## SIEMENS

## Data sheet

## 6ES7212-1AE40-0XB0



SIMATIC S7-1200, CPU 1212C, compact CPU, DC/DC/DC, onboard I/O: 8 DI 24 V DC; 6 DO 24 V DC; 2 AI 0-10 V DC, power supply: DC 20.4-28.8 V DC, program/data memory 100 KB

Figure similar

| General information                                     |  |  |
|---|--|--|
| Product type designation                                | CPU 1212C DC/DC/DC                       |  |
| Firmware version  | V4.7                                     |  |
| Engineering with  |  |  |
| <ul> <li>Programming package</li> </ul>                 | STEP 7 V20 or higher                     |  |
| Supply voltage  |  |  |
| Rated value (DC)  |  |  |
| • 24 V DC   | Yes                                      |  |
| permissible range, lower limit (DC)                     | 20.4 V                                   |  |
| permissible range, upper limit (DC)                     | 28.8 V                                   |  |
| Reverse polarity protection                             | Yes                                      |  |
| Load voltage L+   |  |  |
| Rated value (DC)  | 24 V                                     |  |
| <ul> <li>permissible range, lower limit (DC)</li> </ul> | 20.4 V                                   |  |
| permissible range, upper limit (DC)                     | 28.8 V                                   |  |
| Input current   |  |  |
| Current consumption (rated value)                       | 400 mA; CPU only                         |  |
| Current consumption, max.                               | 1 200 mA; CPU with all expansion modules |  |
| Inrush current, max.                                    | 12 A; at 28.8 V DC                       |  |
| l²t   | 0.5 A <sup>2</sup> ·s                    |  |
| Output current  |  |  |
| for backplane bus (5 V DC), max.                        | 1 000 mA; Max. 5 V DC for SM and CM      |  |
| Encoder supply  |  |  |
| 24 V encoder supply                                     |  |  |
| • 24 V  | L+ minus 4 V DC min.                     |  |
| Power loss  |  |  |
| Power loss, typ.  | 9 W                                      |  |
| Memory  |  |  |
| Work memory   |  |  |
| integrated  | 100 kbyte                                |  |
| Load memory   |  |  |
| • integrated  | 2 Mbyte                                  |  |
| <ul> <li>Plug-in (SIMATIC Memory Card), max.</li> </ul> | with SIMATIC memory card                 |  |
| Backup  |  |  |
| present   | Yes                                      |  |
| maintenance-free  | Yes                                      |  |

| a without botton   | Yes   |  |
|--|---|--|
| without battery  | Tes   |  |
| CPU processing times   |   |  |
| for bit operations, typ.   | 0.08 µs; / instruction  |  |
| for word operations, typ.  | 1.7 μs; / instruction   |  |
| for floating point arithmetic, typ.                                    | 2.3 μs; / instruction   |  |
| CPU-blocks   |   |  |
| Number of blocks (total)   | 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 |  |
| OB   |   |  |
| Number, max.   | Limited only by RAM for code  |  |
| Data areas and their retentivity                                       |   |  |
| Retentive data area (incl. timers, counters, flags), max.              | 14 kbyte  |  |
| Flag   |   |  |
| • Size, max.   | 4 kbyte; Size of bit memory address area  |  |
| Local data   |   |  |
| <ul> <li>per priority class, max.</li> </ul>                           | 16 kbyte; Priority class 1 (program cycle): 16 KB, priority class 2 to 26: 6 KB   |  |
| Address area   | · · · · · · · · · · · · · · · · · · ·   |  |
| Process image  |   |  |
| Inputs, adjustable   | 1 kbyte   |  |
| Outputs, adjustable  | 1 kbyte   |  |
| Hardware configuration   |   |  |
| Number of modules per system, max.                                     | 3 comm. modules, 1 signal board, 2 signal modules   |  |
| Time of day  | 5 comm. modules, i signal board, z signal modules   |  |
|  |   |  |
| Clock  | Ver   |  |
| Hardware clock (real-time)   | Yes   |  |
| Backup time  | 480 h; Typical  |  |
| Deviation per day, max.  | ±60 s/month at 25 °C  |  |
| Digital inputs   |   |  |
| Number of digital inputs   | 8; 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.  | 8   |  |
| 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  | 0.1 / 0.2 / 0.4 / 0.8 / 1.6 / 3.2 / 6.4 / 10.0 / 12.8 / 20.0 µs; 0.05 / 0.1 / 0.2 / 0.4 / 0.8 / 1.6 / 3.2 / 6.4 / 10.0 / 12.8 / 20.0 ms                             |  |
| — at "0" to "1", min.  | 0.2 ms  |  |
| — 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.   | 500 m; 50 m for technological functions   |  |
| • unshielded, max.   | 300 m; for technological functions: No  |  |
| Digital outputs  |   |  |
| Number of digital outputs  | 6   |  |
| <ul> <li>of which high-speed outputs</li> </ul>                        | 4; 100 kHz Pulse Train Output   |  |
| Limitation of inductive shutdown voltage to                            | L+ (-48 V)  |  |
| Switching capacity of the outputs                                      |   |  |
| <ul> <li>with resistive load, max.</li> </ul>                          | 0.5 A   |  |
| • on lamp load, max.   | 5 W   |  |
| Output voltage   |   |  |

