



SIPLUS S7-300 CPU 315F-2PN/DP -25...+60°C with conformal coating based on 6ES7315-2FJ14-0AB0. Central processing unit with 512 KB work memory, 1st interface MPI/DP 12Mbit/s, 2nd interface Ethernet PROFINET, with 2-port switch, Micro Memory Card required

| General information                                         |                                                    |
|-------------------------------------------------------------|----------------------------------------------------|
| Product function                                            |                                                    |
| • Isochronous mode                                          | Yes; Via PROFIBUS DP or PROFINET interface         |
| Engineering with                                            |                                                    |
| • Programming package                                       | STEP 7 V5.5 or higher, Distributed Safety V5.4 SP4 |
| Supply voltage                                              |                                                    |
| Rated value (DC)                                            | 24 V                                               |
| permissible range, lower limit (DC)                         | 20.4 V                                             |
| permissible range, upper limit (DC)                         | 28.8 V                                             |
| external protection for power supply lines (recommendation) | 2 A min.                                           |
| Mains buffering                                             |                                                    |
| • Mains/voltage failure stored energy time                  | 5 ms                                               |
| • Repeat rate, min.                                         | 1 s                                                |
| Input current                                               |                                                    |
| Current consumption (rated value)                           | 750 mA                                             |
| Current consumption (in no-load operation), typ.            | 150 mA                                             |
| Inrush current, typ.                                        | 4 A                                                |
| $I^2t$                                                      | 1 A <sup>2</sup> ·s                                |
| Power loss                                                  |                                                    |
| Power loss, typ.                                            | 4.65 W                                             |
| Memory                                                      |                                                    |
| Work memory                                                 |                                                    |
| • integrated                                                | 512 kbyte                                          |
| • expandable                                                | No                                                 |
| Load memory                                                 |                                                    |
| • Plug-in (MMC)                                             | Yes                                                |
| • Plug-in (MMC), max.                                       | 8 Mbyte                                            |
| • Data management on MMC (after last programming), min.     | 10 y                                               |
| Backup                                                      |                                                    |
| • present                                                   | Yes; Guaranteed by MMC (maintenance-free)          |
| • without battery                                           | Yes; Program and data                              |
| CPU processing times                                        |                                                    |
| for bit operations, typ.                                    | 0.05 µs                                            |
| for word operations, typ.                                   | 0.09 µs                                            |
| for fixed point arithmetic, typ.                            | 0.12 µs                                            |
| for floating point arithmetic, typ.                         | 0.45 µs                                            |

|                                               |                                                                                               |
|-----------------------------------------------|-----------------------------------------------------------------------------------------------|
| <b>CPU-blocks</b>                             |                                                                                               |
| Number of blocks (total)                      | 1 024; (DBs, FCs, FBs); the maximum number of loadable blocks can be reduced by the MMC used. |
| <b>DB</b>                                     |                                                                                               |
| • Number, max.                                | 1 024; Number range: 1 to 16000                                                               |
| • Size, max.                                  | 64 kbyte                                                                                      |
| <b>FB</b>                                     |                                                                                               |
| • Number, max.                                | 1 024; Number range: 0 to 7999                                                                |
| • Size, max.                                  | 64 kbyte                                                                                      |
| <b>FC</b>                                     |                                                                                               |
| • Number, max.                                | 1 024; Number range: 0 to 7999                                                                |
| • Size, max.                                  | 64 kbyte                                                                                      |
| <b>OB</b>                                     |                                                                                               |
| • Size, max.                                  | 64 kbyte                                                                                      |
| • Number of free cycle OBs                    | 1; OB 1                                                                                       |
| • Number of time alarm OBs                    | 1; OB 10                                                                                      |
| • Number of delay alarm OBs                   | 2; OB 20, 21                                                                                  |
| • Number of cyclic interrupt OBs              | 4; OB 32, 33, 34, 35                                                                          |
| • Number of process alarm OBs                 | 1; OB 40                                                                                      |
| • Number of DPV1 alarm OBs                    | 3; OB 55, 56, 57                                                                              |
| • Number of isochronous mode OBs              | 1; OB 61                                                                                      |
| • Number of startup OBs                       | 1; OB 100                                                                                     |
| • Number of asynchronous error OBs            | 6; OB 80, 82, 83, 85, 86, 87 (OB83 only for PROFINET IO)                                      |
| • Number of synchronous error OBs             | 2; OB 121, 122                                                                                |
| <b>Nesting depth</b>                          |                                                                                               |
| • per priority class                          | 16                                                                                            |
| • additional within an error OB               | 4                                                                                             |
| <b>Counters, timers and their retentivity</b> |                                                                                               |
| <b>S7 counter</b>                             |                                                                                               |
| • Number                                      | 256                                                                                           |
| <b>Retentivity</b>                            |                                                                                               |
| — adjustable                                  | Yes                                                                                           |
| — lower limit                                 | 0                                                                                             |
| — upper limit                                 | 255                                                                                           |
| — preset                                      | Z 0 to Z 7                                                                                    |
| <b>Counting range</b>                         |                                                                                               |
| — adjustable                                  | Yes                                                                                           |
| — lower limit                                 | 0                                                                                             |
