

SIMATIC S7-400, CPU 417-4 CENTRAL PROCESSING UNIT WITH:  
32 MB WORKING MEMORY, (16 MB CODE; 16 MB DATA) 1.  
INTERFACE MPI 12 MBIT/S, 2. INTERFACE PROFIBUS DP, 3./4.  
IF IFM MODULES PLUGGABLE

| General information                                                        |                                          |
|----------------------------------------------------------------------------|------------------------------------------|
| Product type designation                                                   | CPU 417-4                                |
| Hardware product version                                                   | 01                                       |
| Firmware version                                                           | V7.0                                     |
| Engineering with                                                           |                                          |
| <ul style="list-style-type: none"> <li>Programming package</li> </ul>      | STEP 7 V5.4 or higher with HSP 261       |
| CiR – Configuration in RUN                                                 |                                          |
| CiR synchronization time, basic load                                       | 60 ms                                    |
| CiR synchronization time, time per I/O byte                                | 7 µs                                     |
| Supply voltage                                                             |                                          |
| Rated value (DC)                                                           |                                          |
| <ul style="list-style-type: none"> <li>24 V DC</li> </ul>                  | No; Power supply via system power supply |
| Input current                                                              |                                          |
| from backplane bus 5 V DC, typ.                                            | 1.3 A                                    |
| from backplane bus 5 V DC, max.                                            | 1.6 A                                    |
| from backplane bus 24 V DC, max.                                           | 600 mA; 150 mA per DP interface          |
| from interface 5 V DC, max.                                                | 90 mA; At each DP interface              |
| Power loss                                                                 |                                          |
| Power loss, typ.                                                           | 6.5 W                                    |
| Power loss, max.                                                           | 8 W                                      |
| Memory                                                                     |                                          |
| Type of memory                                                             | RAM                                      |
| Work memory                                                                |                                          |
| <ul style="list-style-type: none"> <li>integrated</li> </ul>               | 32 Mbyte                                 |
| <ul style="list-style-type: none"> <li>integrated (for program)</li> </ul> | 16 Mbyte                                 |
| <ul style="list-style-type: none"> <li>integrated (for data)</li> </ul>    | 16 Mbyte                                 |
| <ul style="list-style-type: none"> <li>expandable</li> </ul>               | No                                       |
| Load memory                                                                |                                          |
| <ul style="list-style-type: none"> <li>expandable FEPRM</li> </ul>         | Yes; with Memory Card (FLASH)            |
| <ul style="list-style-type: none"> <li>expandable FEPRM, max.</li> </ul>   | 64 Mbyte                                 |
| <ul style="list-style-type: none"> <li>integrated RAM, max.</li> </ul>     | 1 Mbyte                                  |
| <ul style="list-style-type: none"> <li>expandable RAM</li> </ul>           | Yes; with Memory Card (RAM)              |

