

SIPPLUS S7-400 CPU 417-4 -25 ... +70 °C with conformal coating  
 Based on 6ES7417-4XT07-0AB0 . Central processing unit with: Work  
 memory 32 MB, (16 MB code; 16 MB data) Interfaces 1st interface  
 MPI 12 Mbit/s; 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                               |
| Engineering with  |                                    |
| <ul style="list-style-type: none"> <li>Programming package</li> </ul> | STEP 7 V5.4 or higher with HSP 261 |

### CiR – Configuration in RUN

|   |       |
|---|-------|
| CiR synchronization time, basic load        | 60 ms |
| CiR synchronization time, time per I/O byte | 7 µs  |

### Supply voltage

|   |  |
|---|--|
| Rated value (DC)  |  |
| <ul style="list-style-type: none"> <li>24 V DC</li> </ul> | No; Power supply via system power supply |

### Input current

|                                  |                                 |
|----------------------------------|---------------------------------|
| from backplane bus 5 V DC, typ.  | 1.3 A                           |
| from backplane bus 5 V DC, max.  | 1.6 A                           |
| from backplane bus 24 V DC, max. | 600 mA; 150 mA per DP interface |
| from interface 5 V DC, max.      | 90 mA; At each DP interface     |

### Power loss

|                  |       |
|------------------|-------|
| Power loss, typ. | 6.5 W |
| Power loss, max. | 8 W   |

### Memory

|   |  |
|---|--|
| Type of memory  | RAM  |
| Work memory   |  |
| <ul style="list-style-type: none"> <li>integrated</li> <li>integrated (for program)</li> <li>integrated (for data)</li> <li>expandable</li> </ul> | 32 Mbyte<br>16 Mbyte<br>16 Mbyte<br>No               |
| Load memory   |  |
| <ul style="list-style-type: none"> <li>expandable FEPR0M</li> <li>expandable FEPR0M, max.</li> <li>integrated RAM, max.</li> </ul>                | Yes; with Memory Card (FLASH)<br>64 Mbyte<br>1 Mbyte |

|                        |                             |
|------------------------|-----------------------------|
| • expandable RAM       | Yes; with Memory Card (RAM) |
| • expandable RAM, max. | 64 Mbyte                    |
| <b>Backup</b>          |                             |
| • present              | Yes                         |
| • with battery         | Yes; all data               |
| • without battery      | No                          |

## Battery

|   |  |
|---|--|
| <b>Backup battery</b>                       |  |
| • Backup current, typ.                      | 225 µA; up to 40 °C                            |
| • Backup current, max.                      | 1 275 µA                                       |
| • Backup time, max.                         | See reference manual, module data, Chapter 3.3 |
| • Feeding of external backup voltage to CPU | 5 V DC to 15 V DC                              |

## CPU processing times

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

## CPU-blocks

### DB

|                |                                  |
|----------------|----------------------------------|
| • Number, max. | 16 000; Number range: 1 to 16000 |
| • Size, max.   | 64 kbyte                         |

### FB

|                |                                |
|----------------|--------------------------------|
| • Number, max. | 8 000; Number range: 0 to 7999 |
| • Size, max.   | 64 kbyte                       |

### FC

|                |                                |
|----------------|--------------------------------|
| • Number, max. | 8 000; Number range: 0 to 7999 |
| • Size, max.   | 64 kbyte                       |

### OB

|                                  |   |
|----------------------------------|---|
| • Number, max.                   | see instruction list                                  |
| • Size, max.                     | 64 kbyte  |
| • Number of free cycle OBs       | 1; OB 1   |
| • Number of time alarm OBs       | 8; OB 10-17   |
| • Number of delay alarm OBs      | 4; OB 20-23   |
| • Number of cyclic interrupt OBs | 9; OB 30-38 (shortest cycle that can be set = 500 µs) |
| • Number of process alarm OBs    | 8; OB 40-47   |
| • Number of DPV1 alarm OBs       | 3; OB 55-57   |
| • Number of isochronous mode OBs | 4; OB 61-64   |
| • Number of multicomputing OBs   | 1; OB 60  |
| • Number of background OBs       | 1; OB 90  |
| • Number of startup OBs          | 3; OB 100-102   |