| — upper limit                                 | 999                                                                                           |
| <b>IEC counter</b>                            |                                                                                               |
| • present                                     | Yes                                                                                           |
| • Type                                        | SFB                                                                                           |
| • Number                                      | Unlimited (limited only by RAM capacity)                                                      |
| <b>S7 times</b>                               |                                                                                               |
| • Number                                      | 256                                                                                           |
| <b>Retentivity</b>                            |                                                                                               |
| — adjustable                                  | Yes                                                                                           |
| — lower limit                                 | 0                                                                                             |
| — upper limit                                 | 255                                                                                           |
| — preset                                      | No retentivity                                                                                |
| <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 (incl. timers, counters, flags), max. | 128 kbyte                                                                 |
| <b>Flag</b>                                               |                                                                           |
| • Size, max.                                              | 2 048 byte                                                                |
| • Retentivity available                                   | Yes; MB 0 to MB 2 047                                                     |
| • Retentivity preset                                      | MB 0 to MB 15                                                             |
| • Number of clock memories                                | 8; 1 memory byte                                                          |
| <b>Data blocks</b>                                        |                                                                           |
| • Retentivity adjustable                                  | Yes; via non-retain property on DB                                        |
| • Retentivity preset                                      | Yes                                                                       |
| <b>Local data</b>                                         |                                                                           |
| • per priority class, max.                                | 32 768 byte; Max. 2048 bytes per block                                    |
| <b>Address area</b>                                       |                                                                           |
| <b>I/O address area</b>                                   |                                                                           |
| • Inputs                                                  | 2 048 byte                                                                |
| • Outputs                                                 | 2 048 byte                                                                |
| <b>of which distributed</b>                               |                                                                           |
| — Inputs                                                  | 2 048 byte                                                                |
| — Outputs                                                 | 2 048 byte                                                                |
| <b>Process image</b>                                      |                                                                           |
| • Inputs                                                  | 2 048 byte                                                                |
| • Outputs                                                 | 2 048 byte                                                                |
| • Inputs, adjustable                                      | 2 048 byte                                                                |
| • Outputs, adjustable                                     | 2 048 byte                                                                |
| • Inputs, default                                         | 128 byte                                                                  |
| • Outputs, default                                        | 128 byte                                                                  |
| <b>Subprocess images</b>                                  |                                                                           |
| • Number of subprocess images, max.                       | 1; With PROFINET IO, the length of the user data is limited to 1600 bytes |
| <b>Digital channels</b>                                   |                                                                           |
| • Inputs                                                  | 16 384                                                                    |
| — of which central                                        | 1 024                                                                     |
| • Outputs                                                 | 16 384                                                                    |
| — of which central                                        | 1 024                                                                     |
| <b>Analog channels</b>                                    |                                                                           |
| • Inputs                                                  | 1 024                                                                     |
| — of which central                                        | 256                                                                       |
| • Outputs                                                 | 1 024                                                                     |
| — of which central                                        | 256                                                                       |
| <b>Hardware configuration</b>                             |                                                                           |
| Number of expansion units, max.                           | 3                                                                         |
| <b>Number of DP masters</b>                               |                                                                           |
| • integrated                                              | 1                                                                         |
| • via CP                                                  | 4                                                                         |
| <b>Number of operable FMs and CPs (recommended)</b>       |                                                                           |
| • FM                                                      | 8                                                                         |
| • CP, PtP                                                 | 8                                                                         |
| • CP, LAN                                                 | 10                                                                        |
| <b>Rack</b>                                               |                                                                           |
| • Racks, max.                                             | 4                                                                         |
| • Modules per rack, max.                                  | 8                                                                         |
| <b>Time of day</b>                                        |                                                                           |
| <b>Clock</b>                                              |                                                                           |
| • Hardware clock (real-time)                              | Yes                                                                       |
| • retentive and synchronizable                            | Yes                                                                       |
| • Backup time                                             | 6 wk; At 40 °C ambient temperature                                        |
| • Deviation per day, max.                                 | 10 s; Typ.: 2 s                                                           |
| • Behavior of the clock following POWER-ON                | Clock continues running after POWER OFF                                   |
| • Behavior of the clock following expiry of backup        | Clock continues to run with the time at which the power failure occurred  |

|                                          |                                                 |
|------------------------------------------|-------------------------------------------------|
| period                                   |                                                 |
| <b>Operating hours counter</b>           |                                                 |
| • Number                                 | 1                                               |
| • Range of values                        | 0 to 2 <sup>31</sup> hours (when using SFC 101) |
