



SIMATIC S7-300, CPU 317F-2DP, CENTRAL PROCESSING UNIT WITH 1.5 MBYTE WORKING MEMORY, 1. INTERFACE MPI/DP 12MBIT/S, 2. INTERFACE DP-MASTER/SLAVE, MICRO MEMORY CARD NECESSARY FOR USE WITH SOFTWARE OPTION S7 DISTRIBUTED SAFETY V5.2 SP1 AND HIGHER

Product type designation

General information

| | |
|---|---|
| Hardware product version | 01 |
| Firmware version | V3.3 |
| Engineering with | |
| <ul style="list-style-type: none"> Programming package | STEP 7 V5.5 + SP1 or higher or STEP7 V5.2 + SP1 or higher with HSP 202 + Distributed Safety |

Supply voltage

| | |
|---|----------|
| Rated value (DC) | |
| <ul style="list-style-type: none"> 24 V DC | Yes |
| permissible range, lower limit (DC) | 19.2 V |
| permissible range, upper limit (DC) | 28.8 V |
| External protection for supply cables (recommendation) | 2 A min. |

Input current

| | |
|--|---------------------|
| Current consumption (rated value) | 870 mA |
| Current consumption (in no-load operation), typ. | 120 mA |
| Inrush current, typ. | 4 A |
| I^2t | 1 A ² ·s |

Power losses

| | |
|------------------|-------|
| Power loss, typ. | 4.5 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"> • pluggable (MMC) • pluggable (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. | 0.025 µs |
| for word operations, typ. | 0.03 µs |
| for fixed point arithmetic, typ. | 0.04 µs |
| for floating point arithmetic, typ. | 0.16 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 | |
| <ul style="list-style-type: none"> • Number, max. • Size, max. | 2 048; Number range: 1 to 16000 64 kbyte |
| FB | |
| <ul style="list-style-type: none"> • Number, max. • Size, max. | 2 048; Number range: 0 to 7999 64 kbyte |
| FC | |
| <ul style="list-style-type: none"> • Number, max. • Size, max. | 2 048; Number range: 0 to 7999 64 kbyte |
| OB | |
| <ul style="list-style-type: none"> • Description • Size, max. • Number of free cycle OBs • Number of time alarm OBs • Number of delay alarm OBs • Number of time interrupt OBs • Number of process alarm OBs • Number of DPV1 alarm OBs • Number isochronous mode OBs • Number of startup OBs • Number of asynchronous error OBs | see instruction list 64 kbyte 1; OB 1 1; OB 10 2; OB 20, 21 4; OB 32, 33, 34, 35 1; OB 40 3; OB 55, 56, 57 1; OB 61 1; OB 100 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 |
| Retentivity | |
| — can be set | Yes |
| — lower limit | 0 |
| — upper limit | 511 |
| — preset | Z 0 to Z 7 |
| Counting range | |
| — lower limit | 0 |
| — upper limit | 999 |
| IEC counter | |
| • present | Yes |
| • Type | SFB |
| • Number | Unlimited (limited only by RAM capacity) |
| S7 times | |
| • Number | 512 |
| Retentivity | |
| — can be set | Yes |
| — lower limit | 0 |
| — upper limit | 511 |
| — 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 | |
| Total retentive data area | All, max. 256 KB |
| Flag | |
| • Number, max. | 4 096 byte |
| • Retentivity available | Yes; From MB 0 to MB 4095 |
| • Retentivity preset | MB 0 to MB 15 |
| • Number of clock memories | 8; 1 memory byte |
| Data blocks | |

