

SIMATIC S7-300, CPU 314 Central processing unit with MPI, Integr. power supply 24 V DC, work memory 128 KB, Micro Memory Card required



Figure similar

| General information | |
|---|---|
| HW functional status | 01 |
| Firmware version | V3.3 |
| Engineering with | |
| <ul style="list-style-type: none"> Programming package | STEP 7 V5.5 + SP1 or higher or STEP 7 V5.2 + SP1 or higher with HSP 218 |
| 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 power supply lines (recommendation) | 2 A min. |
| Mains buffering | |
| <ul style="list-style-type: none"> Mains/voltage failure stored energy time Repeat rate, min. | 5 ms 1 s |
| Input current | |

| | |
|--|---------------------|
| Current consumption (rated value) | 650 mA |
| Current consumption (in no-load operation), typ. | 140 mA |
| Inrush current, typ. | 3.5 A |
| I ² t | 1 A ² ·s |

| Power loss | |
|------------------|-----|
| Power loss, typ. | 4 W |

| Memory | |
|-------------|--|
| Work memory | |

- integrated 128 kbyte
- expandable No
- Size of retentive memory for retentive data blocks 64 kbyte

| 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. | 0.06 µs |
| for word operations, typ. | 0.12 µs |
| for fixed point arithmetic, typ. | 0.16 µs |
| for floating point arithmetic, typ. | 0.59 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 | |
|----------------------------|----------------------|
| • Description | 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 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 | 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 in total | all, max. 64 KB |
|------------------------------|-----------------|

| Flag | |
|--|------------------------------------|
| • Number, max. | 256 byte |
| • 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 |
| Address area | |
| I/O address area | |
| • Inputs | 1 024 byte |
| • Outputs | 1 024 byte |
| Process image | |
| • Inputs | 1 024 byte |
| • Outputs | 1 024 byte |
| • Inputs, adjustable | 1 024 byte |
| • Outputs, adjustable | 1 024 byte |
| • Inputs, default | 128 byte |
| • Outputs, default | 128 byte |
| Digital channels | |
| • Inputs | 1 024 |
| — of which central | 1 024 |
| • Outputs | 1 024 |
| — of which central | 1 024 |
| Analog channels | |
| • Inputs | 256 |
| — of which central | 256 |
| • Outputs | 256 |
| — of which central | 256 |
| Hardware configuration | |
| Number of expansion units, max. | 3 |
| Number of DP masters | |
| • integrated | 0 |
| • 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 | Clock continues to run with the time at which the power failure occurred |
| 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 |
| • 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 | 1; MPI |
| Number of RS 422 interfaces | 0 |
| 1. Interface | |
| Interface type | Integrated RS 485 interface |
| Physics | RS 485 |
| Isolated | No |
| Power supply to interface (15 to 30 V DC), 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 | No |
| — 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 |
| Communication functions | |
| PG/OP communication | Yes |
| Data record routing | No |
| 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 | 12 |
| • usable for PG communication | 11 |

- 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.

1
1
11
11
1
1
11
8
0
0
8

S7 message functions

| | |
|--|--|
| Number of login stations for message functions, max. | 12; 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
- Variables
- Number of variables, max.
 - of which status variables, max.
 - of which control variables, max.

Yes
Inputs, outputs, memory bits, DB, times, counters
30
30
14

Forcing

- Forcing
- Forcing, variables
- Number of variables, max.

Yes
Inputs, outputs
10

Diagnostic buffer

- present
- Number of entries, max.
 - adjustable
 - of which powerfail-proof
- Number of entries readable in RUN, max.
 - adjustable
 - preset

Yes
500
No
100; Only the last 100 entries are retained
499
Yes; From 10 to 499
10

Service data

- can be read out

Yes

Ambient conditions

Ambient temperature during operation

- min. 0 °C
- max. 60 °C

Configuration

Configuration software

- STEP 7 Yes; V5.2 SP1 or higher 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
- 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. 280 g

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