| • Granularity                            | 1 h                                             |
| • retentive                              | Yes; Must be restarted at each restart          |
| <b>Clock synchronization</b>             |                                                 |
| • supported                              | Yes                                             |
| • to MPI, master                         | Yes                                             |
| • to MPI, slave                          | Yes                                             |
| • to DP, master                          | Yes; With DP slave only slave clock             |
| • to DP, slave                           | Yes                                             |
| • in AS, master                          | Yes                                             |
| • in AS, slave                           | Yes                                             |
| • on Ethernet via NTP                    | Yes; As client                                  |
| <b>Digital inputs</b>                    |                                                 |
| Number of digital inputs                 | 0                                               |
| <b>Digital outputs</b>                   |                                                 |
| Number of digital outputs                | 0                                               |
| <b>Analog inputs</b>                     |                                                 |
| Number of analog inputs                  | 0                                               |
| <b>Analog outputs</b>                    |                                                 |
| Number of analog outputs                 | 0                                               |
| <b>Interfaces</b>                        |                                                 |
| Number of industrial Ethernet interfaces | 1                                               |
| Number of PROFINET interfaces            | 1                                               |
| Number of RS 485 interfaces              | 1                                               |
| Number of RS 422 interfaces              | 0                                               |
| <b>1. Interface</b>                      |                                                 |
| Interface type                           | Integrated RS 485 interface                     |
| Isolated                                 | Yes                                             |
| <b>Interface types</b>                   |                                                 |
| • RS 485                                 | Yes                                             |
| • Output current of the interface, max.  | 200 mA                                          |
| <b>Protocols</b>                         |                                                 |
| • MPI                                    | Yes                                             |
| • PROFIBUS DP master                     | Yes                                             |
| • PROFIBUS DP slave                      | Yes                                             |
| • Point-to-point connection              | No                                              |
| <b>MPI</b>                               |                                                 |
| • 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            | No; but via CP and loadable FB                  |
| — S7 communication, as server            | Yes                                             |
| <b>PROFIBUS DP master</b>                |                                                 |
| • Transmission rate, max.                | 12 Mbit/s                                       |
| • Number of DP slaves, max.              | 124                                             |
| <b>Services</b>                          |                                                 |
| — PG/OP communication                    | Yes                                             |
| — Routing                                | Yes                                             |
| — Global data communication              | No                                              |
| — S7 basic communication                 | Yes; I blocks only                              |

|                                                                              |                                                                                           |
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| — S7 communication                                                           | Yes                                                                                       |
| — S7 communication, as client                                                | No                                                                                        |
| — S7 communication, as server                                                | Yes                                                                                       |
| — Equidistance                                                               | Yes                                                                                       |
| — Isochronous mode                                                           | Yes; OB 61; isochronous mode can only be used alternatively on PROFIBUS DP or PROFINET IO |
| — SYNC/FREEZE                                                                | Yes                                                                                       |
| — Activation/deactivation of DP slaves                                       | Yes                                                                                       |
| — Number of DP slaves that can be simultaneously activated/deactivated, max. | 8                                                                                         |
| — Direct data exchange (slave-to-slave communication)                        | Yes; as subscriber                                                                        |
| — DPV1                                                                       | Yes                                                                                       |
| <b>Address area</b>                                                          |                                                                                           |
| — Inputs, max.                                                               | 2 kbyte                                                                                   |
| — Outputs, max.                                                              | 2 kbyte                                                                                   |
| <b>User data per DP slave</b>                                                |                                                                                           |
| — Inputs, max.                                                               | 244 byte                                                                                  |
| — Outputs, max.                                                              | 244 byte                                                                                  |
| <b>PROFIBUS DP slave</b>                                                     |                                                                                           |
| • Transmission rate, max.                                                    | 12 Mbit/s                                                                                 |
| • automatic baud rate search                                                 | Yes; only with passive interface                                                          |
| • Address area, max.                                                         | 32                                                                                        |
| • User data per address area, max.                                           | 32 byte                                                                                   |
| <b>Services</b>                                                              |                                                                                           |
| — PG/OP communication                                                        | Yes                                                                                       |
| — Routing                                                                    | Yes; Only with active interface                                                           |
| — Global data communication                                                  | No                                                                                        |
| — S7 basic communication                                                     | No                                                                                        |
| — S7 communication                                                           | Yes                                                                                       |
| — S7 communication, as client                                                | No                                                                                        |
| — S7 communication, as server                                                | Yes; Connection configured on one side only                                               |
| — Direct data exchange (slave-to-slave communication)                        | Yes                                                                                       |
| — DPV1                                                                       | No                                                                                        |
| <b>Transfer memory</b>                                                       |                                                                                           |
| — Inputs                                                                     | 244 byte                                                                                  |
