# SIEMENS

Figure similar

SIMATIC S7-300, CPU 315F-2DP Fail-safe module with MPI Integr. power supply 24 V DC, Work memory 384 KB, 40 mm width, 2nd interface DP master/slave Micro Memory Card required

| General information | |
|---|---|
| HW functional status | 01 |
| Firmware version | V3.3 |
| **Product function** | |
| ● Isochronous mode | Yes |
| **Engineering with** | |
| ● Programming package | STEP 7 V5.5 + SP1 or higher or STEP 7 V5.2 + SP1 or higher with HSP 218 + Distributed Safety |

| Supply voltage | |
|---|---|
| Rated value (DC) | 24 V |
| permissible range, lower limit (DC) | 19.2 V |
| permissible range, upper limit (DC) | 28.8 V |
| external protection for power supply lines (recommendation) | 2 A min. |
| **Mains buffering** | |
| ● Mains/voltage failure stored energy time | 5 ms |
| ● Repeat rate, min. | 1 s |

| Input current | |
|---|---|
| Current consumption (rated value) | 850 mA |
| Current consumption (in no-load operation), typ. | 150 mA |
| Inrush current, typ. | 3.5 A |
| I²t | 1 A²·s |

| Power loss | |
|---|---|
| Power loss, typ. | 4.5 W |

| Memory | |
|---|---|
| **Work memory** | |
| ● integrated | 384 kbyte |
| ● expandable | No |
| **Load memory** | |
| ● Plug-in (MMC) | Yes |
| ● Plug-in (MMC), max. | 8 Mbyte |
| ● Data management on MMC (after last programming), min. | 10 a |
| **Backup** | |
| ● present | Yes; Guaranteed by MMC (maintenance-free) |
| ● without battery | Yes; Program and data |

| CPU processing times | |
|---|---|
| for bit operations, typ. | 0.05 µs |
| for word operations, typ. | 0.09 µs |
| for fixed point arithmetic, typ. | 0.12 µs |

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| | |
|---|---|
| for floating point arithmetic, typ. | 0.45 µs |

## CPU-blocks

| | |
|---|---|
| Number of blocks (total) | 1 024; (DBs, FCs, FBs); the maximum number of loadable blocks can be reduced by the MMC used. |

### DB

| | |
|---|---|
| ● Number, max. | 1 024; Number range: 1 to 16000 |
| ● Size, max. | 64 kbyte |

### FB

| | |
|---|---|
| ● Number, max. | 1 024; Number range: 0 to 7999 |
| ● Size, max. | 64 kbyte |

### FC

| | |
|---|---|
| ● Number, max. | 1 024; Number range: 0 to 7999 |
| ● Size, max. | 64 kbyte |

### OB

| | |
|---|---|
| ● Number, max. | see instruction list |
| ● Size, max. | 64 kbyte |
| ● Number of free cycle OBs | 1; OB 1 |
| ● Number of time alarm OBs | 1; OB 10 |
| ● Number of delay alarm OBs | 2; OB 20, 21 |
| ● Number of cyclic interrupt OBs | 4; OB 32, 33, 34, 35 |
| ● Number of process alarm OBs | 1; OB 40 |
| ● Number of DPV1 alarm OBs | 3; OB 55, 56, 57 |
| ● Number of isochronous mode OBs | 1; OB 61 |
| ● Number of startup OBs | 1; OB 100 |
| ● Number of asynchronous error OBs | 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 | 256 |

#### Retentivity

| | |
|---|---|
| — adjustable | Yes |
| — lower limit | 0 |
| — upper limit | 255 |
| — 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 | 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 (incl. timers, counters, flags), max. | 128 kbyte |

### Flag

| | |
|---|---|
| ● Size, max. | 2 048 byte |
| ● Retentivity available | Yes; MB 0 to MB 2 047 |