|   |   |
|---|---|
| • Number of asynchronous error OBs            | 9; OB 80-88   |
| • Number of synchronous error OBs             | 2; OB 121, 122                                      |
| <b>Nesting depth</b>                          |   |
| • per priority class                          | 24  |
| • additional within an error OB               | 2   |
| <b>Counters, timers and their retentivity</b> |   |
| <b>S7 counter</b>                             |   |
| • Number                                      | 2 048   |
| <b>Retentivity</b>                            |   |
| — adjustable                                  | Yes   |
| — lower limit                                 | 0   |
| — upper limit                                 | 2 047   |
| — preset                                      | Z 0 to Z 7  |
| <b>Counting range</b>                         |   |
| — lower limit                                 | 0   |
| — upper limit                                 | 999   |
| <b>IEC counter</b>                            |   |
| • Number                                      | Unlimited (limited only by RAM capacity)            |
| <b>S7 times</b>                               |   |
| • Number                                      | 2 048   |
| <b>Retentivity</b>                            |   |
| — adjustable                                  | Yes   |
| — lower limit                                 | 0   |
| — upper limit                                 | 2 047   |
| — preset                                      | No times retentive                                  |
| <b>Time range</b>                             |   |
| — lower limit                                 | 10 ms   |
| — upper limit                                 | 9 990 s   |
| <b>IEC timer</b>                              |   |
| • present                                     | Yes   |
| • Type  | SFB   |
| • Number                                      | Unlimited (limited only by RAM capacity)            |
| <b>Data areas and their retentivity</b>       |   |
| retentive data area in total                  | Total working and load memory (with backup battery) |
| <b>Flag</b>                                   |   |
| • Number, max.                                | 16 kbyte; Size of bit memory address area           |
| • Retentivity available                       | Yes   |
| • Retentivity preset                          | MB 0 to MB 15                                       |
| • Number of clock memories                    | 8; in 1 memory byte                                 |
| <b>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>of which distributed</b>                  |                                    |
| — MPI/DP interface, inputs                   | 2 kbyte                            |
| — MPI/DP interface, outputs                  | 2 kbyte                            |
| — DP interface, inputs                       | 8 kbyte                            |
| — DP interface, outputs                      | 8 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                                  |

|  |   |
|--|---|
| <ul style="list-style-type: none"> <li>Mixed mode IM + CP permitted</li> </ul>   | No; IM 467 cannot be used jointly with CP 443-5 Ext. or CP 443-1 in PROFINET IO mode                    |
| <ul style="list-style-type: none"> <li>via interface module</li> </ul>   | 2   |
| <ul style="list-style-type: none"> <li>Number of pluggable S5 modules (via adapter capsule in central device), max.</li> </ul> | 6   |
| <b>Number of IO Controllers</b>  |   |
| <ul style="list-style-type: none"> <li>integrated</li> </ul>   | 0   |
| <ul style="list-style-type: none"> <li>via CP</li> </ul>   | 4; Max. 4 in the central controller; no mixed operation of different CP 443-1 types in PROFINET IO mode |
| <b>Number of operable FMs and CPs (recommended)</b>  |   |
| <ul style="list-style-type: none"> <li>FM</li> </ul>   | Limited by number of slots and number of connections  |
| <ul style="list-style-type: none"> <li>CP, PtP</li> </ul>  | CP 440: Limited by number of slots; CP 441: limited by number of connections                            |
| <ul style="list-style-type: none"> <li>PROFIBUS and Ethernet CPs</li> </ul>  | 14; Of which 10 CPs max. or IMs as DP master, 4 PROFINET controller maximum                             |
| <b>Slots</b>   |   |
| <ul style="list-style-type: none"> <li>required slots</li> </ul>   | 2   |
| <b>Time of day</b>   |   |
| <b>Clock</b>   |   |
| <ul style="list-style-type: none"> <li>Hardware clock (real-time)</li> </ul>   | Yes   |
| <ul style="list-style-type: none"> <li>retentive and synchronizable</li> </ul>   | Yes   |
| <ul style="list-style-type: none"> <li>Resolution</li> </ul>   | 1 ms  |
| <ul style="list-style-type: none"> <li>Deviation per day (buffered), max.</li> </ul>   | 1.7 s; Power off  |
| <ul style="list-style-type: none"> <li>Deviation per day (unbuffered), max.</li> </ul>   | 8.6 s; For power On   |
| <b>Operating hours counter</b>   |   |
| <ul style="list-style-type: none"> <li>Number</li> </ul>   | 16  |
| <ul style="list-style-type: none"> <li>Number/Number range</li> </ul>  | 0 to 15   |
| <ul style="list-style-type: none"> <li>Range of values</li> </ul>  | SFCs 2, 3 and 4: 0 to 32767 hours SFC 101: 0 to 2 <sup>31</sup> - 1 hours                               |
| <ul style="list-style-type: none"> <li>retentive</li> </ul>  | Yes   |
| <b>Clock synchronization</b>   |   |
| <ul style="list-style-type: none"> <li>supported</li> </ul>  | Yes   |
| <ul style="list-style-type: none"> <li>to MPI, master</li> </ul>   | Yes   |
| <ul style="list-style-type: none"> <li>to MPI, slave</li> </ul>  | Yes   |
| <ul style="list-style-type: none"> <li>to DP, master</li> </ul>  | Yes   |
| <ul style="list-style-type: none"> <li>to DP, slave</li> </ul>   | Yes   |
| <ul style="list-style-type: none"> <li>in AS, master</li> </ul>  | Yes   |
| <ul style="list-style-type: none"> <li>in AS, slave</li> </ul>   | Yes   |
| <ul style="list-style-type: none"> <li>on Ethernet via NTP</li> </ul>  | No; Via CP  |
| <ul style="list-style-type: none"> <li>to IF 964 DP</li> </ul>   | Yes   |
| <b>Time difference in system when synchronizing via</b>  |   |
| <ul style="list-style-type: none"> <li>MPI, max.</li> </ul>  | 200 ms  |
| <b>Interfaces</b>  |   |