|                                             |                                                       |
|---------------------------------------------|-------------------------------------------------------|
| • expandable RAM, max.                      | 64 Mbyte                                              |
| <b>Backup</b>                               |                                                       |
| • present                                   | Yes                                                   |
| • with battery                              | Yes; all data                                         |
| • without battery                           | No                                                    |
| <b>Battery</b>                              |                                                       |
| <b>Backup battery</b>                       |                                                       |
| • Backup current, typ.                      | 225 µA; up to 40 °C                                   |
| • Backup current, max.                      | 1 275 µA                                              |
| • Backup time, max.                         | See reference manual, module data, Chapter 3.3        |
| • Feeding of external backup voltage to CPU | 5 V DC to 15 V DC                                     |
| <b>CPU processing times</b>                 |                                                       |
| for bit operations, typ.                    | 7.5 ns                                                |
| for word operations, typ.                   | 7.5 ns                                                |
| for fixed point arithmetic, typ.            | 7.5 ns                                                |
| for floating point arithmetic, typ.         | 15 ns                                                 |
| <b>CPU-blocks</b>                           |                                                       |
| <b>DB</b>                                   |                                                       |
| • Number, max.                              | 16 000; Number range: 1 to 16000                      |
| • Size, max.                                | 64 kbyte                                              |
| <b>FB</b>                                   |                                                       |
| • Number, max.                              | 8 000; Number range: 0 to 7999                        |
| • Size, max.                                | 64 kbyte                                              |
| <b>FC</b>                                   |                                                       |
| • Number, max.                              | 8 000; Number range: 0 to 7999                        |
| • Size, max.                                | 64 kbyte                                              |
| <b>OB</b>                                   |                                                       |
| • Number, max.                              | see instruction list                                  |
| • Size, max.                                | 64 kbyte                                              |
| • Number of free cycle OBs                  | 1; OB 1                                               |
| • Number of time alarm OBs                  | 8; OB 10-17                                           |
| • Number of delay alarm OBs                 | 4; OB 20-23                                           |
| • Number of cyclic interrupt OBs            | 9; OB 30-38 (shortest cycle that can be set = 500 µs) |
| • Number of process alarm OBs               | 8; OB 40-47                                           |
| • Number of DPV1 alarm OBs                  | 3; OB 55-57                                           |
| • Number of isochronous mode OBs            | 4; OB 61-64                                           |
| • 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                                      |
| <b>Nesting depth</b>                          |                                                     |
| • per priority class                          | 24                                                  |
| • additional within an error OB               | 2                                                   |
| <b>Counters, timers and their retentivity</b> |                                                     |
| <b>S7 counter</b>                             |                                                     |
| • Number                                      | 2 048                                               |
| <b>Retentivity</b>                            |                                                     |
| — adjustable                                  | Yes                                                 |
| — lower limit                                 | 0                                                   |
| — upper limit                                 | 2 047                                               |
| — preset                                      | Z 0 to Z 7                                          |
| <b>Counting range</b>                         |                                                     |
| — lower limit                                 | 0                                                   |
| — upper limit                                 | 999                                                 |
| <b>IEC counter</b>                            |                                                     |
| • present                                     | Yes                                                 |
| • Type                                        | SFB                                                 |
| • Number                                      | Unlimited (limited only by RAM capacity)            |
| <b>S7 times</b>                               |                                                     |
| • Number                                      | 2 048                                               |
| <b>Retentivity</b>                            |                                                     |
| — adjustable                                  | Yes                                                 |
| — lower limit                                 | 0                                                   |
| — upper limit                                 | 2 047                                               |
| — preset                                      | No times retentive                                  |
| <b>Time range</b>                             |                                                     |
| — lower limit                                 | 10 ms                                               |
| — upper limit                                 | 9 990 s                                             |
| <b>IEC timer</b>                              |                                                     |
| • present                                     | Yes                                                 |
| • Type                                        | SFB                                                 |
| • Number                                      | Unlimited (limited only by RAM capacity)            |
| <b>Data areas and their retentivity</b>       |                                                     |
| retentive data area in total                  | Total working and load memory (with backup battery) |
| <b>Flag</b>                                   |                                                     |
| • Number, max.                                | 16 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>Data blocks</b>                            |                                                     |

|                                              |                                    |
|----------------------------------------------|------------------------------------|
| • Number, max.                               | 16 000; Number range: 1 to 16000   |
| • Size, max.                                 | 64 kbyte                           |
| Local data                                   |                                    |
| • adjustable, max.                           | 64 kbyte                           |
| • preset                                     | 32 kbyte                           |
| Address area                                 |                                    |
| I/O address area                             |                                    |
| • Inputs                                     | 16 kbyte                           |
| • Outputs                                    | 16 kbyte                           |
| of which distributed                         |                                    |
| — MPI/DP interface, inputs                   | 2 kbyte                            |
| — MPI/DP interface, outputs                  | 2 kbyte                            |
| — DP interface, inputs                       | 8 kbyte                            |
| — DP interface, outputs                      | 8 kbyte                            |
| Process image                                |                                    |
| • Inputs, adjustable                         | 16 kbyte                           |
| • Outputs, adjustable                        | 16 kbyte                           |
| • Inputs, default                            | 1 024 byte                         |
| • Outputs, default                           | 1 024 byte                         |
| • consistent data, max.                      | 244 byte                           |
| • Access to consistent data in process image | Yes                                |
| Subprocess images                            |                                    |
| • Number of subprocess images, max.          | 15                                 |
| Digital channels                             |                                    |
| • Inputs                                     | 131 072                            |
| — of which central                           | 131 072                            |
| • Outputs                                    | 131 072                            |
| — of which central                           | 131 072                            |
| Analog channels                              |                                    |
| • Inputs                                     | 8 192                              |
| — of which central                           | 8 192                              |
| • Outputs                                    | 8 192                              |
| — of which central                           | 8 192                              |
| Hardware configuration                       |                                    |
| Number of expansion units, max.              | 21                                 |
| connectable OPs                              | 119                                |
| Multicomputing                               | Yes; 4 CPUs max. (with UR1 or UR2) |
| Interface modules                            |                                    |
| • Number of connectable IMs (total), max.    | 6                                  |
| • Number of connectable IM 460s, max.        | 6                                  |
| • Number of connectable IM 463s, max.        | 4; IM 463-2                        |

