

SIMATIC S7-300,  
CPU 314 CPU WITH INTEGRATED 24 V DC POWER  
SUPPLY 24 KBYTE WORKING MEMORY

| Supply voltage                      |                                                                                            |
|-------------------------------------|--------------------------------------------------------------------------------------------|
| Rated value (DC)                    | 24 V                                                                                       |
| permissible range, lower limit (DC) | 20.4 V                                                                                     |
| permissible range, upper limit (DC) | 28.8 V                                                                                     |
| Input current                       |                                                                                            |
| Rated value at 24 V DC              | 1000 mA                                                                                    |
| Inrush current, max.                | 8 A                                                                                        |
| Power loss                          |                                                                                            |
| Power loss, max.                    | 8 W                                                                                        |
| Memory                              |                                                                                            |
| Work memory                         |                                                                                            |
| integrated                          | 24 kbyte ; 24 KB/8 K instructions RAM (integrated); 1 instruction means 3 bytes on average |
| Load memory                         |                                                                                            |
| expandable FEPRM                    | Yes ; Flash-EPROM                                                                          |
| expandable FEPRM, max.              | 4 Mbyte                                                                                    |
| integrated RAM, max.                | 40 kbyte                                                                                   |
| Backup                              |                                                                                            |
| present                             | Yes                                                                                        |
| with battery                        | Yes ; all blocks                                                                           |
| without battery                     | Yes ; 4 KB: bit memory, counter, times and data                                            |
| CPU processing times                |                                                                                            |
| for bit operations, typ.            | 0.3 µs                                                                                     |
| for bit operations, max.            | 0.6 µs                                                                                     |
| for word operations, typ.           | 1 µs                                                                                       |
| for fixed point arithmetic, typ.    | 2 µs                                                                                       |
| for floating point arithmetic, typ. | 50 µs                                                                                      |
| for timer/counter operations, typ.  | 12 µs                                                                                      |
| CPU-blocks                          |                                                                                            |
| DB                                  |                                                                                            |
| Number, max.                        | 127                                                                                        |

|                                               |                      |
|-----------------------------------------------|----------------------|
| Size, max.                                    | 8 kbyte              |
| <b>FB</b>                                     |                      |
| Number, max.                                  | 128                  |
| Size, max.                                    | 8 kbyte              |
| <b>FC</b>                                     |                      |
| Number, max.                                  | 128                  |
| Size, max.                                    | 8 kbyte              |
| <b>OB</b>                                     |                      |
| Description                                   | see instruction list |
| Size, max.                                    | 8 kbyte              |
| Number of free cycle OBs                      | 1 ; OB 1             |
| Number of time alarm OBs                      | 1 ; OB 10            |
| Number of time interrupt OBs                  | 1 ; OB 35            |
| Number of process alarm OBs                   | 1 ; OB 40            |
| Number of startup OBs                         | 1 ; OB 100           |
| <b>Nesting depth</b>                          |                      |
| per priority class                            | 8                    |
| <b>Counters, timers and their retentivity</b> |                      |
| <b>S7 counter</b>                             |                      |
| Number                                        | 64                   |
| <b>of which retentive with battery</b>        |                      |
| adjustable                                    | Yes                  |
| lower limit                                   | 0                    |
| upper limit                                   | 63                   |
| <b>of which retentive without battery</b>     |                      |
| adjustable                                    | Yes                  |
| lower limit                                   | 0                    |
| upper limit                                   | 63                   |
| <b>Counting range</b>                         |                      |
| lower limit                                   | 1                    |
| upper limit                                   | 999                  |
| <b>S7 times</b>                               |                      |
| Number                                        | 128                  |
| <b>of which retentive with battery</b>        |                      |
| adjustable                                    | Yes                  |
| lower limit                                   | 0                    |
| upper limit                                   | 127                  |
| <b>of which retentive without battery</b>     |                      |

