## **SIEMENS**

## Data sheet

## 6ES7214-1BG40-0XB0

SIMATIC S7-1200, CPU 1214C, COMPACT CPU, AC/DC/RLY, ONBOARD I/O: 14 DI 24V DC; 10 DO RELAY 2A; 2 AI 0 - 10V DC, POWER SUPPLY: AC 85 - 264 V AC AT 47 - 63 HZ, PROGRAM/DATA MEMORY: 100 KB



General information	
Product type designation	CPU 1214C AC/DC/Relay
Firmware version	V4.2
Engineering with	
<ul> <li>Programming package</li> </ul>	STEP 7 V14 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	
• integrated	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
• without battery	Yes
CPU processing times	
for bit operations, typ.	0.085 µs; / instruction
for word operations, typ.	1.7 µs; / instruction
for floating point arithmetic, typ.	2.3 μs; / instruction
for floating point arithmetic, typ.	
for floating point arithmetic, typ. CPU-blocks	2.3 μs; / instruction
for floating point arithmetic, typ.	2.3 μs; / instruction DBs, FCs, FBs, counters and timers. The maximum number of
for floating point arithmetic, typ. CPU-blocks	2.3 μs; / instruction
for floating point arithmetic, typ. CPU-blocks	2.3 μs; / instruction DBs, FCs, FBs, counters and timers. The maximum number of addressable blocks ranges from 1 to 65535. There is no
for floating point arithmetic, typ. <u>CPU-blocks</u> Number of blocks (total)	2.3 μs; / instruction DBs, FCs, FBs, counters and timers. The maximum number of addressable blocks ranges from 1 to 65535. There is no
for floating point arithmetic, typ. CPU-blocks Number of blocks (total) OB • Number, max.	2.3 μs; / instruction DBs, FCs, FBs, counters and timers. The maximum number of addressable blocks ranges from 1 to 65535. There is no restriction, the entire working memory can be used
for floating point arithmetic, typ. CPU-blocks Number of blocks (total) OB	2.3 μs; / instruction DBs, FCs, FBs, counters and timers. The maximum number of addressable blocks ranges from 1 to 65535. There is no restriction, the entire working memory can be used
for floating point arithmetic, typ.          CPU-blocks         Number of blocks (total)         OB         • Number, max.         Data areas and their retentivity	<ul> <li>2.3 μs; / instruction</li> <li>DBs, FCs, FBs, counters and timers. The maximum number of addressable blocks ranges from 1 to 65535. There is no restriction, the entire working memory can be used</li> <li>Limited only by RAM for code</li> </ul>
for floating point arithmetic, typ.          CPU-blocks         Number of blocks (total)         OB         • Number, max.         Data areas and their retentivity         Retentive data area (incl. timers, counters, flags),	<ul> <li>2.3 μs; / instruction</li> <li>DBs, FCs, FBs, counters and timers. The maximum number of addressable blocks ranges from 1 to 65535. There is no restriction, the entire working memory can be used</li> <li>Limited only by RAM for code</li> </ul>
for floating point arithmetic, typ.          CPU-blocks         Number of blocks (total)         OB         • Number, max.         Data areas and their retentivity         Retentive data area (incl. timers, counters, flags), max.	<ul> <li>2.3 μs; / instruction</li> <li>DBs, FCs, FBs, counters and timers. The maximum number of addressable blocks ranges from 1 to 65535. There is no restriction, the entire working memory can be used</li> <li>Limited only by RAM for code</li> </ul>
