



Figure similar

\*\*\*spare part\*\*\* SIPLUS S7-300 CPU 313C-2DP based on 6ES7313-6CG04-0AB0 with conformal coating, -25...+70 °C, compact CPU with MPI, 16 DI/16 DO, 3 high-speed counters (30 kHz), integrated DP interface, integrated power supply 24 V DC, work memory 128 KB, front connector (1x 40-pole) and Micro Memory Card required

| General information                                         |                                                                                         |
|-------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| Product type designation                                    | CPU 313C-2 DP                                                                           |
| based on                                                    | <a href="#">6ES7313-6CG04-0AB0</a>                                                      |
| Engineering with                                            |                                                                                         |
| • Programming package                                       | STEP 7 V5.5 + SP1 or higher or STEP 7 V5.3 + SP2 or higher with HSP 203                 |
| Supply voltage                                              |                                                                                         |
| Rated value (DC)                                            | 24 V                                                                                    |
| permissible range, lower limit (DC)                         | 19.2 V                                                                                  |
| permissible range, upper limit (DC)                         | 28.8 V                                                                                  |
| external protection for power supply lines (recommendation) | Miniature circuit breaker, type C; min. 2 A; miniature circuit breaker type B, min. 4 A |
| Mains buffering                                             |                                                                                         |
| • Mains/voltage failure stored energy time                  | 5 ms                                                                                    |
| • Repeat rate, min.                                         | 1 s                                                                                     |
| Load voltage L+                                             |                                                                                         |
| Digital inputs                                              |                                                                                         |
| — Rated value (DC)                                          | 24 V                                                                                    |
| — Reverse polarity protection                               | Yes                                                                                     |
| Digital outputs                                             |                                                                                         |
| — Rated value (DC)                                          | 24 V                                                                                    |
| — Reverse polarity protection                               | No                                                                                      |
| Input current                                               |                                                                                         |
| Current consumption (rated value)                           | 650 mA                                                                                  |
| Current consumption (in no-load operation), typ.            | 150 mA                                                                                  |
| Inrush current, typ.                                        | 5 A                                                                                     |
| I <sup>2</sup> t                                            | 0.7 A <sup>2</sup> ·s                                                                   |
| Digital inputs                                              |                                                                                         |
| • from load voltage L+ (without load), max.                 | 80 mA                                                                                   |
| Digital outputs                                             |                                                                                         |
| • from load voltage L+, max.                                | 50 mA                                                                                   |
| Power loss                                                  |                                                                                         |
| Power loss, typ.                                            | 12 W                                                                                    |
| Storage                                                     |                                                                                         |
| Work memory                                                 |                                                                                         |
| • integrated                                                | 128 kbyte                                                                               |
| • expandable                                                | No                                                                                      |
| Load memory                                                 |                                                                                         |
| • Plug-in (MMC)                                             | Yes                                                                                     |

