



Spare part SIMATIC S7-300, CPU 317TF-2 DP, Central processing unit for PLC, Technology and safety tasks, 1.5 MB work memory, 1st interface MPI/DP 12 Mbit/s, 2nd interface DP (drive), Integr. I/O for technology Front connector (1x 40-pole) and Micro Memory Card 8 MB required

| General information | |
|---|--|
| HW functional status | 01 |
| Firmware version | CPU: V2.7, integrated technology: V4.1.5 |
| Engineering with | |
| <ul style="list-style-type: none"> Programming package | STEP 7 V5.4 SP5 or higher, S7-Technology V4.2 or higher, Distributed Safety V5.4 SP5 or higher, S7 F Configuration Pack V5.5 SP7 or higher |
| Supply voltage | |
| Rated value (DC) | 24 V |
| permissible range, lower limit (DC) | 20.4 V |
| permissible range, upper limit (DC) | 28.8 V |
| external protection for power supply lines (recommendation) | 2 A min. |
| Load voltage L+ | |
| <ul style="list-style-type: none"> Rated value (DC) Reverse polarity protection | 24 V Yes |
| Digital outputs | |
| — Rated value (DC) | 24 V; 2L+ |
| Input current | |
| Current consumption (in no-load operation), typ. | 250 mA |
| Inrush current, typ. | 2.5 A |
| I ² t | 1 A ² ·s |
| Power loss | |
| Power loss, typ. | 6 W |
| Memory | |
| Work memory | |
| <ul style="list-style-type: none"> integrated expandable Size of retentive memory for retentive data blocks | 1 536 kbyte No 256 kbyte |
| Load memory | |
| <ul style="list-style-type: none"> Plug-in (MMC) Plug-in (MMC), max. Data management on MMC (after last programming), min. | Yes 8 Mbyte 10 y |
| Backup | |
| <ul style="list-style-type: none"> present without battery | Yes; Guaranteed by MMC (maintenance-free) Yes; Program and data |
| CPU processing times | |
| for bit operations, typ. | 0.05 μs |

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|---|---|
| for bit operations, max. | 0.05 µs |
| for word operations, typ. | 0.2 µs |
| for fixed point arithmetic, typ. | 0.2 µs |
| for floating point arithmetic, typ. | 1 µs |
| CPU-blocks | |
| Number of blocks (total) | 2 048; (DBs, FCs, FBs); the maximum number of loadable blocks can be reduced by the MMC used. |
| DB | |
| • Number, max. | 2 047; Number band: 1 to 2047 |
| • Size, max. | 64 kbyte |
| FB | |
| • Number, max. | 2 048; Number range: 0 to 2047 |
| • Size, max. | 64 kbyte |
| FC | |
| • Number, max. | 2 048; Number range: 0 to 2047 |
| • Size, max. | 64 kbyte |
| OB | |
| • Size, max. | 64 kbyte |
| • Number of free cycle OBs | 1; OB 1 |
| • Number of time alarm OBs | 1; OB 10 |
| • Number of delay alarm OBs | 2; OB 20, 21 |
| • Number of cyclic interrupt OBs | 4; OB 32, 33, 34, 35 |
| • Number of process alarm OBs | 1; OB 40 |
| • Number of DPV1 alarm OBs | 3; OB 55, 56, 57 |
| • Number of isochronous mode OBs | 1; OB 61 |
| • Number of technology synchronous alarm OBs | 1; OB 65 |
| • Number of startup OBs | 1; OB 100 |
| • Number of asynchronous error OBs | 5; OB 80, 82, 85, 86, 87 |
| • Number of synchronous error OBs | 2; OB 121, 122 |
| Nesting depth | |
| • per priority class | 16 |
| • additional within an error OB | 4 |
| Counters, timers and their retentivity | |
| S7 counter | |
| • Number | 512; Number range: 0 to 511 |
| Retentivity | |
| — adjustable | Yes |
| — preset | 8 (from Z 0 to Z 7) |
| Counting range | |
| — adjustable | Yes |
| — lower limit | 0 |
| — upper limit | 999 |
| IEC counter | |
| • present | Yes |
| • Type | SFB |
| • Number | Unlimited (limited only by RAM capacity) |
| S7 times | |
| • Number | 512; Number range: 0 to 511 |