for floating point arithmetic, typ.          CPU-blocks         Number of blocks (total)         OB         • Number, max.         Data areas and their retentivity         Retentive data area (incl. timers, counters, flags), max.         Flag	<ul> <li>2.3 µs; / instruction</li> <li>DBs, FCs, FBs, counters and timers. The maximum number of addressable blocks ranges from 1 to 65535. There is no restriction, the entire working memory can be used</li> <li>Limited only by RAM for code</li> <li>10 kbyte</li> </ul>
for floating point arithmetic, typ.          CPU-blocks         Number of blocks (total)         OB         • Number, max.         Data areas and their retentivity         Retentive data area (incl. timers, counters, flags), max.         Flag         • Number, max.	<ul> <li>2.3 µs; / instruction</li> <li>DBs, FCs, FBs, counters and timers. The maximum number of addressable blocks ranges from 1 to 65535. There is no restriction, the entire working memory can be used</li> <li>Limited only by RAM for code</li> <li>10 kbyte</li> <li>8 kbyte; Size of bit memory address area</li> <li>16 kbyte; Priority class 1 (program cycle): 16 KB, priority class 2</li> </ul>
for floating point arithmetic, typ.  CPU-blocks Number of blocks (total)  OB  • Number, max.  Data areas and their retentivity Retentive data area (incl. timers, counters, flags), max. Flag  • Number, max. Local data	<ul> <li>2.3 µs; / instruction</li> <li>DBs, FCs, FBs, counters and timers. The maximum number of addressable blocks ranges from 1 to 65535. There is no restriction, the entire working memory can be used</li> <li>Limited only by RAM for code</li> <li>10 kbyte</li> <li>8 kbyte; Size of bit memory address area</li> </ul>
for floating point arithmetic, typ.  CPU-blocks Number of blocks (total)  OB  • Number, max.  Data areas and their retentivity Retentive data area (incl. timers, counters, flags), max. Flag  • Number, max. Local data	<ul> <li>2.3 µs; / instruction</li> <li>DBs, FCs, FBs, counters and timers. The maximum number of addressable blocks ranges from 1 to 65535. There is no restriction, the entire working memory can be used</li> <li>Limited only by RAM for code</li> <li>10 kbyte</li> <li>8 kbyte; Size of bit memory address area</li> <li>16 kbyte; Priority class 1 (program cycle): 16 KB, priority class 2</li> </ul>
for floating point arithmetic, typ.          CPU-blocks         Number of blocks (total)         OB         • Number, max.         Data areas and their retentivity         Retentive data area (incl. timers, counters, flags), max.         Flag         • Number, max.         Local data         • per priority class, max.	<ul> <li>2.3 µs; / instruction</li> <li>DBs, FCs, FBs, counters and timers. The maximum number of addressable blocks ranges from 1 to 65535. There is no restriction, the entire working memory can be used</li> <li>Limited only by RAM for code</li> <li>10 kbyte</li> <li>8 kbyte; Size of bit memory address area</li> <li>16 kbyte; Priority class 1 (program cycle): 16 KB, priority class 2</li> </ul>
for floating point arithmetic, typ.          CPU-blocks         Number of blocks (total)         OB         • Number, max.         Data areas and their retentivity         Retentive data area (incl. timers, counters, flags), max.         Flag         • Number, max.         Local data         • per priority class, max.         Address area	<ul> <li>2.3 µs; / instruction</li> <li>DBs, FCs, FBs, counters and timers. The maximum number of addressable blocks ranges from 1 to 65535. There is no restriction, the entire working memory can be used</li> <li>Limited only by RAM for code</li> <li>10 kbyte</li> <li>8 kbyte; Size of bit memory address area</li> <li>16 kbyte; Priority class 1 (program cycle): 16 KB, priority class 2</li> </ul>