|                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                    |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> <li>• Plug-in (MMC), max.</li> <li>• Data management on MMC (after last programming), min.</li> </ul>                                                                                                                                                                                                                                                                     | 8 Mbyte<br>10 a                                                                                                                                                    |
| <b>Backup</b>                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                    |
| <ul style="list-style-type: none"> <li>• present</li> <li>• without battery</li> </ul>                                                                                                                                                                                                                                                                                                                       | Yes; Guaranteed by MMC (maintenance-free)<br>Yes; Program and data                                                                                                 |
| <b>CPU processing times</b>                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                    |
| for bit operations, typ.                                                                                                                                                                                                                                                                                                                                                                                     | 0.07 µs                                                                                                                                                            |
| for word operations, typ.                                                                                                                                                                                                                                                                                                                                                                                    | 0.15 µs                                                                                                                                                            |
| for fixed point arithmetic, typ.                                                                                                                                                                                                                                                                                                                                                                             | 0.2 µs                                                                                                                                                             |
| for floating point arithmetic, typ.                                                                                                                                                                                                                                                                                                                                                                          | 0.72 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>                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                    |
| <ul style="list-style-type: none"> <li>• Number, max.</li> <li>• Size, max.</li> </ul>                                                                                                                                                                                                                                                                                                                       | 1 024; Number range: 1 to 16000<br>64 kbyte                                                                                                                        |
| <b>FB</b>                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                    |
| <ul style="list-style-type: none"> <li>• Number, max.</li> <li>• Size, max.</li> </ul>                                                                                                                                                                                                                                                                                                                       | 1 024; Number range: 0 to 7999<br>64 kbyte                                                                                                                         |
| <b>FC</b>                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                    |
| <ul style="list-style-type: none"> <li>• Number, max.</li> <li>• Size, max.</li> </ul>                                                                                                                                                                                                                                                                                                                       | 1 024; Number range: 0 to 7999<br>64 kbyte                                                                                                                         |
| <b>OB</b>                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                    |
| <ul style="list-style-type: none"> <li>• Number, max.</li> <li>• Size, max.</li> <li>• Number of free cycle OBs</li> <li>• Number of time alarm OBs</li> <li>• Number of delay alarm OBs</li> <li>• Number of cyclic interrupt OBs</li> <li>• Number of process alarm OBs</li> <li>• Number of startup OBs</li> <li>• Number of asynchronous error OBs</li> <li>• Number of synchronous error OBs</li> </ul> | see instruction list<br>64 kbyte<br>1; OB 1<br>1; OB 10<br>2; OB 20, 21<br>4; OB 32, 33, 34, 35<br>1; OB 40<br>1; OB 100<br>4; OB 80, 82, 85, 87<br>2; OB 121, 122 |
| <b>Nesting depth</b>                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                    |
| <ul style="list-style-type: none"> <li>• per priority class</li> <li>• additional within an error OB</li> </ul>                                                                                                                                                                                                                                                                                              | 16<br>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>                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                    |
| — lower limit                                                                                                                                                                                                                                                                                                                                                                                                | 0                                                                                                                                                                  |
| — upper limit                                                                                                                                                                                                                                                                                                                                                                                                | 999                                                                                                                                                                |
| <b>IEC counter</b>                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                    |
| <ul style="list-style-type: none"> <li>• present</li> <li>• Type</li> <li>• Number</li> </ul>                                                                                                                                                                                                                                                                                                                | Yes<br>SFB<br>Unlimited (limited only by RAM capacity)                                                                                                             |
| <b>S7 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) |

#### Data areas and their retentivity

|                                                           |          |
|-----------------------------------------------------------|----------|
| Retentive data area (incl. timers, counters, flags), max. | 64 kbyte |
|-----------------------------------------------------------|----------|

##### Flag

|                            |                     |
|----------------------------|---------------------|
| • Size, max.               | 256 byte            |
| • Retentivity available    | Yes; MB 0 to MB 255 |
| • Retentivity preset       | MB 0 to MB 15       |
| • Number of clock memories | 8; 1 memory byte    |

##### Data blocks

|                          |                                    |
|--------------------------|------------------------------------|
| • Retentivity adjustable | Yes; via non-retain property on DB |
| • Retentivity preset     | Yes                                |

##### Local data

|                            |                                     |
|----------------------------|-------------------------------------|
| • per priority class, max. | 32 kbyte; Max. 2048 bytes per block |
|----------------------------|-------------------------------------|

#### Address area

##### I/O address area

|           |            |
|-----------|------------|
| • Inputs  | 1 024 byte |
| • Outputs | 1 024 byte |

##### of which distributed

|           |            |
|-----------|------------|
| — Inputs  | 2 030 byte |
| — Outputs | 2 030 byte |

##### Process image

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

##### Digital channels

|                    |       |
|--------------------|-------|
| • Inputs           | 1 016 |
| — of which central | 1 016 |
| • Outputs          | 1 008 |
| — of which central | 1 008 |

##### Analog channels

|                    |     |
|--------------------|-----|
| • Inputs           | 253 |
| — of which central | 253 |
| • Outputs          | 250 |
| — of which central | 250 |

#### Hardware configuration

|                                 |   |
|---------------------------------|---|
| Number of expansion units, max. | 3 |
|---------------------------------|---|

##### Number of DP masters

|              |   |
|--------------|---|
| • integrated | 1 |
| • via CP     | 4 |

