

SIMATIC S7-400, CPU 414-3 Central processing unit with: Work memory 4 MB, (2 MB code, 2 MB data), 1st interface MPI/DP 12 Mbit/s, 2nd interface PROFIBUS DP, 3rd interface plug-in IFM module



| General information   |  |
|---|--|
| Product type designation  | CPU 414-3                                |
| HW functional status  | 01                                       |
| Firmware version  | V7.0                                     |
| Product function  |  |
| <ul style="list-style-type: none"> <li>• Isochronous mode</li> </ul>    | Yes; For PROFIBUS only                   |
| Engineering with  |  |
| <ul style="list-style-type: none"> <li>• Programming package</li> </ul> | STEP 7 V5.4 or higher with HSP 261       |
| CiR - Configuration in RUN  |  |
| CiR synchronization time, basic load                                    | 100 ms                                   |
| CiR synchronization time, time per I/O byte                             | 15 µs                                    |
| Supply voltage  |  |
| Rated value (DC)  |  |
| <ul style="list-style-type: none"> <li>• 24 V DC</li> </ul>             | No; 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.   | 1.3 A                                    |
| from backplane bus 24 V DC, max.  | 450 mA; 150 mA per DP interface          |

|  |  |
|--|--|
| from interface 5 V DC, max.  | 90 mA; At each DP interface  |
| <b>Power loss</b>  |  |
| Power loss, typ.   | 5.5 W  |
| Power loss, max.   | 6.5 W  |
| <b>Memory</b>  |  |
| Type of memory   | RAM  |
| <b>Work memory</b>   |  |
| <ul style="list-style-type: none"> <li>• integrated</li> <li>• integrated (for program)</li> <li>• integrated (for data)</li> <li>• expandable</li> </ul>  | <ul style="list-style-type: none"> <li>4 Mbyte</li> <li>2 Mbyte</li> <li>2 Mbyte</li> <li>No</li> </ul>  |
| <b>Load memory</b>   |  |
| <ul style="list-style-type: none"> <li>• expandable FEPRM</li> <li>• expandable FEPRM, max.</li> <li>• integrated RAM, max.</li> <li>• expandable RAM</li> <li>• expandable RAM, max.</li> </ul> | <ul style="list-style-type: none"> <li>Yes; with Memory Card (FLASH)</li> <li>64 Mbyte</li> <li>512 kbyte</li> <li>Yes; with Memory Card (RAM)</li> <li>64 Mbyte</li> </ul>  |
| <b>Backup</b>  |  |
| <ul style="list-style-type: none"> <li>• present</li> <li>• with battery</li> <li>• without battery</li> </ul>   | <ul style="list-style-type: none"> <li>Yes</li> <li>Yes; all data</li> <li>No</li> </ul>   |
| <b>Battery</b>   |  |
| <b>Backup battery</b>  |  |
| <ul style="list-style-type: none"> <li>• Backup current, typ.</li> <li>• Backup current, max.</li> <li>• Backup time, max.</li> <li>• Feeding of external backup voltage to CPU</li> </ul>       | <ul style="list-style-type: none"> <li>180 <math>\mu</math>A</li> <li>850 <math>\mu</math>A</li> <li>Dealt with in the module data manual with the secondary conditions and the factors of influence</li> <li>5 V DC to 15 V DC</li> </ul> |
| <b>CPU processing times</b>  |  |
| for bit operations, typ.   | 18.75 ns   |
| for word operations, typ.  | 18.75 ns   |
| for fixed point arithmetic, typ.   | 18.75 ns   |
| for floating point arithmetic, typ.  | 37.5 ns  |
| <b>CPU-blocks</b>  |  |
| <b>DB</b>  |  |
| <ul style="list-style-type: none"> <li>• Number, max.</li> <li>• Size, max.</li> </ul>   | <ul style="list-style-type: none"> <li>6 000; Number range: 1 to 16000</li> <li>64 kbyte</li> </ul>  |
| <b>FB</b>  |  |
| <ul style="list-style-type: none"> <li>• Number, max.</li> <li>• Size, max.</li> </ul>   | <ul style="list-style-type: none"> <li>3 000; Number range: 0 to 7999</li> <li>64 kbyte</li> </ul>   |