<ul> <li>Outputs,</li> </ul>	adjustable
------------------------------	------------

1 kbyte

	- ,
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> </ul>	Yes
<ul> <li>Backup time</li> </ul>	480 h; Typical
<ul> <li>Deviation per day, max.</li> </ul>	+/- 60 s/month at 25 °C
Digital inputs	
Number of digital inputs	14; Integrated
<ul> <li>of which inputs usable for technological functions</li> </ul>	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	
<ul> <li>Rated value (DC)</li> </ul>	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	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 counter/technological functions	
— parameterizable	Single phase: 3 @ 100 kHz & 3 @ 30 kHz, differential: 3 @ 80 kHz & 3 @ 30 kHz
Cable length	
• shielded, max.	500 m; 50 m for technological functions
• unshielded, max.	300 m; For technological functions: No
Digital outputs	
Number of digital outputs	10; Relays
Switching capacity of the outputs	
<ul> <li>with resistive load, max.</li> </ul>	2 A
• on lamp load, max.	30 W with DC, 200 W with AC
Output delay with resistive load	
• "0" to "1", max.	10 ms; max.

Relay outputs         mechanically 10 million, at rated load voltage 100 000           Cable length         •           • shielded, max.         500 m           • unshielded, max.         150 m           Analog inputs         2           Number of analog inputs         2           • Voltage         Yes           • Voltage (sted values), voltages         •           • Voltage (sted values), voltages         •           • Input ranges (sted values), voltages         •           • Oto +10 V         Yes           • Input resistance (0 to 10 V)         2100k ohms           Cable length         •           • shielded, max.         100 m; twisted and shielded           Analog outputs         0           Analog outputs         0           Analog value generation for the inputs           • Resolution with overrange (bit including sign), max.         10 bit           • Integration time, parameterizable         Yes           • Conversion time (resolution per channel)         625 µs           Encoder            Connectable encoders         Yes           • 2-wire sensor         Yes           1 Interface bype         PROFINET           Physics         Ethemet </th <th>• "1" to "0", max.</th> <th>10 ms; max.</th>	• "1" to "0", max.	10 ms; max.
Cable length     • shielded, max.     500 m       • unshielded, max.     150 m       Analog inputs     2       Input ranges     2       • Voltage     Yes       • O to +10 V     Yes       • Input ranges (rated values), voltages     •       • 0 to +10 V     Yes       • Input ranges (rated values), voltages     •       • 0 to +10 V     Yes       • Input resistance (0 to 10 V)     ≥100k ohms       Cable length     •       • shielded, max.     100 m; twisted and shielded       Analog outputs     0       Analog outputs     0       Analog outputs     0       Analog cutputs     0       Number of analog outputs     0       • Resolution with overnage (bit including sign), max.     10 bit       • Integration time, parameterizable     Qes yas       • Conversion time (per channel)     625 µs       Encoder     Conversion time (per channel)       • Conversion time (per channel)     E25 µs       Encoders     •       • 2-wire sensor     Yes       1     1       • Interface type     PROFINET       Physics     Ethernet       Isolated     Yes       automatic detection of transmission rate     Yes	Relay outputs	
• shielded, max.     500 m       • unshielded, max.     150 m       Analog inputs     2       Number of analog inputs     2       Input ranges     Ves       • Voltage     Yes       Input ranges (rated values), voltages     •       • 0 to +10 V     Yes       • Input resistance (of to 10 V)     ≥ 100k ohms       Cable length     •       • shielded, max.     100 m; twisted and shielded       Analog outputs     0       Number of analog outputs     0       Analog value generation for the inputs       Integration and conversion time/resolution per channel       • Resolution with overrange (bit including sign), max.       • Integration time, parameterizable     Yes       • Conversion time (per channel)     625 µs       Encoder       Connectable encoders     • 2-wire sensor       • 2-wire sensor     Yes       1 Interface type     PROFINET       Physics     Ethernet       Isolated     Yes       Autonegotation     Yes       Autoregotation     Yes       Number of ports     1       • Number of ports     1       <	<ul> <li>Number of operating cycles, max.</li> </ul>	mechanically 10 million, at rated load voltage 100 000
