

\*\*\*Spare part\*\*\* SIMATIC S7-300, CPU 313C, Compact CPU with MPI, 24 DI/16 DO, 4 AI, 2 AO, 1 Pt100, 3 high-speed counters (30 kHz), Integr. power supply 24 V DC, work memory 64 KB, Front connector (2x 40-pole) and Micro Memory Card required



Figure similar

| General information                                         |                                                                                         |
|-------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| HW functional status                                        | 01                                                                                      |
| Firmware version                                            | V2.6                                                                                    |
| Engineering with                                            |                                                                                         |
| • Programming package                                       | STEP 7 V5.3 SP2 or higher with HW update                                                |
| Supply voltage                                              |                                                                                         |
| Rated value (DC)                                            | Yes                                                                                     |
| • 24 V DC                                                   |                                                                                         |
| permissible range, lower limit (DC)                         | 20.4 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 |
| Load voltage L+                                             |                                                                                         |
| • Rated value (DC)                                          | 24 V                                                                                    |
| • permissible range, lower limit (DC)                       | 20.4 V                                                                                  |
| • permissible range, upper limit (DC)                       | 28.8 V                                                                                  |
| Digital inputs                                              |                                                                                         |

|                                                         |                                                                                               |
|---------------------------------------------------------|-----------------------------------------------------------------------------------------------|
| — Rated value (DC)                                      | 24 V                                                                                          |
| — Reverse polarity protection                           | Yes                                                                                           |
| Digital outputs                                         |                                                                                               |
| — Rated value (DC)                                      | 24 V                                                                                          |
| — Reverse polarity protection                           | No                                                                                            |
| Analog outputs                                          |                                                                                               |
| — Rated value (DC)                                      | 24 V                                                                                          |
| — Reverse polarity protection                           | Yes                                                                                           |
| Input current                                           |                                                                                               |
| Current consumption (rated value)                       | 700 mA                                                                                        |
| Current consumption (in no-load operation), typ.        | 150 mA                                                                                        |
| Inrush current, typ.                                    | 11 A                                                                                          |
| $I^2t$                                                  | 0.7 A <sup>2</sup> ·s                                                                         |
| Digital inputs                                          |                                                                                               |
| • from load voltage L+ (without load), max.             | 70 mA                                                                                         |
| Digital outputs                                         |                                                                                               |
| • from load voltage L+, max.                            | 100 mA                                                                                        |
| Power loss                                              |                                                                                               |
| Power loss, typ.                                        | 14 W                                                                                          |
| Memory                                                  |                                                                                               |
| Work memory                                             |                                                                                               |
| • integrated                                            | 64 kbyte                                                                                      |
| • expandable                                            | No                                                                                            |
| Load memory                                             |                                                                                               |
| • Plug-in (MMC)                                         | Yes                                                                                           |
| • Plug-in (MMC), max.                                   | 8 Mbyte                                                                                       |
| • Data management on MMC (after last programming), min. | 10 y                                                                                          |
| Backup                                                  |                                                                                               |
| • present                                               | Yes; Guaranteed by MMC (maintenance-free)                                                     |
| • without battery                                       | Yes; Program and data                                                                         |
| CPU processing times                                    |                                                                                               |
| for bit operations, typ.                                | 0.1 µs                                                                                        |
| for bit operations, max.                                | 0.2 µs                                                                                        |
| for word operations, typ.                               | 0.2 µs                                                                                        |
| for fixed point arithmetic, typ.                        | 2 µs                                                                                          |
| for floating point arithmetic, typ.                     | 3 µs                                                                                          |
| CPU-blocks                                              |                                                                                               |
| Number of blocks (total)                                | 1 024; (DBs, FCs, FBs); the maximum number of loadable blocks can be reduced by the MMC used. |
| DB                                                      |                                                                                               |

