



SIPLUS S7-400 CPU 417-4 based on 6ES7417-4XT07-0AB0 with conformal coating, -25...+70 °C, central processing unit with: work memory 32 MB, (16 MB code; 16 MB data) interfaces 1st interface MPI 12 Mbps; 2nd interface PROFIBUS DP, 3rd/4th interface plug-in IFM module

| General information                         |                                      |
|---------------------------------------------|--------------------------------------|
| Product type designation                    | CPU 417-4                            |
| HW functional status                        | 01                                   |
| Firmware version                            | V7.0                                 |
| based on                                    | <a href="#">6ES7417-4XT07-0AB0</a>   |
| 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        | 60 ms                                |
| CiR synchronization time, time per I/O byte | 7 µs                                 |
| Supply voltage                              |                                      |
| Rated value (DC)                            | 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                                |
| Memory                                      |                                      |
| Type of memory                              | RAM                                  |
| Work memory                                 |                                      |
| • integrated                                | 32 Mbyte                             |
| • integrated (for program)                  | 16 Mbyte                             |
| • integrated (for data)                     | 16 Mbyte                             |
| • expandable                                | No                                   |
| Load memory                                 |                                      |
| • expandable FEPRM                          | Yes; with Memory Card (FLASH)        |
| • expandable FEPRM, max.                    | 64 Mbyte                             |
| • integrated RAM, max.                      | 1 Mbyte                              |
| • 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                              |                                      |

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                           |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> <li>• Backup current, typ.</li> <li>• Backup current, max.</li> <li>• Backup time, max.</li> <li>• Feeding of external backup voltage to CPU</li> </ul>                                                                                                                                                                                                                                                                                                                                                                             | 225 µA; up to 40 °C<br>1 275 µA<br>See reference manual, module data, Chapter 3.3<br>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>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                           |
| <ul style="list-style-type: none"> <li>• Number, max.</li> <li>• Size, max.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 16 000; Number range: 1 to 16000<br>64 kbyte                                                                                                                                                                                                              |
| <b>FB</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                           |
| <ul style="list-style-type: none"> <li>• Number, max.</li> <li>• Size, max.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 8 000; Number range: 0 to 7999<br>64 kbyte                                                                                                                                                                                                                |
| <b>FC</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                           |
| <ul style="list-style-type: none"> <li>• Number, max.</li> <li>• Size, max.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 8 000; Number range: 0 to 7999<br>64 kbyte                                                                                                                                                                                                                |
| <b>OB</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                           |
| <ul style="list-style-type: none"> <li>• Number, max.</li> <li>• Size, max.</li> <li>• Number of free cycle OBs</li> <li>• Number of time alarm OBs</li> <li>• Number of delay alarm OBs</li> <li>• Number of cyclic interrupt OBs</li> <li>• Number of process alarm OBs</li> <li>• Number of DPV1 alarm OBs</li> <li>• Number of isochronous mode OBs</li> <li>• Number of multicomputing OBs</li> <li>• Number of background OBs</li> <li>• Number of startup OBs</li> <li>• Number of asynchronous error OBs</li> <li>• Number of synchronous error OBs</li> </ul> | see instruction list<br>64 kbyte<br>1; OB 1<br>8; OB 10-17<br>4; OB 20-23<br>9; OB 30-38 (shortest cycle that can be set = 500 µs)<br>8; OB 40-47<br>3; OB 55-57<br>4; OB 61-64<br>1; OB 60<br>1; OB 90<br>3; OB 100-102<br>9; OB 80-88<br>2; OB 121, 122 |
| <b>Nesting depth</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                           |
| <ul style="list-style-type: none"> <li>• per priority class</li> <li>• additional within an error OB</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 24<br>2                                                                                                                                                                                                                                                   |
| <b>Counters, timers and their retentivity</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                           |
| <b>S7 counter</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                           |
| <ul style="list-style-type: none"> <li>• Number</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 2 048                                                                                                                                                                                                                                                     |
| <b>Retentivity</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                           |
| — adjustable                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Yes                                                                                                                                                                                                                                                       |
| — preset                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Z 0 to Z 7                                                                                                                                                                                                                                                |
| <b>Counting range</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                           |
| — lower limit                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 0                                                                                                                                                                                                                                                         |
| — upper limit                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 999                                                                                                                                                                                                                                                       |
| <b>IEC counter</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                           |
| <ul style="list-style-type: none"> <li>• present</li> <li>• Type</li> <li>• Number</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Yes<br>SFB<br>Unlimited (limited only by RAM capacity)                                                                                                                                                                                                    |
| <b>S7 times</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                           |
| <ul style="list-style-type: none"> <li>• Number</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 2 048                                                                                                                                                                                                                                                     |
| <b>Retentivity</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                           |
| — adjustable                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Yes                                                                                                                                                                                                                                                       |
| — preset                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | No times retentive                                                                                                                                                                                                                                        |
| <b>Time range</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                           |
| — lower limit                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 10 ms                                                                                                                                                                                                                                                     |
| — upper limit                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 9 990 s                                                                                                                                                                                                                                                   |
| <b>IEC timer</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                           |
| <ul style="list-style-type: none"> <li>• present</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 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.                                                                   | 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>Local data</b>                                                              |                                                                                                         |
| • adjustable, max.                                                             | 64 kbyte                                                                                                |
| • preset                                                                       | 32 kbyte                                                                                                |
| <b>Address area</b>                                                            |                                                                                                         |
| <b>I/O address area</b>                                                        |                                                                                                         |
| • Inputs                                                                       | 16 kbyte                                                                                                |
| • Outputs                                                                      | 16 kbyte                                                                                                |
| <b>Process image</b>                                                           |                                                                                                         |
| • 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                                                                                                     |
| <b>Subprocess images</b>                                                       |                                                                                                         |
| • Number of subprocess images, max.                                            | 15                                                                                                      |
| <b>Digital channels</b>                                                        |                                                                                                         |
| • Inputs                                                                       | 131 072                                                                                                 |
| — of which central                                                             | 131 072                                                                                                 |
| • Outputs                                                                      | 131 072                                                                                                 |
| — of which central                                                             | 131 072                                                                                                 |
| <b>Analog channels</b>                                                         |                                                                                                         |
| • Inputs                                                                       | 8 192                                                                                                   |
| — of which central                                                             | 8 192                                                                                                   |
| • Outputs                                                                      | 8 192                                                                                                   |
| — of which central                                                             | 8 192                                                                                                   |
| <b>Hardware configuration</b>                                                  |                                                                                                         |
| Number of expansion units, max.                                                | 21                                                                                                      |
| connectable OPs                                                                | 119                                                                                                     |
| 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                                                         | 2                                                                                                       |
| • 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; Of which 10 CPs max. or IMs as DP master, 4 PROFINET controller maximum                             |
| <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, 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                                          | 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                                 | 44; 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.                           | 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                                                                                                         |
| • 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                               | 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                                                                                                    |
| — 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.                         | 32                                                                                                                            |
| • Transmission rate, max.                             | 12 Mbit/s                                                                                                                     |
| • max. number of DP devices                           | 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 devices               | 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 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                               | 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)                                                                                          |
| 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.                         | 32                                                                                                                            |
| • Transmission rate, max.                             | 12 Mbit/s                                                                                                                     |
| • max. number of DP devices                           | 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 devices               | 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 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                                        | 32                                                                                                                            |
| • 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>4. 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)                                                                                          |
| <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                     | 4                                                                                                                             |
| 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            | 119; When using Alarm_S/SQ and Alarm_D/DQ                                                                                     |
| • Number of connectable OPs without message processing         | 119                                                                                                                           |
| Data record routing                                            | Yes                                                                                                                           |
| <b>Global data communication</b>                               |                                                                                                                               |
| • supported                                                    | Yes                                                                                                                           |
| • Number of GD loops, max.                                     | 16                                                                                                                            |
| • Number of GD packets, transmitter, max.                      | 16                                                                                                                            |
| • Number of GD packets, receiver, max.                         | 32                                                                                                                            |