• unshielded, max.     160 m       Analog inputs     2       Number of analog inputs     2       Input ranges     Yes       • Voltage     Yes       Input ranges (rated values), voltages     •       • 0 to +10 V     Yes       • Input resistance (0 to 10 V)     2100k ohms       Cable length     •       • shielded, max.     100 m; twisted and shielded       Analog outputs     0       Number of analog outputs     0       Analog value generation for the inputs       Integration and conversion time/resolution per channel       • Resolution with overrange (bit including sign), max.     10 bit       • Integration time, parameterizable     Yes       • Connectable encoders     Yes       • 2-wire sensor     Yes       1     11erface       Physics     Ethernet       Isolated     Yes       automatic detection of transmission rate     Yes       Autorossing     Yes       Autorossing     Yes       Number of ports     1       • Interface type     PROFINET       Physics     1       • Number of ports     1    <	Cable length	
Analog inputs       2         Number of analog inputs       2         Input ranges       Yes         • Voitage       Yes         Input ranges (rated values), voitages       2100k ohms         Cable length       2100k ohms         Cable length       2100k ohms         Analog outputs       0         Number of analog outputs       0         Analog outputs       0         Analog value generation for the inputs       100 m; twisted and shielded         Analog value generation for the inputs       0         Analog value generation for the inputs       0         Analog value generation for the inputs       10 bit         • Resolution with overrange (bit including sign), max.       10 bit         • Integration time, parameterizable       Yes         • Conversion time (per channel)       625 µs         Encoder       2         Onectable encoders       Yes         • 2-wire sensor       Yes         1 Interface       PROFINET         Physics       Ethernet         Isolated       Yes         Autoropotation       Yes         Autoropotation       Yes         Autoropotation       Yes         No	<ul> <li>shielded, max.</li> </ul>	500 m
Number of analog inputs       2         Input ranges       Voltage       Yes         Input ranges (rated values), voltages       •         0 to +10 V       Yes         • Input resistance (0 to 10 V)       ≥100k ohms         Cable length       •         • shielded, max.       100 m; twisted and shielded         Analog outputs       0         Number of analog outputs       0         Analog outputs       0         Analog value generation for the inputs       1         Integration and conversion time/resolution per channel       •         • Resolution with overrange (bit including sign), max.       10 bit         • Integration time, parameterizable       Yes         • Conversion time (per channel)       625 µs         Encoder       Connectable encoders         • 2-wire sensor       Yes         1. Interface       Interface         Interface type       PROFINET         Physics       Ethernet         Isolated       Yes         Autoregoliation       Yes         Autoregoliation       Yes         • Number of ports       1         • integrated switch       No         Functionality       Yes	• unshielded, max.	150 m
Number of analog inputs       2         Input ranges       Voltage       Yes         Input ranges (rated values), voltages       •         0 to +10 V       Yes         • Input resistance (0 to 10 V)       ≥100k ohms         Cable length       •         • shielded, max.       100 m; twisted and shielded         Analog outputs       0         Number of analog outputs       0         Analog outputs       0         Analog value generation for the inputs       1         Integration and conversion time/resolution per channel       •         • Resolution with overrange (bit including sign), max.       10 bit         • Integration time, parameterizable       Yes         • Conversion time (per channel)       625 µs         Encoder       Connectable encoders         • 2-wire sensor       Yes         1. Interface       Interface         Interface type       PROFINET         Physics       Ethernet         Isolated       Yes         Autoregoliation       Yes         Autoregoliation       Yes         • Number of ports       1         • integrated switch       No         Functionality       Yes	Anglenissute	