| Retentivity | |
| — adjustable | Yes |
| — 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, max. 256 KB |
| Flag | |
| <ul style="list-style-type: none"> • Retentivity available • Retentivity preset • Number of clock memories | Yes; From MB 0 to MB 4 095 MB 0 to MB 15 8; 1 memory byte |
| Data blocks | |
| <ul style="list-style-type: none"> • Retentivity adjustable • Retentivity preset | Yes; via non-retain property on DB Yes |
| Local data | |
| <ul style="list-style-type: none"> • per priority class, max. | 1 024 byte |
| Address area | |
| I/O address area | |
| <ul style="list-style-type: none"> • Inputs • Outputs | 8 192 byte 8 192 byte |
| of which distributed | |
| <ul style="list-style-type: none"> — Inputs — Outputs | 8 192 byte 8 192 byte |
| Process image | |
| Default addresses of the integrated channels | |
| <ul style="list-style-type: none"> — Digital inputs — Digital outputs | 66 66 |
| Subprocess images | |
| <ul style="list-style-type: none"> • Number of subprocess images, max. | 1 |
| Digital channels | |
| <ul style="list-style-type: none"> • Inputs <ul style="list-style-type: none"> — of which central • Outputs <ul style="list-style-type: none"> — of which central | 65 536 512 65 536 512 |
| Analog channels | |
| <ul style="list-style-type: none"> • Inputs <ul style="list-style-type: none"> — of which central • Outputs <ul style="list-style-type: none"> — of which central | 4 096 64 4 096 64 |
| Hardware configuration | |
| Number of expansion units, max. | 0 |
| Number of DP masters | |
| <ul style="list-style-type: none"> • integrated • via CP | 2; 1 DP and 1 DP (drive) 2; for DP |
| Number of operable FMs and CPs (recommended) | |
| <ul style="list-style-type: none"> • FM • CP, PtP • CP, LAN | 8 8 8 |
| Rack | |
| <ul style="list-style-type: none"> • Racks, max. • Modules per rack, max. | 1 8 |
| Time of day | |
| Clock | |
| <ul style="list-style-type: none"> • Hardware clock (real-time) • retentive and synchronizable • Backup time • Deviation per day, max. • Behavior of the clock following POWER-ON • Behavior of the clock following expiry of backup period | Yes Yes 6 wk; At 40 °C ambient temperature 10 s Clock continues running after POWER OFF Clock continues to run with the time at which the power failure occurred |
| Operating hours counter | |
| <ul style="list-style-type: none"> • Number • Number/Number range | 4 0 to 3 |

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| <ul style="list-style-type: none"> • Range of values • Granularity • retentive | 0 to 2 ³¹ hours (when using SFC 101) 1 h Yes; Must be restarted at each restart |
| Clock synchronization | |
| <ul style="list-style-type: none"> • supported • to DP, master • to DP, slave | Yes Yes Yes; Only time-of-day slave |
| Digital inputs | |
| Number of digital inputs | 4 |
| <ul style="list-style-type: none"> • of which inputs usable for technological functions | 4 |
| Input characteristic curve in accordance with IEC 61131, type 1 | Yes |
| Number of simultaneously controllable inputs | |
| horizontal installation | |
| — up to 40 °C, max. | 4 |
| — up to 60 °C, max. | 4 |
| vertical installation | |
| — up to 40 °C, max. | 4 |
| Input voltage | |
| <ul style="list-style-type: none"> • Rated value (DC) • for signal "0" • for signal "1" | 24 V -3 to +5V +15 to +30 V |
| Input current | |
| <ul style="list-style-type: none"> • for signal "1", typ. | 7 mA |
| Input delay (for rated value of input voltage) | |
| for technological functions | |