|                                                                                |                                                                                                         |
|--------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------|
| Number of DP masters                                                           |                                                                                                         |
| • 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                                                         | 2                                                                                                       |
| • Number of pluggable S5 modules (via adapter capsule in central device), max. | 6                                                                                                       |
| Number of IO Controllers                                                       |                                                                                                         |
| • integrated                                                                   | 0                                                                                                       |
| • via CP                                                                       | 4; Max. 4 in the central controller; no mixed operation of different CP 443-1 types in PROFINET IO mode |
| Number of operable FMs and CPs (recommended)                                   |                                                                                                         |
| • 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; Of which 10 CPs max. or IMs as DP master, 4 PROFINET controller maximum                             |
| Slots                                                                          |                                                                                                         |
| • required slots                                                               | 2                                                                                                       |
| Time of day                                                                    |                                                                                                         |
| Clock                                                                          |                                                                                                         |
| • 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                                                                                     |
| Operating hours counter                                                        |                                                                                                         |
| • 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 hour                                                                                                  |
| • retentive                                                                    | Yes                                                                                                     |
| Clock synchronization                                                          |                                                                                                         |
| • supported                                                                    | Yes                                                                                                     |
| • to MPI, master                                                               | Yes                                                                                                     |
| • to MPI, slave                                                                | Yes                                                                                                     |
| • to DP, master                                                                | Yes                                                                                                     |
| • to DP, slave                                                                 | Yes                                                                                                     |
| • in AS, master                                                                | Yes                                                                                                     |
| • in AS, slave                                                                 | Yes                                                                                                     |