| • for signal Trip max.0.1 V with 10 kOhm load• for signal Trip max.20 V• for signal Trip escula current, max.0.1 mA• for signal Trip escula current, max.0.1 mA• for trip Trip max.1 µa• 'Th 'D' Tri, max.1 µa• 'Th 'D' Trip max.5 µa• of the price volute. with reselve load, max.5 µa• of the price volute. with reselve load, max.6 µa• of the price volute. with reselve load, max.100 hUzReader degrid.•• with load for a with the reselve load, max.100 hUz• with load for a with the reselve load, max.100 n• with load for a with the reselve load, max.100 n• with load for a with the reselve load, max.100 n• with load for a with the reselve load (max.100 n• with load for a with the reselve load (max.100 n• with load for a with the reselve load (max.100 n• with load for a with the reselve load (max.100 n• with load for a with the reselve load (max.0• with load for a with load (max.0• with load for a with load for a with load (max.0• with load for a with load for a with load (max.0• with load for a with load for a with load (max.0• with load for a with load for a with load (max.0• with load for a with load for a with load (max.0• with load for a with load for a with load (max.0• with load for a with loa   | e for signal "0" may   | 0.1 V/; with 10 kOhm load                  |
|---|--|--|
| Output of versite of residual current, max.0.5 A.Origin disk with residue table0.5 A.Origin disk with residue table0.1 mAOrigin disk with residue table1 μa• "1 to "1, max.5 μaStatching frequency0.0 MHz• of the pulse outputs, with residue bad, max,0.0 MHz• of the pulse outputs, with residue bad, max,0.0 MHz• of the pulse outputs, with residue bad, max,0.0 MHz• of the pulse outputs, with residue bad, max,0.0 MHz• of the pulse outputs, with residue bad, max,0.0 MHz• of the pulse outputs, with residue bad, max,0.0 MHz• of the pulse outputs, max,10.0 MHz• of the pulse outputs, max,10.0 ML badded• of the pulse outputs, max,10.0 ML badded <td>-</td> <td></td>   | -  |  |
| • or signal "I" radio value)05 Å• bir signal To resolute term0.5 Å• Diglar General Mit resistive tead10.8• * Th 0 Tr', max10.8• of the pile outputs, wit neissive tead, max10.8• of the pile outputs, wit neissive tead, max10.8• of the pile outputs, wit neissive tead, max50.0• shuther of relay autputs50.0• shuther of relay autputs50.0 <td< td=""><td>· · · · · · · · · · · · · · · · · · ·</td><td>20 V</td></td<>   | · · · · · · · · · · · · · · · · · · ·                                    | 20 V                                       |
| • • resigned "0" residue loarder, max.0.1 mAOutextickly with resistive load1 µs• • * fri o "0", max.1 µs• * fri o "0", max.1 µs• * fri o "0", max.10 lob lob• • eleba outpuis, with resistive load, max.100 lob• • Resistive load, max.100 lob• • resistive load, max.500 m• • carbieledd, max.150 m• • unshieledd, max.150 m• • unshieledd, max.100 m• • • outorskinne (0 to 10 v)100 m• • - neutor skinne (0 to 10 v)100 m• • - neutor skinne (0 to 10 v)100 m• • • neiderdo max.0• • Outor with oneorange (0 the loading auguita)0• • • • • outor with oneorange (0 the loading auguita)10 b• • • • • • • • • • • • • • • • • • •   | · · ·  | 0.5.4                                      |
| Output classy with resident load• "O" (o ''') rank:5 µ sStatebring frequency5 µ s• o'the puice outputs:100 kHzRelay outputs0• Number of ruley outputs0• sharbot of ruley outputs500 m• sharbot of ruley outputs500 m• sharbot of ruley outputs100 kHz• sharbot of ruley outputs100 kHz• sharbot of ruley outputs500 m• sharbot of ruley outputs2Number of railey outputs2• sharbot of ruley outputs2• sharbot of ruley outputs2• sharbot of ruley outputs1000 khrs• sharbot of ruley outputs2• sharbot of ruley outputs1000 khrs• sharbot of ruley outputs1000 khrs• sharbot of ruley outputs0• sharbot of rule with over rains of ruley outputs0• sharbot of rule with over rains outputs0• sharbot of ruley out   | -  |  |
| • Is is a product of the pulse outputs with residue load, max.Is is a product of the pulse outputs with residue load, max.Is outputs of the pulse outputs with residue load, max.• Number of relay outputs.0• Number of relay outputs.0• Number of relay outputs.500 n• Is is idealing max.500 n• Is idealing max.500 n• Is idealing max.100 Max.• Is ideali  |  | 0.1111A                                    |
| • I's 'D', max5 ja 3Switching freques outputs, with resistive load, max.100 M12• Number of relay outputs0Cable length500 m• sindedd, max.500 m• sindedd, max.500 m• sindedd, max.150 m• sindedd, max.150 m• sindedd, max.150 m• oltopic puts2• oltopic puts.150 m• oltopic puts.2• oltopic puts.150 m• oltopic puts.150 m• oltopic puts.150 m• oltopic puts.150 m• oltopic puts.160 m; twisted and shinledd• oltopic puts.100 m; twisted and shinledd• allop conversion time merannetizative100 b;• oltopic puts.100 b;• oltopic pu   |  | 1 us                                       |
| Switching frequency• of the puice outpuicts (the puice outpuicts)• Automic of relay outpuicts• Automic of relay outpuicts• oblidedin, max.• oblidein, max.  |  |  |
| • (If the pulse outputs, with resistive load, max.100 HH2Relay outputs0Cable length0Cable length00 m• shideled, max.500 m• shideled, max.1500 m• shideled, max.1500 m• shideled, max.200 m• shideled, max.100 m; bristed and shieled• shideled, max.100 m; bristed and shieled• shideled, max.100 m; bristed and shieled• shideled, max.10 bith• shideled, max.10 bith• shideled, max.10 bith• shideled, max.10 bith• shideled200 m• s   |  | 0 µ3                                       |
| Relay autyods         0           • Number of relay outputs         500 m           • Ishielded, max.         500 m           • Isnialeded, max.         500 m           • Isnialeded, max.         150 m           Analog inputs         2           • Voltage         Yes           • Voltage (rade values), voltages         -           • Voltage (rade values), voltages         -           • Isolido (, max.         100 m. twisted and shielded           • Isolido (, max.         100 m. twisted and shielded           • Analog outputs         0           • Analog outputs         0           • Isolido (, max.         10 bit voltages           • Isolido (, max.         10 bit voltage (rade values), voltages           • Isolido (, max.         10 bit voltage (rade values), voltages           • Isolido (, max.         10 bit voltage (rade values), voltages           • Isolido (, max.         10 bit voltage (rade values), voltages           • Isolido (rade value grantage (rade values), voltages         Yes           • Isolido (rade values), voltages         Yes <td></td> <td>100 kHz</td>   |  | 100 kHz                                    |
| • Alunder of relay outputs0Cable length500 m• Indide d, max.1500 m• Indide d, max.1500 m• Indide d, max.1500 m• Indide d, max.1500 m• Indide d, max.2• Indide d, max.Ves• Indide d, max.100 m; wisted and sheleded• Indide d, max.10 m; wisted and sheleded• Number of analog outputs0• Indide d, max.10 bit• Indide d, max. <t< td=""><td></td><td></td></t<>  |  |  |
| Cable length500 m• onshielded, max.500 m• onshielded, max.150 mAnalog pupts• Norther of analog inputs2• VoltageYes• Input ranges (rated values), voltages• Ino 10 VYes• Ino 10 V2100k ohmsCable ferath• Inol resistance (Io to 10 V)2100k ohmsCable ferath• Indicide, max.0Analog outputs0Analog outputs• Indicide, max.10 bit /• Indicide, max.10 bit /• Instruction time/resolution per channel• Integration time, parametrizableYes• Conversion time/coscilution per channelYes• Integration time, parametrizableYes• Conversion time (per channel)Yes• Autor sensorYes• Autor sensorYes• LinterfaceYes• LinterfaceYes• Autor sensorYes• Autor sensorYes• InterfaceYes• NoYes• Autor sensorYes• PROFINETNo• PROFINETYes• InterfaceYes• InterfaceYes• Autor sensorYes• Autor sensorYes• Autor sensorYes• Autor sensorYes• Autor sensorYes• PROFINETNo• PROFINETYes• InterfaceYes• Matter sensor <td></td> <td>0</td>  |  | 0  |
| • eliebided, max.500 mAnalesi neuts500 mAnalesi neuts2Analesi neuts2Input ranges (ated values), voltages-• VoltageVelos oms 6- Input resistance (0 to 10 V)Velos oms 6Cable leardt-• sheleled, max.100 m; bwisted and shieldedAnales outputs0Anales outputs0Anales outputs0Cable leardt-• Resolution with overrange (bit including sign), max.10 bit 1• Resolution time, parameterizable263 js a• Conversion limerosolution per Channel-• Resolution time, parameterizable263 js a• Conversion limeroson rateYes• AutoregotionYes• AutoregotionYes• AutoregotionYes• AutoregotionYes• AutoregotionYes• AutoregotionYes• AutoregotionYes• AutoregotionYes• PROFINET IO ControllerYes• PROFINET IO ControllerYes• PROFINET IO ControllerYes• PROFINET IO ControllerYes• PROFINET IO ControllerYes (Columentication a)• PROFINET IO ControllerYes   |  |  |
| • unshielded, max.150 mAnalog inputs2Analog inputs2Input ranges (atel values), voltagesYes• Voltage (atel values), voltages100 to voltage (atel values), voltages• Input rensistance (0 to 10 V)2000 kolmsCable teapth100 m; bwitsed and shieldedAnalog outputs00 m; bwitsed and shieldedCable teapth100 m; bwitsed and shieldedAnalog outputs00 m; bwitsed and shieldedAnalog outputs00 m; bwitsed and shieldedAnalog value generation for the inputs100 h; bwitsed and shieldedIntegration and conversion time/resolution per channel52 b is• Resolution with overrange (bt incluing sign), max.10 bil• Resolution with overrange (bt incluing sign), max.52 b is• Integration for the inputs52 b is• Conversion time (per channel)525 is• Autor sensorYes• Autor sensorYes• Autor sensorYes• Interface teactorYes• Interface teactorYes• Autor sensorYes• Autor se  |  | 500 m                                      |
| Analog Inputs         2           Number of analog inputs         2           • Voltage         Yes           • Voltage (ridet valuets), voltages         -           • Input resistance (0 to 10 V)         Yes           • Analog vulputs         0           Analog vulputs         0           Number of analog oxiputs         0           Analog vulputs         0           • Integration and conversion time (part canont)         E25 µs           • Conversion time (part canont)         E25 µs           • Conversion time (part canont)         E25 µs           • Conversion time (part canont)         Yes           • Linterface         Yes           • Linterface Kype         Yes           • Linterface Kype         Yes           • Autoregotation         Yes           • Autoregotation         Yes           • Linterface Kype         Yes           • PROFINET IO Controller         Yes           • PROFINET IO Controller         Yes           <  |  |  |
| Number of analog inputs         2           Input renges         Yes           Input renges (reted values), voltages         Yes           - Input resistance (0 to 10 V)         > E100k ohms           Cable length         - Input resistance (0 to 10 V)         > E100k ohms           Cable length         - Input resistance (0 to 10 V)         > E100k ohms           Cable length         - Input resistance (0 to 10 V)         > E100k ohms           Cable length         - Input resistance (0 to 10 V)         > E100k ohms           Analog value gonzation for the Inputs         - Integration and conversion time/resolution per channel         - Resolution with overrange (bit including sign), max.         10 bit           Integration and conversion time/resolution per channel         - Ves         - Conversion time (per channel)         625 µs           Encoder         - Conversion time (per channel)         Yes         - Conversion time (per channel)         Yes           Interface         - Ves         - Conversion time (per channel)         Yes         - Conversion time (per channel)           Interface         - Ves         - Conversion time (per channel)         Yes         - Conversion time (per channel)         - So Conversion time (per channel)         - Yes           Interface types         - Yes         - No         - Yes         - No <td></td> <td></td>  |  |  |
| Input ranges         Yes           • O to +0 V         Yes           • O to +10 V         Yes           • Input resistance (0 to 10 V)         > 100k ohms           Cable length         -           • O to +10 V         Yes           • Input resistance (0 to 10 V)         > 100k ohms           Cable length         -           • Analog outputs         0           Number of analog outputs         0           Analog outputs         0           • Resolution with overrange (bit including sign), max:         10 bit           • Integration and conversion time/feer oldname!         -           • Conversion time (per channel)         262 jus           • Conversion time (per channel)         Yes           • Linterface         -           Interface type         PROFINET           Interface type         Yes           • Autoroscian         Yes           • Autoroscian         Yes           • Number of ports         1           • Num   |  | 2  |