|                                        |                                          |
|----------------------------------------|------------------------------------------|
| • Number, max.                         | 511; Number range: 1 to 511              |
| • Size, max.                           | 16 kbyte                                 |
| FB                                     |                                          |
| • Number, max.                         | 1 024; Number range: 0 to 2047           |
| • Size, max.                           | 16 kbyte                                 |
| FC                                     |                                          |
| • Number, max.                         | 1 024; Number range: 0 to 2047           |
| • Size, max.                           | 16 kbyte                                 |
| OB                                     |                                          |
| • Size, max.                           | 16 kbyte                                 |
| • Number of free cycle OBs             | 1; OB 1                                  |
| • Number of time alarm OBs             | 1; OB 10                                 |
| • Number of delay alarm OBs            | 1; OB 20                                 |
| • Number of cyclic interrupt OBs       | 1; OB 35                                 |
| • Number of process alarm OBs          | 1; OB 40                                 |
| • Number of startup OBs                | 1; OB 100                                |
| • Number of asynchronous error OBs     | 4; OB 80, 82, 85, 87                     |
| • Number of synchronous error OBs      | 2; OB 121, 122                           |
| Nesting depth                          |                                          |
| • per priority class                   | 8                                        |
| • additional within an error OB        | 4                                        |
| Counters, timers and their retentivity |                                          |
| S7 counter                             |                                          |
| • Number                               | 256                                      |
| Retentivity                            |                                          |
| — adjustable                           | Yes                                      |
| — lower limit                          | 0                                        |
| — upper limit                          | 255                                      |
| — preset                               | 8                                        |
| Counting range                         |                                          |
| — lower limit                          | 0                                        |
| — upper limit                          | 999                                      |
| IEC counter                            |                                          |
| • Number                               | Unlimited (limited only by RAM capacity) |
| S7 times                               |                                          |
| • Number                               | 256                                      |
| Retentivity                            |                                          |
| — adjustable                           | Yes                                      |
| — lower limit                          | 0                                        |
| — upper limit                          | 255                                      |
| — preset                               | No retentivity                           |

|                                              |                                          |
|----------------------------------------------|------------------------------------------|
| Time range                                   |                                          |
| — lower limit                                | 10 ms                                    |
| — upper limit                                | 9 990 s                                  |
| IEC timer                                    |                                          |
| • present                                    | Yes                                      |
| • Type                                       | SFB                                      |
| • Number                                     | Unlimited (limited only by RAM capacity) |
| Data areas and their retentivity             |                                          |
| retentive data area in total                 | all                                      |
| Flag                                         |                                          |
| • Number, 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.                   | 510 byte                                 |
| Address area                                 |                                          |
| I/O address area                             |                                          |
| • Inputs                                     | 1 kbyte                                  |
| • Outputs                                    | 1 kbyte                                  |
| Process image                                |                                          |
| • Inputs                                     | 128 byte                                 |
| • Outputs                                    | 128 byte                                 |
| Default addresses of the integrated channels |                                          |
| — Digital inputs                             | 124.0 to 126.7                           |
| — Digital outputs                            | 124.0 to 125.7                           |
| — Analog inputs                              | 752 to 761                               |
| — Analog outputs                             | 752 to 755                               |
| 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                                      |

|                                                                 |                                                 |
|-----------------------------------------------------------------|-------------------------------------------------|
| <b>Hardware configuration</b>                                   |                                                 |
| Number of expansion units, max.                                 | 3                                               |
| <b>Number of DP masters</b>                                     |                                                 |
| • integrated                                                    | none                                            |
| • via CP                                                        | 4                                               |
| <b>Number of operable FMs and CPs (recommended)</b>             |                                                 |
| • FM                                                            | 8                                               |
| • CP, PtP                                                       | 8                                               |
| • CP, LAN                                                       | 6                                               |
| <b>Rack</b>                                                     |                                                 |
| • Racks, max.                                                   | 4                                               |
| • Modules per rack, max.                                        | 8; In rack 3 max. 7                             |
| <b>Time of day</b>                                              |                                                 |
| <b>Clock</b>                                                    |                                                 |
| • Hardware clock (real-time)                                    | Yes                                             |
| • retentive and synchronizable                                  | Yes                                             |
| • Backup time                                                   | 6 wk; At 40 °C ambient temperature              |
| • Deviation per day, max.                                       | 10 s                                            |
| <b>Operating hours counter</b>                                  |                                                 |
| • Number                                                        | 1                                               |
| • Number/Number range                                           | 0                                               |
| • Range of values                                               | 0 to 2 <sup>31</sup> hours (when using SFC 101) |
| • retentive                                                     | Yes; Must be restarted at each restart          |
| <b>Clock synchronization</b>                                    |                                                 |
| • supported                                                     | Yes                                             |
| • to MPI, master                                                | Yes                                             |
| • to MPI, slave                                                 | Yes                                             |
| • in AS, master                                                 | Yes                                             |
| <b>Digital inputs</b>                                           |                                                 |
| Number of digital inputs                                        | 24                                              |
| • of which inputs usable for technological functions            | 12                                              |
| integrated channels (DI)                                        | 24                                              |
| Input characteristic curve in accordance with IEC 61131, type 1 | Yes                                             |
| <b>Number of simultaneously controllable inputs</b>             |                                                 |
| <b>horizontal installation</b>                                  |                                                 |
| — up to 40 °C, max.                                             | 24                                              |
| — up to 60 °C, max.                                             | 12                                              |
| <b>vertical installation</b>                                    |                                                 |
| — up to 40 °C, max.                                             | 12                                              |