Input ranges         Yes           Not ranges (rated values), voltages         Yes           0 to +10 V         Yes           Input ranges (rated values), voltages         Yes           0 to +10 V         ≥100k ohms           Cable length         =           • shielded, max.         100 m; twisted and shielded           Analog outputs         0           Analog outputs         0           Analog value generation for the inputs         10 bit           Integration and conversion time/resolution per channel         •           • Resolution with overrange (bit including sign), max.         10 bit           • Integration time, parameterizable         Yes           • Conversion time (per channel)         625 µs           Encoder         Connectable encoders           • 2-wire sensor         Yes           1 Interface         Yes           utomatic detection of transmission rate         Yes           Autoregotiation         Yes           Autorecosing         Yes           Interface types         Yes           • Number of ports         1           • integrated switch         No           Functionality         Yes           • PROFINET IO Controller         Yes <td></td> <td>2</td>		2
• Voltage       Yes         Input ranges (rated values), voltages       •         • 0 to +10 V       Yes         • Input resistance (0 to 10 V)       ≥100k ohms         Cable length       •         • shielded, max.       100 m; twisted and shielded         Analog outputs       0         Number of analog outputs       0         Analog value generation for the inputs       •         Integration and conversion time/resolution per channet       •         • Resolution with overrange (bit including sign), max.       10 bit         • Integration time, parameterizable       Yes         • Conversion time (per channel)       625 μs         Encoder       Connectable encoders         • 2-wire sensor       Yes         1 Interface       PROFINET         Physics       Ethernet         Isolated       Yes         Autoregolation       Yes         Autoregolation       Yes         Autocrossing       Yes         • Number of ports       1         • integrate switch       No         • PROFINET IO Controller       Yes         • PROFINET IO Controller       Yes		2
Input rages (rated values), voltages       No         • 0 to +10 V       Yes         • Input resistance (0 to 10 V)       ≥100k ohms         Cable length       100 m; twisted and shielded         • shielded, max.       100 m; twisted and shielded         Analog outputs       0         Analog outputs       0         Analog value generation for the inputs       10 bit         • Resolution with overrange (bit including sign), max.       10 bit         • Integration and conversion time/resolution per channel       • Resolution with overrange (bit including sign), max.         • Integration time, parameterizable       Yes         • Conversion time (per channel)       625 μs         Encoder       Connectable encoders         • 2-wire sensor       Yes         Interface       PROFINET         Interface type       PROFINET         Physics       Ethernet         Isolated       Yes         Autoerossing       Yes         Autoerossing       Yes         • Number of ports       1         • integrated switch       No         • PROFINET IO Controller       Yes         • PROFINET IO Device       Yes		Yes
• 0 to +10 V       Yes         • Input resistance (0 to 10 V)       ≥100k ohms         Cable length		100
Input resistance (0 to 10 V)         ≥100k ohms           Cable length		Yes
Cable length       I00 m; twisted and shielded         Analog outputs       0         Analog value generation for the inputs       0         Integration and conversion time/resolution per channel       0         • Resolution with overrange (bit including sign), max.       10 bit         • Integration time, parameterizable       Yes         • Conversion time (per channel)       625 µs         Encoder       Connectable encoders         • 2-wire sensor       Yes         Interface       PROFINET         Physics       Ethernet         Isolated       Yes         Autonegotiation       Yes         Autonegotiation       Yes         Interface type       PROFINET         Physics       Ethernet         Isolated       Yes         Autonegotiation       Yes         Interface types       Yes         • Number of ports       1         • integrated switch       No         Functionality       Yes         • PROFINET IO Controller       Yes		
• shielded, max.       100 m; twisted and shielded         Analog outputs       0         Analog value generation for the inputs       0         Integration and conversion time/resolution per channel       •         • Resolution with overrange (bit including sign), max.       10 bit         • Integration time, parameterizable       Yes         • Conversion time (per channel)       625 μs         Encoder       Connectable encoders         • 2-wire sensor       Yes         1. Interface       Interface type         PROFINET       Physics         Ethernet       Isolated         Isolated       Yes         Autonegotiation       Yes         Autonegotiation       Yes         Interface types       Yes         • Number of ports       1         • Interface types       Yes         • Number of ports       1         • integrated switch       No         Functionality       Yes         • PROFINET IO Controller       Yes		