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

### 1. Interface

|   |                         |
|---|-------------------------|
| Interface type                                  | Integrated              |
| Physics   | RS 485 / PROFIBUS + MPI |
| Isolated  | Yes                     |
| Power supply to interface (15 to 30 V DC), max. | 150 mA                  |
| Number of connection resources                  | MPI: 44, DP: 32         |

#### Functionality

|                      |     |
|----------------------|-----|
| • MPI                | Yes |
| • PROFIBUS DP master | Yes |
| • PROFIBUS DP slave  | Yes |

#### MPI

|                           |   |
|---------------------------|---|
| • 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   |

#### Services

|                               |     |
|-------------------------------|-----|
| — 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 |

#### DP master

|                               |   |
|-------------------------------|---|
| • 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   |
| • Number of DP slaves, max.   | 32  |

#### Services

|                               |                 |
|-------------------------------|-----------------|
| — PG/OP communication         | Yes             |
| — Routing                     | Yes; S7 routing |
| — Global data communication   | No              |
| — S7 basic communication      | Yes             |
| — S7 communication            | Yes             |
| — S7 communication, as client | Yes             |
| — S7 communication, as server | Yes             |
| — Equidistance                | Yes             |
| — Isochronous mode            | Yes             |

|   |   |
|---|---|
| — SYNC/FREEZE   | Yes   |
| — Activation/deactivation of DP slaves                | Yes   |
| — Direct data exchange (slave-to-slave communication) | Yes   |
| — DPV1  | Yes   |
| <b>Address area</b>                                   |   |
| — Inputs, max.  | 2 kbyte   |
| — Outputs, max.                                       | 2 kbyte   |
| <b>User data per DP slave</b>                         |   |
| — User data per DP slave, max.                        | 244 byte  |
| — Inputs, max.  | 244 byte  |
| — Outputs, max.                                       | 244 byte  |
| — Slots, max.   | 244   |
| — per slot, max.                                      | 128 byte  |
| <b>DP slave</b>                                       |   |
| • Number of connections                               | 32  |
| • GSD file  | <a href="http://support.automation.siemens.com/WW/view/en/113652">http://support.automation.siemens.com/WW/view/en/113652</a> |
| • Transmission rate, max.                             | 12 Mbit/s   |
| • automatic baud rate search                          | No  |
| • Address area, max.                                  | 32; Virtual slots   |
| • User data per address area, max.                    | 32 byte   |
| — of which consistent, max.                           | 32 byte   |
| <b>Services</b>                                       |   |
| — PG/OP communication                                 | Yes; with interface active  |
| — S7 routing  | Yes; with interface active  |
| — Global data communication                           | No  |
| — S7 basic communication                              | No  |
| — S7 communication                                    | Yes   |
| — S7 communication, as client                         | Yes   |
| — S7 communication, as server                         | Yes   |
| — Direct data exchange (slave-to-slave communication) | No  |
| — DPV1  | No  |
| <b>Transfer memory</b>                                |   |
| — Inputs  | 244 byte  |
| — Outputs   | 244 byte  |