##### Number of operable FMs and CPs (recommended)

|           |   |
|-----------|---|
| • FM      | 8 |
| • CP, PtP | 8 |
| • CP, LAN | 6 |

##### Rack

|                          |                     |
|--------------------------|---------------------|
| • Racks, max.            | 4                   |
| • Modules per rack, max. | 8; In rack 3 max. 7 |

#### Time of day

##### Clock

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

|                                                                 |                                                                                                                                                                                                                                           |
|-----------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Operating hours counter                                         |                                                                                                                                                                                                                                           |
| • 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                                                                                                                                                                                                    |
| Clock synchronization                                           |                                                                                                                                                                                                                                           |
| • supported                                                     | Yes                                                                                                                                                                                                                                       |
| • 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                                                 | No                                                                                                                                                                                                                                        |
| Digital inputs                                                  |                                                                                                                                                                                                                                           |
| Number of digital inputs                                        | 16                                                                                                                                                                                                                                        |
| • of which inputs usable for technological functions            | 12                                                                                                                                                                                                                                        |
| integrated channels (DI)                                        | 16                                                                                                                                                                                                                                        |
| Input characteristic curve in accordance with IEC 61131, type 1 | Yes                                                                                                                                                                                                                                       |
| Number of simultaneously controllable inputs                    |                                                                                                                                                                                                                                           |
| horizontal installation                                         |                                                                                                                                                                                                                                           |
| — up to 40 °C, max.                                             | 16                                                                                                                                                                                                                                        |
| — up to 60 °C, max.                                             | 8; up to 70 °C                                                                                                                                                                                                                            |
| vertical installation                                           |                                                                                                                                                                                                                                           |
| — up to 40 °C, max.                                             | 8                                                                                                                                                                                                                                         |
| Input voltage                                                   |                                                                                                                                                                                                                                           |
| • Rated value (DC)                                              | 24 V                                                                                                                                                                                                                                      |
| • for signal "0"                                                | -3 to +5V                                                                                                                                                                                                                                 |
| • for signal "1"                                                | +15 to +30 V                                                                                                                                                                                                                              |
| Input current                                                   |                                                                                                                                                                                                                                           |
| • for signal "1", typ.                                          | 8 mA                                                                                                                                                                                                                                      |
| Input delay (for rated value of input voltage)                  |                                                                                                                                                                                                                                           |
| for standard inputs                                             |                                                                                                                                                                                                                                           |
| — parameterizable                                               | Yes; 0.1 / 0.3 / 3 / 15 ms (You can reconfigure the input delay of the standard inputs during program runtime. Please note that under certain circumstances your newly set filter time may not be effective until the next filter cycle.) |
| — Rated value                                                   | 3 ms                                                                                                                                                                                                                                      |
| for technological functions                                     |                                                                                                                                                                                                                                           |
| — at "0" to "1", max.                                           | 16 µs; Minimum pulse width/minimum pause between pulses at maximum counting frequency                                                                                                                                                     |
| Cable length                                                    |                                                                                                                                                                                                                                           |
| • shielded, max.                                                | 1 000 m; 100 m for technological functions                                                                                                                                                                                                |
| • unshielded, max.                                              | 600 m; for technological functions: No                                                                                                                                                                                                    |
| for technological functions                                     |                                                                                                                                                                                                                                           |
| — shielded, max.                                                | 100 m; at maximum count frequency                                                                                                                                                                                                         |
| — unshielded, max.                                              | not allowed                                                                                                                                                                                                                               |
| Digital outputs                                                 |                                                                                                                                                                                                                                           |
| Number of digital outputs                                       | 16                                                                                                                                                                                                                                        |
| • of which high-speed outputs                                   | 4; Notice: You cannot connect the fast outputs of your CPU in parallel                                                                                                                                                                    |
| integrated channels (DO)                                        | 16                                                                                                                                                                                                                                        |
| Short-circuit protection                                        | Yes; Clocked electronically                                                                                                                                                                                                               |
| • Response threshold, typ.                                      | 1 A                                                                                                                                                                                                                                       |
| Limitation of inductive shutdown voltage to                     | L+ (-48 V)                                                                                                                                                                                                                                |
| Controlling a digital input                                     | Yes                                                                                                                                                                                                                                       |
| Switching capacity of the outputs                               |                                                                                                                                                                                                                                           |
| • on lamp load, max.                                            | 5 W                                                                                                                                                                                                                                       |
| Load resistance range                                           |                                                                                                                                                                                                                                           |
| • lower limit                                                   | 48 Ω                                                                                                                                                                                                                                      |
| • upper limit                                                   | 4 kΩ                                                                                                                                                                                                                                      |
| Output voltage                                                  |                                                                                                                                                                                                                                           |