|                                                                                                                                                                                                                                                                             |                                                                                                                                      |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> <li>• on Ethernet via NTP</li> <li>• to IF 964 DP</li> </ul>                                                                                                                                                                             | No; Via CP<br>Yes                                                                                                                    |
| Time difference in system when synchronizing via                                                                                                                                                                                                                            |                                                                                                                                      |
| <ul style="list-style-type: none"> <li>• MPI, max.</li> </ul>                                                                                                                                                                                                               | 200 ms                                                                                                                               |
| <b>Interfaces</b>                                                                                                                                                                                                                                                           |                                                                                                                                      |
| Interfaces/bus type                                                                                                                                                                                                                                                         | 1 x MPI/PROFIBUS DP, 1 x PROFIBUS DP, 2 x PROFIBUS DP (optionally pluggable)                                                         |
| Number of RS 485 interfaces                                                                                                                                                                                                                                                 | 2; Combined MPI / PROFIBUS DP and PROFIBUS DP                                                                                        |
| Number of other interfaces                                                                                                                                                                                                                                                  | 2; PROFIBUS DP with IF 964-DP (plug-in option; MLFB: 6ES7964-2AA04-0AB0)                                                             |
| <b>1. Interface</b>                                                                                                                                                                                                                                                         |                                                                                                                                      |
| Interface type                                                                                                                                                                                                                                                              | Integrated                                                                                                                           |
| Physics                                                                                                                                                                                                                                                                     | RS 485 / PROFIBUS + MPI                                                                                                              |
| Isolated                                                                                                                                                                                                                                                                    | Yes                                                                                                                                  |
| Power supply to interface (15 to 30 V DC), max.                                                                                                                                                                                                                             | 150 mA                                                                                                                               |
| Number of connection resources                                                                                                                                                                                                                                              | MPI: 44, DP: 32                                                                                                                      |
| <b>Functionality</b>                                                                                                                                                                                                                                                        |                                                                                                                                      |
| <ul style="list-style-type: none"> <li>• MPI</li> <li>• PROFIBUS DP master</li> <li>• PROFIBUS DP slave</li> </ul>                                                                                                                                                          | Yes<br>Yes<br>Yes                                                                                                                    |
| <b>MPI</b>                                                                                                                                                                                                                                                                  |                                                                                                                                      |
| <ul style="list-style-type: none"> <li>• Number of connections</li> <li>• Transmission rate, max.</li> </ul>                                                                                                                                                                | 44; If a diagnostics repeater is used on the line, the number of connection resources on the line is reduced by 1<br>12 Mbit/s       |
| <b>Services</b>                                                                                                                                                                                                                                                             |                                                                                                                                      |
| <ul style="list-style-type: none"> <li>— PG/OP communication</li> <li>— Routing</li> <li>— Global data communication</li> <li>— S7 basic communication</li> <li>— S7 communication</li> <li>— S7 communication, as client</li> <li>— S7 communication, as server</li> </ul> | Yes<br>Yes<br>Yes<br>Yes<br>Yes<br>Yes<br>Yes                                                                                        |
| <b>DP master</b>                                                                                                                                                                                                                                                            |                                                                                                                                      |
| <ul style="list-style-type: none"> <li>• Number of connections, max.</li> <li>• Transmission rate, max.</li> <li>• Number of DP slaves, max.</li> </ul>                                                                                                                     | 32; If a diagnostics repeater is used on the line, the number of connection resources on the line is reduced by 1<br>12 Mbit/s<br>32 |
| <b>Services</b>                                                                                                                                                                                                                                                             |                                                                                                                                      |
| <ul style="list-style-type: none"> <li>— PG/OP communication</li> <li>— Routing</li> <li>— Global data communication</li> <li>— S7 basic communication</li> </ul>                                                                                                           | Yes<br>Yes; S7 routing<br>No<br>Yes                                                                                                  |