|                                                |                                            |
|------------------------------------------------|--------------------------------------------|
| Input voltage                                  |                                            |
| • Rated value (DC)                             | 24 V                                       |
| • for signal "0"                               | -3 to +5V                                  |
| • for signal "1"                               | +15 to +30V                                |
| Input current                                  |                                            |
| • for signal "1", typ.                         | 9 mA                                       |
| Input delay (for rated value of input voltage) |                                            |
| for standard inputs                            |                                            |
| — parameterizable                              | Yes; 0.1 / 0.3 / 3 / 15 ms                 |
| — Rated value                                  | 3 ms                                       |
| for counter/technological functions            |                                            |
| — at "0" to "1", max.                          | 16 $\mu$ s                                 |
| 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                                      |
| — unshielded, max.                             | not allowed                                |
| Digital outputs                                |                                            |
| Number of digital outputs                      | 16                                         |
| • of which high-speed outputs                  | 4                                          |
| 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 $\Omega$                                |
| • upper limit                                  | 4 k $\Omega$                               |
| Output voltage                                 |                                            |
| • for signal "1", min.                         | L+ (-0.8 V)                                |
| Output current                                 |                                            |
| • 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                                     |
| Parallel switching of two outputs              |                                            |
| • 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                                                |
| <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>                                                  |                                                    |
| <b>Number of analog inputs</b>                                        |                                                    |
| • For voltage/current measurement                                     | 4                                                  |
| • For resistance/resistance thermometer measurement                   | 1                                                  |
| integrated channels (AI)                                              | 4+1                                                |
| permissible input voltage for current input (destruction limit), max. | 5 V; Permanent                                     |
| permissible input voltage for voltage input (destruction limit), max. | 30 V; Permanent                                    |
| permissible input current for voltage input (destruction limit), max. | 0.5 mA; Permanent                                  |
| permissible input current for current input (destruction limit), max. | 50 mA; Permanent                                   |
| No-load voltage for resistance-type transmitter, typ.                 | 2.5 V                                              |
| Constant measurement current for resistance-type transmitter, typ.    | 1.8 to 3.3 mA                                      |
| Technical unit for temperature measurement adjustable                 | Yes; Degrees Celsius / degrees Fahrenheit / Kelvin |
| <b>Input ranges</b>                                                   |                                                    |
| • Current                                                             | Yes                                                |
| • Resistance thermometer                                              | Yes; Pt 100 / 10 MΩ                                |
| • Resistance                                                          | Yes                                                |
| <b>Input ranges (rated values), voltages</b>                          |                                                    |
| • 0 to +10 V                                                          | Yes                                                |
| • Input resistance (0 to 10 V)                                        | 100 kΩ                                             |
| <b>Input ranges (rated values), currents</b>                          |                                                    |
| • 0 to 20 mA                                                          | Yes                                                |