Analog outputs       0         Number of analog outputs       0         Analog value generation for the inputs       Integration and conversion time/resolution per channel         • Resolution with overrange (bit including sign), max.       10 bit         • Integration time, parameterizable       Yes         • Conversion time (per channel)       625 µs         Encoder       Connectable encoders         • 2-wire sensor       Yes         1 Interface       PROFINET         Physics       Ethernet         Isolated       Yes         automatic detection of transmission rate       Yes         Autocrossing       Yes         • Number of ports       1         • integrated switch       No         Functionality       PROFINET IO Controller         • PROFINET IO Dovice       Yes		100 m: twisted and shielded
Number of analog outputs     0       Analog value generation for the inputs       Integration and conversion time/resolution per channel       • Resolution with overrange (bit including sign), max.     10 bit       • Integration time, parameterizable     Yes       • Conversion time (per channel)     625 µs       Encoder     Connectable encoders       • 2-wire sensor     Yes       1 Interface     PROFINET       Physics     Ethernet       Isolated     Yes       automatic detection of transmission rate     Yes       Autocrossing     Yes       Interface types     •       • Number of ports     1       • integrated switch     No       Functionality     •       • PROFINET IO Controller     Yes		
Analog value generation for the inputs         Integration and conversion time/resolution per channel         • Resolution with overrange (bit including sign), max.       10 bit         • Integration time, parameterizable       Yes         • Conversion time (per channel)       625 µs         Encoder       Connectable encoders         • 2-wire sensor       Yes         Interface       Yes         Interface type       PROFINET         Physics       Ethermet         Isolated       Yes         automatic detection of transmission rate       Yes         Autorcossing       Yes         Interface types       Yes         Number of ports       1         • Number of ports       1         • integrated switch       No         Functionality       PROFINET IO Controller         • PROFINET IO Device       Yes		
Integration and conversion time/resolution per channel         • Resolution with overrange (bit including sign), max.       10 bit         • Integration time, parameterizable       Yes         • Conversion time (per channel)       625 μs         Encoder       Connectable encoders         • 2-wire sensor       Yes         1. Interface       Yes         Interface type       PROFINET         Physics       Ethernet         Isolated       Yes         automatic detection of transmission rate       Yes         Autorogotiation       Yes         Interface types       Yes         Physics       Ethernet         Isolated       Yes         Automogotiation       Yes         Autocrossing       Yes         Interface types       1         • Number of ports       1         • integrated switch       No         Functionality       Yes         • PROFINET IO Controller       Yes         • PROFINET IO Device       Yes	Number of analog outputs	0
Integration and conversion time/resolution per channel         • Resolution with overrange (bit including sign), max.       10 bit         • Integration time, parameterizable       Yes         • Conversion time (per channel)       625 μs         Encoder       Connectable encoders         • 2-wire sensor       Yes         1. Interface       Yes         Interface type       PROFINET         Physics       Ethernet         Isolated       Yes         automatic detection of transmission rate       Yes         Autorogotiation       Yes         Interface types       Yes         Physics       Ethernet         Isolated       Yes         Automogotiation       Yes         Autocrossing       Yes         Interface types       1         • Number of ports       1         • integrated switch       No         Functionality       Yes         • PROFINET IO Controller       Yes         • PROFINET IO Device       Yes	Analog value generation for the inputs	
max.Yes• Integration time, parameterizableYes• Conversion time (per channel)625 μsEncoderConnectable encoders• 2-wire sensorYes1.InterfaceInterface typePROFINETPhysicsEthernetIsolatedYesautomatic detection of transmission rateYesAutoregotiationYesAutoregotiationYesInterface typesYes• Number of ports1• Number of portsNo• integrated switchNo• PROFINET IO ControllerYes• PROFINET IO DeviceYes		
• Integration time, parameterizable • Conversion time (per channel)Yes 625 μsEncoderConnectable encoders• 2-wire sensorYes1. InterfaceInterface typePROFINETPhysicsEthernetIsolated automatic detection of transmission rateYesAutonegotiation 	<ul> <li>Resolution with overrange (bit including sign),</li> </ul>	10 bit