|                                                       |                                                                                                                               |
|-------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------|
| — S7 communication                                    | Yes                                                                                                                           |
| — S7 communication, as client                         | Yes                                                                                                                           |
| — S7 communication, as server                         | Yes                                                                                                                           |
| — Equidistance                                        | Yes                                                                                                                           |
| — Isochronous mode                                    | Yes                                                                                                                           |
| — SYNC/FREEZE                                         | Yes                                                                                                                           |
| — Activation/deactivation of DP slaves                | Yes                                                                                                                           |
| — Direct data exchange (slave-to-slave communication) | Yes                                                                                                                           |
| — DPV1                                                | Yes                                                                                                                           |
| <b>Address area</b>                                   |                                                                                                                               |
| — Inputs, max.                                        | 2 kbyte                                                                                                                       |
| — Outputs, max.                                       | 2 kbyte                                                                                                                       |
| <b>User data per DP slave</b>                         |                                                                                                                               |
| — User data per DP slave, max.                        | 244 byte                                                                                                                      |
| — Inputs, max.                                        | 244 byte                                                                                                                      |
| — Outputs, max.                                       | 244 byte                                                                                                                      |
| — Slots, max.                                         | 244                                                                                                                           |
| — per slot, max.                                      | 128 byte                                                                                                                      |
| <b>DP slave</b>                                       |                                                                                                                               |
| • Number of connections                               | 32                                                                                                                            |
| • 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                                                                                                    |
| — S7 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                                        | Integrated                                                                                                                    |
| Physics                                               | RS 485 / PROFIBUS                                                                                                             |
| Isolated                                              | Yes                                                                                                                           |
| Power supply to interface (15 to 30 V DC), max.       | 150 mA                                                                                                                        |
| Number of connection resources                        | 32                                                                                                                            |
| <b>Functionality</b>                                  |                                                                                                                               |
| • PROFIBUS DP master                                  | Yes                                                                                                                           |
| • PROFIBUS DP slave                                   | Yes                                                                                                                           |
| <b>DP master</b>                                      |                                                                                                                               |
| • Number of connections, max.                         | 32                                                                                                                            |
| • Transmission rate, max.                             | 12 Mbit/s                                                                                                                     |
| • Number of DP slaves, max.                           | 125                                                                                                                           |
| <b>Services</b>                                       |                                                                                                                               |
| — PG/OP communication                                 | Yes                                                                                                                           |
| — Routing                                             | Yes; S7 routing                                                                                                               |
| — Global data communication                           | No                                                                                                                            |
| — S7 basic communication                              | Yes                                                                                                                           |
| — S7 communication                                    | Yes                                                                                                                           |
| — S7 communication, as client                         | Yes                                                                                                                           |
| — S7 communication, as server                         | Yes                                                                                                                           |
| — Equidistance                                        | Yes                                                                                                                           |
| — Isochronous mode                                    | Yes                                                                                                                           |
| — SYNC/FREEZE                                         | Yes                                                                                                                           |
| — Activation/deactivation of DP slaves                | Yes                                                                                                                           |
| — Direct data exchange (slave-to-slave communication) | Yes                                                                                                                           |
| — DPV1                                                | Yes                                                                                                                           |
| <b>Address area</b>                                   |                                                                                                                               |
| — Inputs, max.                                        | 8 kbyte                                                                                                                       |
| — Outputs, max.                                       | 8 kbyte                                                                                                                       |
| <b>User data per DP slave</b>                         |                                                                                                                               |
| — User data per DP slave, max.                        | 244 byte                                                                                                                      |
| — Inputs, max.                                        | 244 byte                                                                                                                      |
| — Outputs, max.                                       | 244 byte                                                                                                                      |
| — Slots, max.                                         | 244                                                                                                                           |
| — per slot, max.                                      | 128 byte                                                                                                                      |
| <b>DP slave</b>                                       |                                                                                                                               |
| • Number of connections                               | 32                                                                                                                            |
| • GSD file                                            | <a href="http://support.automation.siemens.com/WW/view/en/113652">http://support.automation.siemens.com/WW/view/en/113652</a> |
| • Transmission rate, max.                             | 12 Mbit/s                                                                                                                     |
| • Address area, max.                                  | 32                                                                                                                            |

|                                                       |                                                                      |
|-------------------------------------------------------|----------------------------------------------------------------------|
| • User data per address area, max.                    | 32 byte                                                              |
| — of which consistent, max.                           | 32 byte                                                              |
| <b>Services</b>                                       |                                                                      |
| — Routing                                             | Yes; with interface active                                           |
| <b>Transfer memory</b>                                |                                                                      |
| — Inputs                                              | 244 byte                                                             |
| — Outputs                                             | 244 byte                                                             |
| <b>3. Interface</b>                                   |                                                                      |
| Interface type                                        | Pluggable interface module (IF), technical data as for 2nd interface |
| Plug-in interface modules                             | IF 964-DP (MLFB: 6ES7964-2AA04-0AB0)                                 |
| Physics                                               | RS 485 / PROFIBUS                                                    |
| Isolated                                              | Yes                                                                  |
| Power supply to interface (15 to 30 V DC), max.       | 150 mA                                                               |
| automatic detection of transmission rate              | No                                                                   |
| Number of connection resources                        | 32                                                                   |
| <b>Functionality</b>                                  |                                                                      |
| • MPI                                                 | No                                                                   |
| • PROFIBUS DP master                                  | Yes                                                                  |
| • PROFIBUS DP slave                                   | Yes                                                                  |
| <b>DP master</b>                                      |                                                                      |
| • Number of connections, max.                         | 32                                                                   |
| • Transmission rate, max.                             | 12 Mbit/s                                                            |
| • Number of DP slaves, max.                           | 125                                                                  |
| <b>Services</b>                                       |                                                                      |
| — PG/OP communication                                 | Yes                                                                  |
| — Routing                                             | Yes; S7 routing                                                      |
| — Global data communication                           | No                                                                   |
| — S7 basic communication                              | Yes                                                                  |
| — S7 communication                                    | Yes                                                                  |
| — S7 communication, as client                         | Yes                                                                  |
| — S7 communication, as server                         | Yes                                                                  |
| — Equidistance                                        | Yes                                                                  |
| — Isochronous mode                                    | Yes                                                                  |
| — SYNC/FREEZE                                         | Yes                                                                  |
| — Activation/deactivation of DP slaves                | Yes                                                                  |
| — Direct data exchange (slave-to-slave communication) | Yes                                                                  |
| — DPV0                                                | Yes                                                                  |
| — DPV1                                                | Yes                                                                  |
| <b>Address area</b>                                   |                                                                      |
| — Inputs, max.                                        | 8 kbyte                                                              |