|                                                     |                                                   |
|-----------------------------------------------------|---------------------------------------------------|
| • Input resistance (0 to 20 mA)                     | 100 $\Omega$                                      |
| • -20 mA to +20 mA                                  | Yes                                               |
| • Input resistance (-20 mA to +20 mA)               | 100 $\Omega$                                      |
| • 4 mA to 20 mA                                     | Yes                                               |
| • Input resistance (4 mA to 20 mA)                  | 100 $\Omega$                                      |
| Input ranges (rated values), resistance thermometer |                                                   |
| • Pt 100                                            | Yes                                               |
| • Input resistance (Pt 100)                         | 10 M $\Omega$                                     |
| Input ranges (rated values), resistors              |                                                   |
| • 0 to 600 ohms                                     | Yes                                               |
| • Input resistance (0 to 600 ohms)                  | 10 M $\Omega$                                     |
| Thermocouple (TC)                                   |                                                   |
| Temperature compensation                            |                                                   |
| — parameterizable                                   | No                                                |
| Characteristic linearization                        |                                                   |
| • parameterizable                                   | Yes; by software                                  |
| — for resistance thermometer                        | Pt 100                                            |
| Cable length                                        |                                                   |
| • shielded, max.                                    | 100 m                                             |
| Analog outputs                                      |                                                   |
| Number of analog outputs                            | 2                                                 |
| integrated channels (AO)                            | 2                                                 |
| Voltage output, short-circuit protection            | Yes                                               |
| Voltage output, short-circuit current, max.         | 55 mA                                             |
| Current output, no-load voltage, max.               | 17 V                                              |
| Output ranges, voltage                              |                                                   |
| • 0 to 10 V                                         | Yes                                               |
| • -10 V to +10 V                                    | Yes                                               |
| Output ranges, current                              |                                                   |
| • 0 to 20 mA                                        | Yes                                               |
| • -20 mA to +20 mA                                  | Yes                                               |
| • 4 mA to 20 mA                                     | Yes                                               |
| Connection of actuators                             |                                                   |
| • for voltage output two-wire connection            | Yes; Without compensation of the line resistances |
| • for voltage output four-wire connection           | No                                                |
| • for current output two-wire connection            | Yes                                               |
| Load impedance (in rated range of output)           |                                                   |
| • with voltage outputs, min.                        | 1 k $\Omega$                                      |
| • with voltage outputs, capacitive load, max.       | 0.1 $\mu$ F                                       |
| • with current outputs, max.                        | 300 $\Omega$                                      |
| • with current outputs, inductive load, max.        | 0.1 mH                                            |

|                                                                        |                                                    |
|------------------------------------------------------------------------|----------------------------------------------------|
| Destruction limits against externally applied voltages and currents    |                                                    |
| • Voltages at the outputs towards MANA                                 | 16 V; Permanent                                    |
| • Current, max.                                                        | 50 mA; Permanent                                   |
| Cable length                                                           |                                                    |
| • shielded, max.                                                       | 200 m                                              |
| Analog value generation for the inputs                                 |                                                    |
| Measurement principle                                                  | Actual value encryption (successive approximation) |
| Integration and conversion time/resolution per channel                 |                                                    |
| • Resolution with overrange (bit including sign), max.                 | 12 bit                                             |
| • Integration time, parameterizable                                    | Yes; 2,5 / 16,6 / 20 ms                            |
| • Interference voltage suppression for interference frequency f1 in Hz | 400 / 60 / 50 Hz                                   |
| • permissible input frequency, max.                                    | 400 Hz                                             |
| • Time constant of the input filter                                    | 0.38 ms                                            |
| • Basic execution time of the module (all channels released)           | 1 ms                                               |
| Analog value generation for the outputs                                |                                                    |
| Integration and conversion time/resolution per channel                 |                                                    |
| • Resolution with overrange (bit including sign), max.                 | 12 bit                                             |
| • Conversion time (per channel)                                        | 1 ms                                               |
| Settling time                                                          |                                                    |
| • for resistive load                                                   | 0.6 ms                                             |
| • for capacitive load                                                  | 1 ms                                               |
| • for inductive load                                                   | 0.5 ms                                             |
| Encoder                                                                |                                                    |
| Connection of signal encoders                                          |                                                    |
| • for voltage measurement                                              | Yes                                                |
| • for current measurement as 2-wire transducer                         | Yes; with external supply                          |
| • for current measurement as 4-wire transducer                         | Yes                                                |
| • for resistance measurement with two-wire connection                  | Yes; Without compensation of the line resistances  |
| • for resistance measurement with three-wire connection                | No                                                 |
| • for resistance measurement with four-wire connection                 | No                                                 |
| Connectable encoders                                                   |                                                    |
| • 2-wire sensor                                                        | Yes                                                |
| — permissible quiescent current (2-wire sensor), max.                  | 1.5 mA                                             |
| Errors/accuracies                                                      |                                                    |