| — Outputs                                                                    | 244 byte                                                                                  |
| <b>2. Interface</b>                                                          |                                                                                           |
| Isolated                                                                     | Yes                                                                                       |
| automatic detection of transmission rate                                     | Yes; 10/100 Mbit/s                                                                        |
| Autonegotiation                                                              | Yes                                                                                       |
| Autocrossing                                                                 | Yes                                                                                       |
| Change of IP address at runtime, supported                                   | Yes                                                                                       |
| <b>Interface types</b>                                                       |                                                                                           |
| • RJ 45 (Ethernet)                                                           | Yes                                                                                       |
| • Number of ports                                                            | 2                                                                                         |
| • integrated switch                                                          | Yes                                                                                       |
| <b>Protocols</b>                                                             |                                                                                           |
| • MPI                                                                        | No                                                                                        |
| • PROFINET IO Controller                                                     | Yes; Also simultaneously with IO-Device functionality                                     |
| • PROFINET IO Device                                                         | Yes; Also simultaneously with IO Controller functionality                                 |
| • PROFINET CBA                                                               | Yes                                                                                       |
| • PROFIBUS DP master                                                         | No                                                                                        |
| • PROFIBUS DP slave                                                          | No                                                                                        |
| • Open IE communication                                                      | Yes; Via TCP/IP, ISO on TCP, and UDP                                                      |
| • Web server                                                                 | Yes; only read function                                                                   |
| • Media redundancy                                                           | Yes                                                                                       |
| <b>PROFINET IO Controller</b>                                                |                                                                                           |

|                                                                               |                                                                                                                               |
|-------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------|
| • Transmission rate, max.                                                     | 100 Mbit/s                                                                                                                    |
| <b>Services</b>                                                               |                                                                                                                               |
| — PG/OP communication                                                         | Yes                                                                                                                           |
| — Routing                                                                     | Yes                                                                                                                           |
| — S7 communication                                                            | Yes; With loadable FBs, max. configurable connections: 14, max. number of instances: 32                                       |
| — Isochronous mode                                                            | Yes; OB 61; isochronous mode can only be used alternatively on PROFIBUS DP or PROFINET IO                                     |
| — IRT                                                                         | Yes                                                                                                                           |
| — Shared device                                                               | Yes                                                                                                                           |
| — Prioritized startup                                                         | Yes                                                                                                                           |
| — Number of IO devices with prioritized startup, max.                         | 32                                                                                                                            |
| — Number of connectable IO Devices, max.                                      | 128                                                                                                                           |
| — Of which IO devices with IRT, max.                                          | 64                                                                                                                            |
| — of which in line, max.                                                      | 64                                                                                                                            |
| — Number of IO Devices with IRT and the option "high flexibility"             | 128                                                                                                                           |
| — of which in line, max.                                                      | 61                                                                                                                            |
| — Number of connectable IO Devices for RT, max.                               | 128                                                                                                                           |
| — of which in line, max.                                                      | 128                                                                                                                           |
| — Activation/deactivation of IO Devices                                       | Yes                                                                                                                           |
| — Number of IO Devices that can be simultaneously activated/deactivated, max. | 8                                                                                                                             |
| — IO Devices changing during operation (partner ports), supported             | Yes                                                                                                                           |
| — Number of IO Devices per tool, max.                                         | 8                                                                                                                             |
| — Device replacement without swap medium                                      | Yes                                                                                                                           |
| — Send cycles                                                                 | 250 µs, 500 µs, 1 ms; 2 ms, 4 ms (not in the case of IRT with "high flexibility" option)                                      |
| — Updating time                                                               | 250 µs to 512 ms (depending on the operating mode, see Manual "S7-300 CPU 31xC and CPU 31x, technical Data" for more details) |
| <b>Address area</b>                                                           |                                                                                                                               |
| — Inputs, max.                                                                | 2 kbyte                                                                                                                       |
| — Outputs, max.                                                               | 2 kbyte                                                                                                                       |
| — User data consistency, max.                                                 | 1 024 byte                                                                                                                    |
| <b>PROFINET IO Device</b>                                                     |                                                                                                                               |