| • VotageYesInput resistance (0 to 10 V)Yes— Input resistance (0 to 10 V)100 knmsCabile strath100 m; kvisted and shieldedAnalog outputs0Analog outputs0Analog outputs0Analog outputs0Cabile strath0Cabile strath0Analog outputs0Analog outputs0Analog outputs0Concersion time/resolution per channel   |  |  |
| • 0 to +10 VYes— Input resistance (0 to 10 V)2 100x ohmsCable lengt3• shielded, max.100 m; twisted and shieldedAnalog outputs0Output of analog outputs0Analog value generation for the inputs10 bitIntegration and conversion time/resolution per channelYes• Resolution with overange (bit including sign), max.10 bit• Integration time, parameterizableYes• Conversion time (per channel)252 ysEcodorYesInterface typePROFINETInterface typeYesInterface typeYesInterface typeYesInterface typeYesInterface typeYesAutorospotationYesAutorospotationYesAutorospotationYesInterface typeYes• RJ 45 (Ethernet)Yes• RJ 45 (Ethernet)Yes• RDFINET IO ControllerYes• PROFINET IO ControllerYes• PROFINET IO ControllerYes• SIMATIC communicationYes• SIMATIC communicationYes• ServicesYes• PROFINET IO ControllerYes• PROFINET IO Controller <td></td> <td>Yes</td>   |  | Yes  |
| • 0 to +10 VYes— Input resistance (0 to 10 V)2 100x ohmsCable lengt3• shielded, max.100 m; twisted and shieldedAnalog outputs0Output of analog outputs0Analog value generation for the inputs10 bitIntegration and conversion time/resolution per channelYes• Resolution with overange (bit including sign), max.10 bit• Integration time, parameterizableYes• Conversion time (per channel)252 ysEcodorYesInterface typePROFINETInterface typeYesInterface typeYesInterface typeYesInterface typeYesInterface typeYesAutorospotationYesAutorospotationYesAutorospotationYesInterface typeYes• RJ 45 (Ethernet)Yes• RJ 45 (Ethernet)Yes• RDFINET IO ControllerYes• PROFINET IO ControllerYes• PROFINET IO ControllerYes• SIMATIC communicationYes• SIMATIC communicationYes• ServicesYes• PROFINET IO ControllerYes• PROFINET IO Controller <td>Input ranges (rated values), voltages</td> <td></td>   | Input ranges (rated values), voltages                                    |  |
| Cable length         100 m; twisted and shielded           Analog outputs         0           Number of analog outputs         0           Analog vatue generation for the inputs         0           Integration and conversion time/resolution gin), max.         10 bit           • Resolution with overrange (bit including sign), max.         10 bit           • Integration time, parameterizable         Yes           • Conversion time (per channel)         625 µs           Encoder         250 µs           Encoder         Yes           • Autorago time (per channel)         795 µs           • Autorago         Yes           • Linterface type         PROFINET           Isolated         Yes           automatic detection of transmission rate         Yes           • Autocrossing         Yes           Interface type         Yes           • Rud 45 (Ethernet)         Yes           • Number of ports         1           • Integrated switch         No           • PROFINET IO Controller         Yes           • Media redundancy         No  |  | Yes  |
| • shelded, max.100 m; twisted and sheldedAnalog outputsIntegration and conversion time/resolution per channelIntegration and conversion time/resolution per channelIntegration and conversion time/resolution per channel• Resolution with overrange (bit including sign), max.10 bit not conversion time (per channel)• Resolution time, parameterizableYes• Conversion time (per channel)625 µsEncoderVes• Conversion time (per channel)Yes• 2-wire sensorYes• 2-wire sensorYes• 1. Interface typePROFINETInstratedYesAutoregotation of transmission rateYesAutoregotationYesAutoregotation of transmission rateYes• R.J.d S (Etneret)Yes• Number of ports1• Number of ports1• Number of portsYes• PROFINET IO ControllerYes• PROFINET IO Controller <td< td=""><td>— Input resistance (0 to 10 V)</td><td>≥100k ohms</td></td<>  | — Input resistance (0 to 10 V)   | ≥100k ohms                                 |
| Analog outputs         0           Analog subputs         0           Analog subue generation for the inputs         0           Integration and conversion time/resolution per channel         0           Integration and conversion time/resolution per channel         10 bit           Integration time, parameterizable         Yes           - Conversion time (per channel)         625 µs           Encoder         625 µs           Connectable encoders         Yes           1 Interface         Yes           1 Interface type         PROFINET           Isolated         Yes           automatic detection of transmission rate         Yes           Autorosylition         Yes           Autorosylition         Yes           Number of ports         1           interface types         Yes  |  |  |
| 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                 • Conversion time (per channel)                 • Valito Secone                 • Interface type                 Interface type                 Interface type                 Interface type                 • Interface type                 • Interface type                 • Rol Ald Celbernel)   |  | 100 m; twisted and shielded                |
| Analog value generation for the inputs           Integration and conversion time/resolution per channel           • Resolution with overrange (bit including sign), max.         10 bit           • Integration time, parametrizable         Yes           • Conversion time (per channel)         625 µs           Encoder            Connectable encoders         Yes           • 2-wire sensor         Yes           1 Interface            Interface type         PROFINET           Isolated         Yes           automatic detection of transmission rate         Yes           Autorossing         Yes           Interface types         Yes           • Rul 45 (Ethernet)         Yes           • Number of ports         1           • Intergrated switch         No           Protocols         Yes           • SIMATIC communication         Yes           • SIMATIC communication         Yes           • Media redundancy         No           PROFINET IO Controller         Yes           • Media redundancy         No           PROFINET IO Controller         Yes           • PROFINET IO Controller         Yes           • Media redundancy         No   | Analog outputs   |  |
| Integration and conversion time/resolution with overrange (bit including sign), max.         10 bit           • Resolution with overrange (bit including sign), max.         10 bit           • Integration time, parameterizable         Yes           • Conversion time (per channel)         625 µs           Encoder         626 µs           Connectable encoders         • 2-wire sensor           • 2-wire sensor         Yes           1. Interface         PROFINET           Isolated         Yes           automatic detection of transmission rate         Yes           Autoropolation         Yes           Autorosing         Yes           Autorosing         Yes           Interface types         -           • RJ 45 (Ethernet)         Yes           • Number of ports         1           • integrated switch         No           Protocol         -           • PROFINET IO Controller         Yes           • SIMATIC communication         Yes           • SIMATIC communication         Yes           • Open IE communication         Yes; encryption with TLS V1.3 pre-selected           • Media redundancy         No           PROFINET IO Controller         -           • Media redundancy  | Number of analog outputs   | 0  |
| Integration and conversion time/resolution with overrange (bit including sign), max.         10 bit           • Resolution with overrange (bit including sign), max.         10 bit           • Integration time, parameterizable         Yes           • Conversion time (per channel)         625 µs           Encoder         626 µs           Connectable encoders         • 2-wire sensor           • 2-wire sensor         Yes           1. Interface         PROFINET           Isolated         Yes           automatic detection of transmission rate         Yes           Autoropolation         Yes           Autorosing         Yes           Autorosing         Yes           Interface types         -           • RJ 45 (Ethernet)         Yes           • Number of ports         1           • integrated switch         No           Protocol         -           • PROFINET IO Controller         Yes           • SIMATIC communication         Yes           • SIMATIC communication         Yes           • Open IE communication         Yes; encryption with TLS V1.3 pre-selected           • Media redundancy         No           PROFINET IO Controller         -           • Media redundancy  | Analog value generation for the inputs                                   |  |
| <ul> <li>Integration time, parameterizable</li> <li>Conversion time (per channel)</li> <li>625 µs</li> <li>Encoder</li> <li>Connectable encoders</li> <li>e2-wire sensor</li> <li>Yes</li> <li>Interface</li> <li>Interface type</li> <li>RoPFINET</li> <li>Isolated</li> <li>Yes</li> <li>Autonegotiation</li> <li>Yes</li> <li>RJ 45 (Ethernet)</li> <li>Yes</li> <li>Number of ports</li> <li>Integrated switch</li> <li>No</li> <li>ProOFINET IO Controller</li> <li>Yes</li> <li>SIMATIC communication</li> <li>Yes</li> <li>SiMATIC communication</li> <li>Yes</li> <li>SiMATIC communication</li> <li>Yes</li> <li>Media redundancy</li> <li>No</li> <li>PROFINET IO Controller</li> <li>Ves (potionally also encrypted</li> <li>Web server</li> <li>Media redundancy</li> <li>No</li> <li>PROFINET IO Communication</li> <li>Yes</li> <li>Services</li> <li>— PG/OP communication</li> <li>Yes (encryption with TLS V1.3 pre-selected</li> <li>— Isochronous mode</li> <li>No</li> <li>— IRT</li> <li>No</li> <li>— PROFINErgy</li> <li>No</li> <li>— PROFINErgy</li> <li>No</li> <li>— Prioritized startup</li> <li>Yes</li> </ul> |  |  |
| • Integration time, parameterizableYes• Conversion time (per channel)625 psEncoderConnectable encoders• 2-wire sensorYes• 2-wire sensorYes1 Interface typePROFINETIsolatedYesautomatic detection of transmission rateYesAutoregotiationYesAutoregotiationYesAutoregotiationYesAutoregotiationYesAutoregotiationYesAutoregotiationYesAutoregotiationYesAutoregotiationYesAutoregotiationYesAutoregotiationYesAutoregotiationYesPROFINET IO ControllerYes• PROFINET IO ControllerYes• PROFINET IO ControllerYes• PROFINET IO ControllerYes• SIMATIC communicationYes; Optionally also encrypted• Web serverYes• Media redundancyNoPROFINET IO ControllerYes; Optionally also encrypted• VerosNo• PROFINET IO ControllerYes; Optionally also encrypted• Veb serverYes; Optionally also encrypted• Media redundancyNoPROFINET IO ControllerYes; Optionally also encrypted• PROFINET IO ControllerYes; Optionally also encrypted• PROFINET IO ControllerYes• PROFINET IO ControllerYes• PROFINET IO ControllerYes; Optionally also encrypted• PROFINET IO ControllerYes; Optionally also encry   | <ul> <li>Resolution with overrange (bit including sign), max.</li> </ul> | 10 bit                                     |
| Encoder         Connectable encoders         2-wire sensor       Yes         1. Interface         Interface type       PROFINET         Isolated       Yes         automatic detection of transmission rate       Yes         Autoregotiation       Yes         Autoregotiation       Yes         Interface type       Yes         Interface types       Yes         Interface types       Yes         • Number of ports       1         • Interface types       Yes         • Number of ports       1         • Interface types       Yes         • Number of ports       1         • Interface types       Yes         • Non       Yes         • PROFINET IO Controller       Yes         • PROFINET IO controller       Yes         • PROFINET IO Controller       Yes         • Open IE communication       Yes         • Open IE communication       Yes         • Open IE communication       Yes         • Media redundancy       No         • Transmission rate, max.       100 Mbit/s         Services       -         - Inschronous mode       No <td< td=""><td></td><td>Yes</td></td<>  |  | Yes  |