| FC                                     |   |
|--|---|
| • Number, max.                         | 3 000; Number range: 0 to 7999                        |
| • Size, max.                           | 64 kbyte  |
| OB                                     |   |
| • Number, max.                         | see instruction list                                  |
| • Size, max.                           | 64 kbyte  |
| • Number of free cycle OBs             | 1; OB 1   |
| • Number of time alarm OBs             | 4; OB 10-13   |
| • Number of delay alarm OBs            | 4; OB 20-23   |
| • Number of cyclic interrupt OBs       | 4; OB 32-35 (shortest cycle that can be set = 500 µs) |
| • Number of process alarm OBs          | 4; OB 40-43   |
| • Number of DPV1 alarm OBs             | 3; OB 55-57   |
| • Number of isochronous mode OBs       | 3; OB 61-63   |
| • 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   |
| Retentivity                            |   |
| — adjustable                           | Yes   |
| — lower limit                          | 0   |
| — upper limit                          | 2 047   |
| — preset                               | Z 0 to Z 7  |
| Counting range                         |   |
| — lower limit                          | 0   |
| — upper limit                          | 999   |
| IEC counter                            |   |
| • present                              | Yes   |
| • Type                                 | SFB   |
| • Number                               | Unlimited (limited only by RAM capacity)              |
| S7 times                               |   |
| • Number                               | 2 048   |
| Retentivity                            |   |
| — adjustable                           | Yes   |
| — lower limit                          | 0   |

|  |   |
|--|---|
| — upper limit                                | 2 047   |
| — preset                                     | No times retentive                                  |
| <b>Time range</b>                            |   |
| — lower limit                                | 10 ms   |
| — upper limit                                | 9 990 s   |
| <b>IEC timer</b>                             |   |
| • present                                    | Yes   |
| • Type                                       | SFB   |
| • Number                                     | Unlimited (limited only by RAM capacity)            |
| <b>Data areas and their retentivity</b>      |   |
| retentive data area in total                 | Total working and load memory (with backup battery) |
| <b>Flag</b>                                  |   |
| • Number, max.                               | 8 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.                           | 16 kbyte  |
| • preset                                     | 8 kbyte   |
| <b>Address area</b>                          |   |
| <b>I/O address area</b>                      |   |
| • Inputs                                     | 8 kbyte   |
| • Outputs                                    | 8 kbyte   |
| <b>Process image</b>                         |   |
| • Inputs, adjustable                         | 8 kbyte   |
| • Outputs, adjustable                        | 8 kbyte   |
| • Inputs, default                            | 256 byte  |
| • Outputs, default                           | 256 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                                     | 65 536  |
| — of which central                           | 65 536  |
| • Outputs                                    | 65 536  |
| — of which central                           | 65 536  |
| <b>Analog channels</b>                       |   |
| • Inputs                                     | 4 096   |
| — of which central                           | 4 096   |
| • Outputs                                    | 4 096   |

