



\*\*\*spare part\*\*\* SIPLUS S7-300 CPU 315-2PN/DP based on 6ES7315-2EH14-0AB0 with conformal coating, -25...+60 °C, central processing unit with 384 KB work memory, 1st interface MPI/DP 12 Mbps, 2nd interface Ethernet PROFINET, with 2-port switch, Micro Memory Card required

| General information                                         |                                                          |
|-------------------------------------------------------------|----------------------------------------------------------|
| Product type designation                                    | CPU 315-2 PN/DP                                          |
| Product function                                            |                                                          |
| • Isochronous mode                                          | Yes; Via PROFIBUS DP or PROFINET interface               |
| Engineering with                                            |                                                          |
| • Programming package                                       | STEP 7 V5.5 or higher                                    |
| Supply voltage                                              |                                                          |
| Rated value (DC)                                            | 24 V; A power supply according to EN 50155 shall be used |
| 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 <sup>2</sup> t                                            | 1 A <sup>2</sup> s                                       |
| Power loss                                                  |                                                          |
| Power loss, typ.                                            | 4.65 W                                                   |
| Storage                                                     |                                                          |
| Work memory                                                 |                                                          |
| • integrated                                                | 384 kbyte                                                |
| • expandable                                                | No                                                       |
| Load memory                                                 |                                                          |
| • Plug-in (MMC)                                             | Yes                                                      |
| • Plug-in (MMC), max.                                       | 8 Mbyte                                                  |
| • Data management on MMC (after last programming), min.     | 10 a                                                     |
| 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                                                  |
| CPU-blocks                                                  |                                                          |

|                                                           |                                                                                               |
|-----------------------------------------------------------|-----------------------------------------------------------------------------------------------|
| 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>                                        |                                                                                               |
| — can be set                                              | Yes                                                                                           |
| — preset                                                  | Z 0 to Z 7                                                                                    |
| <b>Counting range</b>                                     |                                                                                               |
| — can be set                                              | Yes                                                                                           |
| — lower limit                                             | 0                                                                                             |
| — upper limit                                             | 999                                                                                           |
| <b>IEC counter</b>                                        |                                                                                               |
| • present                                                 | Yes                                                                                           |
| • Type                                                    | SFB                                                                                           |
| • Number                                                  | Unlimited (limited only by RAM capacity)                                                      |
| <b>S7 timer</b>                                           |                                                                                               |
| • Number                                                  | 256                                                                                           |
| <b>Retentivity</b>                                        |                                                                                               |
| — adjustable                                              | Yes                                                                                           |
| — 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 period | the clock continues at the time of day it had when power was switched off |
| <b>Operating hours counter</b>                            |                                                                           |
| • Number                                                  | 1                                                                         |
| • Number/Number range                                     | 0                                                                         |
| • 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                                                                       |

|                                                                                |                                                                                           |
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| • to MPI, master                                                               | Yes                                                                                       |
| • on MPI, device                                                               | Yes                                                                                       |
| • to DP, master                                                                | Yes; With DP slave only slave clock                                                       |
| • on DP, device                                                                | Yes                                                                                       |
| • in AS, master                                                                | Yes                                                                                       |
| • in AS, device                                                                | 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>Interfaces</b>                                                              |                                                                                           |
| Number of PROFINET interfaces                                                  | 1; 2 ports (switch) RJ45                                                                  |
| Number of RS 485 interfaces                                                    | 1; Combined MPI / PROFIBUS DP                                                             |
| 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 device                                                           | 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                                                                                 |
| • max. number of DP devices                                                    | 124                                                                                       |
| <b>Services</b>                                                                |                                                                                           |
| — PG/OP communication                                                          | Yes                                                                                       |
| — Routing                                                                      | Yes                                                                                       |
| — Global data communication                                                    | No                                                                                        |
| — S7 basic communication                                                       | Yes; I blocks only                                                                        |
| — 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 devices                                        | Yes                                                                                       |
| — max. number of DP devices that can be activated/deactivated at the same time | 8                                                                                         |
| — Direct data exchange (slave-to-slave communication)                          | Yes; as subscriber                                                                        |
| — DPV1                                                                         | Yes                                                                                       |

