

\*\*\* SPARE PART\*\*\* SIMATIC S7-300, CPU 318-2 DP 512 KBYTE  
 USER MEMORY (256 KB CODE; 256 KB DATA 1ST INTERF. = MPI  
 12 MBIT/S; 2ND INTERF. = PROFIBUS DP



| General information   |   |
|---|---|
| Hardware product version  | 03  |
| Firmware version  | V3.0  |
| Engineering with  |   |
| <ul style="list-style-type: none"> <li>Programming package</li> </ul> | STEP 7 V5.1 SP2                             |
| Supply voltage  |   |
| Rated value (DC)  |   |
| <ul style="list-style-type: none"> <li>24 V DC</li> </ul>             | Yes   |
| 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; 2 A, type B or C |
| Input current   |   |
| Current consumption (in no-load operation), typ.                      | 1.2 A                                       |
| Inrush current, typ.  | 8 A   |
| $I^2t$  | 0.4 A <sup>2</sup> ·s                       |
| Power loss  |   |
| Power loss, typ.  | 12 W  |

| Memory   |                               |
|--|-------------------------------|
| <b>Work memory</b>   |                               |
| <ul style="list-style-type: none"> <li>integrated</li> </ul>                       | 512 kbyte                     |
| <b>Load memory</b>   |                               |
| <ul style="list-style-type: none"> <li>expandable FEPRM</li> </ul>                 | Yes                           |
| <ul style="list-style-type: none"> <li>expandable FEPRM, max.</li> </ul>           | 4 Mbyte                       |
| <ul style="list-style-type: none"> <li>integrated RAM, max.</li> </ul>             | 64 kbyte                      |
| <ul style="list-style-type: none"> <li>expandable RAM</li> </ul>                   | Yes                           |
| <ul style="list-style-type: none"> <li>expandable RAM, max.</li> </ul>             | 2 Mbyte                       |
| <b>Backup</b>  |                               |
| <ul style="list-style-type: none"> <li>present</li> </ul>                          | Yes                           |
| <ul style="list-style-type: none"> <li>with battery</li> </ul>                     | Yes; all blocks               |
| <ul style="list-style-type: none"> <li>without battery</li> </ul>                  | Yes; 11 KB                    |
| CPU processing times   |                               |
| for bit operations, typ.   | 0.1 $\mu$ s                   |
| for bit operations, max.   | 0.1 $\mu$ s                   |
| for word operations, typ.  | 0.1 $\mu$ s                   |
| for fixed point arithmetic, typ.   | 0.1 $\mu$ s                   |
| for floating point arithmetic, typ.  | 0.6 $\mu$ s                   |
| for timer/counter operations, typ.   | 0.1 $\mu$ s                   |
| CPU-blocks   |                               |
| <b>DB</b>  |                               |
| <ul style="list-style-type: none"> <li>Number, max.</li> </ul>                     | 2 047; Number band: 1 to 2047 |
| <ul style="list-style-type: none"> <li>Size, max.</li> </ul>                       | 64 kbyte                      |
| <b>FB</b>  |                               |
| <ul style="list-style-type: none"> <li>Number, max.</li> </ul>                     | 1 024; Number band: 0 to 1023 |
| <ul style="list-style-type: none"> <li>Size, max.</li> </ul>                       | 64 kbyte                      |
| <b>FC</b>  |                               |
| <ul style="list-style-type: none"> <li>Number, max.</li> </ul>                     | 1 024; Number band: 0 to 1023 |
| <ul style="list-style-type: none"> <li>Size, max.</li> </ul>                       | 64 kbyte                      |
| <b>OB</b>  |                               |
| <ul style="list-style-type: none"> <li>Description</li> </ul>                      | see instruction list          |
| <ul style="list-style-type: none"> <li>Number, max.</li> </ul>                     | see instruction list          |
| <ul style="list-style-type: none"> <li>Size, max.</li> </ul>                       | 64 kbyte                      |
| <ul style="list-style-type: none"> <li>Number of time alarm OBs</li> </ul>         | 2; OB 10, 11                  |
| <ul style="list-style-type: none"> <li>Number of delay alarm OBs</li> </ul>        | 2; OB 20, 21                  |
| <ul style="list-style-type: none"> <li>Number of cyclic interrupt OBs</li> </ul>   | 2; OB 32, 35                  |
| <ul style="list-style-type: none"> <li>Number of process alarm OBs</li> </ul>      | 2; OB 40, 41                  |
| <ul style="list-style-type: none"> <li>Number of startup OBs</li> </ul>            | 1; OB 100                     |
| <ul style="list-style-type: none"> <li>Number of asynchronous error OBs</li> </ul> | 5; OB 80, 81, 85, 86, 87      |
| <ul style="list-style-type: none"> <li>Number of synchronous error OBs</li> </ul>  | 2; OB 121, 122                |