| — at "0" to "1", max. | 10 µs; Typical |
| — at "1" to "0", max. | 10 µs; Typical |
| Cable length | |
| <ul style="list-style-type: none"> • shielded, max. | 1 000 m |
| Digital outputs | |
| Number of digital outputs | 8 |
| <ul style="list-style-type: none"> • of which high-speed outputs | 8 |
| Functions | for technology functions, e.g. high-speed cam switch signals |
| Short-circuit protection | Yes |
| <ul style="list-style-type: none"> • Response threshold, typ. | 1 A |
| Limitation of inductive shutdown voltage to | 48 V |
| Controlling a digital input | No |
| Switching capacity of the outputs | |
| <ul style="list-style-type: none"> • on lamp load, max. | 5 W |
| Load resistance range | |
| <ul style="list-style-type: none"> • lower limit • upper limit | 48 Ω 4 kΩ |
| Output voltage | |
| <ul style="list-style-type: none"> • for signal "0", max. • for signal "1", min. | 3 V; 2L+ Rated voltage -2.5 V (2L+) |
| Output current | |
| <ul style="list-style-type: none"> • for signal "1" rated value • for signal "1" permissible range for 0 to 60 °C, min. • for signal "1" permissible range for 0 to 60 °C, max. • for signal "0" residual current, max. | 0.5 A 5 mA 0.6 A 0.3 mA |
| Parallel switching of two outputs | |
| <ul style="list-style-type: none"> • for uprating • for redundant control of a load | No No |
| Switching frequency | |
| <ul style="list-style-type: none"> • with resistive load, max. • with inductive load, max. • on lamp load, max. | 100 Hz 0.2 Hz; According to IEC 60947-5-1, DC-13 100 Hz |

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| Total current of the outputs (per group) | |
| horizontal installation | |
| — up to 40 °C, max. | 4 A |
| — up to 60 °C, max. | 3 A |
| all other mounting positions | |
| — up to 40 °C, max. | 3 A |
| Cable length | |
| • shielded, max. | 1 000 m |
| Analog inputs | |
| Number of analog inputs | 0 |
| Analog outputs | |
| Number of analog outputs | 0 |
| Encoder | |
| Connectable encoders | |
| • 2-wire sensor | No |
| Interfaces | |
| Number of industrial Ethernet interfaces | 0 |
| Number of PROFINET interfaces | 0 |
| Number of RS 485 interfaces | 2 |
| Number of RS 422 interfaces | 0 |
| 1. Interface | |
| Interface type | Integrated RS 485 interface |
| Isolated | Yes |
| Interface types | |
| • RS 485 | Yes |
| Protocols | |
| • MPI | Yes |
| • PROFIBUS DP master | Yes |
| • PROFIBUS DP slave | Yes |
| • Point-to-point connection | No |
| MPI | |
| • Number of connections | 32 |
| • Transmission rate, max. | 12 Mbit/s |
| Services | |
| — PG/OP communication | Yes |
| — Routing | Yes |
| — Global data communication | Yes |
| — S7 basic communication | Yes |
| — S7 communication | Yes |
| — S7 communication, as client | No; but via CP and loadable FB |
| — S7 communication, as server | Yes |
| PROFIBUS DP master | |
| • Transmission rate, max. | 12 Mbit/s |
| • Number of DP slaves, max. | 124 |
| Services | |
| — PG/OP communication | Yes |
| — Routing | Yes |
| — Global data communication | No |
| — S7 basic communication | Yes; I blocks only |
| — S7 communication | Yes |
| — S7 communication, as client | No; but via CP and loadable FB |
| — S7 communication, as server | Yes |
| — Equidistance | Yes |
| — Isochronous mode | Yes; OB 61 |
| — SYNC/FREEZE | Yes |
| — Activation/deactivation of DP slaves | Yes |
| — Number of DP slaves that can be simultaneously activated/deactivated, max. | 4 |

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| — DPV1 | Yes |
| Address area | |
