



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                            |                                      |
| • Isochronous mode                          | Yes; For PROFIBUS only               |
| Engineering with                            |                                      |
| • Programming package                       | 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)                            | 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          |
| Power loss                                  |                                      |
| Power loss, typ.                            | 5.5 W                                |
| Memory                                      |                                      |
| Type of memory                              | RAM                                  |
| Work memory                                 |                                      |
| • integrated                                | 4 Mbyte                              |
| • integrated (for program)                  | 2 Mbyte                              |
| • integrated (for data)                     | 2 Mbyte                              |
| • expandable                                | No                                   |
| Load memory                                 |                                      |
| • expandable FEPR0M                         | Yes; with Memory Card (FLASH)        |
| • expandable FEPR0M, max.                   | 64 Mbyte                             |
| • integrated RAM, max.                      | 512 kbyte                            |
| • expandable RAM                            | Yes; with Memory Card (RAM)          |
| • expandable RAM, max.                      | 64 Mbyte                             |
| Backup                                      |                                      |
| • present                                   | Yes                                  |
| • with battery                              | Yes; all data                        |
| • without battery                           | No                                   |
| Battery                                     |                                      |
| Backup battery                              |                                      |
| • Backup current, typ.                      | 180 µA                               |

|                                             |                                                                                                 |
|---------------------------------------------|-------------------------------------------------------------------------------------------------|
| • 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.            | 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  |

#### CPU-blocks

|                                    |                                                       |
|------------------------------------|-------------------------------------------------------|
| DB                                 |                                                       |
| • Number, max.                     | 6 000; Number range: 1 to 16000                       |
| • Size, max.                       | 64 kbyte                                              |
| FB                                 |                                                       |
| • Number, max.                     | 3 000; Number range: 0 to 7999                        |
| • Size, max.                       | 64 kbyte                                              |
| 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                                      |
| — 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                                      |
| — preset       | No times retentive                       |
| Time range     |                                          |
| — 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.                                                                   | 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                                                                                                                                           |
| — of which central                                                             | 4 096                                                                                                                                           |
| <b>Hardware configuration</b>                                                  |                                                                                                                                                 |
| Number of expansion units, max.                                                | 21                                                                                                                                              |
| connectable OPs                                                                | 63                                                                                                                                              |
| 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                                                                   | 2                                                                                                                                               |
| • 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                                                         | 1                                                                                                                                               |
| • Number of pluggable S5 modules (via adapter capsule in central device), max. | 6                                                                                                                                               |
| <b>Number of IO Controllers</b>                                                |                                                                                                                                                 |
| • integrated                                                                   | 0                                                                                                                                               |
| • 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 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                                                               | 2                                                                                                                                               |

