



SIMATIC S7-400, CPU 412-2 PN Central processing unit with: Work memory 1 MB, (0.5 MB code; 0.5 MB data) interfaces 1st interface MPI/DP 12 Mbit/s, (X1), 2nd interface Ethernet/PROFINET (X5)

| General information  |  |
|--|--|
| Product type designation   | CPU 412-2 PN                               |
| HW functional status   | 01   |
| Firmware version   | V7.0                                       |
| Product function   |  |
| <ul style="list-style-type: none"> <li>• Isochronous mode</li> </ul>         | Yes; Via PROFIBUS DP or PROFINET interface |
| Engineering with   |  |
| <ul style="list-style-type: none"> <li>• Programming package</li> </ul>      | STEP 7 V5.5 or higher with HSP 262         |
| CiR - Configuration in RUN   |  |
| CiR synchronization time, basic load   | 100 ms                                     |
| CiR synchronization time, time per I/O byte                                  | 30 µs                                      |
| Supply voltage   |  |
| Rated value (DC)   | Power supply via system power supply       |
| Input current  |  |
| from backplane bus 5 V DC, typ.  | 1.1 A                                      |
| from backplane bus 5 V DC, max.  | 1.4 A                                      |
| from backplane bus 24 V DC, max.   | 150 mA; 150 mA per DP interface            |
| from interface 5 V DC, max.  | 90 mA; At the DP interface                 |
| Power loss   |  |
| Power loss, typ.   | 5.5 W                                      |
| Power loss, max.   | 7 W  |
| Memory   |  |
| Type of memory   | RAM  |
| Work memory  |  |
| <ul style="list-style-type: none"> <li>• integrated</li> </ul>               | 1 Mbyte                                    |
| <ul style="list-style-type: none"> <li>• integrated (for program)</li> </ul> | 512 kbyte                                  |
| <ul style="list-style-type: none"> <li>• integrated (for data)</li> </ul>    | 512 kbyte                                  |
| <ul style="list-style-type: none"> <li>• expandable</li> </ul>               | No   |
| Load memory  |  |
| <ul style="list-style-type: none"> <li>• expandable FEPR0M</li> </ul>        | Yes; with Memory Card (FLASH)              |
| <ul style="list-style-type: none"> <li>• expandable FEPR0M, max.</li> </ul>  | 64 Mbyte                                   |
| <ul style="list-style-type: none"> <li>• integrated RAM, max.</li> </ul>     | 512 kbyte                                  |
| <ul style="list-style-type: none"> <li>• expandable RAM</li> </ul>           | Yes; with Memory Card (RAM)                |
| <ul style="list-style-type: none"> <li>• expandable RAM, max.</li> </ul>     | 64 Mbyte                                   |
| Backup   |  |
| <ul style="list-style-type: none"> <li>• present</li> </ul>                  | Yes  |
| <ul style="list-style-type: none"> <li>• with battery</li> </ul>             | Yes; all data                              |
| <ul style="list-style-type: none"> <li>• without battery</li> </ul>          | No   |
| Battery  |  |
| Backup battery   |  |

|   |   |
|---|---|
| • Backup current, typ.                      | 180 µA; up to 40 °C   |
| • Backup current, max.                      | 850 µA  |
| • Backup time, max.                         | Dealt with in the module data manual with the secondary conditions and the factors of influence |
| • Feeding of external backup voltage to CPU | 5 V DC to 15 V DC   |

#### CPU processing times

|                                     |          |
|-------------------------------------|----------|
| for bit operations, typ.            | 31.25 ns |
| for word operations, typ.           | 31.25 ns |
| for fixed point arithmetic, typ.    | 31.25 ns |
| for floating point arithmetic, typ. | 62.5 ns  |