## Hardware configuration

|  |   |
|--|---|
| Number of expansion units, max.  | 21  |
| connectable OPs  | 63  |
| Multicomputing   | Yes; 4 CPUs max. (with UR1 or UR2)  |
| <b>Interface modules</b>   |   |
| <ul style="list-style-type: none"> <li>Number of connectable IMs (total), max.</li> </ul>                                      | 6   |
| <ul style="list-style-type: none"> <li>Number of connectable IM 460s, max.</li> </ul>  | 6   |
| <ul style="list-style-type: none"> <li>Number of connectable IM 463s, max.</li> </ul>  | 4; IM 463-2   |
| <b>Number of DP masters</b>  |   |
| <ul style="list-style-type: none"> <li>integrated</li> </ul>   | 2   |
| <ul style="list-style-type: none"> <li>via CP</li> </ul>   | 10; CP 443-5 Extended   |
| <ul style="list-style-type: none"> <li>via IM 467</li> </ul>   | 4   |
| <ul style="list-style-type: none"> <li>Mixed mode IM + CP permitted</li> </ul>   | No; IM 467 cannot be used jointly with CP 443-5 Ext. or CP 443-1 in PROFINET IO mode  |
| <ul style="list-style-type: none"> <li>via interface module</li> </ul>   | 1   |
| <ul style="list-style-type: none"> <li>Number of pluggable S5 modules (via adapter capsule in central device), max.</li> </ul> | 6   |
| <b>Number of IO Controllers</b>  |   |
| <ul style="list-style-type: none"> <li>integrated</li> </ul>   | 0   |
| <ul style="list-style-type: none"> <li>via CP</li> </ul>   | 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>  |   |
| <ul style="list-style-type: none"> <li>FM</li> </ul>   | Limited by number of slots and number of connections  |
| <ul style="list-style-type: none"> <li>CP, PtP</li> </ul>  | CP 440: Limited by number of slots; CP 441: limited by number of connections  |
| <ul style="list-style-type: none"> <li>PROFIBUS and Ethernet CPs</li> </ul>  | 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>   |   |
| <ul style="list-style-type: none"> <li>required slots</li> </ul>   | 2   |
| <b>Time of day</b>   |   |
| <b>Clock</b>   |   |
| <ul style="list-style-type: none"> <li>Hardware clock (real-time)</li> </ul>   | Yes   |
| <ul style="list-style-type: none"> <li>retentive and synchronizable</li> </ul>   | Yes   |
| <ul style="list-style-type: none"> <li>Resolution</li> </ul>   | 1 ms  |
| <ul style="list-style-type: none"> <li>Deviation per day (buffered), max.</li> </ul>   | 1.7 s; Power off  |
| <ul style="list-style-type: none"> <li>Deviation per day (unbuffered), max.</li> </ul>   | 8.6 s; For power On   |
| <b>Operating hours counter</b>   |   |
| <ul style="list-style-type: none"> <li>Number</li> </ul>   | 16  |
| <ul style="list-style-type: none"> <li>Number/Number range</li> </ul>  | 0 to 15   |
| <ul style="list-style-type: none"> <li>Range of values</li> </ul>  | 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                                   | No; Via CP |
| • to IF 964 DP  | Yes        |
| <b>Time difference in system when synchronizing via</b> |            |
| • MPI, max.   | 200 ms     |

|                             |  |
|-----------------------------|--|
| <b>Interfaces</b>           |  |
| Interfaces/bus type         | 1 x MPI/PROFIBUS DP, 1 x PROFIBUS DP, 1 x PROFIBUS DP (optionally pluggable) |
| Number of RS 485 interfaces | 2; Combined MPI / PROFIBUS DP and PROFIBUS DP                                |
| Number of other interfaces  | 1; PROFIBUS DP with IF 964-DP (plug-in option; MLFB: 6ES7964-2AA04-0AB0)     |

|   |                         |
|---|-------------------------|
| <b>1. Interface</b>                             |                         |
| Interface type                                  | Integrated              |
| Physics   | RS 485 / PROFIBUS + MPI |
| Isolated  | Yes                     |
| Power supply to interface (15 to 30 V DC), 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 |

## 2. Interface

|   |                   |
|---|-------------------|
| Interface type  | Integrated        |
| Physics   | RS 485 / PROFIBUS |
| Isolated  | Yes               |
| Power supply to interface (15 to 30 V DC), max.       | 150 mA            |
| Number of connection resources                        | 16                |
| <b>Protocols</b>                                      |                   |
| • PROFIBUS DP master                                  | Yes               |
| • PROFIBUS DP slave                                   | Yes               |
| <b>PROFIBUS DP master</b>                             |                   |
| • Number of connections, max.                         | 16                |
| • Transmission rate, max.                             | 12 Mbit/s         |
| • Number of DP slaves, max.                           | 96                |
| <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.  | 6 kbyte           |
| — Outputs, max.                                       | 6 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   |
| • Address area, max.                            | 32  |
| • User data per address area, max.              | 32 byte   |
| — of which consistent, max.                     | 32 byte   |
| <b>Services</b>                                 |   |
| — Routing                                       | Yes; with interface active  |
| <b>Transfer memory</b>                          |   |
| — Inputs  | 244 byte  |
| — Outputs                                       | 244 byte  |
| <b>3. Interface</b>                             |   |
| Interface type                                  | pluggable interface module (IF), technical data as for 2nd interface  |
| Plug-in interface modules                       | IF 964-DP (MLFB: 6ES7964-2AA04-0AB0)  |
| Physics   | RS 485 / PROFIBUS   |
| Isolated  | Yes   |
| Power supply to interface (15 to 30 V DC), max. | 150 mA  |
| automatic detection of transmission rate        | No  |
| Number of connection resources                  | 16  |
| <b>Protocols</b>                                |   |
| • MPI   | No  |
| • PROFIBUS DP master                            | Yes   |
| • PROFIBUS DP slave                             | Yes   |
| <b>PROFIBUS DP master</b>                       |   |
| • Number of connections, max.                   | 16  |
| • Transmission rate, max.                       | 12 Mbit/s   |
| • Number of DP slaves, max.                     | 96  |
| <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   |
| — DPV0  | Yes   |
| — DPV1  | Yes   |
| <b>Address area</b>                                   |   |
| — Inputs, max.  | 6 kbyte   |
| — Outputs, max.                                       | 6 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  |
| • User data per address area, max.                    | 32 byte   |
| — of which consistent, max.                           | 32 byte   |
| <b>Services</b>                                       |   |
| — PG/OP communication                                 | Yes   |
| — 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  |