|                                                       |                                                                                                                               |
|-------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------|
| — Outputs, max.                                       | 8 kbyte                                                                                                                       |
| <b>User data per DP slave</b>                         |                                                                                                                               |
| — User data per DP slave, max.                        | 244 byte                                                                                                                      |
| — Inputs, max.                                        | 244 byte                                                                                                                      |
| — Outputs, max.                                       | 244 byte                                                                                                                      |
| — Slots, max.                                         | 244                                                                                                                           |
| — per slot, max.                                      | 128 byte                                                                                                                      |
| <b>DP slave</b>                                       |                                                                                                                               |
| • Number of connections                               | 32                                                                                                                            |
| • GSD file                                            | <a href="http://support.automation.siemens.com/WW/view/en/113652">http://support.automation.siemens.com/WW/view/en/113652</a> |
| • Transmission rate, max.                             | 12 Mbit/s                                                                                                                     |
| • automatic baud rate search                          | No                                                                                                                            |
| • Address area, max.                                  | 32                                                                                                                            |
| • User data per address area, max.                    | 32 byte                                                                                                                       |
| — of which consistent, max.                           | 32 byte                                                                                                                       |
| <b>Services</b>                                       |                                                                                                                               |
| — PG/OP communication                                 | Yes                                                                                                                           |
| — S7 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                                                                                                                      |

#### 4. Interface

|                           |                                                                      |
|---------------------------|----------------------------------------------------------------------|
| Interface type            | Pluggable interface module (IF), technical data as for 2nd interface |
| Plug-in interface modules | IF 964-DP (MLFB: 6ES7964-2AA04-0AB0)                                 |

#### Isochronous mode

|                                                                 |                                          |
|-----------------------------------------------------------------|------------------------------------------|
| Isochronous operation (application synchronized up to terminal) | Yes; For PROFIBUS only                   |
| Number of DP masters with isochronous mode                      | 4                                        |
| User data per isochronous slave, max.                           | 244 byte                                 |
| Equidistance                                                    | Yes                                      |
| shortest clock pulse                                            | 1 ms; 0.5 ms without use of SFC 126, 127 |
| max. cycle                                                      | 32 ms                                    |