#### CPU-blocks

|                                    |  |
|------------------------------------|--|
| <b>DB</b>                          |  |
| • Number, max.                     | 3 000; Number range: 1 to 16000                        |
| • Size, max.                       | 64 kbyte   |
| <b>FB</b>                          |  |
| • Number, max.                     | 1 500; Number range: 0 to 7999                         |
| • Size, max.                       | 64 kbyte   |
| <b>FC</b>                          |  |
| • Number, max.                     | 1 500; Number range: 0 to 7999                         |
| • Size, max.                       | 64 kbyte   |
| <b>OB</b>                          |  |
| • Number, max.                     | see instruction list                                   |
| • Size, max.                       | 64 kbyte   |
| • Number of free cycle OBs         | 1; OB 1  |
| • Number of time alarm OBs         | 2; OB 10, 11   |
| • Number of delay alarm OBs        | 2; OB 20, 21   |
| • Number of cyclic interrupt OBs   | 2; OB 32, 35 (shortest cycle that can be set = 500 µs) |
| • Number of process alarm OBs      | 2; OB 40, 41   |
| • Number of DPV1 alarm OBs         | 3; OB 55-57  |
| • Number of isochronous mode OBs   | 2; OB 61-62  |
| • Number of multicomputing OBs     | 1; OB 60   |
| • Number of background OBs         | 1; OB 90   |
| • Number of startup OBs            | 3; OB 100-102  |
| • Number of asynchronous error OBs | 9; OB 80-88  |
| • Number of synchronous error OBs  | 2; OB 121, 122   |

#### Nesting depth

|                                 |    |
|---------------------------------|----|
| • per priority class            | 24 |
| • additional within an error OB | 1  |

#### Counters, timers and their retentivity

##### S7 counter

|                       |            |
|-----------------------|------------|
| • Number              | 2 048      |
| <b>Retentivity</b>    |            |
| — adjustable          | Yes        |
| — preset              | Z 0 to Z 7 |
| <b>Counting range</b> |            |
| — lower limit         | 0          |
| — upper limit         | 999        |

##### IEC counter

|           |  |
|-----------|--|
| • present | Yes                                      |
| • Type    | SFB                                      |
| • Number  | Unlimited (limited only by RAM capacity) |

##### S7 times

|                    |                    |
|--------------------|--------------------|
| • Number           | 2 048              |
| <b>Retentivity</b> |                    |
| — adjustable       | Yes                |
| — preset           | No times retentive |
| <b>Time range</b>  |                    |
| — lower limit      | 10 ms              |
| — upper limit      | 9 990 s            |

##### IEC timer

|           |     |
|-----------|-----|
| • present | Yes |
|-----------|-----|

|  |   |
|--|---|
| • Type   | SFB   |
| • Number   | Unlimited (limited only by RAM capacity)  |
| <b>Data areas and their retentivity</b>  |   |
| Retentive data area (incl. timers, counters, flags), max.                      | Total working and load memory (with backup battery)   |
| <b>Flag</b>  |   |
| • Size, max.   | 4 kbyte; Size of bit memory address area  |
| • Retentivity available  | Yes   |
| • Retentivity preset   | MB 0 to MB 15   |
| • Number of clock memories   | 8; in 1 memory byte   |
| <b>Local data</b>  |   |
| • adjustable, max.   | 8 kbyte   |
| • preset   | 4 kbyte   |
| <b>Address area</b>  |   |
| <b>I/O address area</b>  |   |
| • Inputs   | 4 kbyte   |
| • Outputs  | 4 kbyte   |
| <b>Process image</b>   |   |
| • Inputs, adjustable   | 4 kbyte   |
| • Outputs, adjustable  | 4 kbyte   |
| • Inputs, default  | 128 byte  |
| • Outputs, default   | 128 byte  |
| • consistent data, max.  | 244 byte  |
| • Access to consistent data in process image                                   | Yes   |
| <b>Subprocess images</b>   |   |
| • Number of subprocess images, max.  | 15  |
| <b>Digital channels</b>  |   |
| • Inputs   | 32 768  |
| — of which central   | 32 768  |
| • Outputs  | 32 768  |
| — of which central   | 32 768  |
| <b>Analog channels</b>   |   |
| • Inputs   | 2 048   |
| — of which central   | 2 048   |
| • Outputs  | 2 048   |
| — of which central   | 2 048   |
| <b>Hardware configuration</b>  |   |
| Number of expansion units, max.  | 21  |
| connectable OPs  | 47  |
| Multicomputing   | Yes; 4 CPUs max. (with UR1 or UR2)  |
| <b>Interface modules</b>   |   |
| • Number of connectable IMs (total), max.                                      | 6   |
| • Number of connectable IM 460s, max.  | 6   |
| • Number of connectable IM 463s, max.  | 4; IM 463-2   |
| <b>Number of DP masters</b>  |   |
| • integrated   | 1   |
| • via CP   | 10; CP 443-5 Extended   |
| • via IM 467   | 4   |
| • Mixed mode IM + CP permitted   | No; IM 467 cannot be used jointly with CP 443-5 Ext. or CP 443-1 in PROFINET IO mode  |
| • via interface module   | 0   |
| • Number of pluggable S5 modules (via adapter capsule in central device), max. | 6   |
| <b>Number of IO Controllers</b>  |   |
| • integrated   | 1   |
| • via CP   | 4; Max. 4 in the central controller; no mixed operation of different CP 443-1 types in PROFINET IO mode   |
| <b>Number of operable FMs and CPs (recommended)</b>                            |   |
| • FM   | Limited by number of slots and number of connections  |
| • CP, PtP  | CP 440: Limited by number of slots; CP 441: Limited by number of slots and number of connections  |
| • PROFIBUS and Ethernet CPs  | 14; In total max. 10 CPs as DP master and PROFINET controller, of which up to 10 IMs or CPs as DP master and up to 4 CPs as PROFINET controller |