|                                                       |                                                   |
|-------------------------------------------------------|---------------------------------------------------|
| <b>adjustable</b>                                     | Yes                                               |
| <b>lower limit</b>                                    | 0                                                 |
| <b>upper limit</b>                                    | 127                                               |
| <b>Time range</b>                                     |                                                   |
| <b>lower limit</b>                                    | 10 ms                                             |
| <b>upper limit</b>                                    | 9990 s                                            |
| <b>Data areas and their retentivity</b>               |                                                   |
| <b>Flag</b>                                           |                                                   |
| <b>Number, max.</b>                                   | 256 byte                                          |
| <b>Retentivity available</b>                          | Yes ; MB 0 to MB 255                              |
| <b>of which retentive with battery</b>                | 0 to 2047 (M 0.0 to M 255.7, adjustable)          |
| <b>of which retentive without battery</b>             | 0 to 2047 (M 0.0 to M 255.7, adjustable)          |
| <b>Address area</b>                                   |                                                   |
| <b>I/O address area</b>                               |                                                   |
| <b>Inputs</b>                                         | 512 byte                                          |
| <b>Outputs</b>                                        | 512 byte                                          |
| <b>Process image</b>                                  |                                                   |
| <b>Inputs</b>                                         | 128 byte                                          |
| <b>Outputs</b>                                        | 128 byte                                          |
| <b>Digital channels</b>                               |                                                   |
| <b>Inputs</b>                                         | 1024                                              |
| <b>Outputs</b>                                        | 1024                                              |
| <b>Analog channels</b>                                |                                                   |
| <b>Inputs</b>                                         | 256                                               |
| <b>Outputs</b>                                        | 128                                               |
| <b>Addressing volume</b>                              |                                                   |
| <b>Inputs</b>                                         | 122 byte                                          |
| <b>Outputs</b>                                        | 122 byte                                          |
| <b>Hardware configuration</b>                         |                                                   |
| <b>Number of modules per DP slave interface, max.</b> | 16                                                |
| <b>Expansion devices, max.</b>                        | 3                                                 |
| <b>connectable programming devices/PCs</b>            | PGs/PCs with STEP 7 connectable via MPI interface |
| <b>Number of DP masters</b>                           |                                                   |
| <b>integrated</b>                                     | 0                                                 |
| <b>via CP</b>                                         | 1 ; CP 342-5                                      |
| <b>Number of operable FMs and CPs (recommended)</b>   |                                                   |
| <b>FM</b>                                             | 4                                                 |
| <b>CP, point-to-point</b>                             | 2                                                 |

|                                         |                                                                                                                                                             |
|-----------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>CP, LAN</b>                          | 1                                                                                                                                                           |
| <b>Rack</b>                             |                                                                                                                                                             |
| <b>Modules per rack, max.</b>           | 32                                                                                                                                                          |
| <b>Time of day</b>                      |                                                                                                                                                             |
| <b>Clock</b>                            |                                                                                                                                                             |
| <b>Hardware clock (real-time clock)</b> | Yes                                                                                                                                                         |
| <b>Interfaces</b>                       |                                                                                                                                                             |
| <b>MPI</b>                              |                                                                                                                                                             |
| <b>Cable length, max.</b>               | 9100 m ; without repeaters: 50 m; with 2 repeaters: 1100 m; with 10 repeaters in series: 9100 m; via fiber optic cable: 23.8 km (with 16 star hubs or OLMs) |
| <b>1. Interface</b>                     |                                                                                                                                                             |
| <b>Functionality</b>                    |                                                                                                                                                             |
| <b>MPI</b>                              | Yes                                                                                                                                                         |
| <b>MPI</b>                              |                                                                                                                                                             |
| <b>Number of nodes, max.</b>            | 32 ; 32 nodes on MPI bus; PG/PC, OP, additional S7-300/400, C7; per CPU max. 4 static and 4 dynamic connections                                             |
| <b>Transmission rate, max.</b>          | 187.5 kbit/s                                                                                                                                                |
| <b>Services</b>                         |                                                                                                                                                             |
| <b>PG/OP communication</b>              | Yes                                                                                                                                                         |
| <b>Global data communication</b>        | Yes                                                                                                                                                         |
| <b>S7 basic communication</b>           | Yes                                                                                                                                                         |
| <b>S7 communication</b>                 | Yes                                                                                                                                                         |
| <b>Communication functions</b>          |                                                                                                                                                             |
| <b>PG/OP communication</b>              | Yes                                                                                                                                                         |
| <b>Global data communication</b>        |                                                                                                                                                             |
| <b>supported</b>                        | Yes                                                                                                                                                         |
| <b>S7 basic communication</b>           |                                                                                                                                                             |
| <b>supported</b>                        | Yes                                                                                                                                                         |
| <b>S7 communication</b>                 |                                                                                                                                                             |
| <b>supported</b>                        | Yes                                                                                                                                                         |
| <b>as server</b>                        | Yes                                                                                                                                                         |
| <b>S5 compatible communication</b>      |                                                                                                                                                             |
| <b>supported</b>                        | Yes ; via loadable blocks                                                                                                                                   |
| <b>Standard communication (FMS)</b>     |                                                                                                                                                             |
| <b>supported</b>                        | Yes ; via loadable blocks                                                                                                                                   |
| <b>Number of connections</b>            |                                                                                                                                                             |
| <b>overall</b>                          |                                                                                                                                                             |
| <b>of which dynamic</b>                 | 8                                                                                                                                                           |