|                                                                     |                                                                                                                             |
|---------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|
| • 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.       | 64/64                                                                                                                       |
| <b>Standard communication (FMS)</b>                                 |                                                                                                                             |
| • supported                                                         | Yes; Via CP and loadable FB                                                                                                 |
| <b>Number of connections</b>                                        |                                                                                                                             |
| • overall                                                           | 120                                                                                                                         |
| • usable for PG communication                                       | 119                                                                                                                         |
| — reserved for PG communication                                     | 1                                                                                                                           |
| — adjustable for PG communication, max.                             | 0                                                                                                                           |
| • usable for OP communication                                       | 119                                                                                                                         |
| — reserved for OP communication                                     | 1                                                                                                                           |
| — adjustable for OP communication, max.                             | 0                                                                                                                           |
| • usable for S7 basic communication                                 | 118                                                                                                                         |
| — reserved for S7 basic communication                               | 0                                                                                                                           |
| — adjustable for S7 basic communication, max.                       | 0                                                                                                                           |
| • usable for S7 communication                                       | 118                                                                                                                         |
| — reserved for S7 communication                                     | 0                                                                                                                           |
| — adjustable for S7 communication, max.                             | 0                                                                                                                           |
| • usable for routing                                                | 59                                                                                                                          |
| — reserved for routing                                              | 0                                                                                                                           |
| — adjustable for routing, max.                                      | 0                                                                                                                           |
| <b>S7 message functions</b>                                         |                                                                                                                             |
| 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                                                                                                                         |
| Program alarms                                                      | 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                                                                                                                          |
| <b>Number of messages</b>                                           |                                                                                                                             |
| • overall, max.                                                     | 1 024                                                                                                                       |
| • in 100 ms grid, max.                                              | 128                                                                                                                         |
| • in 500 ms grid, max.                                              | 512                                                                                                                         |
| • in 1000 ms grid, max.                                             | 1 024                                                                                                                       |
| <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                                                                                                                                                                                   |
| • 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                                                                                                                                                                                                             |
| EAC (formerly Gost-R)                                                                                                   | Yes                                                                                                                                                                                                             |
| <b>Ambient conditions</b>                                                                                               |                                                                                                                                                                                                                 |
| <b>Ambient temperature during operation</b>                                                                             |                                                                                                                                                                                                                 |
| • min.                                                                                                                  | -25 °C; = Tmin                                                                                                                                                                                                  |
| • max.                                                                                                                  | 70 °C; = Tmax                                                                                                                                                                                                   |
| <b>Altitude during operation relating to sea level</b>                                                                  |                                                                                                                                                                                                                 |
| • Installation altitude above sea level, max.                                                                           | 5 000 m                                                                                                                                                                                                         |
| • Ambient air temperature-barometric pressure-altitude                                                                  | Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m) |
| <b>Relative humidity</b>                                                                                                |                                                                                                                                                                                                                 |
| • With condensation, tested in accordance with IEC 60068-2-38, max.                                                     | 100 %; RH incl. condensation / frost (no commissioning in bedewed state), horizontal installation                                                                                                               |
| <b>Resistance</b>                                                                                                       |                                                                                                                                                                                                                 |
| <b>Use in stationary industrial systems</b>                                                                             |                                                                                                                                                                                                                 |
| — to biologically active substances according to EN 60721-3-3                                                           | Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request                                                                                                              |
| — to chemically active substances according to EN 60721-3-3                                                             | Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *                                                                                                                        |
| — to mechanically active substances according to EN 60721-3-3                                                           | Yes; Class 3S4 incl. sand, dust, *                                                                                                                                                                              |
| <b>Use on ships/at sea</b>                                                                                              |                                                                                                                                                                                                                 |
| — to biologically active substances according to EN 60721-3-6                                                           | Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request                                                                                                                                   |
| — to chemically active substances according to EN 60721-3-6                                                             | Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *                                                                                                                        |
| — to mechanically active substances according to EN 60721-3-6                                                           | Yes; Class 6S3 incl. sand, dust; *                                                                                                                                                                              |
| <b>Usage in industrial process technology</b>                                                                           |                                                                                                                                                                                                                 |
| — Against chemically active substances acc. to EN 60654-4                                                               | Yes; Class 3 (excluding trichlorethylene)                                                                                                                                                                       |
| — Environmental conditions for process, measuring and control systems acc. to ANSI/ISA-71.04                            | Yes; Level GX group A/B (excluding trichlorethylene; harmful gas concentrations up to the limits of EN 60721-3-3 class 3C4 permissible); level LC3 (salt spray) and level LB3 (oil)                             |
| <b>Remark</b>                                                                                                           |                                                                                                                                                                                                                 |
| — Note regarding classification of environmental conditions acc. to EN 60721, EN 60654-4 and ANSI/ISA-71.04             | * The supplied plug covers must remain in place over the unused interfaces during operation!                                                                                                                    |
| <b>Conformal coating</b>                                                                                                |                                                                                                                                                                                                                 |
| • Coatings for printed circuit board assemblies acc. to EN 61086                                                        | Yes; Class 2 for high reliability                                                                                                                                                                               |
| • Protection against fouling acc. to EN 60664-3                                                                         | Yes; Type 1 protection                                                                                                                                                                                          |
| • Military testing according to MIL-I-46058C, Amendment 7                                                               | Yes; Discoloration of coating possible during service life                                                                                                                                                      |
| • Qualification and Performance of Electrical Insulating Compound for Printed Board Assemblies according to IPC-CC-830A | Yes; Conformal coating, Class A                                                                                                                                                                                 |
| <b>configuration / header</b>                                                                                           |                                                                                                                                                                                                                 |