| — Inputs, max. | 8 192 byte |
| — Outputs, max. | 8 192 byte |
| User data per DP slave | |
| — Inputs, max. | 244 byte |
| — Outputs, max. | 244 byte |
| PROFIBUS DP slave | |
| • GSD file | http://www.siemens.com/profibus-gsd |
| • Transmission rate, max. | 12 Mbit/s |
| • automatic baud rate search | Yes; only with passive interface |
| • Address area, max. | 32 |
| • User data per address area, max. | 32 byte |
| Services | |
| — PG/OP communication | Yes |
| — Routing | Yes; Only with active interface |
| — Global data communication | No |
| — S7 basic communication | No |
| — S7 communication | Yes; Only server, configured on one side |
| — S7 communication, as client | Yes; but via CP and loadable FB |
| — S7 communication, as server | Yes; Connection configured on one side only |
| — Direct data exchange (slave-to-slave communication) | Yes |
| — DPV1 | No |
| Transfer memory | |
| — Inputs | 244 byte |
| — Outputs | 244 byte |
| 2. Interface | |
| Interface type | Integrated RS 485 interface |
| Isolated | Yes |
| Interface types | |
| • RS 485 | Yes |
| Protocols | |
| • MPI | No |
| • PROFIBUS DP master | Yes; DP(DRIVE)-Master |
| • PROFIBUS DP slave | No |
| • Point-to-point connection | No |
| PROFIBUS DP master | |
| • Transmission rate, max. | 12 Mbit/s |
| • Number of DP slaves, max. | 64 |
| Services | |
| — PG/OP communication | No |
| — Routing | Yes |
| — Global data communication | No |
| — S7 basic communication | No |
| — S7 communication | No |
| — Equidistance | Yes |
| — Isochronous mode | Yes |
| — SYNC/FREEZE | No |
| — Activation/deactivation of DP slaves | Yes |
| — DPV1 | No |
| Address area | |
| — Inputs, max. | 1 024 byte |
| — Outputs, max. | 1 024 byte |
| User data per DP slave | |
| — Inputs, max. | 244 byte |
| — Outputs, max. | 244 byte |
| Communication functions | |

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|---|--|
| PG/OP communication | Yes |
| Global data communication | |
| <ul style="list-style-type: none"> supported | Yes |
| <ul style="list-style-type: none"> Number of GD loops, max. | 8 |
| <ul style="list-style-type: none"> Number of GD packets, max. | 8 |
| <ul style="list-style-type: none"> Number of GD packets, transmitter, max. | 8 |
| <ul style="list-style-type: none"> Number of GD packets, receiver, max. | 8 |
| <ul style="list-style-type: none"> Size of GD packets, max. | 22 byte |
| <ul style="list-style-type: none"> Size of GD packet (of which consistent), max. | 22 byte |
| S7 basic communication | |
| <ul style="list-style-type: none"> supported | Yes |
| <ul style="list-style-type: none"> User data per job, max. | 76 byte |
| <ul style="list-style-type: none"> User data per job (of which consistent), max. | 76 byte; 76 bytes (with X_SEND or X_RCV), 76 bytes (with X_PUT or X_GET as server) |
| S7 communication | |
| <ul style="list-style-type: none"> supported | Yes |
| <ul style="list-style-type: none"> as server | Yes |
| <ul style="list-style-type: none"> as client | Yes; Via CP and loadable FB |
| <ul style="list-style-type: none"> User data per job, max. | 180 byte; With PUT/GET |
| <ul style="list-style-type: none"> User data per job (of which consistent), max. | 160 byte |
| S5 compatible communication | |
| <ul style="list-style-type: none"> supported | Yes; via CP and loadable FC |
| Number of connections | |
| <ul style="list-style-type: none"> overall | 32 |
| <ul style="list-style-type: none"> usable for PG communication | 31 |
| <ul style="list-style-type: none"> — reserved for PG communication | 1 |