| Communication functions                                                                                                                                                                                                                                                               |                                                                                                |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------|
| PG/OP communication                                                                                                                                                                                                                                                                   | Yes                                                                                            |
| <ul style="list-style-type: none"> <li>Number of connectable OPs without message processing</li> <li>Number of connectable OPs with message processing</li> </ul>                                                                                                                     | 119<br>119; When using Alarm_S/SQ and Alarm_D/DQ                                               |
| Data record routing                                                                                                                                                                                                                                                                   | Yes                                                                                            |
| Global data communication                                                                                                                                                                                                                                                             |                                                                                                |
| <ul style="list-style-type: none"> <li>supported</li> <li>Number of GD loops, max.</li> <li>Number of GD packets, transmitter, max.</li> <li>Number of GD packets, receiver, max.</li> <li>Size of GD packets, max.</li> <li>Size of GD packet (of which consistent), max.</li> </ul> | Yes<br>16<br>16<br>32<br>54 byte<br>1 variable                                                 |
| S7 basic communication                                                                                                                                                                                                                                                                |                                                                                                |
| <ul style="list-style-type: none"> <li>supported</li> <li>User data per job, max.</li> <li>User data per job (of which consistent), max.</li> </ul>                                                                                                                                   | Yes<br>76 byte<br>1 variable                                                                   |
| S7 communication                                                                                                                                                                                                                                                                      |                                                                                                |
| <ul style="list-style-type: none"> <li>supported</li> <li>as server</li> <li>as client</li> <li>User data per job, max.</li> <li>User data per job (of which consistent), max.</li> </ul>                                                                                             | Yes<br>Yes<br>Yes<br>64 kbyte<br>462 byte; 1 variable                                          |
| S5 compatible communication                                                                                                                                                                                                                                                           |                                                                                                |
| <ul style="list-style-type: none"> <li>supported</li> <li>User data per job, max.</li> <li>User data per job (of which consistent), max.</li> <li>Number of simultaneous AG-SEND/AG-RECV orders per CPU, max.</li> </ul>                                                              | Yes; Via FC AG_SEND and AG_RECV, max. via 10 CP 443-1 or 443-5<br>8 kbyte<br>240 byte<br>64/64 |
| Standard communication (FMS)                                                                                                                                                                                                                                                          |                                                                                                |
| <ul style="list-style-type: none"> <li>supported</li> </ul>                                                                                                                                                                                                                           | Yes; Via CP and loadable FB                                                                    |
| Open IE communication                                                                                                                                                                                                                                                                 |                                                                                                |
| <ul style="list-style-type: none"> <li>ISO-on-TCP (RFC1006) <ul style="list-style-type: none"> <li>Data length, max.</li> </ul> </li> </ul>                                                                                                                                           | Via CP 443-1 and loadable FB<br>1452 bytes via CP 443-1 Adv.                                   |
| Web server                                                                                                                                                                                                                                                                            |                                                                                                |
| <ul style="list-style-type: none"> <li>supported</li> </ul>                                                                                                                                                                                                                           | No                                                                                             |
| Number of connections                                                                                                                                                                                                                                                                 |                                                                                                |
| <ul style="list-style-type: none"> <li>overall</li> <li>usable for PG communication <ul style="list-style-type: none"> <li>reserved for PG communication</li> </ul> </li> </ul>                                                                                                       | 120<br>119<br>1                                                                                |

- adjustable for PG communication, max.
- usable for OP communication
  - reserved for OP communication
  - adjustable for OP communication, max.
- usable for S7 basic communication
  - reserved for S7 basic communication
  - adjustable for S7 basic communication, max.
- usable for S7 communication
  - reserved for S7 communication
  - adjustable for S7 communication, max.
- usable for routing
  - reserved for routing
  - adjustable for routing, max.

0  
119  
1  
0  
118  
0  
0  
118  
0  
0  
59  
0  
0

## S7 message functions

|                                                                     |                                                                                                                             |
|---------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|
| Number of login stations for message functions, max.                | 119; Max. 119 with Alarm_S/SQ and Alarm_D/DQ (OPs); max. 16 with Alarm, Alarm_8, Alarm_8P, Notify and Notify_8 (e.g. WinCC) |
| Symbol-related messages                                             | Yes                                                                                                                         |
| SCAN procedure                                                      | Yes                                                                                                                         |
| Block related messages                                              | Yes                                                                                                                         |
| Process diagnostic messages                                         | Yes                                                                                                                         |
| simultaneously active Alarm-S blocks, max.                          | 1 000; 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. | 10 000                                                                                                                      |
| • preset, max.                                                      | 1 200                                                                                                                       |
| Process control messages                                            | Yes                                                                                                                         |
| Number of archives that can log on simultaneously (SFB 37 AR_SEND)  | 64                                                                                                                          |
| Number of messages                                                  |                                                                                                                             |
| • overall, max.                                                     | 1 024                                                                                                                       |
| • in 100 ms grid, max.                                              | 128                                                                                                                         |
| • in 500 ms grid, max.                                              | 512                                                                                                                         |
| • in 1000 ms grid, max.                                             | 1 024                                                                                                                       |
| Number of additional values                                         |                                                                                                                             |
| • with 100 ms grid, max.                                            | 1                                                                                                                           |
| • with 500, 1000 ms grid, max.                                      | 10                                                                                                                          |