| Connectable encoders     Yes          • 2-wire sensor      Yes           Interface      PROFINET        Isolated       ves      PROFINET        Isolated       ves      Yes        automatic detection of transmission rate       ves      Yes        Autoregotiation      Yes        Autoregotiation      Yes        Autorossing      Yes        Interface types      Yes        • RJ 45 (Ethernet)      Yes        • Number of ports      1        • NeOFINET IO Controller      Yes        • PROFINET IO Controller      Yes        • SIMATIC communication      Yes        • Open IE communication      Yes        • Web server      Yes        • Media redundancy      No        • PROFINET IO Controller      Interface        • Transmission rate, max.     100 Mbit/s        Services            - PRO/P communication         <  |  | 625 µs                                     |
| • 2-wire sensorYes1. InterfacePROFINET1. Interface typePROFINET1. IsolatedYesautomatic detection of transmission rateYesAutoregotiationYesAutoregotiationYesAutoregotiationYesAutoregotiationYesAutoregotiationYesInterface typesYesInterface typesYesInterface typesYes• RAJ 45 (Ethernet)Yes• Number of ports1• Number of ports1• Integrated switchNo• PROFINET IO ControllerYes• PROFINET IO ControllerYes• PROFINET IO ControllerYes• SIMATIC communicationYes; Optionally also encrypted• Ves serverYes• Media redundancyNo• NoNoPROFINET IO ControllerYes; optionally also encrypted• Fransmission rate, max.100 Mbit/sServices PROF communicationYes; encryption with TLS V1.3 pre-selected- PROF communicationYes; encryption with TLS V1.3 pre-selected- Isochronous modeNo- IRTNo- PROF lenergyNo- PROF lenergyNo- Prioritized startupYes   | Encoder  |  |
| 1. Interface       PROFINET         Interface type       PROFINET         Isolated       Yes         automatic detection of transmission rate       Yes         Autorossing       Yes         Autorossing       Yes         Interface types       Yes         PROFINET IO Controller       Yes         Intramsmission rate, max.       Yes         Intramsmission rate, max.       Yes; encryption with TLS V1.3 pre-selected         Intramsmission rate, max.       No         Intramsmission rate, max.       No         Intramsmission rate, max.       No         Intramsmission rate, max.       No   | Connectable encoders   |  |
| Interface type         PROFINET           Isolated         Yes           automatic detection of transmission rate         Yes           Autoregotiation         Yes           Autorcossing         Yes           Interface types         Interface types           • RJ 45 (Ethernet)         Yes           • Number of ports         1           • integrated switch         No           Protocols         Yes           • PROFINET IO Controller         Yes           • PROFINET IO Controller         Yes           • SIMATIC communication         Yes           • Open IE communication         Yes           • Web server         Yes           • Media redundancy         No           PROFINET IO Controller         Yes           • Transmission rate, max.         100 Mbit/s           Services         -           - PROFOROUS         Yes; encryption with TLS V1.3 pre-selected           - Isochronous mode         No           - Isochronous mode         No           - IRT         No           - PROFINERIT         No           - PROFINETIO         Yes   | 2-wire sensor  | Yes  |
| IsolatedYesautomatic detection of transmission rateYesAutonegotiationYesAutorossingYesInterface typesYes• RJ 45 (Ethernet)Yes• Number of ports1• Integrated switchNoProtocolsYes• PROFINET IO ControllerYes• PROFINET ID DeviceYes• SIMATIC communicationYes• Open IE communicationYes (Optionally also encrypted)• Web serverYes• Media redundancyYes• Transmission rate, max.100 Mbit/sServices- PG/OP communicationYes; encryption with TLS V1.3 pre-selected• ITansmission rate, max.No- IRTNo- IRTNo- IRTNo- PG/OP communicationYes; encryption with TLS V1.3 pre-selected• PROFINET IO ControllerYes; encryption with TLS V1.3 pre-selected• PROFINET IO ControllerNo- IRTNo- IRTNo- PROFILERINGYes; encryption with TLS V1.3 pre-selected• PROFILERINGNo• IRTNo• PROFILERINGNo• PROFILERING <td>1. Interface</td> <td></td>  | 1. Interface   |  |
| automatic detection of transmission rate         Yes           Autonegotiation         Yes           Autocrossing         Yes           Autocrossing         Yes           Interface types         Interface types           • RJ 45 (Ethernet)         Yes           • Number of ports         1           • Integrated switch         No           • PROFINET IO Controller         Yes           • PROFINET IO Controller         Yes           • PROFINET IO Device         Yes           • PROFINET IO Device         Yes; Optionally also encrypted           • Open IE communication         Yes; Optionally also encrypted           • Web server         Yes; Optionally also encrypted           • Media redundancy         No           • PROFINET IO Controller         Yes; Optionally also encrypted           • Transmission rate, max.         100 Mbit/s           Services  | Interface type   | PROFINET                                   |
| Autonegotiation         Yes           Autocrossing         Yes           Autocrossing         Yes           Interface types         ************************************  | Isolated   | Yes  |
| Autocrossing         Yes           Interface types         FRJ 45 (Ethernet)         Yes s           • RJ 45 (Ethernet)         Yes s           • Number of ports         1           • integrated switch         No           Protocols         Yes           • PROFINET IO Controller         Yes           • PROFINET IO Device         Yes           • SIMATIC communication         Yes; Optionally also encrypted           • Open IE communication         Yes; Optionally also encrypted           • Web server         Yes; Optionally also encrypted           • Media redundancy         Yes; Optionally also encrypted           • Transmission rate, max.         100 Mbit/s           Services  | automatic detection of transmission rate                                 | Yes  |
| Interface types           • RJ 45 (Ethernet)         Yes           • Number of ports         1           • integrated switch         No           • Protocols            • PROFINET IO Controller         Yes           • PROFINET IO Device         Yes           • SIMATIC communication         Yes; Optionally also encrypted           • Open IE communication         Yes; Optionally also encrypted           • Web server         Yes; Optionally also encrypted           • Media redundancy         Yes           • Transmission rate, max.         100 Mbit/s           Services            - PG/OP communication         Yes; encryption with TLS V1.3 pre-selected           - IRT         No           - IRT         No           - PROFIenergy         No           - ProFienergy         No           - Prioritized startup         Yes   | Autonegotiation  | Yes  |
| • RJ 45 (Ethernet)Yes• Number of ports1• Integrated switchNo• ProtocolsYes• PROFINET IO ControllerYes• PROFINET IO DeviceYes• SIMATIC communicationYes• Open IE communicationYes; Optionally also encrypted• Open IE communicationYes; Optionally also encrypted• Web serverYes• Media redundancyNo• Transmission rate, max.100 Mbit/s• ServicesYes; encryption with TLS V1.3 pre-selected• Isochronous modeNo• IRTNo• PROFIenergyNo• PROFIenergyNo• Prioritized startupYes   | Autocrossing   | Yes  |
| • Number of ports1• integrated switchNoProtocols• PROFINET IO ControllerYes• PROFINET IO DeviceYes• SIMATIC communicationYes• Open IE communicationYes; Optionally also encrypted• Open IE communicationYes; Optionally also encrypted• Web serverYes• Media redundancyNoPROFINET IO Controller• Transmission rate, max.100 Mbit/sServices PG/OP communicationYes; encryption with TLS V1.3 pre-selected- Isochronous modeNo- IRTNo- PROFIenergyNo- PROFIenergyNo- Prioritized startupYes   | Interface types  |  |
| • integrated witchNoProtocols• PROFINET IO ControllerYes• PROFINET IO DeviceYes• SIMATIC communicationYes• Open IE communicationYes; Optionally also encrypted• Open IE communicationYes; Optionally also encrypted• Media redundancyNo• PROFINET IO Controller100 Mbit/s• Transmission rate, max.100 Mbit/s• PROFINETYes; encryption with TLS V1.3 pre-selected• PG/OP communicationNo• InRTNo• PROFINErgyNo• PROFInergyNo• Prioritized startupYes; encryption with TLS V1.3 pre-selected  | RJ 45 (Ethernet)   | Yes  |
| Protocols <ul> <li>PROFINET IO Controller</li> <li>PROFINET IO Device</li> <li>Yes</li> <li>SIMATIC communication</li> <li>Yes</li> <li>Open IE communication</li> <li>Yes; Optionally also encrypted</li> <li>Web server</li> <li>Yes</li> <li>Media redundancy</li> <li>No</li> </ul> <li>PROFINET IO Controller</li> <li>PROFINET IO Controller</li> <li>Yes; encryption with TLS V1.3 pre-selected</li> <li>IRT</li> <li>No</li> <li>IRT</li> <li>PROFIenergy</li> <li>Prioritized startup</li> <li>Yes</li> <li>Yes</li> <li>Yes</li> <li>Yes</li> <li>Yes</li> <li>Yes; encryption with TLS V1.3 pre-selected</li> <li>Yes</li>   | Number of ports  | 1  |
| • PROFINET IO ControllerYes• PROFINET IO DeviceYes• SIMATIC communicationYes (Optionally also encrypted)• Open IE communicationYes (Optionally also encrypted)• Web serverYes• Media redundancyNo• PROFINET IO Controller100 Mbit/s• Transmission rate, max.100 Mbit/s• Services PG/OP communicationYes; encryption with TLS V1.3 pre-selected• Inschronous modeNo- IRTNo- PROFIenergyNo- Prioritized startupYes  | <ul> <li>integrated switch</li> </ul>                                    | No   |
| • PROFINET IO DeviceYes• SIMATIC communicationYes• Open IE communicationYes; Optionally also encrypted• Web serverYes• Media redundancyNo• PROFINET IO Controller100 Mbit/s• Transmission rate, max.100 Mbit/s• Services PG/OP communicationYes; encryption with TLS V1.3 pre-selected- Isochronous modeNo- IRTNo- PROFIenergyNo- Prioritized startupYes; encryption with TLS V1.3 pre-selected   | Protocols  |  |
| • SIMATIC communicationYes• Open IE communicationYes; Optionally also encrypted• Web serverYes• Media redundancyNo• PROFINET IO Controller100 Mbit/s• Transmission rate, max.100 Mbit/s• Services PG/OP communicationYes; encryption with TLS V1.3 pre-selected- Isochronous modeNo- IRTNo- PROFIenergyNo- Prioritized startupYes   | PROFINET IO Controller   | Yes  |
| • Open IE communicationYes; Optionally also encrypted• Web serverYes• Media redundancyNo• PROFINET IO Controller100 Mbit/s• Transmission rate, max.100 Mbit/s• Services- PG/OP communicationYes; encryption with TLS V1.3 pre-selected- Isochronous modeNo- IRTNo- PROFlenergyNo- Prioritized startupYes  | PROFINET IO Device   | Yes  |
| • Web serverYes• Media redundancyNoPROFINET IO Controller100 Mbit/s• Transmission rate, max.100 Mbit/sServices PG/OP communicationYes; encryption with TLS V1.3 pre-selected- Isochronous modeNo- IRTNo- PROFIenergyNo- Prioritized startupYes  | SIMATIC communication  | Yes  |
| • Media redundancyNoPROFINET IO Controller• Transmission rate, max.100 Mbit/sServices- PG/OP communicationYes; encryption with TLS V1.3 pre-selected- Isochronous modeNo- IRTNo- PROFlenergyNo- Prioritized startupYes  | Open IE communication  | Yes; Optionally also encrypted             |
| 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   | Web server   | Yes  |
| <ul> <li>Transmission rate, max.</li> </ul> 100 Mbit/s                  Services               - PG/OP communication               Yes; encryption with TLS V1.3 pre-selected                 - Isochronous mode             - IRT             No               No                 - PROFlenergy             - Prioritized startup               No   | · · · · · · · · · · · · · · · · · · ·                                    | No   |
| Services         — PG/OP communication       Yes; encryption with TLS V1.3 pre-selected         — Isochronous mode       No         — IRT       No         — PROFlenergy       No         — Prioritized startup       Yes   |  |  |
| PG/OP communicationYes; encryption with TLS V1.3 pre-selected- Isochronous modeNo- IRTNo- PROFlenergyNo- Prioritized startupYes   |  | 100 Mbit/s                                 |
| — Isochronous mode     No       — IRT     No       — PROFlenergy     No       — Prioritized startup     Yes   |  |  |
| - IRTNo- PROFlenergyNo- Prioritized startupYes  | — PG/OP communication  | Yes; encryption with TLS V1.3 pre-selected |
| PROFlenergy     No       — Prioritized startup     Yes  |  | No   |
| - Prioritized startup Yes   |  | No   |
|   | - PROFlenergy  | No   |
| - Number of IO devices with prioritized startup, max. 16  | -  |  |
|   | <ul> <li>Number of IO devices with prioritized startup, max.</li> </ul>  | 16   |

