1", max.	10 ms; max.

• "1" to "0", max.	10 ms; max.
Relay outputs	
Number of relay outputs	10
Number of operating cycles, max.	mechanically 10 million, at rated load voltage 100 000
Cable length	
• shielded, max.	500 m
• unshielded, max.	150 m
Analog inputs	
Number of analog inputs	2
Input ranges	2
Voltage	Yes
Input ranges (rated values), voltages	100
• 0 to +10 V	Yes
— Input resistance (0 to 10 V)	≥100k ohms
Cable length	
• shielded, max.	100 m; twisted and shielded
Analog outputs	
Number of analog outputs	0
Analog value generation for the inputs	
Integration and conversion time/resolution per channel	10 bit
<ul> <li>Resolution with overrange (bit including sign), max.</li> <li>Integration time, parameterizable</li> </ul>	10 bit Yes
Conversion time (per channel)	625 µs
Encoder	
Connectable encoders	Ver
• 2-wire sensor	Yes
1. Interface	PROFILIET
Interface type	PROFINET
Isolated	Yes
automatic detection of transmission rate	Yes
Autonegotiation	Yes
Autocrossing Interface types	
RJ 45 (Ethernet)	Yes
Number of ports	1
integrated switch	No
Protocols	INO
PROFINET IO Controller	Yes
PROFINET IO Device	Yes
SIMATIC communication	Yes
Open IE communication	Yes; Optionally also encrypted
Web server	Yes
Media redundancy	No
PROFINET IO Controller	
Transmission rate, max.	100 Mbit/s
Services	
— PG/OP communication	Yes; encryption with TLS V1.3 pre-selected
— Isochronous mode	No
— IRT	No
— PROFlenergy	No
— Prioritized startup	Yes
— Number of IO devices with prioritized startup,	16
max.	
<ul> <li>— Number of connectable IO Devices, max.</li> </ul>	16
<ul> <li>Number of connectable IO Devices for RT,</li> </ul>	16
max.	16
<ul> <li>— of which in line, max.</li> <li>— Activation/deactivation of IO Devices</li> </ul>	16 Yes
— Activation/deactivation of IO Devices     — Number of IO Devices that can be	7 es 8
simultaneously activated/deactivated, max.	

— Updating time	The minimum value of the update time also depends on the communication component set for PROFINET IO, on the number of IO devices and the quantity of configured user data.
PROFINET IO Device	
Services	
— PG/OP communication	Yes; encryption with TLS V1.3 pre-selected
— Isochronous mode	No
— IRT	No
— PROFlenergy	Yes
— Shared device	Yes
<ul> <li>Number of IO Controllers with shared device,</li> </ul>	2
max.	
Protocols	
Supports protocol for PROFINET IO	Yes
PROFIsafe	No
PROFIBUS	Yes; CM 1243-5 (master) or CM 1242-5 (slave) required
OPC UA	Yes; OPC UA Server
AS-Interface	Yes; CM 1243-2 required
Protocols (Ethernet)	
• TCP/IP	Yes
• DHCP	No
• SNMP	Yes
• DCP	Yes
• LLDP	Yes
Redundancy mode	100
Media redundancy — MRP	No
— MRP — MRPD	No
	No
SIMATIC communication	Vee
• S7 routing	Yes
Open IE communication	
• TCP/IP	Yes
— Data length, max.	8 kbyte
• ISO-on-TCP (RFC1006)	Yes
— Data length, max.	8 kbyte
• UDP	Yes
— Data length, max.	1 472 byte
Web server	
<ul> <li>supported</li> </ul>	Yes
User-defined websites	Yes
OPC UA	
<ul> <li>Runtime license required</li> </ul>	Yes; "Basic" license required
OPC UA Server	Yes; data access (read, write, subscribe), method call, runtime license required
<ul> <li>Application authentication</li> </ul>	Available security policies: None, Basic128Rsa15, Basic256Rsa15, Basic256Sha256
— User authentication	"anonymous" or by user name & password
<ul> <li>Number of sessions, max.</li> </ul>	10
<ul> <li>— Number of subscriptions per session, max.</li> </ul>	50
— Sampling interval, min.	100 ms
— Publishing interval, min.	200 ms
- Number of server methods, max.	20
- Number of monitored items, max.	1 000
— Number of server interfaces, max.	2
<ul> <li>— Number of nodes for user-defined server interfaces, max.</li> </ul>	2 000
Further protocols	
MODBUS	Yes
communication functions / header	
S7 communication	
supported	Yes