|                                                    |                                                                                                                                                                                                                                              |
|----------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>of which static</b>                             | 4                                                                                                                                                                                                                                            |
| <b>Configuration</b>                               |                                                                                                                                                                                                                                              |
| <b>Configuration software</b>                      |                                                                                                                                                                                                                                              |
| <b>STEP 7</b>                                      | Yes ; V5.0, V5.0 SP1                                                                                                                                                                                                                         |
| <b>Programming</b>                                 |                                                                                                                                                                                                                                              |
| <b>Command set</b>                                 | Binary logic operations, bracketed operations, result allocation, saving, counting, loading, transferring, comparing, shifting, rotating, complementation, calling blocks, fixed point arithmetic, floating point arithmetic, jump functions |
| <b>Nesting levels</b>                              | 8                                                                                                                                                                                                                                            |
| <b>Program organization</b>                        | Linear, structured                                                                                                                                                                                                                           |
| <b>System functions (SFC)</b>                      | Interrupt and error processing, copy data, clock functions, diagnostic functions, module parameterization, operating mode transitions                                                                                                        |
| <b>System function blocks (SFB)</b>                | 1                                                                                                                                                                                                                                            |
| <b>Programming language</b>                        |                                                                                                                                                                                                                                              |
| <b>LAD</b>                                         | Yes                                                                                                                                                                                                                                          |
| <b>FBD</b>                                         | Yes                                                                                                                                                                                                                                          |
| <b>STL</b>                                         | Yes                                                                                                                                                                                                                                          |
| <b>SCL</b>                                         | Yes                                                                                                                                                                                                                                          |
| <b>GRAPH</b>                                       | Yes                                                                                                                                                                                                                                          |
| <b>Software libraries</b>                          |                                                                                                                                                                                                                                              |
| <b>Process diagnostics</b>                         | Yes                                                                                                                                                                                                                                          |
| <b>Software controller</b>                         | Yes ; depending on the required memory space and the resulting execution time                                                                                                                                                                |
| <b>Know-how protection</b>                         |                                                                                                                                                                                                                                              |
| <b>User program protection/password protection</b> | Yes                                                                                                                                                                                                                                          |
| <b>Cycle time monitoring</b>                       |                                                                                                                                                                                                                                              |
| <b>lower limit</b>                                 | 1 ms                                                                                                                                                                                                                                         |
| <b>upper limit</b>                                 | 6000 ms                                                                                                                                                                                                                                      |
| <b>adjustable</b>                                  | Yes                                                                                                                                                                                                                                          |
| <b>preset</b>                                      | 150 ms                                                                                                                                                                                                                                       |
| <b>Dimensions</b>                                  |                                                                                                                                                                                                                                              |
| <b>Width</b>                                       | 80 mm                                                                                                                                                                                                                                        |
| <b>Height</b>                                      | 125 mm                                                                                                                                                                                                                                       |
| <b>Depth</b>                                       | 130 mm                                                                                                                                                                                                                                       |
| <b>Weights</b>                                     |                                                                                                                                                                                                                                              |
| <b>Weight, approx.</b>                             | 530 g ; Memory card 16 g                                                                                                                                                                                                                     |
| Status                                             | Aug 25, 2014                                                                                                                                                                                                                                 |