| | |
|---|--|
| • Number, max. | 2 048; Number range: 1 to 16000 |
| • Size, max. | 64 kbyte |
| • Retentivity adjustable | Yes; via non-retain property on DB |
| • Retentivity preset | Yes |
| Local data | |
| • per priority class, max. | 32 768 byte; Max. 2048 bytes per block |
| Address area | |
| I/O address area | |
| • Inputs | 8 192 byte |
| • Outputs | 8 192 byte |
| of which, distributed | |
| — Inputs | 8 192 byte |
| — Outputs | 8 192 byte |
| Process image | |
| • Inputs | 8 192 byte |
| • Outputs | 8 192 byte |
| • Inputs, adjustable | 8 192 byte |
| • Outputs, adjustable | 8 192 byte |
| • Inputs, default | 1 024 byte |
| • Outputs, default | 1 024 byte |
| Subprocess images | |
| • Number of subprocess images, max. | 1 |
| Digital channels | |
| • Inputs | 65 536 |
| — Inputs, of which central | 1 024 |
| • Outputs | 65 536 |
| — Outputs, of which central | 1 024 |
| Analog channels | |
| • Inputs | 4 096 |
| — Inputs, of which central | 256 |
| • Outputs | 4 096 |
| — Outputs, of which central | 256 |
| Hardware configuration | |
| Expansion devices, max. | 3 |
| Number of DP masters | |
| • Integrated | 2 |
| • Via CP | 4 |
| Number of operable FMs and CPs (recommended) | |
| • FM | 8 |
| • CP, point-to-point | 8 |
| • CP, LAN | 10 |

| Rack | |
|---|--|
| • Racks, max. | 4 |
| • Modules per rack, max. | 8 |
| Time of day | |
| Clock | |
| • Hardware clock (real-time clock) | Yes |
| • battery-backed and synchronizable | Yes |
| • Deviation per day, max. | 10 s; Typ.: 2 s |
| • Backup time | 6 wk; At 40 °C ambient temperature |
| • Behavior of the clock following POWER-ON | Clock continues running after POWER OFF |
| • Behavior of the clock following expiry of backup period | Clock continues to run with the time at which the power failure occurred |
| Operating hours counter | |
| • Number | 4 |
| • Number/Number range | 0 to 3 |
| • Range of values | 0 to 2 ³¹ hours (when using SFC 101) |
| • Granularity | 1 hour |
| • retentive | Yes; Must be restarted at each restart |
| Clock synchronization | |
| • supported | Yes |
| • to MPI, master | Yes |
| • to MPI, slave | Yes |
| • to DP, master | Yes; With DP slave only slave clock |
| • to DP, slave | Yes |
| • in AS, master | Yes |
| • in AS, slave | Yes |
| • on Ethernet via NTP | No |
| Digital inputs | |
| Number of digital inputs | 0 |
| Digital outputs | |
| Number of digital outputs | 0 |
| Analog inputs | |
| Number of analog inputs | 0 |
| Analog outputs | |
| Number of analog outputs | 0 |
| Interfaces | |
| Number of 20 mA interfaces (TTY) | 0 |
| Number of RS 232 interfaces | 0 |
| Number of RS 422 interfaces | 0 |
| Number of parallel interfaces | 0 |

| | |
|--|---|
| Number of other interfaces | 0 |
| 1st interface | |
| Interface type | Integrated RS 485 interface |
| Physics | RS 485 |
| Isolated | Yes |
| Power supply to interface (15 to 30 V DC), max. | 200 mA |
| Functionality | |
| • MPI | Yes |
| • DP master | Yes |
| • DP slave | Yes; A DP slave at both interfaces simultaneously is not possible |
| • Point-to-point connection | No |
| MPI | |
| • Transmission rate, max. | 12 Mbit/s |
| Services | |
| — PG/OP communication | Yes |
| — Routing | Yes |
| — 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 |
| 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; Only server, configured on one side |
| — S7 communication, as client | No |
| — S7 communication, as server | Yes |
| — Equidistance mode support | Yes |
| — Isochronous mode | No |
| — SYNC/FREEZE | Yes |
| — Activation/deactivation of DP slaves | Yes |
| — Number of DP slaves that can be simultaneously activated/deactivated, max. | 8 |
| — Direct data exchange (slave-to-slave communication) | Yes; As subscriber |
| — DPV1 | Yes |

| | |
|---|---|
| Address area | |
| — Inputs, max. | 8 kbyte |
| — Outputs, max. | 8 kbyte |
| User data per DP slave | |
| — Inputs, max. | 244 byte |
| — Outputs, max. | 244 byte |
| DP slave | |
| • 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 | No |
| — S7 communication, as server | Yes; Connection configured on one side only |
| — Direct data exchange (slave-to-slave communication) | Yes |
| — DPV1 | No |
| Transfer memory | |
| — Inputs | 244 byte |
| — Outputs | 244 byte |