|                                                       |                                          |
|-------------------------------------------------------|------------------------------------------|
| • for signal "1", min.                                | L+ (-0.8 V)                              |
| <b>Output current</b>                                 |                                          |
| • for signal "1" rated value                          | 500 mA                                   |
| • for signal "1" permissible range, min.              | 5 mA                                     |
| • for signal "1" permissible range, max.              | 0.6 A                                    |
| • for signal "1" minimum load current                 | 5 mA                                     |
| • for signal "0" residual current, max.               | 0.5 mA                                   |
| <b>Parallel switching of two outputs</b>              |                                          |
| • for uprating                                        | No                                       |
| • for redundant control of a load                     | Yes                                      |
| <b>Switching frequency</b>                            |                                          |
| • with resistive load, max.                           | 100 Hz                                   |
| • with inductive load, max.                           | 0.5 Hz                                   |
| • on lamp load, max.                                  | 100 Hz                                   |
| • of the pulse outputs, with resistive load, max.     | 2.5 kHz                                  |
| <b>Total current of the outputs (per group)</b>       |                                          |
| <b>horizontal installation</b>                        |                                          |
| — up to 40 °C, max.                                   | 3 A                                      |
| — up to 60 °C, max.                                   | 2 A; 1.5 A @ > 60 °C                     |
| <b>vertical installation</b>                          |                                          |
| — up to 40 °C, max.                                   | 2 A                                      |
| <b>Cable length</b>                                   |                                          |
| • shielded, max.                                      | 1 000 m                                  |
| • unshielded, max.                                    | 600 m                                    |
| <b>Analog inputs</b>                                  |                                          |
| Number of analog inputs                               | 0                                        |
| integrated channels (AI)                              | 0                                        |
| <b>Input ranges (rated values), voltages</b>          |                                          |
| • 0 to +10 V                                          | Yes                                      |
| — Input resistance (0 to 10 V)                        | 100 kΩ                                   |
| <b>Analog outputs</b>                                 |                                          |
| integrated channels (AO)                              | 0                                        |
| <b>Encoder</b>                                        |                                          |
| <b>Connectable encoders</b>                           |                                          |
| • 2-wire sensor                                       | Yes                                      |
| — permissible quiescent current (2-wire sensor), max. | 1.5 mA                                   |
| <b>Interfaces</b>                                     |                                          |
| Number of PROFINET interfaces                         | 0                                        |
| Number of RS 485 interfaces                           | 2; MPI and PROFIBUS DP                   |
| Number of RS 422 interfaces                           | 0                                        |
| <b>1. Interface</b>                                   |                                          |
| Interface type                                        | Integrated RS 485 interface              |
| Isolated                                              | No                                       |
| <b>Interface types</b>                                |                                          |
| • RS 485                                              | Yes                                      |
| • Output current of the interface, max.               | 200 mA                                   |
| <b>Protocols</b>                                      |                                          |
| • MPI                                                 | Yes                                      |
| • PROFIBUS DP master                                  | No                                       |
| • PROFIBUS DP device                                  | No                                       |
| • Point-to-point connection                           | No                                       |
| <b>MPI</b>                                            |                                          |
| • Transmission rate, max.                             | 187.5 kbit/s                             |
| <b>Services</b>                                       |                                          |
| — PG/OP communication                                 | Yes                                      |
| — Routing                                             | No                                       |
| — Global data communication                           | Yes                                      |
| — S7 basic communication                              | Yes                                      |
| — S7 communication                                    | Yes; Only server, configured on one side |