|                                                                                                                                 |                                     |
|---------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|
| Temperature error (relative to input range), (+/-)                                                                              | 0.006 %/K                           |
| Crosstalk between the inputs, min.                                                                                              | 60 dB                               |
| Repeat accuracy in steady state at 25 °C (relative to input range), (+/-)                                                       | 0.06 %                              |
| Output ripple (relative to output range, bandwidth 0 to 50 kHz), (+/-)                                                          | 0.1 %                               |
| Linearity error (relative to output range), (+/-)                                                                               | 0.15 %                              |
| Temperature error (relative to output range), (+/-)                                                                             | 0.01 %/K                            |
| Crosstalk between the outputs, min.                                                                                             | 60 dB                               |
| Repeat accuracy in steady state at 25 °C (relative to output range), (+/-)                                                      | 0.06 %                              |
| <b>Operational error limit in overall temperature range</b>                                                                     |                                     |
| • Voltage, relative to input range, (+/-)                                                                                       | 1 %                                 |
| • Current, relative to input range, (+/-)                                                                                       | 1 %                                 |
| • Resistance, relative to input range, (+/-)                                                                                    | 5 %                                 |
| • Voltage, relative to output range, (+/-)                                                                                      | 1 %                                 |
| • Current, relative to output range, (+/-)                                                                                      | 1 %                                 |
| <b>Basic error limit (operational limit at 25 °C)</b>                                                                           |                                     |
| • Voltage, relative to input range, (+/-)                                                                                       | 0.7 %; Linearity error $\pm 0.06$ % |
| • Current, relative to input range, (+/-)                                                                                       | 0.7 %; Linearity error $\pm 0.06$ % |
| • Resistance, relative to input range, (+/-)                                                                                    | 3 %; Linearity error $\pm 0.2$ %    |
| • Resistance thermometer, relative to input range, (+/-)                                                                        | 3 %                                 |
| • Voltage, relative to output range, (+/-)                                                                                      | 0.7 %                               |
| • Current, relative to output range, (+/-)                                                                                      | 0.7 %                               |
| <b>Interference voltage suppression for <math>f = n \times (f_1 \pm 1 \%)</math>, <math>f_1</math> = interference frequency</b> |                                     |
| • Series mode interference (peak value of interference < rated value of input range), min.                                      | 30 dB                               |
| • Common mode interference, min.                                                                                                | 40 dB                               |
| <b>Interfaces</b>                                                                                                               |                                     |
| Number of industrial Ethernet interfaces                                                                                        | 0                                   |
| Number of PROFINET interfaces                                                                                                   | 0                                   |
| Number of RS 485 interfaces                                                                                                     | 1; MPI                              |
| Number of RS 422 interfaces                                                                                                     | 0                                   |
| <b>MPI</b>                                                                                                                      |                                     |
| • Cable length, max.                                                                                                            | 50 m; without repeater              |
| <b>1. Interface</b>                                                                                                             |                                     |
| Interface type                                                                                                                  | Integrated RS 485 interface         |
| Physics                                                                                                                         | RS 485                              |
| Isolated                                                                                                                        | No                                  |
| Power supply to interface (15 to 30 V DC), max.                                                                                 | 200 mA                              |
| <b>Functionality</b>                                                                                                            |                                     |

|                                                 |                                                                                    |
|-------------------------------------------------|------------------------------------------------------------------------------------|
| • MPI                                           | Yes                                                                                |
| • PROFIBUS DP master                            | No                                                                                 |
| • PROFIBUS DP slave                             | No                                                                                 |
| • Point-to-point connection                     | No                                                                                 |
| <b>MPI</b>                                      |                                                                                    |
| • Number of connections                         | 8                                                                                  |
| • 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                                                                                |
| — S7 communication, as client                   | No                                                                                 |
| — S7 communication, as server                   | Yes                                                                                |
| <b>Communication functions</b>                  |                                                                                    |
| PG/OP communication                             | Yes                                                                                |
| <b>Global data communication</b>                |                                                                                    |
| • supported                                     | Yes                                                                                |
| • Number of GD loops, max.                      | 4                                                                                  |
| • Number of GD packets, max.                    | 4                                                                                  |
| • Number of GD packets, transmitter, max.       | 4                                                                                  |
| • Number of GD packets, receiver, max.          | 4                                                                                  |
| • 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. | 64 byte                                                                            |
| <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
- adjustable for PG communication, min.
- adjustable for PG communication, max.
- usable for OP communication
  - reserved for OP communication
  - adjustable for OP communication, min.
  - adjustable for OP communication, max.
- usable for S7 basic communication
  - reserved for S7 basic communication
  - adjustable for S7 basic communication, min.
  - adjustable for S7 basic communication, max.
- usable for routing