	Yes
<ul> <li>as server</li> <li>as client</li> </ul>	Yes
User data per job, max.  Number of connections	See online help (S7 communication, user data size)
• overall	PG Connections: 4 reserved / 4 max; HMI Connections: 12 reserved / 18 max; S7 Connections: 8 reserved / 14 max; Open User Connections: 8 reserved / 14 max; Web Connections: 2 reserved / 30 max; OPC UA Connections: 0 reserved / 10 max; Total Connections: 34 reserved / 64 max
Test commissioning functions	
Status/control	
Status/control variable	Yes
Variables	Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters
Forcing	
Forcing	Yes
Diagnostic buffer	
present	Yes
Traces	
<ul> <li>Number of configurable Traces</li> </ul>	2
Memory size per trace, max.	512 kbyte
Interrupts/diagnostics/status information	
Diagnostics indication LED	
RUN/STOP LED	Yes
• ERROR LED	Yes
MAINT LED	Yes
Integrated Functions	
Frequency measurement	Yes
controlled positioning	Yes
Number of position-controlled positioning axes, max.	8
Number of positioning axes via pulse-direction interface	Up to 4 with SB 1222
PID controller	Yes
Number of alarm inputs	4
Potential separation	
Potential separation digital inputs	
<ul> <li>Potential separation digital inputs</li> </ul>	500V AC for 1 minute
<ul> <li>between the channels, in groups of</li> </ul>	1
Potential separation digital outputs	
<ul> <li>Potential separation digital outputs</li> </ul>	Relays
<ul> <li>between the channels</li> </ul>	No
<ul> <li>between the channels, in groups of</li> </ul>	2
EMC	
Interference immunity against discharge of static electricity	
<ul> <li>Interference immunity against discharge of static electricity acc. to IEC 61000-4-2</li> </ul>	Yes
— Test voltage at air discharge	8 kV
— Test voltage at contact discharge	6 kV
Interference immunity to cable-borne interference     Interference immunity on supply lines acc. to IEC	Yes
<ul> <li>61000-4-4</li> <li>Interference immunity on signal cables acc. to IEC</li> </ul>	Yes
61000-4-4	
Interference immunity against voltage surge Interference immunity on supply lines acc. to IEC 61000-4-5	Yes
Interference immunity against conducted variable disturbance	e induced by high-frequency fields
<ul> <li>Interference immunity against high-frequency radiation acc. to IEC 61000-4-6</li> </ul>	Yes
Emission of radio interference acc. to EN 55 011	
<ul> <li>Limit class A, for use in industrial areas</li> </ul>	Yes; Group 1
• Limit class B, for use in residential areas	Yes; When appropriate measures are used to ensure compliance with the limits for Class B according to EN 55011
Degree and class of protection	

IP degree of protection	IP20
Standards, approvals, certificates	
CE mark	Yes
UL approval	Yes
cULus	Yes
FM approval	Yes
RCM (formerly C-TICK)	Yes
KC approval	Yes
Marine approval	Yes
Ambient conditions	
Free fall	
• Fall height, max.	0.3 m; five times, in product package
Ambient temperature during operation	
• min.	-20 °C
• max.	60 °C; 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
<ul> <li>horizontal installation, min.</li> </ul>	-20 °C
<ul> <li>horizontal installation, max.</li> </ul>	60 °C
<ul> <li>vertical installation, min.</li> </ul>	-20 °C
<ul> <li>vertical installation, max.</li> </ul>	50 °C
Ambient temperature during storage/transportation	
• min.	-40 °C
● max.	70 °C
Air pressure acc. to IEC 60068-2-13	
<ul> <li>Operation, min.</li> </ul>	795 hPa
<ul> <li>Operation, max.</li> </ul>	1 080 hPa
<ul> <li>Storage/transport, min.</li> </ul>	660 hPa
Storage/transport, max.	1 080 hPa
Altitude during operation relating to sea level	
<ul> <li>Installation altitude, min.</li> </ul>	-1 000 m
Installation altitude, max.	5 000 m; Restrictions for installation altitudes > 2 000 m, see manual
Relative humidity	
• Operation, max.	95 %; no condensation
Vibrations	
Vibration resistance during operation acc. to IEC 60068-2-6	2 g (m/s <sup>2</sup> ) wall mounting, 1 g (m/s <sup>2</sup> ) DIN rail
Operation, tested according to IEC 60068-2-6	Yes
Shock testing	
tested according to IEC 60068-2-27	Yes; IEC 68, Part 2-27 half-sine: strength of the shock 15 g (peak value), duration 11 ms
Pollutant concentrations	
<ul> <li>SO2 at RH &lt; 60% without condensation</li> </ul>	S02: < 0.5 ppm; H2S: < 0.1 ppm; RH < 60% condensation-free
configuration / header	
configuration / programming / header	
Programming language	
— LAD	Yes
— FBD	Yes
— SCL	Yes
Know-how protection	
· · · · · · · · · · · · · · · · · · ·	
User program protection/password protection	Yes
<ul><li>User program protection/password protection</li><li>Copy protection</li></ul>	Yes
<ul> <li>User program protection/password protection</li> <li>Copy protection</li> <li>Block protection</li> </ul>	
<ul> <li>User program protection/password protection</li> <li>Copy protection</li> <li>Block protection</li> <li>Access protection</li> </ul>	Yes Yes
<ul> <li>User program protection/password protection</li> <li>Copy protection</li> <li>Block protection</li> <li>Access protection</li> <li>protection of confidential configuration data</li> </ul>	Yes
<ul> <li>User program protection/password protection</li> <li>Copy protection</li> <li>Block protection</li> <li>Access protection</li> <li>protection of confidential configuration data</li> <li>Protection level: Write protection</li> </ul>	Yes Yes
<ul> <li>User program protection/password protection</li> <li>Copy protection</li> <li>Block protection</li> <li>Access protection</li> <li>protection of confidential configuration data</li> <li>Protection level: Write protection</li> <li>Protection level: Read/write protection</li> </ul>	Yes Yes Yes
<ul> <li>User program protection/password protection</li> <li>Copy protection</li> <li>Block protection</li> <li>Access protection</li> <li>protection of confidential configuration data</li> <li>Protection level: Write protection</li> <li>Protection level: Read/write protection</li> <li>Protection level: Complete protection</li> </ul>	Yes Yes Yes
User program protection/password protection     Copy protection     Block protection     Access protection     protection of confidential configuration data     Protection level: Write protection     Protection level: Read/write protection	Yes Yes Yes Yes

Dimensions	
Width	110 mm
Height	100 mm
Depth	75 mm
Weights	
Weight, approx.	455 g
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