• Conversion time (per channel)       625 μs         Encoder       Connectable encoders         • 2-wire sensor       Yes         1. Interface       PROFINET         Physics       Ethernet         Isolated       Yes         automatic detection of transmission rate       Yes         Autonegotiation       Yes         Autoressing       Yes         Interface types       Yes         • Number of ports       1         • integrated switch       No         Functionality       Yes         • PROFINET IO Controller       Yes         • PROFINET IO Device       Yes	max.	
Encoder         Connectable encoders         • 2-wire sensor       Yes         1. Interface         Interface type       PROFINET         Physics       Ethernet         Isolated       Yes         automatic detection of transmission rate       Yes         Autonegotiation       Yes         Autocrossing       Yes         Interface types       1         • Number of ports       1         • integrated switch       No         Functionality       Yes         • PROFINET IO Controller       Yes         • PROFINET IO Device       Yes	<ul> <li>Integration time, parameterizable</li> </ul>	Yes
Connectable encoders         • 2-wire sensor       Yes         1. Interface       PROFINET         Interface type       PROFINET         Physics       Ethernet         Isolated       Yes         automatic detection of transmission rate       Yes         Autonegotiation       Yes         Autocrossing       Yes         Interface types       1         • Number of ports       1         • integrated switch       No         Functionality       PROFINET IO Controller         • PROFINET IO Controller       Yes	<ul> <li>Conversion time (per channel)</li> </ul>	625 µs
• 2-wire sensorYes1. InterfaceInterface typePROFINETPhysicsEthernetIsolatedYesautomatic detection of transmission rateYesAutonegotiationYesAutocrossingYesInterface types1• Number of ports1• integrated switchNoFunctionalityYes• PROFINET IO ControllerYes• PROFINET IO DeviceYes	Encoder	
1. Interface         Interface type       PROFINET         Physics       Ethernet         Isolated       Yes         automatic detection of transmission rate       Yes         Autonegotiation       Yes         Autocrossing       Yes         Interface types       1         • Number of ports       1         • integrated switch       No         Functionality       Yes         • PROFINET IO Controller       Yes         • PROFINET IO Device       Yes	Connectable encoders	
Interface typePROFINETPhysicsEthernetIsolatedYesautomatic detection of transmission rateYesAutonegotiationYesAutocrossingYesInterface types1• Number of ports1• integrated switchNoFunctionalityYes• PROFINET IO ControllerYes• PROFINET IO DeviceYes	• 2-wire sensor	Yes
Interface typePROFINETPhysicsEthernetIsolatedYesautomatic detection of transmission rateYesAutonegotiationYesAutocrossingYesInterface types1• Number of ports1• integrated switchNoFunctionalityYes• PROFINET IO ControllerYes• PROFINET IO DeviceYes	1. Interface	
IsolatedYesautomatic detection of transmission rateYesAutonegotiationYesAutocrossingYesInterface types1• Number of ports1• integrated switchNoFunctionalityYes• PROFINET IO ControllerYes• PROFINET IO DeviceYes		PROFINET
automatic detection of transmission rateYesAutonegotiationYesAutocrossingYesInterface types1• Number of ports1• integrated switchNoFunctionalityYes• PROFINET IO ControllerYes• PROFINET IO DeviceYes	Physics	Ethernet
AutonegotiationYesAutocrossingYesInterface types1• Number of ports1• integrated switchNoFunctionalityYes• PROFINET IO ControllerYes• PROFINET IO DeviceYes	Isolated	Yes
AutocrossingYesInterface types1• Number of ports1• integrated switchNoFunctionality-• PROFINET IO ControllerYes• PROFINET IO DeviceYes	automatic detection of transmission rate	Yes
Interface types         • Number of ports       1         • integrated switch       No         Functionality          • PROFINET IO Controller       Yes         • PROFINET IO Device       Yes	Autonegotiation	Yes
• Number of ports       1         • integrated switch       No         Functionality          • PROFINET IO Controller       Yes         • PROFINET IO Device       Yes	Autocrossing	Yes
• integrated switch     No       Functionality     • PROFINET IO Controller       • PROFINET IO Device     Yes	Interface types	
Functionality     Yes       • PROFINET IO Controller     Yes       • PROFINET IO Device     Yes	Number of ports	1
PROFINET IO Controller Yes     PROFINET IO Device Yes	<ul> <li>integrated switch</li> </ul>	No
PROFINET IO Device Yes	Functionality	
	PROFINET IO Controller	Yes
SIMATIC communication Yes	PROFINET IO Device	Yes
	SIMATIC communication	Yes