|                                                                            |                                                                               |         |                |
|----------------------------------------------------------------------------|-------------------------------------------------------------------------------|---------|----------------|
| Configuration software                                                     |                                                                               |         |                |
| • STEP 7                                                                   | Yes                                                                           |         |                |
| configuration / programming / header                                       |                                                                               |         |                |
| • 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                                                          |         |                |
| Programming language                                                       |                                                                               |         |                |
| — LAD                                                                      | Yes                                                                           |         |                |
| — FBD                                                                      | Yes                                                                           |         |                |
| — STL                                                                      | Yes                                                                           |         |                |
| — SCL                                                                      | Yes                                                                           |         |                |
| — CFC                                                                      | Yes                                                                           |         |                |
| — GRAPH                                                                    | Yes                                                                           |         |                |
| — HiGraph®                                                                 | Yes                                                                           |         |                |
| configuration / programming / number of simultaneously active SFC / header |                                                                               |         |                |
| — 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                                                     |         |                |
| configuration / programming / number of simultaneously active SFB / header |                                                                               |         |                |
| — 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                                                                         |         |                |
| 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                                                   |                                                                               |         | EMV            |

[Miscellaneous](#)



[Manufacturer Declaration](#)



For use in hazardous locations

[CCC-Ex](#)



last modified:

12/8/2024 