## Protocols

| Open IE communication   |  |
|---|--|
| <ul style="list-style-type: none"> <li>• ISO-on-TCP (RFC1006) <ul style="list-style-type: none"> <li>— Data length, max.</li> </ul> </li> </ul> | Via CP 443-1 and loadable FB<br>1 452 bytes via CP 443-1 Adv.  |
| Web server  |  |
| <ul style="list-style-type: none"> <li>• supported</li> </ul>   | No   |
| Isochronous mode  |  |
| Equidistance  | Yes  |
| Number of DP masters with isochronous mode  | 3  |
| User data per isochronous slave, max.   | 244 byte   |
| shortest clock pulse  | 1 ms; 0.5 ms without use of SFC 126, 127                       |
| max. cycle  | 32 ms  |
| Communication functions   |  |
| PG/OP communication   | Yes  |
| <ul style="list-style-type: none"> <li>• Number of connectable OPs without message processing</li> </ul>  | 63   |
| <ul style="list-style-type: none"> <li>• Number of connectable OPs with message processing</li> </ul>   | 63; When using Alarm_S/SQ and Alarm_D/DQ                       |
| Data record routing   | Yes  |
| Global data communication   |  |
| <ul style="list-style-type: none"> <li>• supported</li> </ul>   | Yes  |
| <ul style="list-style-type: none"> <li>• Number of GD loops, max.</li> </ul>  | 8  |
| <ul style="list-style-type: none"> <li>• Number of GD packets, transmitter, max.</li> </ul>   | 8  |
| <ul style="list-style-type: none"> <li>• Number of GD packets, receiver, max.</li> </ul>  | 16   |
| <ul style="list-style-type: none"> <li>• Size of GD packets, max.</li> </ul>  | 54 byte  |
| <ul style="list-style-type: none"> <li>• Size of GD packet (of which consistent), max.</li> </ul>   | 1 variable   |
| S7 basic communication  |  |
| <ul style="list-style-type: none"> <li>• supported</li> </ul>   | Yes  |
| <ul style="list-style-type: none"> <li>• User data per job, max.</li> </ul>   | 76 byte  |
| <ul style="list-style-type: none"> <li>• User data per job (of which consistent), max.</li> </ul>   | 1 variable   |
| S7 communication  |  |
| <ul style="list-style-type: none"> <li>• supported</li> </ul>   | Yes  |
| <ul style="list-style-type: none"> <li>• as server</li> </ul>   | Yes  |
| <ul style="list-style-type: none"> <li>• as client</li> </ul>   | Yes  |
| <ul style="list-style-type: none"> <li>• User data per job, max.</li> </ul>   | 64 kbyte   |
| <ul style="list-style-type: none"> <li>• User data per job (of which consistent), max.</li> </ul>   | 462 byte; 1 variable   |
| S5 compatible communication   |  |
| <ul style="list-style-type: none"> <li>• supported</li> </ul>   | Yes; Via FC AG_SEND and AG_RECV, max. via 10 CP 443-1 or 443-5 |
| <ul style="list-style-type: none"> <li>• User data per job, max.</li> </ul>   | 8 kbyte  |
| <ul style="list-style-type: none"> <li>• User data per job (of which consistent), max.</li> </ul>   | 240 byte   |
| <ul style="list-style-type: none"> <li>• Number of simultaneous AG-SEND/AG-RECV orders per CPU, max.</li> </ul>                                 | 24/24  |