| | |
|---|---|
| 2nd interface | |
| Interface type | Integrated RS 485 interface |
| Physics | RS 485 |
| Isolated | Yes |
| Power supply to interface (15 to 30 V DC), max. | 200 mA |
| Functionality | |
| • MPI | No |
| • DP master | Yes |
| • DP slave | Yes; A DP slave at both interfaces simultaneously is not possible |
| • Point-to-point connection | No |
| 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; Only server, configured on one side |
| — S7 communication, as client | No; but via CP and loadable FB |
| — S7 communication, as server | Yes |
| — Equidistance mode support | 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. | 8 |
| — Direct data exchange (slave-to-slave communication) | Yes; As subscriber |
| — 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 |
| DP slave | |
| • GSD file | The latest GSD file is available on the Internet (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 | No; but via CP and loadable FB |
| — S7 communication, as server | Yes |
| — Direct data exchange (slave-to-slave communication) | Yes |
| — DPV1 | No |
| Transfer memory | |
| — Inputs | 244 byte |
| — Outputs | 244 byte |

Communication functions

| | |
|---|--|
| PG/OP communication | Yes |
| Data record routing | 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); 64 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. | See online help of STEP 7 (shared parameters of the SFBs/FBs and of the SFCs/FCs of S7 Communication) |
| S5-compatible communication | |
| <ul style="list-style-type: none"> 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"> <ul style="list-style-type: none"> reserved for PG communication | 1 |
| <ul style="list-style-type: none"> <ul style="list-style-type: none"> Adjustable for PG communication, min. | 1 |
| <ul style="list-style-type: none"> <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"> <ul style="list-style-type: none"> reserved for OP communication | 1 |
| <ul style="list-style-type: none"> <ul style="list-style-type: none"> adjustable for OP communication, min. | 1 |
| <ul style="list-style-type: none"> <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"> <ul style="list-style-type: none"> Reserved for S7 basic communication | 0 |
| <ul style="list-style-type: none"> <ul style="list-style-type: none"> adjustable for S7 basic communication, min. | 0 |
| <ul style="list-style-type: none"> <ul style="list-style-type: none"> adjustable for S7 basic communication, max. | 30 |
| <ul style="list-style-type: none"> usable for routing | X1 as a MPI, max. 10; X1 as DP Master max. 24; X1 as DP Slave (active) max. 14; X2 as DP Master max. 24; X2 as DP Slave (active) max. 14 |

S7 message functions

| | |
|--|--|
| Number of login stations for message functions, max. | 32; Depending on the configured connections for PG/OP and S7 basic communication |
| Process diagnostic messages | Yes |
| simultaneously active Alarm-S blocks, max. | 300 |

Test commissioning functions

| | |
|-----------------------|-----------------------------|
| Status block | Yes; Up to 2 simultaneously |
| Single step | Yes |
| Number of breakpoints | 4 |

Status/control

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

Forcing

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

Diagnostic buffer

| | |
|---|---|
| • present | Yes |
| • Number of entries, max. | 500 |
| — can be set | No |
| — Of which powerfail-proof | 100; Only the last 100 entries are retained |
| • Number of entries readable in RUN, max. | 499 |
| — can be set | Yes; From 10 to 499 |
| — preset | 10 |

Service data

| | |
|-------------------|-----|
| • Can be read out | Yes |
|-------------------|-----|

Ambient conditions

| | |
|----------------------------------|-------|
| Ambient temperature in operation | |
| • Min. | 0 °C |
| • max. | 60 °C |

Configuration

| | |
|------------------------|--|
| Configuration software | |
| • STEP 7 | Yes; STEP 7 V5.5 + SP1 or higher or STEP 7 V5.3 + SP2 or higher with HSP 203 |
| • STEP 7 Lite | No |
| programming | |
| • Command set | see instruction list |
| • Nesting levels | 8 |

- System functions (SFC) see instruction list
- System function blocks (SFB) see instruction list

Programming language

| | |
|------------|-----|
| — LAD | Yes |
| — FBD | Yes |
| — STL | Yes |
| — SCL | Yes |
| — CFC | Yes |
| — GRAPH | Yes |
| — HiGraph® | Yes |

Know-how protection

- User program protection/password protection Yes
- Block encryption Yes; With S7 block Privacy

Dimensions

| | |
|--------|--------|
| Width | 40 mm |
| Height | 125 mm |
| Depth | 130 mm |

Weights

Weight, approx. 360 g

last modified: 12.03.2015