|                                                       |                                                                                           |
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| Address area                                          |                                                                                           |
| — Inputs, max.                                        | 2 kbyte                                                                                   |
| — Outputs, max.                                       | 2 kbyte                                                                                   |
| User data per DP device                               |                                                                                           |
| — Inputs, max.                                        | 244 byte                                                                                  |
| — Outputs, max.                                       | 244 byte                                                                                  |
| PROFIBUS DP device                                    |                                                                                           |
| • 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                                                                                   |
| Services                                              |                                                                                           |
| — 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                                                                                        |
| Transfer memory                                       |                                                                                           |
| — Inputs                                              | 244 byte                                                                                  |
| — Outputs                                             | 244 byte                                                                                  |
| <b>2. Interface</b>                                   |                                                                                           |
| Interface type                                        | PROFINET                                                                                  |
| Isolated                                              | Yes                                                                                       |
| automatic detection of transmission rate              | Yes; 10/100 Mbit/s                                                                        |
| Autonegotiation                                       | Yes                                                                                       |
| Autocrossing                                          | Yes                                                                                       |
| Change of IP address at runtime, supported            | Yes                                                                                       |
| Interface types                                       |                                                                                           |
| • RJ 45 (Ethernet)                                    | Yes                                                                                       |
| • Number of ports                                     | 2                                                                                         |
| • integrated switch                                   | Yes                                                                                       |
| Protocols                                             |                                                                                           |
| • 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 device                                  | No                                                                                        |
| • Open IE communication                               | Yes; Via TCP/IP, ISO on TCP, and UDP                                                      |
| • Web server                                          | Yes                                                                                       |
| • Media redundancy                                    | Yes                                                                                       |
| PROFINET IO Controller                                |                                                                                           |
| • Transmission rate, max.                             | 100 Mbit/s                                                                                |
| Services                                              |                                                                                           |
| — 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                                                                                       |

|                                                                               |                                                                                                                               |
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| — 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                                                                                                                             |
| • Local port numbers used at the system end                                   | 0, 20, 21, 25, 80, 102, 135, 161, 8080, 34962, 34963, 34964, 65532, 65533, 65534, 65535                                       |
| • Keep-alive function, supported                                              | Yes                                                                                                                           |
| <b>Protocols</b>                                                              |                                                                                                                               |
| PROFIsafe                                                                     | No                                                                                                                            |
| <b>Redundancy mode</b>                                                        |                                                                                                                               |
| <b>Media redundancy</b>                                                       |                                                                                                                               |
| — Switchover time on line break, typ.                                         | 200 ms; PROFINET MRP                                                                                                          |
| — Number of stations in the ring, max.                                        | 50                                                                                                                            |
| <b>Open IE communication</b>                                                  |                                                                                                                               |
| • TCP/IP                                                                      | 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                                                                                                                           |
| • ISO-on-TCP (RFC1006)                                                        | Yes; via integrated PROFINET interface and loadable FBs                                                                       |