Open IE communication	Yes
Web server	Yes
<ul> <li>Media redundancy</li> </ul>	No
PROFINET IO Controller	
<ul> <li>Transmission rate, max.</li> </ul>	100 Mbit/s
Services	
— PG/OP communication	Yes
— S7 routing	Yes
— Isochronous mode	No
— Open IE communication	Yes
— IRT	No
— MRP	No
— MRPD	No
— PROFlenergy	No
— Prioritized startup	Yes
<ul> <li>— Number of IO devices with prioritized</li> </ul>	16
startup, 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.	
— of which in line, max.	16
<ul> <li>Activation/deactivation of IO Devices</li> </ul>	Yes
<ul> <li>Number of IO Devices that can be</li> </ul>	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.

Services	
— PG/OP communication	Yes
— S7 routing	Yes
— Isochronous mode	No
— Open IE communication	Yes
— IRT	No
— MRP	No
— MRPD	No
— PROFlenergy	Yes
— Shared device	Yes
— Number of IO Controllers with shared	2
device, max.	
Protocols	
Supports protocol for PROFINET IO	Yes

**PROFINET IO Device** 

PROFIBUS	Yes; CM 1243-5 required
AS-Interface	Yes; CM 1243-2 required
Protocols (Ethernet)	
• TCP/IP	Yes
• DHCP	No
• SNMP	Yes
• DCP	Yes
• LLDP	Yes
Further protocols	
• MODBUS	Yes
Communication functions	
S7 communication	
• supported	Yes
• as server	Yes
• as client	Yes
<ul> <li>User data per job, max.</li> </ul>	See online help (S7 communication, user data size)
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	
• supported	Yes
<ul> <li>User-defined websites</li> </ul>	Yes
Number of connections	
• overall	16; dynamically
Test commissioning functions	
Status/control	
<ul> <li>Status/control variable</li> </ul>	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
<ul> <li>Memory size per trace, max.</li> </ul>	512 kbyte
Interrupts/diagnostics/status information	

Diagnostics indication LED	
RUN/STOP LED	Yes
• ERROR LED	Yes
MAINT LED	Yes
Integrated Functions	
Number of counters	6
Counting frequency (counter) max.	100 kHz
Frequency meter	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
• between the channels	No
<ul> <li>between the channels, in groups of</li> </ul>	2
EMC	
Interference immunity against discharge of static electric	city
<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	
<ul> <li>Interference immunity on supply lines acc. to IEC 61000-4-4</li> </ul>	Yes
<ul> <li>Interference immunity on signal cables acc. to IEC 61000-4-4</li> </ul>	Yes
Interference immunity against voltage surge	
• on the supply lines acc. to IEC 61000-4-5	Yes
Interference immunity against conducted variable distur	bance 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	
Degree of protection acc. to EN 60529	
• IP20	Yes
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	
<ul> <li>Fall height, max.</li> </ul>	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	
• Operation, min.	795 hPa
• Operation, max.	1 080 hPa
<ul> <li>Storage/transport, min.</li> </ul>	660 hPa
<ul> <li>Storage/transport, max.</li> </ul>	1 080 hPa
<ul> <li>permissible operating height</li> </ul>	-1000 to 2000 m
Relative humidity	
• Operation, max.	95 %; no condensation
Vibrations	
Vibrations	2 g (m/s²) wall mounting, 1 g (m/s²) DIN rail
<ul> <li>Operation, tested according to IEC 60068-2-6</li> </ul>	Yes
Shock test	
• 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
Extended ambient conditions	
Pollutant concentrations	

Configuration Programming	
Programming language	
— LAD	Yes
— FBD	Yes
— SCL	Yes
Know-how protection	
<ul> <li>User program protection/password protection</li> </ul>	Yes
Copy protection	Yes
Block protection	Yes
Access protection	
<ul> <li>Protection level: Write protection</li> </ul>	Yes
<ul> <li>Protection level: Read/write protection</li> </ul>	Yes
<ul> <li>Protection level: Complete protection</li> </ul>	Yes
Cycle time monitoring	
● adjustable	Yes
Dimensions	
Width	110 mm
Height	100 mm
Depth	75 mm
Weights	
Weight, approx.	455 g
last modified:	05/23/2017

05/23/2017