| <ul> <li>— Number of connectable IO Devices, max.</li> </ul>   | 16   |
|--|--|
| <ul> <li>— Number of connectable IO Devices for RT, max.</li> </ul>  | 16   |
| — 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 simultaneously</li> </ul>  | 8  |
| 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  |
| — Number of IO Controllers with shared device, max.  | 2  |
| Protocols  | 2  |
|  | Yes  |
| Supports protocol for PROFINET IO PROFIsafe  | No   |
|  |  |
| PROFIBUS   | Yes; CM 1243-5 (master) or CM 1242-5 (slave) required  |
|  | 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  |  |
| Media redundancy   |  |
| — MRP  | No   |
| — MRPD   | No   |
| SIMATIC communication  |  |
| S7 routing   | Yes  |
| Open IE communication  |  |
| • TCP/IP   | Yes  |
| — Data length, max.  | 8 kbyte  |
| <ul> <li>— several passive connections per port, supported</li> </ul>  | Yes  |
| <ul> <li>ISO-on-TCP (RFC1006)</li> </ul>   | Yes  |
| — Data length, max.  | 8 kbyte  |
| • UDP  | Yes  |
| — Data length, max.  | 1 472 byte   |
| Web server   |  |
| supported  | Yes  |
| User-defined websites  | Yes  |
| OPC UA   |  |
| Runtime license required   | Yes; "Basic" license required  |
| OPC UA Server  | Yes; data access (read, write, subscribe), method call, runtime license required                     |
| - Application authentication   | Available security policies: None, Basic128Rsa15, Basic256Rsa15, Basic256Sha256                      |
| — User authentication  | "anonymous" or by user name & password   |
| — Number of sessions, max.   | 10   |
| - Number of subscriptions per session, max.  | 5  |
| — Sampling interval, min.  | 100 ms   |
| — Publishing interval, min.  | 200 ms   |
| - Number of server methods, max.   | 20   |
| <ul> <li>— Number of monitored items, recommended max.</li> </ul>  | 1 000  |
| <ul> <li>— Number of monitored terms, recommended max.</li> <li>— Number of server interfaces, max.</li> </ul>     | 2  |
| <ul> <li>Number of server interfaces, max.</li> <li>Number of nodes for user-defined server interfaces,</li> </ul> | 2 2 000  |
| max.<br>Further protocols  |  |
|  |  |