|                                                         |                                                                                                                   |
|---------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------|
| <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                                                                                                               |
| • on MPI, device                                        | Yes                                                                                                               |
| • to DP, master                                         | Yes                                                                                                               |
| • on DP, device                                         | Yes                                                                                                               |
| • in AS, master                                         | Yes                                                                                                               |
| • in AS, device                                         | 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                                          | 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 device                                    | 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                                                                                                         |
| • max. number of DP devices                             | 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 devices               | 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 device</b>                        |                                                                                                                               |
| — user data per DP device, max.                       | 244 byte                                                                                                                      |
| — Inputs, max.                                        | 244 byte                                                                                                                      |
| — Outputs, max.                                       | 244 byte                                                                                                                      |
| — Slots, max.                                         | 244                                                                                                                           |
| — per slot, max.                                      | 128 byte                                                                                                                      |
| <b>1st interface / PROFIBUS DP device / header</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                                        | PROFIBUS DP                                                                                                                   |
| Isolated                                              | Yes                                                                                                                           |
| <b>Interface types</b>                                |                                                                                                                               |
| • RS 485                                              | Yes                                                                                                                           |
| • Output current of the interface, max.               | 150 mA                                                                                                                        |
| <b>Protocols</b>                                      |                                                                                                                               |
| • PROFIBUS DP master                                  | Yes                                                                                                                           |
| • PROFIBUS DP device                                  | Yes                                                                                                                           |
| <b>PROFIBUS DP master</b>                             |                                                                                                                               |
| • Number of connections, max.                         | 16                                                                                                                            |
| • Transmission rate, max.                             | 12 Mbit/s                                                                                                                     |
| • max. number of DP devices                           | 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 devices               | 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 device</b>                        |                                                                                                                               |
| — user data per DP device, max.                       | 244 byte                                                                                                                      |
| — Inputs, max.                                        | 244 byte                                                                                                                      |
| — Outputs, max.                                       | 244 byte                                                                                                                      |
| — Slots, max.                                         | 244                                                                                                                           |
| — per slot, max.                                      | 128 byte                                                                                                                      |
| <b>2nd interface / PROFIBUS DP device / header</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)                                                                                          |
| Isolated                                              | Yes                                                                                                                           |
| automatic detection of transmission rate              | No                                                                                                                            |
| <b>Interface types</b>                                |                                                                                                                               |
| • RS 485                                              | Yes                                                                                                                           |
| • Output current of the interface, max.               | 150 mA                                                                                                                        |
| <b>Protocols</b>                                      |                                                                                                                               |
| • MPI                                                 | No                                                                                                                            |
| • PROFIBUS DP master                                  | Yes                                                                                                                           |
| • PROFIBUS DP device                                  | Yes                                                                                                                           |
| <b>PROFIBUS DP master</b>                             |                                                                                                                               |
| • Number of connections, max.                         | 16                                                                                                                            |
| • Transmission rate, max.                             | 12 Mbit/s                                                                                                                     |
| • max. number of DP devices                           | 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 devices               | 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 device</b>                                 |                                                                                                                               |
| — user data per DP device, max.                                | 244 byte                                                                                                                      |
| — Inputs, max.                                                 | 244 byte                                                                                                                      |
| — Outputs, max.                                                | 244 byte                                                                                                                      |
| — Slots, max.                                                  | 244                                                                                                                           |
| — per slot, max.                                               | 128 byte                                                                                                                      |
| <b>3rd interface / PROFIBUS DP device / header</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> |
| • transfer rate / at the 3rd interface / as DP slave / maximum | 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                                                                                                                      |
| <b>Protocols</b>                                               |                                                                                                                               |
| <b>SIMATIC communication</b>                                   |                                                                                                                               |
| • S7 routing                                                   | Yes                                                                                                                           |
| <b>Open IE communication</b>                                   |                                                                                                                               |
| • ISO-on-TCP (RFC1006)                                         | Via CP 443-1 and loadable FB                                                                                                  |
| — Data length, max.                                            | 1 452 bytes via CP 443-1 Adv.                                                                                                 |
| <b>Web server</b>                                              |                                                                                                                               |
| • supported                                                    | No                                                                                                                            |
| <b>Isochronous mode</b>                                        |                                                                                                                               |
| 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                                                                                                                         |
| <b>communication functions / header</b>                        |                                                                                                                               |
| PG/OP communication                                            | Yes                                                                                                                           |
| • Number of connectable OPs with message processing            | 63; When using Alarm_S/SQ and Alarm_D/DQ                                                                                      |
| • Number of connectable OPs without message processing         | 63                                                                                                                            |
| 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>                                  |                                                                                                                               |
| • supported                                                    | 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>Number of connections</b>                                        |                                                                                                                          |
| • 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                                                                                                                        |
| <b>S7 message functions</b>                                         |                                                                                                                          |
| 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                                                                                                                       |
| <b>Number of messages</b>                                           |                                                                                                                          |
| • overall, max.                                                     | 512                                                                                                                      |
| • in 100 ms grid, max.                                              | 128                                                                                                                      |
| • in 500 ms grid, max.                                              | 256                                                                                                                      |
| • in 1000 ms grid, max.                                             | 512                                                                                                                      |
| <b>Number of additional values</b>                                  |                                                                                                                          |
| • with 100 ms grid, max.                                            | 1                                                                                                                        |
| • with 500, 1000 ms grid, max.                                      | 10                                                                                                                       |
| <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                                                                                            |