|   |   |
|---|---|
| <b>Slots</b>  |   |
| • required slots  | 1   |
| <b>Time of day</b>                                      |   |
| <b>Clock</b>  |   |
| • Hardware clock (real-time)                            | Yes   |
| • retentive and synchronizable                          | Yes   |
| • Resolution  | 1 ms  |
| • Deviation per day (buffered), max.                    | 1.7 s; Power off  |
| • Deviation per day (unbuffered), max.                  | 8.6 s; For power On   |
| <b>Operating hours counter</b>                          |   |
| • Number  | 16  |
| • Number/Number range                                   | 0 to 15   |
| • Range of values                                       | SFCs 2, 3 and 4: 0 to 32767 hours SFC 101: 0 to 2 <sup>31</sup> - 1 hours   |
| • Granularity   | 1 h   |
| • retentive   | Yes   |
| <b>Clock synchronization</b>                            |   |
| • supported   | Yes   |
| • to MPI, master  | Yes   |
| • to MPI, slave   | Yes   |
| • to DP, master   | Yes   |
| • to DP, slave  | Yes   |
| • in AS, master   | Yes   |
| • in AS, slave  | Yes   |
| • on Ethernet via NTP                                   | Yes; As client  |
| • to IF 964 DP  | No  |
| <b>Time difference in system when synchronizing via</b> |   |
| • Ethernet, max.  | 10 ms   |
| • MPI, max.   | 200 ms  |
| <b>Interfaces</b>                                       |   |
| Interfaces/bus type                                     | 1 x MPI/PROFIBUS DP, 1 x PROFINET (2 ports)   |
| Number of RS 485 interfaces                             | 1; Combined MPI / PROFIBUS DP   |
| <b>1. Interface</b>                                     |   |
| Interface type  | MPI/PROFIBUS DP   |
| Isolated  | Yes   |
| <b>Interface types</b>                                  |   |
| • RS 485  | Yes   |
| • Output current of the interface, max.                 | 150 mA  |
| <b>Protocols</b>  |   |
| • MPI   | Yes   |
| • PROFIBUS DP master                                    | Yes   |
| • PROFIBUS DP slave                                     | Yes   |
| <b>MPI</b>  |   |
| • Number of connections                                 | 32; If a diagnostics repeater is used on the line, the number of connection resources on the line is reduced by 1 |
| • Transmission rate, max.                               | 12 Mbit/s   |
| <b>Services</b>   |   |
| — PG/OP communication                                   | Yes   |
| — Routing   | Yes   |
| — Global data communication                             | Yes   |
| — S7 basic communication                                | Yes   |
| — S7 communication                                      | Yes   |
| — S7 communication, as client                           | Yes   |
| — S7 communication, as server                           | Yes   |
| <b>PROFIBUS DP master</b>                               |   |
| • Number of connections, max.                           | 16; If a diagnostics repeater is used on the line, the number of connection resources on the line is reduced by 1 |
| • Transmission rate, max.                               | 12 Mbit/s   |
| • Number of DP slaves, max.                             | 32  |
| <b>Services</b>   |   |
| — PG/OP communication                                   | Yes   |
| — Routing   | Yes; S7 routing   |

