



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  |  |
| <ul style="list-style-type: none"> <li>• Isochronous mode</li> </ul>                                      | Yes  |
| Engineering with  |  |
| <ul style="list-style-type: none"> <li>• Programming package</li> </ul>                                   | 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   |  |
| <ul style="list-style-type: none"> <li>• Mains/voltage failure stored energy time</li> </ul>              | 5 ms   |
| <ul style="list-style-type: none"> <li>• Repeat rate, min.</li> </ul>                                     | 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  |
| I <sup>2</sup> t  | 1 A <sup>2</sup> ·s  |
| Power loss  |  |
| Power loss, typ.  | 4.5 W  |
| Memory  |  |
| Work memory   |  |
| <ul style="list-style-type: none"> <li>• integrated</li> </ul>  | 384 kbyte  |
| <ul style="list-style-type: none"> <li>• expandable</li> </ul>  | No   |
| Load memory   |  |
| <ul style="list-style-type: none"> <li>• Plug-in (MMC)</li> </ul>   | Yes  |
| <ul style="list-style-type: none"> <li>• Plug-in (MMC), max.</li> </ul>                                   | 8 Mbyte  |
| <ul style="list-style-type: none"> <li>• Data management on MMC (after last programming), min.</li> </ul> | 10 a   |
| Backup  |  |
| <ul style="list-style-type: none"> <li>• present</li> </ul>   | Yes; Guaranteed by MMC (maintenance-free)  |
| <ul style="list-style-type: none"> <li>• without battery</li> </ul>                                       | 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  |

|  |  |
|--|--|
| for floating point arithmetic, typ.  | 0.45 µs  |
| <b>CPU-blocks</b>  |  |
| Number of blocks (total)   | 1 024; (DBs, FCs, FBs); the maximum number of loadable blocks can be reduced by the MMC used.  |
| <b>DB</b>  |  |
| <ul style="list-style-type: none"> <li>• Number, max.</li> <li>• Size, max.</li> </ul>   | 1 024; Number range: 1 to 16000<br>64 kbyte  |
| <b>FB</b>  |  |
| <ul style="list-style-type: none"> <li>• Number, max.</li> <li>• Size, max.</li> </ul>   | 1 024; Number range: 0 to 7999<br>64 kbyte   |
| <b>FC</b>  |  |
| <ul style="list-style-type: none"> <li>• Number, max.</li> <li>• Size, max.</li> </ul>   | 1 024; Number range: 0 to 7999<br>64 kbyte   |
| <b>OB</b>  |  |
| <ul style="list-style-type: none"> <li>• Number, max.</li> <li>• Size, max.</li> <li>• Number of free cycle OBs</li> <li>• Number of time alarm OBs</li> <li>• Number of delay alarm OBs</li> <li>• Number of cyclic interrupt OBs</li> <li>• Number of process alarm OBs</li> <li>• Number of DPV1 alarm OBs</li> <li>• Number of isochronous mode OBs</li> <li>• Number of startup OBs</li> <li>• Number of asynchronous error OBs</li> <li>• Number of synchronous error OBs</li> </ul> | see instruction list<br>64 kbyte<br>1; OB 1<br>1; OB 10<br>2; OB 20, 21<br>4; OB 32, 33, 34, 35<br>1; OB 40<br>3; OB 55, 56, 57<br>1; OB 61<br>1; OB 100<br>5; OB 80, 82, 85, 86, 87<br>2; OB 121, 122 |
| <b>Nesting depth</b>   |  |
| <ul style="list-style-type: none"> <li>• per priority class</li> <li>• additional within an error OB</li> </ul>  | 16<br>4  |
| <b>Counters, timers and their retentivity</b>  |  |
| <b>S7 counter</b>  |  |
| <ul style="list-style-type: none"> <li>• Number</li> </ul>   | 256  |
| <b>Retentivity</b>   |  |
| — adjustable   | Yes  |
| — lower limit  | 0  |
| — upper limit  | 255  |
| — preset   | Z 0 to Z 7   |
| <b>Counting range</b>  |  |
| — lower limit  | 0  |
| — upper limit  | 999  |
| <b>IEC counter</b>   |  |
| <ul style="list-style-type: none"> <li>• present</li> <li>• Type</li> <li>• Number</li> </ul>  | Yes<br>SFB<br>Unlimited (limited only by RAM capacity)   |
| <b>S7 times</b>  |  |
| <ul style="list-style-type: none"> <li>• Number</li> </ul>   | 256  |
| <b>Retentivity</b>   |  |
| — adjustable   | Yes  |
| — lower limit  | 0  |
| — upper limit  | 255  |
| — preset   | No retentivity   |
| <b>Time range</b>  |  |
| — lower limit  | 10 ms  |
| — upper limit  | 9 990 s  |
| <b>IEC timer</b>   |  |