| Nesting depth                          |                             |
|--|-----------------------------|
| • per priority class                   | 16                          |
| • additional within an error OB        | 3                           |
| Counters, timers and their retentivity |                             |
| S7 counter                             |                             |
| • Number                               | 512                         |
| of which retentive without battery     |                             |
| — can be set                           | Yes                         |
| — preset                               | Z 0 to Z 7                  |
| Counting range                         |                             |
| — lower limit                          | 0                           |
| — upper limit                          | 999                         |
| IEC counter                            |                             |
| • present                              | Yes                         |
| • Type                                 | SFB                         |
| S7 times                               |                             |
| • Number                               | 512                         |
| Retentivity                            |                             |
| — adjustable                           | Yes                         |
| — preset                               | No times retentive          |
| Time range                             |                             |
| — lower limit                          | 10 ms                       |
| — upper limit                          | 9 990 s                     |
| IEC timer                              |                             |
| • present                              | Yes                         |
| • Type                                 | SFB                         |
| Data areas and their retentivity       |                             |
| Flag                                   |                             |
| • Number, max.                         | 1 024 byte                  |
| • Retentivity available                | Yes; MB 0 to MB 1023        |
| • Retentivity preset                   | MB 0 to MB 15               |
| • Number of clock memories             | 8; 1 memory byte            |
| Data blocks                            |                             |
| • Number, max.                         | 2 047; from DB 1 to DB 2047 |
| • Size, max.                           | 64 kbyte                    |
| Local data                             |                             |
| • adjustable, max.                     | 8 192 byte                  |
| • preset                               | 3 584 byte                  |
| • per priority class, max.             | 8 192 byte                  |
| Address area                           |                             |

|   |             |
|---|-------------|
| <b>I/O address area</b>                             |             |
| • Inputs  | 8 kbyte     |
| • Outputs   | 8 kbyte     |
| <b>of which distributed</b>                         |             |
| — Inputs  | 8 kbyte     |
| — Outputs   | 8 kbyte     |
| <b>Process image</b>                                |             |
| • Inputs  | 2 048 byte  |
| • Outputs   | 2 048 byte  |
| • Inputs, default                                   | 256 byte    |
| • Outputs, default                                  | 256 byte    |
| <b>Digital channels</b>                             |             |
| • Inputs  | 65 536      |
| — of which central                                  | 1 024       |
| • Outputs   | 65 536      |
| — of which central                                  | 1 024       |
| <b>Analog channels</b>                              |             |
| • Inputs  | 4 096       |
| — of which central                                  | 256         |
| • Outputs   | 4 096       |
| — of which central                                  | 128         |
| <b>Hardware configuration</b>                       |             |
| Number of expansion units, max.                     | 3           |
| <b>Number of DP masters</b>                         |             |
| • integrated  | 2           |
| • via CP  | 4; CP 342-5 |
| <b>Number of operable FMs and CPs (recommended)</b> |             |
| • FM  | 16          |
| • CP, PtP   | 8           |
| • CP, LAN   | 16          |
| <b>Rack</b>   |             |
| • Racks, max.                                       | 4           |
| • Modules per rack, max.                            | 8           |
| <b>Time of day</b>                                  |             |
| <b>Clock</b>  |             |
| • Hardware clock (real-time)                        | Yes         |
| • retentive and synchronizable                      | Yes         |
| • Deviation per day, max.                           | 10 s        |
| <b>Operating hours counter</b>                      |             |
| • Number  | 8           |
| • Number/Number range                               | 0 to 7      |

|                              |                  |
|------------------------------|------------------|
| • Range of values            | 0 to 32767 hours |
| • Granularity                | 1 hour           |
| • retentive                  | Yes              |
| <b>Clock synchronization</b> |                  |
| • supported                  | Yes              |
| • to MPI, master             | Yes              |
| • to MPI, slave              | Yes              |
| • in AS, master              | Yes              |
| • in AS, slave               | Yes              |

## 1. Interface

|   |                             |
|---|-----------------------------|
| Interface type                                  | Integrated RS 485 interface |
| Physics   | RS 485                      |
| Isolated  | Yes                         |
| Power supply to interface (15 to 30 V DC), max. | 200 mA                      |
| <b>Functionality</b>                            |                             |
| • MPI   | Yes                         |
| • PROFIBUS DP master                            | Yes                         |
| • PROFIBUS DP slave                             | Yes                         |
| • Point-to-point connection                     | No                          |
| <b>MPI</b>                                      |                             |
| • Number of connections                         | 32                          |
| • Number of nodes, max.                         | 32                          |
| • Transmission rate, max.                       | 12 Mbit/s                   |
| <b>Services</b>                                 |                             |
| — PG/OP communication                           | Yes                         |
| — Global data communication                     | Yes                         |
| — S7 basic communication                        | Yes                         |
| — S7 communication                              | Yes                         |
| — S7 communication, as server                   | Yes                         |
| <b>DP master</b>                                |                             |
| • Transmission rate, max.                       | 12 Mbit/s                   |
| • Number of DP slaves, max.                     | 125                         |
| <b>Services</b>                                 |                             |
| — PG/OP communication                           | Yes                         |
| — Global data communication                     | No                          |
| — S7 basic communication                        | No                          |
| — S7 communication, as server                   | Yes                         |
| — Equidistance                                  | Yes                         |
| — SYNC/FREEZE                                   | Yes                         |
| — Activation/deactivation of DP slaves          | Yes                         |