1  
1  
7  
7  
1  
1  
7  
4  
0  
0  
4  
No

### S7 message functions

|                                                      |                                                                                 |
|------------------------------------------------------|---------------------------------------------------------------------------------|
| 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.           | 20                                                                              |

### Test commissioning functions

|                       |     |
|-----------------------|-----|
| Status block          | Yes |
| Single step           | Yes |
| Number of breakpoints | 2   |

#### Status/control

|                                    |                                                   |
|------------------------------------|---------------------------------------------------|
| • Status/control variable          | Yes                                               |
| • Variables                        | Inputs, outputs, memory bits, DB, times, counters |
| • Number of variables, max.        | 30                                                |
| — of which status variables, max.  | 30                                                |
| — of which control variables, max. | 14                                                |

#### Forcing

|                             |                 |
|-----------------------------|-----------------|
| • Forcing                   | Yes             |
| • Forcing, variables        | Inputs, outputs |
| • Number of variables, max. | 10              |

#### Diagnostic buffer

|                           |     |
|---------------------------|-----|
| • present                 | Yes |
| • Number of entries, max. | 100 |

### Interrupts/diagnostics/status information

|                                           |     |
|-------------------------------------------|-----|
| Diagnostics indication LED                |     |
| • Status indicator digital input (green)  | Yes |
| • Status indicator digital output (green) | Yes |

### Integrated Functions

|                                                  |                                                                                                |
|--------------------------------------------------|------------------------------------------------------------------------------------------------|
| Number of counters                               | 3; 3 channels (see "Technological Functions" manual)                                           |
| Counting frequency (counter) max.                | 30 kHz                                                                                         |
| Frequency measurement                            | Yes                                                                                            |
| Number of frequency meters                       | 3; 3 channels up to max. 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; 3 channels pulse width modulation up to max. 2.5 kHz (see "Technological Functions" manual) |
| Limit frequency (pulse)                          | 2.5 kHz                                                                                        |

#### Potential separation

##### Potential separation digital inputs

- |                                          |     |
|------------------------------------------|-----|
| • Potential separation digital inputs    | Yes |
| • between the channels                   | No  |
| • between the channels and backplane bus | Yes |

##### Potential separation digital outputs

- |                                          |     |
|------------------------------------------|-----|
| • Potential separation digital outputs   | Yes |
| • between the channels                   | Yes |
| • between the channels, in groups of     | 8   |
| • between the channels and backplane bus | Yes |

##### Potential separation analog inputs

- |                                          |                            |
|------------------------------------------|----------------------------|
| • Potential separation analog inputs     | Yes; common for analog I/O |
| • between the channels                   | No                         |
| • between the channels and backplane bus | Yes                        |

##### Potential separation analog outputs

- |                                          |                            |
|------------------------------------------|----------------------------|
| • Potential separation analog outputs    | Yes; common for analog I/O |
| • between the channels                   | No                         |
| • between the channels and backplane bus | Yes                        |

#### Permissible potential difference

|                                       |                 |
|---------------------------------------|-----------------|
| between different circuits            | 75 V DC/60 V AC |
| Between the inputs and MANA (UCM)     | 8 V DC          |
| between MANA and M internally (UIISO) | 75 V DC/60 V AC |

#### Isolation

|                       |          |
|-----------------------|----------|
| Isolation tested with | 600 V DC |
|-----------------------|----------|

#### Configuration

|                        |                              |
|------------------------|------------------------------|
| Configuration software |                              |
| • STEP 7               | Yes; V5.3 SP2 with HW update |
| Programming            |                              |
| • Command set          | see instruction list         |
| • Nesting levels       | 8                            |

|                                               |                      |
|-----------------------------------------------|----------------------|
| • System functions (SFC)                      | see instruction list |
| • System function blocks (SFB)                | see instruction list |
| Programming language                          |                      |
| — LAD                                         | Yes                  |
| — FBD                                         | Yes                  |
| — STL                                         | Yes                  |
| — SCL                                         | Yes                  |
| — GRAPH                                       | Yes                  |
| — HiGraph®                                    | Yes                  |
| Know-how protection                           |                      |
| • User program protection/password protection | Yes                  |
| Dimensions                                    |                      |
| Width                                         | 120 mm               |
| Height                                        | 125 mm               |
| Depth                                         | 130 mm               |
| Weights                                       |                      |
| Weight, approx.                               | 660 g                |
| <b>last modified:</b>                         | 04/19/2018           |