| <ul style="list-style-type: none"> <li>• present</li> <li>• Type</li> <li>• Number</li> </ul>  | Yes<br>SFB<br>Unlimited (limited only by RAM capacity)   |
| <b>Data areas and their retentivity</b>  |  |
| Retentive data area (incl. timers, counters, flags), max.  | 128 kbyte  |
| <b>Flag</b>  |  |
| <ul style="list-style-type: none"> <li>• Size, max.</li> <li>• Retentivity available</li> </ul>  | 2 048 byte<br>Yes; MB 0 to MB 2 047  |

|   |   |
|---|---|
| <ul style="list-style-type: none"> <li>• Retentivity preset</li> <li>• Number of clock memories</li> </ul>  | MB 0 to MB 15<br>8; 1 memory byte   |
| <b>Data blocks</b>  |   |
| <ul style="list-style-type: none"> <li>• Retentivity adjustable</li> <li>• Retentivity preset</li> </ul>  | Yes; via non-retain property on DB<br>Yes   |
| <b>Local data</b>   |   |
| <ul style="list-style-type: none"> <li>• per priority class, max.</li> </ul>  | 32 kbyte; Max. 2 KB per block   |
| <b>Address area</b>   |   |
| <b>I/O address area</b>   |   |
| <ul style="list-style-type: none"> <li>• Inputs</li> <li>• Outputs</li> </ul>   | 2 048 byte<br>2 048 byte  |
| of which distributed  |   |
| <ul style="list-style-type: none"> <li>— Inputs</li> <li>— Outputs</li> </ul>   | 2 048 byte<br>2 048 byte  |
| <b>Process image</b>  |   |
| <ul style="list-style-type: none"> <li>• Inputs</li> <li>• Outputs</li> <li>• Inputs, adjustable</li> <li>• Outputs, adjustable</li> <li>• Inputs, default</li> <li>• Outputs, default</li> </ul>   | 2 048 byte<br>2 048 byte<br>2 048 byte<br>2 048 byte<br>384 byte<br>384 byte  |
| <b>Subprocess images</b>  |   |
| <ul style="list-style-type: none"> <li>• Number of subprocess images, max.</li> </ul>   | 1   |
| <b>Digital channels</b>   |   |
| <ul style="list-style-type: none"> <li>• Inputs               <ul style="list-style-type: none"> <li>— of which central</li> </ul> </li> <li>• Outputs               <ul style="list-style-type: none"> <li>— of which central</li> </ul> </li> </ul>   | 16 384<br>1 024<br>16 384<br>1 024  |
| <b>Analog channels</b>  |   |
| <ul style="list-style-type: none"> <li>• Inputs               <ul style="list-style-type: none"> <li>— of which central</li> </ul> </li> <li>• Outputs               <ul style="list-style-type: none"> <li>— of which central</li> </ul> </li> </ul>   | 1 024<br>256<br>1 024<br>256  |
| <b>Hardware configuration</b>   |   |
| Number of expansion units, max.   | 3   |
| <b>Number of DP masters</b>   |   |
| <ul style="list-style-type: none"> <li>• integrated</li> <li>• via CP</li> </ul>  | 1<br>4  |
| <b>Number of operable FMs and CPs (recommended)</b>   |   |
| <ul style="list-style-type: none"> <li>• FM</li> <li>• CP, PtP</li> <li>• CP, LAN</li> </ul>  | 8<br>8<br>10  |
| <b>Rack</b>   |   |
| <ul style="list-style-type: none"> <li>• Racks, max.</li> <li>• Modules per rack, max.</li> </ul>   | 4<br>8  |
| <b>Time of day</b>  |   |
| <b>Clock</b>  |   |
| <ul style="list-style-type: none"> <li>• Hardware clock (real-time)</li> <li>• retentive and synchronizable</li> <li>• Backup time</li> <li>• Deviation per day, max.</li> <li>• Behavior of the clock following POWER-ON</li> <li>• Behavior of the clock following expiry of backup period</li> </ul> | Yes<br>Yes<br>6 wk; At 40 °C ambient temperature<br>10 s; Typ.: 2 s<br>Clock continues running after POWER OFF<br>the clock continues at the time of day it had when power was switched off |
| <b>Operating hours counter</b>  |   |
| <ul style="list-style-type: none"> <li>• Number</li> <li>• Number/Number range</li> <li>• Range of values</li> <li>• Granularity</li> <li>• retentive</li> </ul>  | 1<br>0<br>0 to 2 <sup>31</sup> hours (when using SFC 101)<br>1 h<br>Yes; Must be restarted at each restart  |
| <b>Clock synchronization</b>  |   |
| <ul style="list-style-type: none"> <li>• supported</li> <li>• to MPI, master</li> </ul>   | Yes<br>Yes  |

|   |  |
|---|--|
| <ul style="list-style-type: none"> <li>• to MPI, slave</li> <li>• to DP, master</li> <li>• to DP, slave</li> <li>• in AS, master</li> <li>• in AS, slave</li> </ul>   | Yes<br>Yes; With DP slave only slave clock<br>Yes<br>Yes<br>No   |