## Test commissioning functions

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

|                                              |                                                                      |
|----------------------------------------------|----------------------------------------------------------------------|
| <b>Status/control</b>                        |                                                                      |
| • Status/control variable                    | Yes; Up to 16 variable tables                                        |
| • Variables                                  | Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters |
| • Number of variables, max.                  | 70; Status/control                                                   |
| <b>Forcing</b>                               |                                                                      |
| • Forcing                                    | Yes                                                                  |
| • Forcing, variables                         | Inputs, outputs, bit memories, peripheral inputs, peripheral outputs |
| • Number of variables, max.                  | 512                                                                  |
| <b>Diagnostic buffer</b>                     |                                                                      |
| • present                                    | Yes                                                                  |
| • Number of entries, max.                    | 3 200                                                                |
| — adjustable                                 | Yes                                                                  |
| — preset                                     | 120                                                                  |
| <b>Service data</b>                          |                                                                      |
| • can be read out                            | Yes                                                                  |
| <b>Standards, approvals, certificates</b>    |                                                                      |
| CE mark                                      | Yes                                                                  |
| CSA approval                                 | Yes                                                                  |
| UL approval                                  | Yes                                                                  |
| cULus                                        | Yes                                                                  |
| FM approval                                  | Yes                                                                  |
| RCM (formerly C-TICK)                        | Yes                                                                  |
| KC approval                                  | Yes                                                                  |
| EAC (formerly Gost-R)                        | Yes                                                                  |
| <b>Use in hazardous areas</b>                |                                                                      |
| • ATEX                                       | ATEX II 3 G Ex nA IIC T4 Gc                                          |
| <b>Ambient conditions</b>                    |                                                                      |
| <b>Ambient temperature during operation</b>  |                                                                      |
| • min.                                       | 0 °C                                                                 |
| • max.                                       | 60 °C                                                                |
| <b>Configuration</b>                         |                                                                      |
| <b>Configuration software</b>                |                                                                      |
| • STEP 7                                     | Yes                                                                  |
| <b>Programming</b>                           |                                                                      |
| • Command set                                | see instruction list                                                 |
| • Nesting levels                             | 7                                                                    |
| • Access to consistent data in process image | Yes                                                                  |
| • System functions (SFC)                     | see instruction list                                                 |
| • System function blocks (SFB)               | see instruction list                                                 |
| <b>Programming language</b>                  |                                                                      |

|                                               |                                                                               |
|-----------------------------------------------|-------------------------------------------------------------------------------|
| — LAD                                         | Yes                                                                           |
| — FBD                                         | Yes                                                                           |
| — STL                                         | Yes                                                                           |
| — SCL                                         | Yes                                                                           |
| — CFC                                         | Yes                                                                           |
| — GRAPH                                       | Yes                                                                           |
| — HiGraph®                                    | Yes                                                                           |
| Number of simultaneously active SFCs          |                                                                               |
| — DPSYC_FR                                    | 2; SFC 11; per interface                                                      |
| — D_ACT_DP                                    | 8; SFC 12; per interface                                                      |
| — RD_REC                                      | 8; SFC 59; per interface                                                      |
| — WR_REC                                      | 8; SFC 58; per interface                                                      |
| — WR_PARM                                     | 8; SFC 55; per interface                                                      |
| — PARM_MOD                                    | 1; SFC 57; per interface                                                      |
| — WR_DPARM                                    | 2; SFC 56; per interface                                                      |
| — DPNRM_DG                                    | 8; SFC 13; per interface                                                      |
| — RDSYSST                                     | 8; SFC 51                                                                     |
| — DP_TOPOL                                    | 1; SFC 103; per interface                                                     |
| Number of simultaneously active SFBs          |                                                                               |
| — RDREC                                       | 8; SFB 52; per interface, but not more than 32 across all external interfaces |
| — WRREC                                       | 8; SFB 53; per interface, but not more than 32 across all external interfaces |
| Know-how protection                           |                                                                               |
| • User program protection/password protection | Yes                                                                           |
| • Block encryption                            | Yes; With S7 block Privacy                                                    |
| Dimensions                                    |                                                                               |
| Width                                         | 50 mm                                                                         |
| Height                                        | 290 mm                                                                        |
| Depth                                         | 219 mm                                                                        |
| Weights                                       |                                                                               |
| Weight, approx.                               | 900 g                                                                         |
| <b>last modified:</b>                         | 11/15/2016                                                                    |