|   |                               |
|---|-------------------------------|
| — Direct data exchange (slave-to-slave communication) | Yes; Transmitter and receiver |
| <b>Address area</b>                                   |                               |
| — Inputs, max.  | 2 kbyte                       |
| — Outputs, max.                                       | 2 kbyte                       |
| <b>User data per DP slave</b>                         |                               |
| — Inputs, max.  | 244 byte                      |
| — Outputs, max.                                       | 244 byte                      |
| <b>DP slave</b>                                       |                               |
| • Number of connections                               | 12                            |
| • Transmission rate, max.                             | 12 Mbit/s                     |
| <b>Services</b>                                       |                               |
| — PG/OP communication                                 | Yes                           |
| — Routing   | Yes                           |
| <b>Transfer memory</b>                                |                               |
| — Inputs  | 244 byte                      |
| — Outputs   | 244 byte                      |

## 2. Interface

|   |                             |
|---|-----------------------------|
| Interface type                                  | Integrated RS 485 interface |
| Physics   | RS 485                      |
| Isolated  | Yes                         |
| Power supply to interface (15 to 30 V DC), max. | 200 mA                      |
| <b>Functionality</b>                            |                             |
| • MPI   | No                          |
| • PROFIBUS DP master                            | Yes                         |
| • PROFIBUS DP slave                             | Yes                         |
| • Point-to-point connection                     | No                          |
| <b>DP master</b>                                |                             |
| • Number of connections, max.                   | 16                          |
| • Transmission rate, max.                       | 12 Mbit/s                   |
| • Number of DP slaves, max.                     | 125                         |
| <b>Services</b>                                 |                             |
| — PG/OP communication                           | Yes                         |
| — Routing                                       | Yes                         |
| — Global data communication                     | No                          |
| — S7 basic communication                        | No                          |
| — S7 communication                              | Yes                         |
| — S7 communication, as client                   | No                          |
| — S7 communication, as server                   | Yes                         |
| — Equidistance                                  | Yes                         |
| — SYNC/FREEZE                                   | Yes                         |

|   |                             |
|---|-----------------------------|
| — Activation/deactivation of DP slaves          | Yes                         |
| <b>Address area</b>                             |                             |
| — Inputs, max.                                  | 244 byte                    |
| — Outputs, max.                                 | 244 byte                    |
| <b>User data per DP slave</b>                   |                             |
| — Inputs, max.                                  | 244 byte                    |
| — Outputs, max.                                 | 244 byte                    |
| <b>DP slave</b>                                 |                             |
| • GSD file                                      | siem807f.gsg                |
| • Transmission rate, max.                       | 12 Mbit/s                   |
| <b>Services</b>                                 |                             |
| — Routing                                       | Yes                         |
| <b>Transfer memory</b>                          |                             |
| — Inputs  | 244 byte                    |
| — Outputs                                       | 244 byte                    |
| <b>Communication functions</b>                  |                             |
| PG/OP communication                             | Yes                         |
| <b>Global data communication</b>                |                             |
| • supported                                     | Yes                         |
| • Number of GD packets, transmitter, max.       | 1                           |
| • Number of GD packets, receiver, max.          | 2                           |
| • Size of GD packets, max.                      | 54 byte                     |
| • Size of GD packet (of which consistent), max. | 32 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                     |
| <b>S7 communication</b>                         |                             |
| • supported                                     | Yes                         |
| • as server                                     | Yes                         |
| • User data per job, max.                       | 160 byte                    |
| <b>S5 compatible communication</b>              |                             |
| • supported                                     | Yes; via CP and loadable FC |
| <b>Standard communication (FMS)</b>             |                             |
| • supported                                     | Yes; via CP and loadable FC |
| <b>Number of connections</b>                    |                             |
| • overall                                       | 32                          |
| • usable for PG communication                   | 31                          |
| — reserved for PG communication                 | 1                           |
| • usable for OP communication                   | 31                          |
| — reserved for OP communication                 | 1                           |

- usable for S7 basic communication 30
- usable for S7 communication 30

### S7 message functions

|  |     |
|--|-----|
| Process diagnostic messages                | Yes |
| simultaneously active Alarm-S blocks, max. | 100 |

### Test commissioning functions

|                       |     |
|-----------------------|-----|
| Status block          | Yes |
| 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. 70

#### Forcing

- Forcing Yes
- Forcing, variables Inputs, outputs, bit memories, peripheral inputs, peripheral outputs
- Number of variables, max. 256

#### Diagnostic buffer

- present Yes
- Number of entries, max. 100
- adjustable No

### Configuration

#### Configuration software

- STEP 7 Yes; V5.0

#### 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
- HiGraph® Yes

#### Software libraries

- Process diagnostics Yes
- Software controller 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. | 930 g |
|-----------------|-------|

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