| <b>Digital inputs</b>   |  |
| Number of digital inputs  | 0  |
| <b>Digital outputs</b>  |  |
| Number of digital outputs   | 0  |
| <b>Analog inputs</b>  |  |
| Number of analog inputs   | 0  |
| <b>Analog outputs</b>   |  |
| Number of analog outputs  | 0  |
| <b>Interfaces</b>   |  |
| Number of industrial Ethernet interfaces  | 0  |
| Number of PROFINET interfaces   | 0  |
| Number of RS 485 interfaces   | 2  |
| Number of RS 422 interfaces   | 0  |
| <b>1. Interface</b>   |  |
| Interface type  | Integrated RS 485 interface  |
| Isolated  | No   |
| <b>Interface types</b>  |  |
| <ul style="list-style-type: none"> <li>• RS 485</li> <li>• Output current of the interface, max.</li> </ul>   | Yes<br>200 mA  |
| <b>Protocols</b>  |  |
| <ul style="list-style-type: none"> <li>• MPI</li> <li>• PROFIBUS DP master</li> <li>• PROFIBUS DP slave</li> <li>• Point-to-point connection</li> </ul>   | Yes<br>No<br>No<br>No  |
| <b>MPI</b>  |  |
| <ul style="list-style-type: none"> <li>• Transmission rate, max.</li> </ul>   | 187.5 kbit/s   |
| <b>Services</b>   |  |
| <ul style="list-style-type: none"> <li>— PG/OP communication</li> <li>— Routing</li> <li>— Global data communication</li> <li>— S7 basic communication</li> <li>— S7 communication</li> <li>— S7 communication, as client</li> <li>— S7 communication, as server</li> </ul>                         | Yes<br>Yes<br>Yes<br>Yes<br>Yes; Only server, configured on one side<br>No<br>Yes                      |
| <b>2. Interface</b>   |  |
| Interface type  | Integrated RS 485 interface  |
| Isolated  | Yes  |
| <b>Interface types</b>  |  |
| <ul style="list-style-type: none"> <li>• RS 485</li> <li>• Output current of the interface, max.</li> </ul>   | Yes<br>200 mA  |
| <b>Protocols</b>  |  |
| <ul style="list-style-type: none"> <li>• MPI</li> <li>• PROFIBUS DP master</li> <li>• PROFIBUS DP slave</li> <li>• Point-to-point connection</li> </ul>   | No<br>Yes<br>Yes<br>No   |
| <b>PROFIBUS DP master</b>   |  |
| <ul style="list-style-type: none"> <li>• Transmission rate, max.</li> <li>• Number of DP slaves, max.</li> </ul>  | 12 Mbit/s<br>124; Per station  |
| <b>Services</b>   |  |
| <ul style="list-style-type: none"> <li>— PG/OP communication</li> <li>— Routing</li> <li>— Global data communication</li> <li>— S7 basic communication</li> <li>— S7 communication</li> <li>— S7 communication, as client</li> <li>— S7 communication, as server</li> <li>— Equidistance</li> </ul> | Yes<br>Yes<br>No<br>Yes; I blocks only<br>Yes; Only server, configured on one side<br>No<br>Yes<br>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  |
| <b>Address area</b>  |  |
| — Inputs, max.   | 2 048 byte   |
| — Outputs, max.  | 2 048 byte   |
| <b>User data per DP slave</b>  |  |
| — Inputs, max.   | 244 byte   |
| — Outputs, max.  | 244 byte   |
| <b>PROFIBUS DP slave</b>   |  |
| • GSD file   | The latest GSD file is available at: <a href="http://www.siemens.com/profibus-gsd">http://www.siemens.com/profibus-gsd</a> |
| • 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  |
| <b>Services</b>  |  |
| — 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   |
| <b>Transfer memory</b>   |  |
| — Inputs   | 244 byte   |
| — Outputs  | 244 byte   |
| <b>Protocols</b>   |  |
| PROFIsafe  | Yes  |
| <b>communication functions / header</b>                                      |  |
| PG/OP communication  | Yes  |
| Data record routing  | Yes  |
| <b>Global data communication</b>   |  |
| • 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  |
| <b>S7 basic communication</b>  |  |
| • 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)   |
| <b>S7 communication</b>  |  |
| • 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  |
| <b>S5 compatible communication</b>   |  |
| • supported  | Yes; via CP and loadable FC  |
| <b>Number of connections</b>   |  |
| • 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  |
| <b>Weights</b>        |   |
| Weight, approx.       | 290 g   |
| <b>last modified:</b> | 8/24/2021  |