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| — Number of connections, max.                                        | 8                                                                                                     |
| — Data length, max.                                                  | 32 768 byte                                                                                           |
| • UDP                                                                | Yes; via integrated PROFINET interface and loadable FBs                                               |
| — Number of connections, max.                                        | 8                                                                                                     |
| — Data length, max.                                                  | 1 472 byte                                                                                            |
| <b>Web server</b>                                                    |                                                                                                       |
| • supported                                                          | Yes                                                                                                   |
| • User-defined websites                                              | Yes                                                                                                   |
| • Number of HTTP clients                                             | 5                                                                                                     |
| <b>Communication functions</b>                                       |                                                                                                       |
| PG/OP communication                                                  | Yes                                                                                                   |
| Data record routing                                                  | Yes                                                                                                   |
| <b>Global data communication</b>                                     |                                                                                                       |
| • supported                                                          | Yes                                                                                                   |
| • Number of GD loops, max.                                           | 8                                                                                                     |
| • Number of GD packets, max.                                         | 8                                                                                                     |
| • Number of GD packets, transmitter, max.                            | 8                                                                                                     |
| • Number of GD packets, receiver, max.                               | 8                                                                                                     |
| • Size of GD packets, max.                                           | 22 byte                                                                                               |
| • Size of GD packet (of which consistent), max.                      | 22 byte                                                                                               |
| <b>S7 basic communication</b>                                        |                                                                                                       |
| • supported                                                          | Yes                                                                                                   |
| • User data per job, max.                                            | 76 byte                                                                                               |
| • User data per job (of which consistent), max.                      | 76 byte; 76 bytes (with X_SEND or X_RCV); 64 bytes (with X_PUT or X_GET as server)                    |
| <b>S7 communication</b>                                              |                                                                                                       |
| • supported                                                          | Yes                                                                                                   |
| • as server                                                          | Yes                                                                                                   |
| • as client                                                          | Yes; via integrated PROFINET interface and loadable FB or via CP and loadable FB                      |
| • User data per job, max.                                            | See online help of STEP 7 (shared parameters of the SFBs/FBs and of the SFCs/FCs of S7 Communication) |
| <b>S5 compatible communication</b>                                   |                                                                                                       |
| • supported                                                          | Yes; via CP and loadable FC                                                                           |
| <b>PROFINET CBA (at set setpoint communication load)</b>             |                                                                                                       |
| • Setpoint for the CPU communication load                            | 50 %                                                                                                  |
| • Number of remote interconnection partners                          | 32                                                                                                    |
| • number of master/device functions                                  | 30                                                                                                    |
| • total of all master/device connections                             | 1 000                                                                                                 |
| • data length of all incoming master/device connections, max.        | 4 000 byte                                                                                            |
| • data length of all outgoing master/device connections, max.        | 4 000 byte                                                                                            |
| • Number of device-internal and PROFIBUS interconnections            | 500                                                                                                   |
| • Data length of device-internal und PROFIBUS interconnections, max. | 4 000 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                                                                                            |

|                                                      |                                                                                                         |
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| PROFIBUS proxy functionality                         |                                                                                                         |
| — supported                                          | Yes                                                                                                     |
| — Number of linked PROFIBUS devices                  | 16                                                                                                      |
| — Data length per connection, max.                   | 240 byte; Slave-dependent                                                                               |
| Number of connections                                |                                                                                                         |
| • 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. |
| S7 message functions                                 |                                                                                                         |
| 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                                                                                                     |
| Test commissioning functions                         |                                                                                                         |
| Status block                                         | Yes; Up to 2 simultaneously                                                                             |
| Single step                                          | Yes                                                                                                     |
| Number of breakpoints                                | 4                                                                                                       |
| Status/control                                       |                                                                                                         |
| • 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                                                                                                      |
| Forcing                                              |                                                                                                         |
| • Forcing                                            | Yes                                                                                                     |
| • Forcing, variables                                 | Inputs, outputs                                                                                         |
| • Number of variables, max.                          | 10                                                                                                      |
| Diagnostic buffer                                    |                                                                                                         |
| • present                                            | Yes                                                                                                     |
| • Number of entries, max.                            | 500                                                                                                     |
| — can be set                                         | No                                                                                                      |
| — of which powerfail-proof                           | 100; Only the last 100 entries are retained                                                             |
| • Number of entries readable in RUN, max.            | 499                                                                                                     |
| — can be set                                         | Yes; From 10 to 499                                                                                     |
| — preset                                             | 10                                                                                                      |
| Service data                                         |                                                                                                         |
| • Can be read out                                    | Yes                                                                                                     |
| Standards, approvals, certificates                   |                                                                                                         |
| CE mark                                              | Yes                                                                                                     |
| UL approval                                          | Yes; File E239877                                                                                       |
| RCM (formerly C-TICK)                                | Yes                                                                                                     |
| KC approval                                          | Yes                                                                                                     |