|   |   |
|---|---|
| — Global data communication                           | No  |
| — S7 basic communication                              | Yes   |
| — S7 communication                                    | Yes   |
| — S7 communication, as client                         | Yes   |
| — S7 communication, as server                         | Yes   |
| — Equidistance  | Yes   |
| — Isochronous mode                                    | Yes   |
| — SYNC/FREEZE   | Yes   |
| — Activation/deactivation of DP slaves                | Yes   |
| — Direct data exchange (slave-to-slave communication) | Yes   |
| — DPV1  | Yes   |
| <b>Address area</b>                                   |   |
| — Inputs, max.  | 2 kbyte   |
| — Outputs, max.                                       | 2 kbyte   |
| <b>User data per DP slave</b>                         |   |
| — User data per DP slave, max.                        | 244 byte  |
| — Inputs, max.  | 244 byte  |
| — Outputs, max.                                       | 244 byte  |
| — Slots, max.   | 244   |
| — per slot, max.                                      | 128 byte  |
| <b>PROFIBUS DP slave</b>                              |   |
| • Number of connections                               | 16  |
| • GSD file  | <a href="http://support.automation.siemens.com/WW/view/en/113652">http://support.automation.siemens.com/WW/view/en/113652</a> |
| • Transmission rate, max.                             | 12 Mbit/s   |
| • automatic baud rate search                          | No  |
| • Address area, max.                                  | 32; Virtual slots   |
| • User data per address area, max.                    | 32 byte   |
| — of which consistent, max.                           | 32 byte   |
| <b>Services</b>                                       |   |
| — PG/OP communication                                 | Yes; with interface active  |
| — Routing   | Yes; with interface active  |
| — Global data communication                           | No  |
| — S7 basic communication                              | No  |
| — S7 communication                                    | Yes   |
| — S7 communication, as client                         | Yes   |
| — S7 communication, as server                         | Yes   |
| — Direct data exchange (slave-to-slave communication) | No  |
| — DPV1  | No  |
| <b>Transfer memory</b>                                |   |
| — Inputs  | 244 byte  |
| — Outputs   | 244 byte  |
| <b>2. Interface</b>                                   |   |
| Interface type  | PROFINET  |
| Isolated  | Yes   |
| automatic detection of transmission rate              | Yes; Autosensing  |
| Autonegotiation                                       | Yes   |
| Autocrossing  | Yes   |
| Change of IP address at runtime, supported            | Yes; Assignment by higher-level IO-Controller or by the user program with SFB104 "IP_CONF"                                    |
| <b>Interface types</b>                                |   |
| • RJ 45 (Ethernet)                                    | Yes   |
| • Number of ports                                     | 2   |
| • integrated switch                                   | Yes   |
| <b>Protocols</b>                                      |   |
| • PROFINET IO Controller                              | Yes   |
| • PROFINET IO Device                                  | Yes   |
| • PROFINET CBA  | Yes   |
| • PROFIBUS DP master                                  | No  |
| • PROFIBUS DP slave                                   | No  |
| • Open IE communication                               | Yes   |