| <ul style="list-style-type: none"> — adjustable for PG communication, min. | 1 |
| <ul style="list-style-type: none"> — adjustable for PG communication, max. | 31 |
| <ul style="list-style-type: none"> usable for OP communication | 31 |
| <ul style="list-style-type: none"> — reserved for OP communication | 1 |
| <ul style="list-style-type: none"> — adjustable for OP communication, min. | 1 |
| <ul style="list-style-type: none"> — adjustable for OP communication, max. | 31 |
| <ul style="list-style-type: none"> usable for S7 basic communication | 30 |
| <ul style="list-style-type: none"> — reserved for S7 basic communication | 0 |
| <ul style="list-style-type: none"> — adjustable for S7 basic communication, min. | 0 |
| <ul style="list-style-type: none"> — adjustable for S7 basic communication, max. | 30 |
| <ul style="list-style-type: none"> usable for routing | 8 |
| S7 message functions | |
| Number of login stations for message functions, max. | 32; Depending on the configured connections for PG/OP and S7 basic communication |
| simultaneously active Alarm-S blocks, max. | 60 |
| Test commissioning functions | |
| Status block | Yes; Up to 2 simultaneously |
| Single step | Yes |
| Number of breakpoints | 2; without continuation |
| Status/control | |
| <ul style="list-style-type: none"> Status/control variable | Yes |
| <ul style="list-style-type: none"> Variables | Inputs, outputs, memory bits, DB, times, counters |
| <ul style="list-style-type: none"> Number of variables, max. | 30 |
| <ul style="list-style-type: none"> — of which status variables, max. | 30 |
| <ul style="list-style-type: none"> — of which control variables, max. | 14 |
| Forcing | |
| <ul style="list-style-type: none"> Forcing | Yes |
| <ul style="list-style-type: none"> Forcing, variables | Inputs, outputs |
| <ul style="list-style-type: none"> Number of variables, max. | 10 |
| Diagnostic buffer | |
| <ul style="list-style-type: none"> present | Yes |
| <ul style="list-style-type: none"> Number of entries, max. | 100 |

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| — adjustable | No |
| Interrupts/diagnostics/status information | |
| Alarms | No |
| Diagnostics function | No |
| Diagnostics indication LED | |
| • Status indicator digital input (green) | Yes |
| • Status indicator digital output (green) | Yes |
| Potential separation | |
| Potential separation digital inputs | |
| • between the channels and backplane bus | Yes |
| Potential separation digital outputs | |
| • between the channels and backplane bus | Yes |
| Isolation | |
| Isolation tested with | 500 V DC |
| Ambient conditions | |
| Ambient temperature during operation | |
| • min. | 0 °C |
| • max. | 60 °C |
| Configuration | |
| Configuration software | |
| • STEP 7 | Yes |
| Programming | |
| • Command set | see instruction list |
| • Nesting levels | 8 |
| • System functions (SFC) | see instruction list |
| • System function blocks (SFB) | see instruction list |
| Programming language | |
| — LAD | Yes |
| — FBD | Yes |
| — STL | Yes |
| — SCL | Yes |
| — CFC | Yes |
| — GRAPH | Yes |
| — HiGraph® | Yes |
| Know-how protection | |
| • User program protection/password protection | Yes |
| Cycle time monitoring | |
| • lower limit | 1 ms |
| • upper limit | 6 000 ms |
| • adjustable | Yes |
| • preset | 150 ms |
| Dimensions | |
| Width | 160 mm |
| Height | 125 mm |
| Depth | 130 mm |
| Weights | |
| Weight, approx. | 750 g |
| last modified: | 1/16/2021  |