|                                                                                |                                                                                                                                                                     |
|--------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| — S7 communication, as client                                                  | No; but via CP and loadable FB                                                                                                                                      |
| — S7 communication, as server                                                  | Yes                                                                                                                                                                 |
| <b>2. 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                                                                          | No                                                                                                                                                                  |
| • PROFINET IO Controller                                                       | No                                                                                                                                                                  |
| • PROFINET IO Device                                                           | No                                                                                                                                                                  |
| • PROFINET CBA                                                                 | No                                                                                                                                                                  |
| • PROFIBUS DP master                                                           | Yes                                                                                                                                                                 |
| • PROFIBUS DP device                                                           | Yes                                                                                                                                                                 |
| <b>PROFIBUS DP master</b>                                                      |                                                                                                                                                                     |
| • Transmission rate, max.                                                      | 12 Mbit/s                                                                                                                                                           |
| <b>Services</b>                                                                |                                                                                                                                                                     |
| — PG/OP communication                                                          | Yes                                                                                                                                                                 |
| — Routing                                                                      | Yes                                                                                                                                                                 |
| — Global data communication                                                    | No                                                                                                                                                                  |
| — S7 basic communication                                                       | Yes; I blocks only                                                                                                                                                  |
| — S7 communication                                                             | Yes; Yes (only server; connection configured at one end)                                                                                                            |
| — S7 communication, as client                                                  | No                                                                                                                                                                  |
| — S7 communication, as server                                                  | Yes                                                                                                                                                                 |
| — Equidistance                                                                 | Yes                                                                                                                                                                 |
| — Isochronous mode                                                             | No                                                                                                                                                                  |
| — 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                                                                                                                                                  |
| <b>Address area</b>                                                            |                                                                                                                                                                     |
| — Inputs, max.                                                                 | 2 kbyte                                                                                                                                                             |
| — Outputs, max.                                                                | 2 kbyte                                                                                                                                                             |
| <b>User data per DP device</b>                                                 |                                                                                                                                                                     |
| — Inputs, max.                                                                 | 244 byte                                                                                                                                                            |
| — Outputs, max.                                                                | 244 byte                                                                                                                                                            |
| <b>PROFIBUS DP device</b>                                                      |                                                                                                                                                                     |
| • GSD file                                                                     | The latest GSD file is available on the Internet<br>( <a href="https://www.modulplc.com/?s=6AG1313-6CG04-7AB0">https://www.modulplc.com/?s=6AG1313-6CG04-7AB0</a> ) |
| • 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; Yes (only server; connection configured at one end)                                                                                                            |
| — S7 communication, as client                                                  | No                                                                                                                                                                  |
| — S7 communication, as server                                                  | Yes                                                                                                                                                                 |
| — Direct data exchange (slave-to-slave communication)                          | Yes                                                                                                                                                                 |
| — DPV1                                                                         | No                                                                                                                                                                  |
| <b>Transfer memory</b>                                                         |                                                                                                                                                                     |
| — Inputs                                                                       | 244 byte                                                                                                                                                            |
| — Outputs                                                                      | 244 byte                                                                                                                                                            |