| MODBUS  | Yes   |  |
|---|---|--|
|   | res   |  |
| communication functions / header  |   |  |
| S7 communication  |   |  |
| supported   | Yes   |  |
| • as server   | Yes   |  |
| • as client   | Yes   |  |
| User data per job, max.   | See online help (S7 communication, user data size)  |  |
| Number of connections   |   |  |
| overall   | PG Connections: 4 reserved / 4 max; HMI Connections: 12 reserved / 18 max;<br>S7 Connections: 8 reserved / 14 max; Open User Connections: 8 reserved / 14<br>max; Web Connections: 2 reserved / 30 max; OPC UA Connections: 0 reserved<br>/ 10 max; Total Connections: 34 reserved / 68 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  |   |  |
| Number of configurable Traces   | 2   |  |
| Memory size per trace, max.   | 512 kbyte   |  |
| Interrupts/diagnostics/status information   |   |  |
| Diagnostics indication LED  |   |  |
| RUN/STOP LED  | Yes   |  |
|   |   |  |
|   | Yes   |  |
| MAINT LED   | Yes   |  |
| Integrated Functions  |   |  |
| Counter   |   |  |
| Number of counters  | 6   |  |
| <ul> <li>Counting frequency, max.</li> </ul>  | 100 kHz   |  |
| Frequency measurement   | Yes   |  |
| controlled positioning  | Yes   |  |
| Number of position-controlled positioning axes, max.                                  | 8   |  |
| Number of positioning axes via pulse-direction interface                              | 4; With integrated outputs  |  |
| PID controller  | Yes   |  |
| Number of alarm inputs  | 4   |  |
| Number of pulse outputs   | 4   |  |
| Limit frequency (pulse)   | 100 kHz   |  |
| Potential separation  |   |  |
| Potential separation digital inputs   |   |  |
| <ul> <li>Potential separation digital inputs</li> </ul>                               | No  |  |
| • between the channels, in groups of  | 1   |  |
| Potential separation digital outputs  |   |  |
| Potential separation digital outputs  | Yes   |  |
| between the channels  | No  |  |
| <ul> <li>between the channels, in groups of</li> </ul>                                | 1   |  |
| EMC   |   |  |
| Interference immunity against discharge of static electricity                         |   |  |
| Interference immunity against discharge of static                                     | Yes   |  |
| electricity acc. to IEC 61000-4-2   |   |  |
| — Test voltage at air discharge   | 8 kV  |  |
| <ul> <li>Test voltage at contact discharge</li> </ul>                                 | 6 kV  |  |
| Interference immunity to cable-borne interference                                     |   |  |
| <ul> <li>Interference immunity on supply lines acc. to IEC 61000-<br/>4-4</li> </ul>  | Yes   |  |
| <ul> <li>Interference immunity on signal cables acc. to IEC 61000-<br/>4-4</li> </ul> | Yes   |  |
| Interference immunity against voltage surge   |   |  |
| <ul> <li>Interference immunity on supply lines acc. to IEC 61000-<br/>4-5</li> </ul>  | Yes   |  |