| <b>Services</b>                                                               |                                                                                                                               |
| — PG/OP communication                                                         | Yes                                                                                                                           |
| — Routing                                                                     | Yes                                                                                                                           |
| — S7 communication                                                            | Yes; With loadable FBs, max. configurable connections: 14, max. number of instances: 32                                       |
| — Isochronous mode                                                            | No                                                                                                                            |
| — IRT                                                                         | Yes                                                                                                                           |
| — PROFINergy                                                                  | Yes; With SFB 73 / 74 prepared for loadable PROFINergy standard FB for I-Device                                               |
| — Shared device                                                               | Yes                                                                                                                           |
| — Number of IO Controllers with shared device, max.                           | 2                                                                                                                             |
| <b>Transfer memory</b>                                                        |                                                                                                                               |
| — Inputs, max.                                                                | 1 440 byte; Per IO Controller with shared device                                                                              |
| — Outputs, max.                                                               | 1 440 byte; Per IO Controller with shared device                                                                              |
| <b>Submodules</b>                                                             |                                                                                                                               |
| — Number, max.                                                                | 64                                                                                                                            |
| — User data per submodule, max.                                               | 1 024 byte                                                                                                                    |
| <b>PROFINET CBA</b>                                                           |                                                                                                                               |
| • acyclic transmission                                                        | Yes                                                                                                                           |
| • cyclic transmission                                                         | Yes                                                                                                                           |
| <b>Open IE communication</b>                                                  |                                                                                                                               |
| • Number of connections, max.                                                 | 8                                                                                                                             |

|                                                                                                              |                                                                                                       |
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| <ul style="list-style-type: none"> <li>Local port numbers used at the system end</li> </ul>                  | 0, 20, 21, 25, 80, 102, 135, 161, 8080, 34962, 34963, 34964, 65532, 65533, 65534, 65535               |
| <ul style="list-style-type: none"> <li>Keep-alive function, supported</li> </ul>                             | Yes                                                                                                   |
| <b>Protocols</b>                                                                                             |                                                                                                       |
| Redundancy mode                                                                                              |                                                                                                       |
| Media redundancy                                                                                             |                                                                                                       |
| — Switchover time on line break, typ.                                                                        | 200 ms; PROFINET MRP                                                                                  |
| — Number of stations in the ring, max.                                                                       | 50                                                                                                    |
| Open IE communication                                                                                        |                                                                                                       |
| <ul style="list-style-type: none"> <li>TCP/IP</li> </ul>                                                     | Yes; via integrated PROFINET interface and loadable FBs                                               |
| — Number of connections, max.                                                                                | 8                                                                                                     |
| — Data length for connection type 01H, max.                                                                  | 1 460 byte                                                                                            |
| — Data length for connection type 11H, max.                                                                  | 32 768 byte                                                                                           |
| — several passive connections per port, supported                                                            | Yes                                                                                                   |
| <ul style="list-style-type: none"> <li>ISO-on-TCP (RFC1006)</li> </ul>                                       | Yes; via integrated PROFINET interface and loadable FBs                                               |
| — Number of connections, max.                                                                                | 8                                                                                                     |
| — Data length, max.                                                                                          | 32 768 byte                                                                                           |
| <ul style="list-style-type: none"> <li>UDP</li> </ul>                                                        | Yes; via integrated PROFINET interface and loadable FBs                                               |
| — Number of connections, max.                                                                                | 8                                                                                                     |
| — Data length, max.                                                                                          | 1 472 byte                                                                                            |
| Web server                                                                                                   |                                                                                                       |
| <ul style="list-style-type: none"> <li>supported</li> </ul>                                                  | Yes; only read function                                                                               |
| <ul style="list-style-type: none"> <li>User-defined websites</li> </ul>                                      | Yes                                                                                                   |
| <ul style="list-style-type: none"> <li>Number of HTTP clients</li> </ul>                                     | 5                                                                                                     |
| <b>Communication functions</b>                                                                               |                                                                                                       |
| PG/OP communication                                                                                          | Yes                                                                                                   |
| Data record routing                                                                                          | Yes                                                                                                   |
| Global data communication                                                                                    |                                                                                                       |