|   |   |
|---|---|
| • Web server  | Yes   |
| • Point-to-point connection   | No  |
| • Media redundancy  | Yes   |
| <b>PROFINET IO Controller</b>   |   |
| • Transmission rate, max.   | 100 Mbit/s  |
| <b>Services</b>   |   |
| — PG/OP communication   | Yes   |
| — S7 communication  | Yes   |
| — Isochronous mode  | Yes; Only with IRT and the High Performance option  |
| — Shared device   | Yes   |
| — Prioritized startup   | Yes   |
| — Number of IO devices with prioritized startup, max.                         | 32  |
| — Number of connectable IO Devices, max.                                      | 256   |
| — Of which IO devices with IRT, max.  | 64  |
| — of which in line, max.  | 64  |
| — Number of IO Devices with IRT and the option "high flexibility"             | 256   |
| — of which in line, max.  | 61  |
| — Number of connectable IO Devices for RT, max.                               | 256   |
| — of which in line, max.  | 256   |
| — Activation/deactivation of IO Devices                                       | Yes   |
| — Number of IO Devices that can be simultaneously activated/deactivated, max. | 8   |
| — IO Devices changing during operation (partner ports), supported             | Yes   |
| — Number of IO Devices per tool, max.   | 8; 8 parallel calls of the SFC 12 "D_ACT_DP" possible per line. Max. 32 IO Devices changing during operation (partner ports) are supported  |
| — Device replacement without swap medium                                      | Yes   |
| — Send cycles   | 250 µs, 500 µs, 1 ms, 2 ms, 4 ms additionally with IRT with high performance: 250 µs to 4 ms in 125 µs frame  |
| — Updating time   | 250 µs to 512 ms; minimum value depends on preset communication share for PROFINET IO, on the number of IO Devices and on the amount of configured user data, see PROFINET system description |
| <b>Address area</b>   |   |
| — Inputs, max.  | 4 kbyte   |
| — Outputs, max.   | 4 kbyte   |
| — User data consistency, max.   | 1 024 byte  |
| <b>PROFINET IO Device</b>   |   |
| <b>Services</b>   |   |
| — PG/OP communication   | Yes   |
| — S7 communication  | Yes   |
| — Isochronous mode  | No  |
| — IRT   | Yes   |
| — Prioritized startup   | Yes   |
| — Shared device   | Yes   |
| — Number of IO Controllers with shared device, max.                           | 2   |
| <b>Transfer memory</b>  |   |
| — Inputs, max.  | 1 440 byte; Per IO Controller with shared device  |
| — Outputs, max.   | 1 440 byte; Per IO Controller with shared device  |
| <b>Submodules</b>   |   |
| — Number, max.  | 64  |
| — User data per submodule, max.   | 1 024 byte  |
| <b>PROFINET CBA</b>   |   |
| • acyclic transmission  | Yes   |
| • cyclic transmission   | Yes   |
| <b>Open IE communication</b>  |   |
| • Number of connections, max.   | 46  |
| • Local port numbers used at the system end                                   | 0, 20, 21, 25, 80, 102, 135, 161, 34962, 34963, 34964, 65532, 65533, 65534, 65535   |
| • Keep-alive function, supported  | Yes   |
| <b>Protocols</b>  |   |
| <b>Redundancy mode</b>  |   |
| Media redundancy  |   |

|   |  |
|---|--|
| — Switchover time on line break, typ.   | 200 ms   |
| — Number of stations in the ring, max.  | 50   |
| <b>SIMATIC communication</b>  |  |
| • S7 routing  | Yes  |
| <b>Open IE communication</b>  |  |
| • TCP/IP  | Yes; via integrated PROFINET interface and loadable FBs                  |
| — Number of connections, max.   | 46   |
| — Data length, max.   | 32 kbyte   |
| — several passive connections per port, supported   | Yes  |
| • ISO-on-TCP (RFC1006)  | Yes; Via integrated PROFINET interface or CP 443-1 Adv. and loadable FBs |
| — Number of connections, max.   | 46   |
| — Data length, max.   | 32 kbyte; 1 452 bytes via CP 443-1 Adv.                                  |
| • UDP   | Yes; via integrated PROFINET interface and loadable FBs                  |
| — Number of connections, max.   | 46   |
| — Data length, max.   | 1 472 byte   |
| <b>Web server</b>   |  |
| • supported   | Yes  |
| • User-defined websites   | Yes  |
| • Number of HTTP clients  | 5  |
| <b>Isochronous mode</b>   |  |
| Equidistance  | Yes  |
| Number of DP masters with isochronous mode  | 1  |
| User data per isochronous slave, max.   | 244 byte   |
| shortest clock pulse  | 1.5 ms; 0.5 ms without use of SFC 126, 127                               |
| max. cycle  | 32 ms  |
| <b>communication functions / header</b>   |  |
| PG/OP communication   | Yes  |
| • Number of connectable OPs without message processing                                      | 47   |
| • Number of connectable OPs with message processing   | 47; When using Alarm_S/SQ and Alarm_D/DQ                                 |
| Data record routing   | Yes  |
| <b>Global data communication</b>  |  |
| • supported   | Yes  |
| • Number of GD loops, max.  | 8  |
| • Number of GD packets, transmitter, max.   | 8  |
| • Number of GD packets, receiver, max.  | 16   |
| • Size of GD packets, max.  | 54 byte  |
| • Size of GD packet (of which consistent), max.   | 1 variable   |
| <b>S7 basic communication</b>   |  |
| • communication function / S7 basic communication   | Yes  |
| • User data per job, max.   | 76 byte  |
| • User data per job (of which consistent), max.   | 1 variable   |
| <b>S7 communication</b>   |  |
| • supported   | Yes  |
| • as server   | Yes  |
| • as client   | Yes  |
| • User data per job, max.   | 64 kbyte   |
| • User data per job (of which consistent), max.   | 462 byte; 1 variable   |
| <b>S5 compatible communication</b>  |  |
| • supported   | Yes; Via FC AG_SEND and AG_RECV, max. via 10 CP 443-1 or 443-5           |
| • User data per job, max.   | 8 kbyte  |
| • User data per job (of which consistent), max.   | 240 byte   |
| • Number of simultaneous AG-SEND/AG-RECV orders per CPU, max.                               | 24/24  |
| <b>Standard communication (FMS)</b>   |  |
| • supported   | Yes; Via CP and loadable FB  |
| <b>communication functions / PROFINET CBA (with set target communication load) / header</b> |  |
| • Setpoint for the CPU communication load   | 20 %   |
| • Number of remote interconnection partners   | 32   |
| • Number of functions, master/slave   | 150  |
| • Total of all master/slave connections   | 4 500  |
| • Data length of all incoming connections master/slave,                                     | 45 000 byte  |