| | |
|---|---|
| ● Retentivity preset | MB 0 to MB 15 |
| ● Number of clock memories | 8; 1 memory byte |
| **Data blocks** | |
| ● Retentivity adjustable | Yes; via non-retain property on DB |
| ● Retentivity preset | Yes |
| **Local data** | |
| ● per priority class, max. | 32 kbyte; Max. 2 KB per block |
| **Address area** | |
| **I/O address area** | |
| ● Inputs | 2 048 byte |
| ● Outputs | 2 048 byte |
| of which distributed | |
| — Inputs | 2 048 byte |
| — Outputs | 2 048 byte |
| **Process image** | |
| ● Inputs | 2 048 byte |
| ● Outputs | 2 048 byte |
| ● Inputs, adjustable | 2 048 byte |
| ● Outputs, adjustable | 2 048 byte |
| ● Inputs, default | 384 byte |
| ● Outputs, default | 384 byte |
| **Subprocess images** | |
| ● Number of subprocess images, max. | 1 |
| **Digital channels** | |
| ● Inputs | 16 384 |
| — of which central | 1 024 |
| ● Outputs | 16 384 |
| — of which central | 1 024 |
| **Analog channels** | |
| ● Inputs | 1 024 |
| — of which central | 256 |
| ● Outputs | 1 024 |
| — of which central | 256 |
| **Hardware configuration** | |
| Number of expansion units, max. | 3 |
| **Number of DP masters** | |
| ● integrated | 1 |
| ● via CP | 4 |
| **Number of operable FMs and CPs (recommended)** | |
| ● FM | 8 |
| ● CP, PtP | 8 |
| ● CP, LAN | 10 |
| **Rack** | |
| ● Racks, max. | 4 |
| ● Modules per rack, max. | 8 |
| **Time of day** | |
| **Clock** | |
| ● Hardware clock (real-time) | Yes |
| ● retentive and synchronizable | Yes |
| ● Backup time | 6 wk; At 40 °C ambient temperature |
| ● Deviation per day, max. | 10 s; Typ.: 2 s |
| ● Behavior of the clock following POWER-ON | Clock continues running after POWER OFF |
| ● Behavior of the clock following expiry of backup period | the clock continues at the time of day it had when power was switched off |
| **Operating hours counter** | |
| ● Number | 1 |
| ● Number/Number range | 0 |
| ● Range of values | 0 to 2^31 hours (when using SFC 101) |
| ● Granularity | 1 h |
| ● 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 | 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 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 | No |
| Interface types | |
| ● RS 485 | Yes |
| ● Output current of the interface, max. | 200 mA |
| Protocols | |
| ● MPI | Yes |
| ● PROFIBUS DP master | No |
| ● PROFIBUS DP slave | No |
| ● Point-to-point connection | No |
| MPI | |
| ● Transmission rate, max. | 187.5 kbit/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 |
| — S7 communication, as server | Yes |
| **2. Interface** | |
| Interface type | Integrated RS 485 interface |
| Isolated | Yes |
| Interface types | |
| ● RS 485 | Yes |
| ● Output current of the interface, max. | 200 mA |
| Protocols | |
| ● MPI | No |
| ● PROFIBUS DP master | Yes |
| ● PROFIBUS DP slave | Yes |
| ● Point-to-point connection | No |
| PROFIBUS DP master | |
| ● Transmission rate, max. | 12 Mbit/s |
| ● Number of DP slaves, max. | 124; Per station |
| 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 | 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 |
| — DPV1 | Yes |
| **Address area** | |
| — Inputs, max. | 2 048 byte |
| — Outputs, max. | 2 048 byte |
| **User data per DP slave** | |
| — Inputs, max. | 244 byte |
| — Outputs, max. | 244 byte |
| **PROFIBUS DP slave** | |
| ● GSD file | The latest GSD file is available at: 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 |
| — S7 communication, as server | Yes |
| — Direct data exchange (slave-to-slave communication) | Yes |
| — DPV1 | No |
| **Transfer memory** | |
| — Inputs | 244 byte |
| — Outputs | 244 byte |
| **Protocols** | |
| PROFIsafe | Yes |
| **communication functions / header** | |
| PG/OP communication | Yes |
| Data record routing | Yes |
| **Global data communication** | |
| ● supported | Yes |
| ● Number of GD loops, max. | 8 |
| ● Number of GD packets, max. | 8 |
| ● Number of GD packets, transmitter, max. | 8 |
| ● Number of GD packets, receiver, max. | 8 |
| ● Size of GD packets, max. | 22 byte |
| ● Size of GD packet (of which consistent), max. | 22 byte |
| **S7 basic communication** | |
| ● 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) |
| **S7 communication** | |
| ● supported | Yes |
| ● as server | Yes |
| ● as client | Yes; Via CP and loadable FB |
| ● User data per job, max. | 180 byte; With PUT/GET |
| ● User data per job (of which consistent), max. | 240 byte; as server |
| **S5 compatible communication** | |
| ● supported | Yes; via CP and loadable FC |
| **Number of connections** | |
| ● overall | 16 |
| ● usable for PG communication | 15 |
| — reserved for PG communication | 1 |
| — adjustable for PG communication, min. | 1 |
| — adjustable for PG communication, max. | 15 |

| | |
|---|---|
| ● usable for OP communication | 15 |
| — reserved for OP communication | 1 |
| — adjustable for OP communication, min. | 1 |
| — adjustable for OP communication, max. | 15 |
| ● usable for S7 basic communication | 12 |
| — reserved for S7 basic communication | 0 |
| — adjustable for S7 basic communication, min. | 0 |
| — adjustable for S7 basic communication, max. | 12 |

## S7 message functions

| | |
|---|---|
| Number of login stations for message functions, max. | 16; Depending on the configured connections for PG/OP and S7 basic communication |
| Process diagnostic messages | Yes |
| simultaneously active Alarm-S blocks, max. | 300 |

## Test commissioning functions

| | |
|---|---|
| Status block | Yes; Up to 2 simultaneously |
| Single step | Yes |
| Number of breakpoints | 4 |
| Status/control | |
| ● Status/control variable | Yes |
| ● Variables | Inputs, outputs, memory bits, DB, times, counters |
| ● Number of variables, max. | 30 |
| — of which status variables, max. | 30 |
| — of which control variables, max. | 14 |
| Forcing | |
| ● Forcing | Yes |
| ● Forcing, variables | Inputs, outputs |
| ● Number of variables, max. | 10 |
| Diagnostic buffer | |
| ● present | Yes |
| ● Number of entries, max. | 500 |
| — adjustable | No |
| — of which powerfail-proof | 100; Only the last 100 entries are retained |
| ● Number of entries readable in RUN, max. | |
| — adjustable | Yes; From 10 to 499 |
| — preset | 10 |
| Service data | |
| ● can be read out | Yes |

## Ambient conditions

| | |
|---|---|
| Ambient temperature during operation | |
| ● min. | 0 °C |
| ● max. | 60 °C |

## configuration / header

| | |
|---|---|
| Configuration software | |
| ● STEP 7 | Yes; V5.2 SP1 or higher with HW update |
| configuration / programming / header | |
| ● 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. | 290 g |

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