## 2. Interface

|   |                   |
|---|-------------------|
| Interface type                                  | Integrated        |
| Physics   | RS 485 / PROFIBUS |
| Isolated  | Yes               |
| Power supply to interface (15 to 30 V DC), max. | 150 mA            |

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



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

|   |   |
|---|---|
| — Slots, max.   | 244   |
| — per slot, max.  | 128 byte  |
| <b>DP slave</b>   |   |
| • Number of connections   | 32  |
| • GSD file  | <a href="http://support.automation.siemens.com/WW/view/en/113652">http://support.automation.siemens.com/WW/view/en/113652</a> |
| • Transmission rate, max.                                       | 12 Mbit/s   |
| • automatic baud rate search                                    | No  |
| • Address area, max.  | 32  |
| • User data per address area, max.                              | 32 byte   |
| — of which consistent, max.                                     | 32 byte   |
| <b>Services</b>   |   |
| — PG/OP communication   | Yes   |
| — S7 routing  | Yes; with interface active  |
| — Global data communication                                     | No  |
| — S7 basic communication  | No  |
| — S7 communication  | Yes   |
| — S7 communication, as client                                   | Yes   |
| — S7 communication, as server                                   | Yes   |
| — Direct data exchange (slave-to-slave communication)           | No  |
| — DPV1  | No  |
| <b>Transfer memory</b>  |   |
| — Inputs  | 244 byte  |
| — Outputs   | 244 byte  |
| <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>Open IE communication</b>                                    |   |
| • ISO-on-TCP (RFC1006)  | Via CP 443-1 and loadable FB  |
| — Data length, max.   | 1452 bytes via CP 443-1 Adv.  |
| <b>Isochronous mode</b>   |   |
| Isochronous operation (application synchronized up to terminal) | Yes; For PROFIBUS only  |
| 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</b>                                  |   |

|   |  |
|---|--|
| PG/OP communication   | Yes  |
| <ul style="list-style-type: none"> <li>• Number of connectable OPs without message processing</li> <li>• Number of connectable OPs with message processing</li> </ul>   | 119<br>119; When using Alarm_S/SQ and Alarm_D/DQ   |
| Data record routing   | Yes  |
| <b>Global data communication</b>  |  |
| <ul style="list-style-type: none"> <li>• supported</li> <li>• Number of GD loops, max.</li> <li>• Number of GD packets, transmitter, max.</li> <li>• Number of GD packets, receiver, max.</li> <li>• Size of GD packets, max.</li> <li>• Size of GD packet (of which consistent), max.</li> </ul>   | Yes<br>16<br>16<br>32<br>54 byte<br>1 variable   |
| <b>S7 basic communication</b>   |  |
| <ul style="list-style-type: none"> <li>• supported</li> <li>• User data per job, max.</li> <li>• User data per job (of which consistent), max.</li> </ul>   | Yes<br>76 byte<br>1 variable   |
| <b>S7 communication</b>   |  |
| <ul style="list-style-type: none"> <li>• supported</li> <li>• as server</li> <li>• as client</li> <li>• User data per job, max.</li> <li>• User data per job (of which consistent), max.</li> </ul>   | Yes<br>Yes<br>Yes<br>64 kbyte<br>462 byte; 1 variable  |
| <b>S5 compatible communication</b>  |  |
| <ul style="list-style-type: none"> <li>• supported</li> <li>• User data per job, max.</li> <li>• User data per job (of which consistent), max.</li> <li>• Number of simultaneous AG-SEND/AG-RECV orders per CPU, max.</li> </ul>  | Yes; Via FC AG_SEND and AG_RECV, max. via 10 CP 443-1 or 443-5<br>8 kbyte<br>240 byte<br>64/64 |
| <b>Standard communication (FMS)</b>   |  |
| <ul style="list-style-type: none"> <li>• supported</li> </ul>   | Yes; Via CP and loadable FB  |
| <b>Web server</b>   |  |
| <ul style="list-style-type: none"> <li>• supported</li> </ul>   | No   |
| <b>Number of connections</b>  |  |
| <ul style="list-style-type: none"> <li>• overall</li> <li>• usable for PG communication <ul style="list-style-type: none"> <li>— reserved for PG communication</li> <li>— adjustable for PG communication, max.</li> </ul> </li> <li>• usable for OP communication <ul style="list-style-type: none"> <li>— reserved for OP communication</li> <li>— adjustable for OP communication, max.</li> </ul> </li> </ul> | 120<br>119<br>1<br>0<br>119<br>1<br>0  |