|                                                      |                                                                                    |
|------------------------------------------------------|------------------------------------------------------------------------------------|
| <b>Protocols</b>                                     |                                                                                    |
| PROFIsafe                                            | No                                                                                 |
| <b>Communication functions</b>                       |                                                                                    |
| PG/OP communication                                  | Yes                                                                                |
| Data record routing                                  | No                                                                                 |
| <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 CP and loadable FB                                                        |
| • User data per job, max.                            | 180 byte; With PUT/GET                                                             |
| • User data per job (of which consistent), max.      | 240 byte; as server                                                                |
| <b>S5 compatible communication</b>                   |                                                                                    |
| • supported                                          | Yes; via CP and loadable FC                                                        |
| <b>Number of connections</b>                         |                                                                                    |
| • overall                                            | 8                                                                                  |
| • usable for PG communication                        | 7                                                                                  |
| — reserved for PG communication                      | 1                                                                                  |
| — adjustable for PG communication, min.              | 1                                                                                  |
| — adjustable for PG communication, max.              | 7                                                                                  |
| • usable for OP communication                        | 7                                                                                  |
| — reserved for OP communication                      | 1                                                                                  |
| — adjustable for OP communication, min.              | 1                                                                                  |
| — adjustable for OP communication, max.              | 7                                                                                  |
| • usable for S7 basic communication                  | 4                                                                                  |
| — reserved for S7 basic communication                | 0                                                                                  |
| — adjustable for S7 basic communication, min.        | 0                                                                                  |
| — adjustable for S7 basic communication, max.        | 4                                                                                  |
| • usable for routing                                 | 4; max.                                                                            |
| <b>S7 message functions</b>                          |                                                                                    |
| Number of login stations for message functions, max. | 8; 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                                                                                                                                                                                                             |
| — 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                                                                                                                                                                                                              |
| <b>Service data</b>                                      |                                                                                                                                                                                                                 |
| • can be read out                                        | Yes                                                                                                                                                                                                             |
| <b>Interrupts/diagnostics/status information</b>         |                                                                                                                                                                                                                 |
| <b>Diagnostics indication LED</b>                        |                                                                                                                                                                                                                 |
| • Status indicator digital input (green)                 | Yes                                                                                                                                                                                                             |
| • Status indicator digital output (green)                | Yes                                                                                                                                                                                                             |
| <b>Integrated Functions</b>                              |                                                                                                                                                                                                                 |
| <b>Counter</b>                                           |                                                                                                                                                                                                                 |
| • Number of counters                                     | 3; See "Technological Functions" manual                                                                                                                                                                         |
| • Counting frequency, max.                               | 30 kHz                                                                                                                                                                                                          |
| <b>Frequency measurement</b>                             |                                                                                                                                                                                                                 |
| • Number of frequency meters                             | 3; up to 30 kHz (see "Technological Functions" manual)                                                                                                                                                          |
| controlled positioning                                   | No                                                                                                                                                                                                              |
| integrated function blocks (closed-loop control)         | Yes; PID controller (see "Technological Functions" manual)                                                                                                                                                      |
| PID controller                                           | Yes                                                                                                                                                                                                             |
| Number of pulse outputs                                  | 3; Pulse width modulation up to 2.5 kHz (see "Technological Functions" Manual)                                                                                                                                  |
| Limit frequency (pulse)                                  | 2.5 kHz                                                                                                                                                                                                         |
| <b>Potential separation</b>                              |                                                                                                                                                                                                                 |
| <b>Potential separation digital inputs</b>               |                                                                                                                                                                                                                 |
| • Potential separation digital inputs                    | Yes                                                                                                                                                                                                             |
| • between the channels                                   | No                                                                                                                                                                                                              |
| • between the channels and backplane bus                 | Yes                                                                                                                                                                                                             |
| <b>Potential separation digital outputs</b>              |                                                                                                                                                                                                                 |
| • Potential separation digital outputs                   | Yes                                                                                                                                                                                                             |
| • between the channels                                   | Yes                                                                                                                                                                                                             |
| • between the channels, in groups of                     | 8                                                                                                                                                                                                               |
| • between the channels and backplane bus                 | Yes                                                                                                                                                                                                             |
| <b>Isolation</b>                                         |                                                                                                                                                                                                                 |
| Isolation tested with                                    | 600 V DC                                                                                                                                                                                                        |
| <b>Standards, approvals, certificates</b>                |                                                                                                                                                                                                                 |