| <ul style="list-style-type: none"> <li>supported</li> </ul>                                                  | Yes                                                                                                   |
| <ul style="list-style-type: none"> <li>Number of GD loops, max.</li> </ul>                                   | 8                                                                                                     |
| <ul style="list-style-type: none"> <li>Number of GD packets, max.</li> </ul>                                 | 8                                                                                                     |
| <ul style="list-style-type: none"> <li>Number of GD packets, transmitter, max.</li> </ul>                    | 8                                                                                                     |
| <ul style="list-style-type: none"> <li>Number of GD packets, receiver, max.</li> </ul>                       | 8                                                                                                     |
| <ul style="list-style-type: none"> <li>Size of GD packets, max.</li> </ul>                                   | 22 byte                                                                                               |
| <ul style="list-style-type: none"> <li>Size of GD packet (of which consistent), max.</li> </ul>              | 22 byte                                                                                               |
| S7 basic communication                                                                                       |                                                                                                       |
| <ul style="list-style-type: none"> <li>supported</li> </ul>                                                  | Yes                                                                                                   |
| <ul style="list-style-type: none"> <li>User data per job, max.</li> </ul>                                    | 76 byte                                                                                               |
| <ul style="list-style-type: none"> <li>User data per job (of which consistent), max.</li> </ul>              | 76 byte; 76 bytes (with X_SEND or X_RCV); 64 bytes (with X_PUT or X_GET as server)                    |
| S7 communication                                                                                             |                                                                                                       |
| <ul style="list-style-type: none"> <li>supported</li> </ul>                                                  | Yes                                                                                                   |
| <ul style="list-style-type: none"> <li>as server</li> </ul>                                                  | Yes                                                                                                   |
| <ul style="list-style-type: none"> <li>as client</li> </ul>                                                  | Yes; via integrated PROFINET interface and loadable FB or via CP and loadable FB                      |
| <ul style="list-style-type: none"> <li>User data per job, max.</li> </ul>                                    | See online help of STEP 7 (shared parameters of the SFBs/FBs and of the SFCs/FCs of S7 Communication) |
| S5 compatible communication                                                                                  |                                                                                                       |
| <ul style="list-style-type: none"> <li>supported</li> </ul>                                                  | Yes; via CP and loadable FC                                                                           |
| PROFINET CBA (at set setpoint communication load)                                                            |                                                                                                       |
| <ul style="list-style-type: none"> <li>Setpoint for the CPU communication load</li> </ul>                    | 50 %                                                                                                  |
| <ul style="list-style-type: none"> <li>Number of remote interconnection partners</li> </ul>                  | 32                                                                                                    |
| <ul style="list-style-type: none"> <li>Number of functions, master/slave</li> </ul>                          | 30                                                                                                    |
| <ul style="list-style-type: none"> <li>Total of all master/slave connections</li> </ul>                      | 1 000                                                                                                 |
| <ul style="list-style-type: none"> <li>Data length of all incoming connections master/slave, max.</li> </ul> | 4 000 byte                                                                                            |
| <ul style="list-style-type: none"> <li>Data length of all outgoing connections master/slave, max.</li> </ul> | 4 000 byte                                                                                            |
| <ul style="list-style-type: none"> <li>Number of device-internal and PROFIBUS</li> </ul>                     | 500                                                                                                   |

|                                                                      |                                                                                                         |
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| interconnections                                                     |                                                                                                         |
| • Data length of device-internal und PROFIBUS interconnections, max. | 4 000 byte                                                                                              |
| • Data length per connection, max.                                   | 1 400 byte                                                                                              |
| <b>Remote interconnections with acyclic transmission</b>             |                                                                                                         |
| — Sampling interval, min.                                            | 500 ms                                                                                                  |
| — Number of incoming interconnections                                | 100                                                                                                     |
| — Number of outgoing interconnections                                | 100                                                                                                     |
| — Data length of all incoming interconnections, max.                 | 2 000 byte                                                                                              |
| — Data length of all outgoing interconnections, max.                 | 2 000 byte                                                                                              |
| — Data length per connection, max.                                   | 1 400 byte                                                                                              |
| <b>Remote interconnections with cyclic transmission</b>              |                                                                                                         |
| — Transmission frequency: Transmission interval, min.                | 10 ms                                                                                                   |
| — Number of incoming interconnections                                | 200                                                                                                     |
| — Number of outgoing interconnections                                | 200                                                                                                     |
| — Data length of all incoming interconnections, max.                 | 2 000 byte                                                                                              |
| — Data length of all outgoing interconnections, max.                 | 2 000 byte                                                                                              |
| — Data length per connection, max.                                   | 450 byte                                                                                                |
| <b>HMI variables via PROFINET (acyclic)</b>                          |                                                                                                         |
| — Number of stations that can log on for HMI variables (PN OPC/iMap) | 3; 2x PN OPC/1x iMap                                                                                    |
| — HMI variable updating                                              | 500 ms                                                                                                  |
| — Number of HMI variables                                            | 200                                                                                                     |
| — Data length of all HMI variables, max.                             | 2 000 byte                                                                                              |
| <b>PROFIBUS proxy functionality</b>                                  |                                                                                                         |
| — supported                                                          | Yes                                                                                                     |