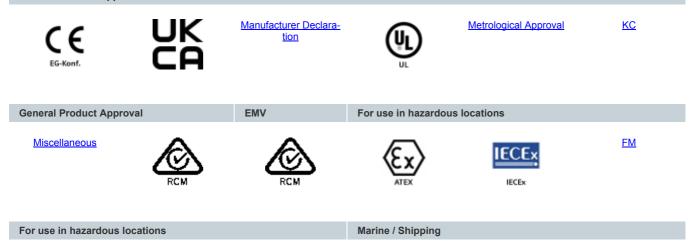
| Interference immunity against conducted variable disturbance indu   | iced by high-frequency fields   |
|---|---|
| Interference immunity against conducted variable distributice indu  | Yes   |
| acc. to IEC 61000-4-6   | 165   |
| Emission of radio interference acc. to EN 55 011  |   |
| <ul> <li>Limit class A, for use in industrial areas</li> </ul>  | Yes; Group 1  |
| <ul> <li>Limit class B, for use in residential areas</li> </ul>   | 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  |   |
| Siemens Eco Profile (SEP)   | Siemens EcoTech   |
| CE mark   | Yes   |
| UL approval   | Yes   |
| cULus   | Yes   |
| FM approval   | Yes   |
| RCM (formerly C-TICK)   | Yes   |
| KC approval   | Yes   |
| Marine approval   | Yes   |
| Ecological footprint  |   |
| <ul> <li>environmental product declaration</li> </ul>   | Yes; type II acc. to ISO 14021  |
| Global warming potential  |   |
| — global warming potential, (total) [CO2 eq]  | 76.4 kg   |
| <ul> <li>— global warming potential, (during production) [CO2<br/>eq]</li> </ul>  | 13.8 kg   |
| — global warming potential, (during operation) [CO2 eq]   | 63.4 kg   |
| — global warming potential, (after end of life cycle)<br>[CO2 eq]   | -0.89 kg  |
| Ambient conditions  |   |
| Free fall   |   |
| • Fall height, max.   | 0.3 m; five times, in product package   |
| Ambient temperature during operation  |   |
| stablent temperature daming operation   |   |
| • min   | -20 °C  |
| • min.<br>• max.  | -20 °C<br>60 °C; Number of simultaneously activated inputs or outputs 4 or 3 (no adjacent<br>points) at 60 °C horizontal or 50 °C vertical, 8 or 6 at 55 °C horizontal or 45 °C<br>vertical   |
|   | 60 °C; Number of simultaneously activated inputs or outputs 4 or 3 (no adjacent points) at 60 °C horizontal or 50 °C vertical, 8 or 6 at 55 °C horizontal or 45 °C  |
| • max.  | 60 °C; Number of simultaneously activated inputs or outputs 4 or 3 (no adjacent points) at 60 °C horizontal or 50 °C vertical, 8 or 6 at 55 °C horizontal or 45 °C vertical   |
| <ul><li>max.</li><li>horizontal installation, min.</li></ul>  | 60 °C; Number of simultaneously activated inputs or outputs 4 or 3 (no adjacent points) at 60 °C horizontal or 50 °C vertical, 8 or 6 at 55 °C horizontal or 45 °C vertical -20 °C  |
| <ul> <li>max.</li> <li>horizontal installation, min.</li> <li>horizontal installation, max.</li> </ul>  | 60 °C; Number of simultaneously activated inputs or outputs 4 or 3 (no adjacent points) at 60 °C horizontal or 50 °C vertical, 8 or 6 at 55 °C horizontal or 45 °C vertical<br>-20 °C 60 °C   |
| <ul> <li>max.</li> <li>horizontal installation, min.</li> <li>horizontal installation, max.</li> <li>vertical installation, min.</li> </ul>   | 60 °C; Number of simultaneously activated inputs or outputs 4 or 3 (no adjacent<br>points) at 60 °C horizontal or 50 °C vertical, 8 or 6 at 55 °C horizontal or 45 °C<br>vertical<br>-20 °C<br>60 °C<br>-20 °C  |
| <ul> <li>max.</li> <li>horizontal installation, min.</li> <li>horizontal installation, max.</li> <li>vertical installation, min.</li> <li>vertical installation, max.</li> </ul>  | 60 °C; Number of simultaneously activated inputs or outputs 4 or 3 (no adjacent<br>points) at 60 °C horizontal or 50 °C vertical, 8 or 6 at 55 °C horizontal or 45 °C<br>vertical<br>-20 °C<br>60 °C<br>-20 °C  |
| <ul> <li>max.</li> <li>horizontal installation, min.</li> <li>horizontal installation, max.</li> <li>vertical installation, min.</li> <li>vertical installation, max.</li> </ul> Ambient temperature during storage/transportation  | 60 °C; Number of simultaneously activated inputs or outputs 4 or 3 (no adjacent<br>points) at 60 °C horizontal or 50 °C vertical, 8 or 6 at 55 °C horizontal or 45 °C<br>vertical<br>-20 °C<br>60 °C<br>-20 °C<br>50 °C   |
| <ul> <li>max.</li> <li>horizontal installation, min.</li> <li>horizontal installation, max.</li> <li>vertical installation, min.</li> <li>vertical installation, max.</li> </ul> Ambient temperature during storage/transportation <ul> <li>min.</li> </ul>   | 60 °C; Number of simultaneously activated inputs or outputs 4 or 3 (no adjacent points) at 60 °C horizontal or 50 °C vertical, 8 or 6 at 55 °C horizontal or 45 °C vertical<br>-20 °C<br>60 °C<br>-20 °C<br>50 °C   |
| <ul> <li>max.</li> <li>horizontal installation, min.</li> <li>horizontal installation, max.</li> <li>vertical installation, min.</li> <li>vertical installation, max.</li> </ul> Ambient temperature during storage/transportation <ul> <li>min.</li> <li>max.</li> </ul>   | 60 °C; Number of simultaneously activated inputs or outputs 4 or 3 (no adjacent points) at 60 °C horizontal or 50 °C vertical, 8 or 6 at 55 °C horizontal or 45 °C vertical<br>-20 °C<br>60 °C<br>-20 °C<br>50 °C   |
| <ul> <li>max.</li> <li>horizontal installation, min.</li> <li>horizontal installation, max.</li> <li>vertical installation, min.</li> <li>vertical installation, max.</li> </ul> Ambient temperature during storage/transportation <ul> <li>min.</li> <li>max.</li> </ul> Air pressure acc. to IEC 60068-2-13   | 60 °C; Number of simultaneously activated inputs or outputs 4 or 3 (no adjacent points) at 60 °C horizontal or 50 °C vertical, 8 or 6 at 55 °C horizontal or 45 °C vertical<br>-20 °C<br>60 °C<br>-20 °C<br>50 °C   |
| <ul> <li>max.</li> <li>horizontal installation, min.</li> <li>horizontal installation, max.</li> <li>vertical installation, min.</li> <li>vertical installation, max.</li> </ul> Ambient temperature during storage/transportation <ul> <li>min.</li> <li>max.</li> </ul> Air pressure acc. to IEC 60068-2-13 <ul> <li>Operation, min.</li> </ul>   | 60 °C; Number of simultaneously activated inputs or outputs 4 or 3 (no adjacent points) at 60 °C horizontal or 50 °C vertical, 8 or 6 at 55 °C horizontal or 45 °C vertical<br>-20 °C<br>60 °C<br>-20 °C<br>50 °C<br>-40 °C<br>70 °C<br>795 hPa   |
| <ul> <li>max.</li> <li>horizontal installation, min.</li> <li>horizontal installation, max.</li> <li>vertical installation, min.</li> <li>vertical installation, max.</li> </ul> Ambient temperature during storage/transportation <ul> <li>min.</li> <li>max.</li> </ul> Air pressure acc. to IEC 60068-2-13 <ul> <li>Operation, min.</li> <li>Operation, max.</li> </ul>  | 60 °C; Number of simultaneously activated inputs or outputs 4 or 3 (no adjacent points) at 60 °C horizontal or 50 °C vertical, 8 or 6 at 55 °C horizontal or 45 °C vertical<br>-20 °C<br>60 °C<br>-20 °C<br>50 °C<br>-40 °C<br>70 °C<br>795 hPa<br>1 080 hPa  |
| <ul> <li>max.</li> <li>horizontal installation, min.</li> <li>horizontal installation, max.</li> <li>vertical installation, min.</li> <li>vertical installation, max.</li> </ul> Ambient temperature during storage/transportation <ul> <li>min.</li> <li>max.</li> </ul> Air pressure acc. to IEC 60068-2-13 <ul> <li>Operation, min.</li> <li>Operation, max.</li> <li>Storage/transport, min.</li> </ul>   | 60 °C; Number of simultaneously activated inputs or outputs 4 or 3 (no adjacent points) at 60 °C horizontal or 50 °C vertical, 8 or 6 at 55 °C horizontal or 45 °C vertical<br>-20 °C<br>60 °C<br>-20 °C<br>50 °C<br>-40 °C<br>70 °C<br>795 hPa<br>1 080 hPa<br>660 hPa   |
| <ul> <li>max.</li> <li>horizontal installation, min.</li> <li>horizontal installation, max.</li> <li>vertical installation, min.</li> <li>vertical installation, max.</li> </ul> Ambient temperature during storage/transportation <ul> <li>min.</li> <li>max.</li> </ul> Air pressure acc. to IEC 60068-2-13 <ul> <li>Operation, min.</li> <li>Operation, max.</li> <li>Storage/transport, min.</li> <li>Storage/transport, max.</li> </ul>  | 60 °C; Number of simultaneously activated inputs or outputs 4 or 3 (no adjacent points) at 60 °C horizontal or 50 °C vertical, 8 or 6 at 55 °C horizontal or 45 °C vertical<br>-20 °C<br>60 °C<br>-20 °C<br>50 °C<br>-40 °C<br>70 °C<br>795 hPa<br>1 080 hPa<br>660 hPa   |
| <ul> <li>max.</li> <li>horizontal installation, min.</li> <li>horizontal installation, max.</li> <li>vertical installation, min.</li> <li>vertical installation, max.</li> </ul> Ambient temperature during storage/transportation <ul> <li>min.</li> <li>max.</li> </ul> Air pressure acc. to IEC 60068-2-13 <ul> <li>Operation, min.</li> <li>Operation, max.</li> <li>Storage/transport, min.</li> <li>Storage/transport, max.</li> </ul> Altitude during operation relating to sea level  | 60 °C; Number of simultaneously activated inputs or outputs 4 or 3 (no adjacent points) at 60 °C horizontal or 50 °C vertical, 8 or 6 at 55 °C horizontal or 45 °C vertical<br>-20 °C<br>60 °C<br>-20 °C<br>50 °C<br>-40 °C<br>70 °C<br>795 hPa<br>1 080 hPa<br>660 hPa<br>1 080 hPa  |
| <ul> <li>max.</li> <li>horizontal installation, min.</li> <li>horizontal installation, max.</li> <li>vertical installation, min.</li> <li>vertical installation, max.</li> </ul> Ambient temperature during storage/transportation <ul> <li>min.</li> <li>max.</li> </ul> Air pressure acc. to IEC 60068-2-13 <ul> <li>Operation, min.</li> <li>Operation, max.</li> <li>Storage/transport, min.</li> <li>Storage/transport, max.</li> </ul> Altitude during operation relating to sea level <ul> <li>Installation altitude, min.</li> </ul>  | 60 °C; Number of simultaneously activated inputs or outputs 4 or 3 (no adjacent points) at 60 °C horizontal or 50 °C vertical, 8 or 6 at 55 °C horizontal or 45 °C vertical -20 °C 60 °C -20 °C 50 °C   |
| <ul> <li>max.</li> <li>horizontal installation, min.</li> <li>horizontal installation, max.</li> <li>vertical installation, min.</li> <li>vertical installation, max.</li> </ul> Ambient temperature during storage/transportation <ul> <li>min.</li> <li>max.</li> </ul> Air pressure acc. to IEC 60068-2-13 <ul> <li>Operation, min.</li> <li>Operation, min.</li> <li>Storage/transport, min.</li> <li>Storage/transport, max.</li> </ul> Altitude during operation relating to sea level <ul> <li>Installation altitude, min.</li> <li>Installation altitude, max.</li> </ul>   | 60 °C; Number of simultaneously activated inputs or outputs 4 or 3 (no adjacent points) at 60 °C horizontal or 50 °C vertical, 8 or 6 at 55 °C horizontal or 45 °C vertical -20 °C 60 °C -20 °C 50 °C   |
| <ul> <li>max.</li> <li>horizontal installation, min.</li> <li>horizontal installation, max.</li> <li>vertical installation, max.</li> <li>vertical installation, max.</li> <li>vertical installation, max.</li> </ul> Ambient temperature during storage/transportation <ul> <li>min.</li> <li>max.</li> </ul> Air pressure acc. to IEC 60068-2-13 <ul> <li>Operation, min.</li> <li>Operation, min.</li> <li>Operation, max.</li> <li>Storage/transport, min.</li> <li>Storage/transport, max.</li> </ul> Altitude during operation relating to sea level <ul> <li>Installation altitude, min.</li> <li>Installation altitude, max.</li> </ul>   | 60 °C; Number of simultaneously activated inputs or outputs 4 or 3 (no adjacent<br>points) at 60 °C horizontal or 50 °C vertical, 8 or 6 at 55 °C horizontal or 45 °C<br>vertical<br>-20 °C<br>60 °C<br>-20 °C<br>50 °C<br>-40 °C<br>70 °C<br>-70 °C      |
| <ul> <li>max.</li> <li>horizontal installation, min.</li> <li>horizontal installation, max.</li> <li>vertical installation, min.</li> <li>vertical installation, max.</li> </ul> Ambient temperature during storage/transportation <ul> <li>min.</li> <li>max.</li> </ul> Air pressure acc. to IEC 60068-2-13 <ul> <li>Operation, min.</li> <li>Operation, max.</li> <li>Storage/transport, min.</li> <li>Storage/transport, max.</li> </ul> Altitude during operation relating to sea level <ul> <li>Installation altitude, min.</li> <li>Installation altitude, max.</li> </ul> Relative humidity <ul> <li>Operation, max.</li> </ul>   | 60 °C; Number of simultaneously activated inputs or outputs 4 or 3 (no adjacent<br>points) at 60 °C horizontal or 50 °C vertical, 8 or 6 at 55 °C horizontal or 45 °C<br>vertical<br>-20 °C<br>60 °C<br>-20 °C<br>50 °C<br>-40 °C<br>70 °C<br>-70 °C<br>- |
| <ul> <li>max.</li> <li>horizontal installation, min.</li> <li>horizontal installation, max.</li> <li>vertical installation, min.</li> <li>vertical installation, max.</li> </ul> Ambient temperature during storage/transportation <ul> <li>min.</li> <li>max.</li> </ul> Air pressure acc. to IEC 60068-2-13 <ul> <li>Operation, min.</li> <li>Operation, max.</li> <li>Storage/transport, min.</li> <li>Storage/transport, max.</li> </ul> Altitude during operation relating to sea level <ul> <li>Installation altitude, min.</li> <li>Installation altitude, max.</li> </ul> Relative humidity <ul> <li>Operation, max.</li> </ul> Vibrations <ul> <li>Vibrations</li> <li>Vibration resistance during operation acc. to IEC 60068-</li> </ul>   | 60 °C; Number of simultaneously activated inputs or outputs 4 or 3 (no adjacent<br>points) at 60 °C horizontal or 50 °C vertical, 8 or 6 at 55 °C horizontal or 45 °C<br>vertical<br>-20 °C<br>60 °C<br>-20 °C<br>50 °C<br>-40 °C<br>70 °C<br>795 hPa<br>1 080 hPa<br>660 hPa<br>1 080 hPa<br>-1 000 m<br>5 000 m; Restrictions for installation altitudes > 2 000 m, see manual<br>95 %; no condensation   |
| <ul> <li>max.</li> <li>horizontal installation, min.</li> <li>horizontal installation, max.</li> <li>vertical installation, min.</li> <li>vertical installation, max.</li> </ul> Ambient temperature during storage/transportation <ul> <li>min.</li> <li>max.</li> </ul> Air pressure acc. to IEC 60068-2-13 <ul> <li>Operation, min.</li> <li>Operation, max.</li> <li>Storage/transport, min.</li> <li>Storage/transport, max.</li> </ul> Altitude during operation relating to sea level <ul> <li>Installation altitude, min.</li> <li>Installation altitude, max.</li> </ul> Relative humidity <ul> <li>Operation, max.</li> </ul> Vibrations <ul> <li>Vibration resistance during operation acc. to IEC 60068-2-6</li> </ul>  | 60 °C; Number of simultaneously activated inputs or outputs 4 or 3 (no adjacent<br>points) at 60 °C horizontal or 50 °C vertical, 8 or 6 at 55 °C horizontal or 45 °C<br>vertical<br>-20 °C<br>60 °C<br>-20 °C<br>50 °C<br>-40 °C<br>70 °C<br>-70 °C      |
| <ul> <li>max.</li> <li>horizontal installation, min.</li> <li>horizontal installation, max.</li> <li>vertical installation, min.</li> <li>vertical installation, max.</li> </ul> Ambient temperature during storage/transportation <ul> <li>min.</li> <li>max.</li> </ul> Air pressure acc. to IEC 60068-2-13 <ul> <li>Operation, min.</li> <li>Operation, max.</li> <li>Storage/transport, min.</li> <li>Storage/transport, max.</li> </ul> Altitude during operation relating to sea level <ul> <li>Installation altitude, max.</li> </ul> Relative humidity <ul> <li>Operation, max.</li> <li>Vibrations</li> <li>Vibration resistance during operation acc. to IEC 60068-2-6</li> </ul>   | 60 °C; Number of simultaneously activated inputs or outputs 4 or 3 (no adjacent<br>points) at 60 °C horizontal or 50 °C vertical, 8 or 6 at 55 °C horizontal or 45 °C<br>vertical<br>-20 °C<br>60 °C<br>-20 °C<br>50 °C<br>-40 °C<br>70 °C<br>-70 °C      |
| <ul> <li>max.</li> <li>horizontal installation, min.</li> <li>horizontal installation, max.</li> <li>vertical installation, min.</li> <li>vertical installation, max.</li> <li>vertical installation, max.</li> <li>Ambient temperature during storage/transportation <ul> <li>min.</li> <li>max.</li> </ul> </li> <li>Air pressure acc. to IEC 60068-2-13 <ul> <li>Operation, min.</li> <li>Operation, max.</li> <li>Storage/transport, min.</li> <li>Storage/transport, min.</li> <li>Storage/transport, max.</li> </ul> </li> <li>Altitude during operation relating to sea level <ul> <li>Installation altitude, max.</li> </ul> </li> <li>Relative humidity <ul> <li>Operation, max.</li> </ul> </li> <li>Vibrations <ul> <li>Vibration resistance during operation acc. to IEC 60068-2-6</li> <li>Operation, tested according to IEC 60068-2-6</li> </ul> </li> </ul> | 60 °C; Number of simultaneously activated inputs or outputs 4 or 3 (no adjacent<br>points) at 60 °C horizontal or 50 °C vertical, 8 or 6 at 55 °C horizontal or 45 °C<br>vertical<br>-20 °C<br>60 °C<br>-20 °C<br>50 °C<br>-40 °C<br>70 °C<br>-70 °C<br>-70 °C<br>-795 hPa<br>1 080 hPa<br>1 080 hPa<br>660 hPa<br>1 080 hPa<br>-1 000 m<br>5 000 m; Restrictions for installation altitudes > 2 000 m, see manual<br>95 %; no condensation<br>2 g (m/s²) wall mounting, 1 g (m/s²) DIN rail<br>Yes; IEC 68, Part 2-27 half-sine: strength of the shock 15 g (peak value),  |
| <ul> <li>max.</li> <li>horizontal installation, min.</li> <li>horizontal installation, max.</li> <li>vertical installation, min.</li> <li>vertical installation, max.</li> <li>vertical installation, max.</li> </ul> Ambient temperature during storage/transportation <ul> <li>min.</li> <li>max.</li> </ul> Air pressure acc. to IEC 60068-2-13 <ul> <li>Operation, min.</li> <li>Operation, max.</li> <li>Storage/transport, min.</li> <li>Storage/transport, max.</li> </ul> Altitude during operation relating to sea level <ul> <li>Installation altitude, max.</li> </ul> Relative humidity <ul> <li>Operation, max.</li> </ul> Vibrations <ul> <li>Vibration resistance during operation acc. to IEC 60068-2-6</li> <li>Shock testing</li> <li>tested according to IEC 60068-2-27</li> </ul>   | 60 °C; Number of simultaneously activated inputs or outputs 4 or 3 (no adjacent<br>points) at 60 °C horizontal or 50 °C vertical, 8 or 6 at 55 °C horizontal or 45 °C<br>vertical<br>-20 °C<br>60 °C<br>-20 °C<br>50 °C<br>-40 °C<br>70 °C<br>-70 °C<br>-70 °C<br>-795 hPa<br>1 080 hPa<br>1 080 hPa<br>660 hPa<br>1 080 hPa<br>-1 000 m<br>5 000 m; Restrictions for installation altitudes > 2 000 m, see manual<br>95 %; no condensation<br>2 g (m/s²) wall mounting, 1 g (m/s²) DIN rail<br>Yes; IEC 68, Part 2-27 half-sine: strength of the shock 15 g (peak value),  |