|                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                        |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> <li>• Variables</li> <li>• Number of variables, max.</li> </ul>                                                                                                                                         | Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters<br>70; Status/control                                                                                                                                                                             |
| <b>Forcing</b>                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                        |
| <ul style="list-style-type: none"> <li>• Forcing</li> <li>• Forcing, variables</li> <li>• Number of variables, max.</li> </ul>                                                                                                             | Yes<br>Inputs, outputs, bit memories, peripheral inputs, peripheral outputs<br>256                                                                                                                                                                                     |
| <b>Diagnostic buffer</b>                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                        |
| <ul style="list-style-type: none"> <li>• present</li> <li>• Number of entries, max. <ul style="list-style-type: none"> <li>— adjustable</li> <li>— preset</li> </ul> </li> </ul>                                                           | Yes<br>3 200<br>Yes<br>120                                                                                                                                                                                                                                             |
| <b>Service data</b>                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                        |
| <ul style="list-style-type: none"> <li>• can be read out</li> </ul>                                                                                                                                                                        | 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>                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                        |
| <ul style="list-style-type: none"> <li>• ATEX</li> </ul>                                                                                                                                                                                   | ATEX II 3G Ex nA IIC T4 Gc                                                                                                                                                                                                                                             |
| <b>Ambient conditions</b>                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                        |
| <b>Ambient temperature during operation</b>                                                                                                                                                                                                |                                                                                                                                                                                                                                                                        |
| <ul style="list-style-type: none"> <li>• min.</li> <li>• max.</li> </ul>                                                                                                                                                                   | 0 °C<br>60 °C                                                                                                                                                                                                                                                          |
| <b>configuration / header</b>                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                        |
| <b>Configuration software</b>                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                        |
| <ul style="list-style-type: none"> <li>• STEP 7</li> </ul>                                                                                                                                                                                 | Yes                                                                                                                                                                                                                                                                    |
| <b>configuration / programming / header</b>                                                                                                                                                                                                |                                                                                                                                                                                                                                                                        |
| <ul style="list-style-type: none"> <li>• Command set</li> <li>• Nesting levels</li> <li>• Access to consistent data in process image</li> <li>• System functions (SFC)</li> <li>• System function blocks (SFB)</li> </ul>                  | see instruction list<br>7<br>Yes<br>see instruction list<br>see instruction list                                                                                                                                                                                       |
| <b>Programming language</b>                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                        |
| <ul style="list-style-type: none"> <li>— LAD</li> <li>— FBD</li> <li>— STL</li> <li>— SCL</li> <li>— CFC</li> <li>— GRAPH</li> <li>— HiGraph®</li> </ul>                                                                                   | Yes<br>Yes<br>Yes<br>Yes<br>Yes<br>Yes<br>Yes                                                                                                                                                                                                                          |
| <b>configuration / programming / number of simultaneously active SFC / header</b>                                                                                                                                                          |                                                                                                                                                                                                                                                                        |
| <ul style="list-style-type: none"> <li>— DPSYC_FR</li> <li>— D_ACT_DP</li> <li>— RD_REC</li> <li>— WR_REC</li> <li>— WR_PARM</li> <li>— PARM_MOD</li> <li>— WR_DPARM</li> <li>— DPNRM_DG</li> <li>— RDSYSST</li> <li>— DP_TOPOL</li> </ul> | 2; SFC 11; per interface<br>8; SFC 12; per interface<br>8; SFC 59; per interface<br>8; SFC 58; per interface<br>8; SFC 55; per interface<br>1; SFC 57; per interface<br>2; SFC 56; per interface<br>8; SFC 13; per interface<br>8; SFC 51<br>1; SFC 103; per interface |
| <b>configuration / programming / number of simultaneously active SFB / header</b>                                                                                                                                                          |                                                                                                                                                                                                                                                                        |
| <ul style="list-style-type: none"> <li>— RDREC</li> <li>— WRREC</li> </ul>                                                                                                                                                                 | 8; SFB 52; per interface, but not more than 32 across all external interfaces<br>8; SFB 53; per interface, but not more than 32 across all external interfaces                                                                                                         |
| <b>Know-how protection</b>                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                        |

- User program protection/password protection
- Block encryption

Yes  
Yes; With S7 block Privacy

#### Dimensions

|        |        |
|--------|--------|
| Width  | 50 mm  |
| Height | 290 mm |
| Depth  | 219 mm |

#### Weights

|                 |       |
|-----------------|-------|
| Weight, approx. | 900 g |
|-----------------|-------|

#### Classifications

|        | 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

For use in hazardous locations



[Miscellaneous](#)



##### For use in hazardous locations



[FM](#)



[Type Examination Certificate](#)



##### Maritime application



[NK / Nippon Kaiji Kyokai](#)



##### Maritime application

##### Environment

[CCS \(China Classification Society\)](#)



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