| — Number of linked PROFIBUS devices                                  | 16                                                                                                      |
| — Data length per connection, max.                                   | 240 byte; Slave-dependent                                                                               |
| <b>Number of connections</b>                                         |                                                                                                         |
| • overall                                                            | 16                                                                                                      |
| • usable for PG communication                                        | 15                                                                                                      |
| — reserved for PG communication                                      | 1                                                                                                       |
| — adjustable for PG communication, min.                              | 1                                                                                                       |
| — adjustable for PG communication, max.                              | 15                                                                                                      |
| • usable for OP communication                                        | 15                                                                                                      |
| — reserved for OP communication                                      | 1                                                                                                       |
| — adjustable for OP communication, min.                              | 1                                                                                                       |
| — adjustable for OP communication, max.                              | 15                                                                                                      |
| • usable for S7 basic communication                                  | 14                                                                                                      |
| — reserved for S7 basic communication                                | 0                                                                                                       |
| — adjustable for S7 basic communication, min.                        | 0                                                                                                       |
| — adjustable for S7 basic communication, max.                        | 14                                                                                                      |
| • usable for S7 communication                                        | 14                                                                                                      |
| — reserved for S7 communication                                      | 0                                                                                                       |
| — adjustable for S7 communication, min.                              | 0                                                                                                       |
| — adjustable for S7 communication, max.                              | 14                                                                                                      |
| • total number of instances, max.                                    | 32                                                                                                      |
| • usable for routing                                                 | X1 as MPI: max. 10; X1 as DP master: max. 24; X1 as DP slave (active): max. 14; X2 as PROFINET: 24 max. |
| <b>S7 message functions</b>                                          |                                                                                                         |
| Number of login stations for message functions, max.                 | 16; Depending on the configured connections for PG/OP and S7 basic communication                        |
| Process diagnostic messages                                          | Yes                                                                                                     |
| simultaneously active Alarm-S blocks, max.                           | 300                                                                                                     |
| <b>Test commissioning functions</b>                                  |                                                                                                         |



|                                                                     |                                                                                                    |
|---------------------------------------------------------------------|----------------------------------------------------------------------------------------------------|
| Status block                                                        | Yes; Up to 2 simultaneously                                                                        |
| Single step                                                         | Yes                                                                                                |
| Number of breakpoints                                               | 4                                                                                                  |
| <b>Status/control</b>                                               |                                                                                                    |
| • Status/control variable                                           | Yes                                                                                                |
| • Variables                                                         | Inputs, outputs, memory bits, DB, times, counters                                                  |
| • Number of variables, max.                                         | 30                                                                                                 |
| — of which status variables, max.                                   | 30                                                                                                 |
| — of which control variables, max.                                  | 14                                                                                                 |
| <b>Forcing</b>                                                      |                                                                                                    |
| • Forcing                                                           | Yes                                                                                                |
| • Forcing, variables                                                | Inputs, outputs                                                                                    |
| • Number of variables, max.                                         | 10                                                                                                 |
| <b>Diagnostic buffer</b>                                            |                                                                                                    |
| • present                                                           | Yes                                                                                                |
| • Number of entries, max.                                           | 500                                                                                                |
| — adjustable                                                        | No                                                                                                 |
| — of which powerfail-proof                                          | 100                                                                                                |
| • Number of entries readable in RUN, max.                           | 499                                                                                                |
| — adjustable                                                        | Yes                                                                                                |
| — preset                                                            | 10                                                                                                 |
| <b>Service data</b>                                                 |                                                                                                    |
| • can be read out                                                   | Yes                                                                                                |
| <b>Standards, approvals, certificates</b>                           |                                                                                                    |
| CE mark                                                             | Yes                                                                                                |
| UL approval                                                         | Yes; File E239877                                                                                  |
| RCM (formerly C-TICK)                                               | Yes                                                                                                |
| KC approval                                                         | Yes                                                                                                |
| EAC (formerly Gost-R)                                               | Yes                                                                                                |
| <b>Use in hazardous areas</b>                                       |                                                                                                    |