|   |  |
|---|--|
| max.  |  |
| • Data length of all outgoing connections master/slave, max.  | 45 000 byte  |
| • Number of device-internal and PROFIBUS interconnections   | 1 000  |
| • Data length of device-internal und PROFIBUS interconnections, max.  | 16 000 byte  |
| • Data length per connection, max.  | 2 000 byte   |
| <b>performance data / PROFINET CBA / remote interconnection / with acyclic transfer / header</b>  |  |
| — Sampling interval, min.   | 200 ms; Depending on preset communication load, number of interconnections and data length used                          |
| — Number of incoming interconnections   | 250  |
| — Number of outgoing interconnections   | 250  |
| — Data length of all incoming interconnections, max.  | 8 000 byte   |
| — Data length of all outgoing interconnections, max.  | 8 000 byte   |
| — data volume / as user data for remote interconnections / in the case of acyclic transmission / with PROFINET CBA / per connection / maximum | 2 000 byte   |
| <b>performance data / PROFINET CBA / remote interconnection / with cyclic transfer / header</b>   |  |
| — Transmission frequency: Transmission interval, min.   | 1 ms; Depending on preset communication load, number of interconnections and data length used                            |
| — number of remote connections to input variables / with PROFINET CBA / with cyclic transfer / maximum  | 300  |
| — number of remote connections to output variables / with cyclical transfer / with PROFINET CBA / maximum                                     | 300  |
| — data volume / as user data for remote interconnections with input variables / with cyclical transfer / with PROFINET CBA / maximum          | 4 800 byte   |
| — data volume / as user data for remote interconnections with output variables / with cyclical transfer / with PROFINET CBA / maximum         | 4 800 byte   |
| — data volume / as user data for remote interconnections / with cyclical transfer / with PROFINET CBA / per connection / maximum              | 450 byte   |
| <b>performance data / PROFINET CBA / HMI variables via PROFINET / acyclic / header</b>  |  |
| — Number of stations that can log on for HMI variables (PN OPC/iMap)  | 2x PN OPC/1x iMap  |
| — HMI variable updating   | 500 ms   |
| — Number of HMI variables   | 1 000  |
| — Data length of all HMI variables, max.  | 32 000 byte  |
| <b>performance data / PROFINET CBA / PROFIBUS proxy functionality / header</b>  |  |
| — supported   | Yes; 32 PROFIBUS slaves max. connectable   |
| — Data length per connection, max.  | 240 byte; Slave-dependent  |
| <b>Number of connections</b>  |  |
| • overall   | 48   |
| • usable for PG communication   | 47   |
| — reserved for PG communication   | 1  |
| — adjustable for PG communication, max.   | 0  |
| • usable for OP communication   | 47   |
| — reserved for OP communication   | 1  |
| — adjustable for OP communication, max.   | 0  |
| • usable for S7 basic communication   | 46   |
| — reserved for S7 basic communication   | 0  |
| — adjustable for S7 basic communication, max.   | 0  |
| • usable for S7 communication   | 46   |
| — reserved for S7 communication   | 0  |
| — adjustable for S7 communication, max.   | 0  |
| • usable for routing  | 23   |
| — reserved for routing  | 0  |
| — adjustable for routing, max.  | 0  |
| <b>S7 message functions</b>   |  |
| Number of login stations for message functions, max.  | 47; Max. 47 with Alarm_S/SQ and Alarm_D/DQ (OPs); max. 8 with Alarm, Alarm_8, Alarm_8P, Notify and Notify_8 (e.g. WinCC) |
| Symbol-related messages   | Yes  |
| SCAN procedure  | Yes  |
| Program alarms  | Yes  |