| Standard communication (FMS)  |  |
|---|--|
| • supported   | Yes; Via CP and loadable FB  |
| Number of connections   |  |
| • overall   | 64   |
| • usable for PG communication                                       | 63   |
| — reserved for PG communication                                     | 1  |
| — adjustable for PG communication, max.                             | 0  |
| • usable for OP communication                                       | 63   |
| — reserved for OP communication                                     | 1  |
| — adjustable for OP communication, max.                             | 0  |
| • usable for S7 basic communication                                 | 62   |
| — reserved for S7 basic communication                               | 0  |
| — adjustable for S7 basic communication, max.                       | 0  |
| • usable for S7 communication                                       | 62   |
| — reserved for S7 communication                                     | 0  |
| — adjustable for S7 communication, max.                             | 0  |
| • usable for routing  | 31   |
| — reserved for routing  | 0  |
| — adjustable for routing, max.                                      | 0  |
| S7 message functions  |  |
| Number of login stations for message functions, max.                | 63; Max. 63 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.                          | 400; 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. | 1 200  |
| • preset, max.  | 300  |
| Process control messages  | Yes  |
| Number of archives that can log on simultaneously (SFB 37 AR_SEND)  | 16   |
| Number of messages  |  |
| • overall, max.   | 512  |
| • in 100 ms grid, max.  | 128  |
| • in 500 ms grid, max.  | 256  |
| • in 1000 ms grid, max.   | 512  |
| Number of additional values   |  |

- with 100 ms grid, max.
- with 500, 1000 ms grid, max.

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### Test commissioning functions

|                       |                              |
|-----------------------|------------------------------|
| Status block          | Yes; Up to 16 simultaneously |
| Single step           | Yes                          |
| Number of breakpoints | 16                           |

#### Status/control

- 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

#### Forcing

- Forcing: Yes
- Forcing, variables: Inputs, outputs, bit memories, peripheral inputs, peripheral outputs
- Number of variables, max.: 256

#### Diagnostic buffer

- present: Yes
- Number of entries, max.: 3 200
  - adjustable: Yes
  - preset: 120

#### Service data

- can be read out: Yes

### Standards, approvals, certificates

|                       |     |
|-----------------------|-----|
| 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 |

#### Use in hazardous areas

- ATEX: ATEX II 3G Ex nA IIC T4 Gc

### Ambient conditions

|                                      |       |
|--------------------------------------|-------|
| Ambient temperature during operation |       |
| • min.                               | 0 °C  |
| • max.                               | 60 °C |

### Configuration

|                        |     |
|------------------------|-----|
| Configuration software |     |
| • STEP 7               | Yes |
| Programming            |     |

|   |   |
|---|---|
| • 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   | Yes   |
| — FBD   | Yes   |
| — STL   | Yes   |
| — SCL   | Yes   |
| — CFC   | Yes   |
| — GRAPH                                       | Yes   |
| — HiGraph®                                    | Yes   |
| <b>Number of simultaneously active SFCs</b>   |   |
| — DPSYC_FR                                    | 2; SFC 11; per interface  |
| — D_ACT_DP                                    | 8; SFC 12; per interface  |
| — RD_REC                                      | 8; SFC 59; per interface  |
| — WR_REC                                      | 8; SFC 58; per interface  |
| — WR_PARM                                     | 8; SFC 55; per interface  |
| — PARM_MOD                                    | 1; SFC 57; per interface  |
| — WR_DPARM                                    | 2; SFC 56; per interface  |
| — DPNRM_DG                                    | 8; SFC 13; per interface  |
| — RDSYSST                                     | 8; SFC 51   |
| — DP_TOPOL                                    | 1; SFC 103; per interface   |
| <b>Number of simultaneously active SFBs</b>   |   |
| — RDREC                                       | 8; SFB 52; per interface, but not more than 32 across all external interfaces |
| — WRREC                                       | 8; SFB 53; per interface, but not more than 32 across all external interfaces |
| <b>Know-how protection</b>                    |   |
| • User program protection/password protection | Yes   |
| • Block encryption                            | Yes; With S7 block Privacy  |
| <b>Dimensions</b>                             |   |
| Width   | 50 mm   |
| Height  | 290 mm  |
| Depth   | 219 mm  |
| <b>Weights</b>                                |   |
| Weight, approx.                               | 900 g   |
| <b>last modified:</b>                         | 10/09/2020  |