|                                                                                                             |                                                                                                                                                                                                                 |
|-------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| EAC (formerly Gost-R)                                                                                       | Yes                                                                                                                                                                                                             |
| Use in hazardous areas                                                                                      |                                                                                                                                                                                                                 |
| • ATEX                                                                                                      | Yes                                                                                                                                                                                                             |
| Railway application                                                                                         |                                                                                                                                                                                                                 |
| • EN 50155                                                                                                  | Yes; Sections 4, 5 and 12; no further agreements apply; T1, Category 1, Class A/B, EN 50155:2007                                                                                                                |
| <b>Ambient conditions</b>                                                                                   |                                                                                                                                                                                                                 |
| Ambient temperature during operation                                                                        |                                                                                                                                                                                                                 |
| • min.                                                                                                      | -25 °C; = Tmin                                                                                                                                                                                                  |
| • max.                                                                                                      | 60 °C; = Tmax; the rated temperature range of -25 ... +55 °C (T1) applies for the use on railway vehicles according to EN50155                                                                                  |
| Ambient temperature during storage/transportation                                                           |                                                                                                                                                                                                                 |
| • min.                                                                                                      | -40 °C                                                                                                                                                                                                          |
| • max.                                                                                                      | 70 °C                                                                                                                                                                                                           |
| Altitude during operation relating to sea level                                                             |                                                                                                                                                                                                                 |
| • 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) |
| Relative humidity                                                                                           |                                                                                                                                                                                                                 |
| • With condensation, tested in accordance with IEC 60068-2-38, max.                                         | 100 %; RH incl. condensation/frost (no commissioning under condensation conditions)                                                                                                                             |
| Resistance                                                                                                  |                                                                                                                                                                                                                 |
| Use in stationary industrial systems                                                                        |                                                                                                                                                                                                                 |
| — 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, *                                                                                                                                                                              |
| Use on land craft, rail vehicles and special-purpose vehicles                                               |                                                                                                                                                                                                                 |
| — to biologically active substances according to EN 60721-3-5                                               | Yes; Class 5B2 mold, fungus and dry rot spores (with the exception of fauna); Class 5B3 on request                                                                                                              |
| — to chemically active substances according to EN 60721-3-5                                                 | Yes; Class 5C3 (RH < 75 %) incl. salt spray acc. to EN 50155 (ST2); *                                                                                                                                           |
| — to mechanically active substances according to EN 60721-3-5                                               | Yes; Class 5S3 incl. sand, dust; *                                                                                                                                                                              |
| Remark                                                                                                      |                                                                                                                                                                                                                 |
| — 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>                                                                                        |                                                                                                                                                                                                                 |
| Configuration software                                                                                      |                                                                                                                                                                                                                 |
| • STEP 7                                                                                                    | Yes; V5.5 or higher                                                                                                                                                                                             |
| Programming                                                                                                 |                                                                                                                                                                                                                 |
| • Command set                                                                                               | see instruction list                                                                                                                                                                                            |
| • Nesting levels                                                                                            | 8                                                                                                                                                                                                               |
| • 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                                                                                                                                                                                                             |
| Know-how protection                                                                                         |                                                                                                                                                                                                                 |
| • 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 |
| Weights         |        |
| Weight, approx. | 340 g  |
| Classifications |        |

|        | Version | Classification |
|--------|---------|----------------|
| eClass | 16      | 27-24-22-07    |
| eClass | 14      | 27-24-22-07    |
| eClass | 12      | 27-24-22-07    |
| eClass | 9.1     | 27-24-22-07    |
| eClass | 9       | 27-24-22-07    |
| eClass | 8       | 27-24-22-07    |
| eClass | 7.1     | 27-24-22-07    |
| eClass | 6       | 27-24-22-07    |
| ETIM   | 10      | EC000236       |
| ETIM   | 9       | EC000236       |
| ETIM   | 8       | EC000236       |
| ETIM   | 7       | EC000236       |
| IDEA   | 4       | 3565           |
| UNSPSC | 15      | 32-15-17-05    |

|                          |  |
|--------------------------|--|
| Approvals / Certificates |  |
| General Product Approval |  |



[Manufacturer Declaration](#)

[Declaration of Conformity](#)



[China RoHS](#)



|                          |     |                                |
|--------------------------|-----|--------------------------------|
| General Product Approval | EMV | For use in hazardous locations |
|--------------------------|-----|--------------------------------|



[CCC-Ex](#)

last modified:

12/8/2024