|   |  |
|---|--|
| Process diagnostic messages   | Yes  |
| simultaneously active Alarm-S blocks, max.                          | 250; Simultaneously active alarm_S/SQ blocks or alarm_D/DQ blocks    |
| Alarm 8-blocks  | Yes  |
| • Number of instances for alarm 8 and S7 communication blocks, max. | 300  |
| • preset, max.  | 150  |
| Process control messages  | Yes  |
| Number of archives that can log on simultaneously (SFB 37 AR_SEND)  | 4  |
| <b>Number of messages</b>   |  |
| • overall, max.   | 256  |
| • in 100 ms grid, max.  | 0  |
| • in 500 ms grid, max.  | 256  |
| • in 1000 ms grid, max.   | 256  |
| <b>Number of additional values</b>                                  |  |
| • with 100 ms grid, max.  | 0  |
| • with 500, 1000 ms grid, max.                                      | 1  |
| <b>Test commissioning functions</b>                                 |  |
| Status block  | Yes; Up to 16 simultaneously   |
| Single step   | Yes  |
| Number of breakpoints   | 16   |
| <b>Status/control</b>   |  |
| • Status/control variable   | Yes; Up to 16 variable tables  |
| • Variables   | Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters |
| • Number of variables, max.   | 70; Status/control   |
| <b>Forcing</b>  |  |
| • Forcing   | Yes  |
| • Forcing, variables  | Inputs/outputs, bit memories, distributed I/Os                       |
| • Number of variables, max.   | 64   |
| <b>Diagnostic buffer</b>  |  |
| • present   | Yes  |
| • Number of entries, max.   | 3 200  |
| — adjustable  | Yes  |
| — preset  | 120  |
| <b>Service data</b>   |  |
| • can be read out   | Yes  |
| <b>Standards, approvals, certificates</b>                           |  |
| CE mark   | Yes  |
| CSA approval  | Yes  |
| UL approval   | Yes  |
| cULus   | Yes  |
| FM approval   | Yes  |
| RCM (formerly C-TICK)   | Yes  |
| KC approval   | Yes  |
| EAC (formerly Gost-R)   | Yes  |
| <b>Use in hazardous areas</b>                                       |  |
| • ATEX  | ATEX II 3G Ex nA IIC T4 Gc   |
| <b>Ambient conditions</b>   |  |
| <b>Ambient temperature during operation</b>                         |  |
| • min.  | 0 °C   |
| • max.  | 60 °C  |
| <b>configuration / header</b>                                       |  |
| <b>Configuration software</b>                                       |  |
| • STEP 7  | Yes  |
| <b>configuration / programming / header</b>                         |  |
| • Command set   | see instruction list   |
| • Nesting levels  | 7  |
| • Access to consistent data in process image                        | Yes  |
| • System functions (SFC)  | see instruction list   |
| • System function blocks (SFB)                                      | see instruction list   |
| <b>Programming language</b>   |  |

- LAD
- FBD
- STL
- SCL
- CFC
- GRAPH
- HiGraph®

Yes  
Yes  
Yes  
Yes  
Yes  
Yes  
Yes

configuration / programming / number of simultaneously active SFC / header

- DPSYC\_FR
- D\_ACT\_DP
- RD\_REC
- WR\_REC
- WR\_PARM
- PARM\_MOD
- WR\_DPARM
- DPNRM\_DG
- RDSYSST
- DP\_TOPOL

2; SFC 11; per interface  
8; SFC 12; per interface  
8; SFC 59; per interface  
8; SFC 58; per interface  
8; SFC 55; per interface  
1; SFC 57; per interface  
2; SFC 56; per interface  
8; SFC 13; per interface  
8; SFC 51  
1; SFC 103; per interface

configuration / programming / number of simultaneously active SFB / header

- RDREC
- WRREC

8; SFB 52; per interface, but not more than 32 across all external interfaces  
8; SFB 53; per interface, but not more than 32 across all external interfaces

Know-how protection

- User program protection/password protection
- Block encryption

Yes  
Yes; With S7 block Privacy

**Dimensions**

|        |        |
|--------|--------|
| Width  | 25 mm  |
| Height | 290 mm |
| Depth  | 219 mm |

**Weights**

|                 |       |
|-----------------|-------|
| Weight, approx. | 750 g |
|-----------------|-------|

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