| • ATEX                                                              | Yes                                                                                                |
| <b>Marine approval</b>                                              |                                                                                                    |
| • American Bureau of Shipping (ABS)                                 | Yes                                                                                                |
| <b>Ambient conditions</b>                                           |                                                                                                    |
| <b>Ambient temperature during operation</b>                         |                                                                                                    |
| • min.                                                              | -25 °C; = Tmin                                                                                     |
| • max.                                                              | 60 °C; = Tmax                                                                                      |
| <b>Ambient temperature during storage/transportation</b>            |                                                                                                    |
| • min.                                                              | -40 °C                                                                                             |
| • max.                                                              | 70 °C                                                                                              |
| <b>Altitude during operation relating to sea level</b>              |                                                                                                    |
| • Installation altitude above sea level, max.                       | 2 000 m                                                                                            |
| • Ambient air temperature-barometric pressure-altitude              | Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m)                                     |
| <b>Relative humidity</b>                                            |                                                                                                    |
| • With condensation, tested in accordance with IEC 60068-2-38, max. | 100 %; RH incl. condensation/frost (no commissioning under condensation conditions)                |
| <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>Configuration</b>                                                                                        |                                                                                                                                                                                     |
| <b>Configuration software</b>                                                                               |                                                                                                                                                                                     |
| • STEP 7                                                                                                    | Yes; V5.5 or higher                                                                                                                                                                 |
| <b>Programming</b>                                                                                          |                                                                                                                                                                                     |
| • Command set                                                                                               | see instruction list                                                                                                                                                                |
| • Nesting levels                                                                                            | 8                                                                                                                                                                                   |
| • System functions (SFC)                                                                                    | see instruction list                                                                                                                                                                |
| • System function blocks (SFB)                                                                              | see instruction list                                                                                                                                                                |
| <b>Programming language</b>                                                                                 |                                                                                                                                                                                     |
| — LAD                                                                                                       | Yes                                                                                                                                                                                 |
| — FBD                                                                                                       | Yes                                                                                                                                                                                 |
| — STL                                                                                                       | Yes                                                                                                                                                                                 |
| — SCL                                                                                                       | Yes                                                                                                                                                                                 |
| — CFC                                                                                                       | Yes                                                                                                                                                                                 |
| — GRAPH                                                                                                     | Yes                                                                                                                                                                                 |
| — HiGraph®                                                                                                  | Yes                                                                                                                                                                                 |
| <b>Know-how protection</b>                                                                                  |                                                                                                                                                                                     |
| • User program protection/password protection                                                               | Yes                                                                                                                                                                                 |
| • Block encryption                                                                                          | Yes; With S7 block Privacy                                                                                                                                                          |
| <b>Dimensions</b>                                                                                           |                                                                                                                                                                                     |
| Width                                                                                                       | 40 mm                                                                                                                                                                               |
| Height                                                                                                      | 125 mm                                                                                                                                                                              |
| Depth                                                                                                       | 130 mm                                                                                                                                                                              |
| <b>Weights</b>                                                                                              |                                                                                                                                                                                     |
| Weight, approx.                                                                                             | 340 g                                                                                                                                                                               |
| <b>last modified:</b>                                                                                       | 3/25/2021                                                                                        |