| configuration / programming / header                              |                  |
|---|------------------|
| 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 of confidential configuration data</li> </ul> | Yes              |
| <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              |
| <ul> <li>User administration</li> </ul>                           | Yes; device-wide |
| Number of users   | 42               |
| Number of groups  | 14               |
| Number of roles   | 20               |
| programming / cycle time monitoring / header                      |                  |
| adjustable  | Yes              |
| Dimensions  |                  |
| Width   | 90 mm            |
| Height  | 100 mm           |
| Depth   | 75 mm            |
| Weights   |                  |
| Weight, approx.   | 370 g            |
| Classifications   |                  |
|   | Version          |

|        | Version | Classification |
|--------|---------|----------------|
| eClass | 14      | 27-24-22-07    |
| eClass | 12      | 27-24-22-07    |
| eClass | 9.1     | 27-24-22-07    |
| eClass | 9       | 27-24-22-07    |
| eClass | 8       | 27-24-22-07    |
| eClass | 7.1     | 27-24-22-07    |
| eClass | 6       | 27-24-22-07    |
| ETIM   | 9       | EC000236       |
| ETIM   | 8       | EC000236       |
| ETIM   | 7       | EC000236       |
| IDEA   | 4       | 3565           |
| UNSPSC | 15      | 32-15-17-05    |

## Approvals / Certificates

**General Product Approval** 



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last modified:

2/18/2025 🖸