| CE mark                                                  | Yes                                                                                                                                                                                                             |
| UL approval                                              | Yes                                                                                                                                                                                                             |
| RCM (formerly C-TICK)                                    | Yes                                                                                                                                                                                                             |
| KC approval                                              | Yes                                                                                                                                                                                                             |
| EAC (formerly Gost-R)                                    | Yes                                                                                                                                                                                                             |
| <b>Use in hazardous areas</b>                            |                                                                                                                                                                                                                 |
| • ATEX                                                   | Yes                                                                                                                                                                                                             |
| <b>Ambient conditions</b>                                |                                                                                                                                                                                                                 |
| <b>Ambient temperature during operation</b>              |                                                                                                                                                                                                                 |
| • min.                                                   | -25 °C; = Tmin                                                                                                                                                                                                  |
| • max.                                                   | 70 °C; = Tmax; 60 °C @ UL/cUL, ATEX and FM use                                                                                                                                                                  |
| <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.            | 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                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                              |         |                |
| <ul style="list-style-type: none"><li>• With condensation, tested in accordance with IEC 60068-2-38, max.</li></ul>                                                                                                                                     | 100 %; RH incl. condensation/frost (no commissioning under condensation conditions)                                                                                                                                                          |         |                |
| Resistance                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                              |         |                |
| Use in stationary industrial systems                                                                                                                                                                                                                    |                                                                                                                                                                                                                                              |         |                |
| <ul style="list-style-type: none"><li>— to biologically active substances according to EN 60721-3-3</li><li>— to chemically active substances according to EN 60721-3-3</li><li>— to mechanically active substances according to EN 60721-3-3</li></ul> | Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request<br><br>Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *<br><br>Yes; Class 3S4 incl. sand, dust, * |         |                |
| Use on ships/at sea                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                              |         |                |
| <ul style="list-style-type: none"><li>— to biologically active substances according to EN 60721-3-6</li><li>— to chemically active substances according to EN 60721-3-6</li><li>— to mechanically active substances according to EN 60721-3-6</li></ul> | Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request<br><br>Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *<br><br>Yes; Class 6S3 incl. sand, dust; *                      |         |                |
| Usage in industrial process technology                                                                                                                                                                                                                  |                                                                                                                                                                                                                                              |         |                |
| <ul style="list-style-type: none"><li>— Against chemically active substances acc. to EN 60654-4</li><li>— Environmental conditions for process, measuring and control systems acc. to ANSI/ISA-71.04</li></ul>                                          | Yes; Class 3 (excluding trichlorethylene)<br><br>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)         |         |                |
| Remark                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                              |         |                |
| <ul style="list-style-type: none"><li>— Note regarding classification of environmental conditions acc. to EN 60721, EN 60654-4 and ANSI/ISA-71.04</li></ul>                                                                                             | * The supplied plug covers must remain in place over the unused interfaces during operation!                                                                                                                                                 |         |                |
| Configuration                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                              |         |                |
| Configuration software                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                              |         |                |
| <ul style="list-style-type: none"><li>• STEP 7</li></ul>                                                                                                                                                                                                | Yes; STEP 7 V5.5 + SP1 or higher or STEP 7 V5.3 + SP2 or higher with HSP 203                                                                                                                                                                 |         |                |
| <ul style="list-style-type: none"><li>• STEP 7 Lite</li></ul>                                                                                                                                                                                           | No                                                                                                                                                                                                                                           |         |                |
| Programming                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                              |         |                |
| <ul style="list-style-type: none"><li>• Command set</li><li>• Nesting levels</li><li>• System functions (SFC)</li><li>• System function blocks (SFB)</li></ul>                                                                                          | see instruction list<br>8<br>see instruction list<br>see instruction list                                                                                                                                                                    |         |                |
| Programming language                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                              |         |                |
| <ul style="list-style-type: none"><li>— LAD</li><li>— FBD</li><li>— STL</li><li>— SCL</li><li>— CFC</li><li>— GRAPH</li><li>— HiGraph®</li></ul>                                                                                                        | Yes<br>Yes<br>Yes<br>Yes<br>Yes<br>Yes<br>Yes                                                                                                                                                                                                |         |                |
| Know-how protection                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                              |         |                |
| <ul style="list-style-type: none"><li>• User program protection/password protection</li><li>• Block encryption</li></ul>                                                                                                                                | Yes<br>Yes; With S7 block Privacy                                                                                                                                                                                                            |         |                |
| Dimensions                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                              |         |                |
| Width                                                                                                                                                                                                                                                   | 80 mm                                                                                                                                                                                                                                        |         |                |
| Height                                                                                                                                                                                                                                                  | 125 mm                                                                                                                                                                                                                                       |         |                |
| Depth                                                                                                                                                                                                                                                   | 130 mm                                                                                                                                                                                                                                       |         |                |
| Weights                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                              |         |                |
| Weight, approx.                                                                                                                                                                                                                                         | 500 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](#)



[China RoHS](#)



EMV

For use in hazardous locations



[CCC-Ex](#)

last modified:

12/8/2024