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

|     |
|-----|
| 118 |
| 0   |
| 0   |
| 118 |
| 0   |
| 0   |
| 59  |
| 0   |
| 0   |

### S7 message functions

|  |   |
|--|---|
| Number of login stations for message functions, max.   | 119; Max. 119 with Alarm_S/SQ and Alarm_D/DQ (OPs); max. 16 with Alarm, Alarm_8, Alarm_8P, Notify and Notify_8 (e.g. WinCC) |
| Symbol-related messages  | Yes   |
| SCAN procedure   | Yes   |
| 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 <ul style="list-style-type: none"> <li>• Number of instances for alarm 8 and S7 communication blocks, max.</li> <li>• preset, max.</li> </ul>                                 | 10 000<br>1 200   |
| Process control messages   | Yes   |
| Number of archives that can log on simultaneously (SFB 37 AR_SEND)   | 64  |
| <b>Number of messages</b> <ul style="list-style-type: none"> <li>• overall, max.</li> <li>• in 100 ms grid, max.</li> <li>• in 500 ms grid, max.</li> <li>• in 1000 ms grid, max.</li> </ul> | 1 024<br>128<br>512<br>1 024  |
| <b>Number of additional values</b> <ul style="list-style-type: none"> <li>• with 100 ms grid, max.</li> <li>• with 500, 1000 ms grid, max.</li> </ul>  | 1<br>10   |

### Test commissioning functions

|  |   |
|--|---|
| Status block   | Yes; Up to 16 simultaneously  |
| Single step  | Yes   |
| Number of breakpoints  | 16  |
| <b>Status/control</b> <ul style="list-style-type: none"> <li>• Status/control variable</li> <li>• Variables</li> </ul> | Yes; Up to 16 variable tables<br>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; *  |

from supply voltage 1L+

— Note regarding classification of environmental conditions acc. to EN 60721

\* The supplied plug covers must remain in place over the unused interfaces during operation!

## Configuration

|   |   |
|---|---|
| Configuration software                        |   |
| • STEP 7                                      | Yes   |
| Programming                                   |   |
| • Command set                                 | see instruction list  |
| • Nesting levels                              | 7   |
| • Access to consistent data in process image  | Yes   |
| • System functions (SFC)                      | see instruction list  |
| • System function blocks (SFB)                | see instruction list  |
| Programming language                          |   |
| — LAD   | Yes   |
| — FBD   | Yes   |
| — STL   | Yes   |
| — SCL   | Yes   |
| — CFC   | Yes   |
| — GRAPH                                       | Yes   |
| — HiGraph®                                    | Yes   |
| Number of simultaneously active SFCs          |   |
| — DPSYC_FR                                    | 2; SFC 11; per interface  |
| — D_ACT_DP                                    | 8; SFC 12; per interface  |
| — RD_REC                                      | 8; SFC 59; per interface  |
| — WR_REC                                      | 8; SFC 58; per interface  |
| — WR_PARM                                     | 8; SFC 55; per interface  |
| — PARM_MOD                                    | 1; SFC 57; per interface  |
| — WR_DPARM                                    | 2; SFC 56; per interface  |
| — DPNRM_DG                                    | 8; SFC 13; per interface  |
| — RDSYSST                                     | 8; SFC 51   |
| — DP_TOPOL                                    | 1; SFC 103; per interface   |
| Number of simultaneously active SFBs          |   |
| — RDREC                                       | 8; SFB 52; per interface, but not more than 32 across all external interfaces |
| — WRREC                                       | 8; SFB 53; per interface, but not more than 32 across all external interfaces |
| Know-how protection                           |   |
| • User program protection/password protection | Yes   |
| • Block encryption                            | Yes; With S7 block Privacy  |
| Dimensions                                    |   |
| Width   | 50 mm   |

|                       |            |
|-----------------------|------------|
| Height                | 290 mm     |
| Depth                 | 219 mm     |
| <b>Weights</b>        |            |
| Weight, approx.       | 900 g      |
| <b>last modified:</b> | 05/18/2018 |