Data sheet



SIMATIC S7-300 CPU319F-3 PN/DP, Central processing unit with 2.5 MB work memory, 1st interface MPI/DP 12 Mbit/s, 2nd interface DP master/slave 3rd interface Ethernet PROFINET, Micro Memory Card required

| General information | |
|--|--|
| HW functional status | 01 |
| Firmware version | V3.2 |
| Product function | |
| • Isochronous mode | Yes; Via 2nd PROFIBUS DP or PROFINET interface |
| Engineering with | |
| Programming package | STEP 7 V5.5 or higher, Distributed Safety V5.4 SP4 |
| Supply voltage | |
| Rated value (DC) | |
| • 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 | 2 A min. |
| (recommendation) | |
| Mains buffering | |
| Mains/voltage failure stored energy time | 5 ms |
| • Repeat rate, min. | 1 s |
| Input current | |

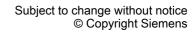
| Current consumption (rated value) | 1 250 mA |
|---|---|
| | |
| Current consumption (in no-load operation), typ. | 500 mA |
| Inrush current, typ. I²t | 4 A 1.2 A²·s |
| П | 1.2 A · S |
| Power loss | |
| Power loss, typ. | 14 W |
| Memory | |
| Work memory | |
| ● integrated | 2 560 kbyte |
| • expandable | No |
| Size of retentive memory for retentive data blocks | 700 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 |
| without battery | Yes |
| CPU processing times | |
| for bit operations, typ. | 0.004 μs |
| for word operations, typ. | 0.01 μs |
| for fixed point arithmetic, typ. | 0.01 μs |
| for floating point arithmetic, typ. | 0.04 µs |
| CPU-blocks | |
| Number of blocks (total) | 4 096; (DBs, FCs, FBs); the maximum number of loadable blocks can be reduced by the MMC used. |
| DB | |
| • Number, max. | 4 096; Number range: 1 to 16000 |
| • Size, max. | 64 kbyte |
| FB | |
| Number, max. | 4 096; Number range: 0 to 7999 |
| • Size, max. | 64 kbyte |
| FC | |
| Number, max. | 4 096; Number range: 0 to 7999 |
| • Size, max. | 64 kbyte |
| OB | |
| • Size, max. | 64 kbyte |
| Number of free cycle OBs | 1; OB 1 |
| Number of time alarm OBs | 1; OB 10 |



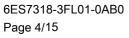
| Number of delay alarm OBs | 2; OB 20, 21 |
|--|--|
| Number of cyclic interrupt OBs | 4; OB 32, 33, 34, 35 (OB 35: smallest settable clock pulse = 500 |
| | μs) |
| Number of process alarm OBs | 1; OB 40 |
| Number of DPV1 alarm OBs | 3; OB 55, 56, 57 |
| Number of isochronous mode OBs | 1; OB 61 |
| Number of startup OBs | 1; OB 100 |
| Number of asynchronous error OBs | 6; OB 80, 82, 83, 85, 86, 87 (OB83 only for PROFINET IO) |
| 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 | 2 048 |
| Retentivity | |
| — adjustable | Yes |
| — lower limit | 0 |
| — upper limit | 2 047 |
| — preset | Z 0 to Z 7 |
| Counting range | |
| — adjustable | Yes |
| — lower limit | 0 |
| — upper limit | 999 |
| IEC counter | |
| • present | Yes |
| • Type | SFB |
| • Number | Unlimited (limited only by RAM capacity) |
| S7 times | |
| Number | 2 048 |
| Retentivity | |
| — adjustable | Yes |
| — lower limit | 0 |
| — upper limit | 2 047 |
| — preset | No retentivity |
| Time range | |
| — lower limit | 10 ms |
| — upper limit | 9 990 s |
| IEC timer | |
| • present | Yes |
| • Type | SFB |
| | |





| Data areas and their retentivity | |
|--|---|
| retentive data area in total | all, max. 700 KB |
| Flag | |
| Number, max. | 8 192 byte |
| Retentivity available | Yes; From MB 0 to MB 8 191 |
| 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. | 32 768 byte; Max. 2048 bytes per block |
| Address area | |
| I/O address area | |
| • Inputs | 8 192 byte |
| Outputs | 8 192 byte |
| of which distributed | |
| — Inputs | 8 192 byte |
| — Outputs | 8 192 byte |
| Process image | |
| • Inputs | 8 192 byte |
| Outputs | 8 192 byte |
| Inputs, adjustable | 8 192 byte |
| Outputs, adjustable | 8 192 byte |
| • Inputs, default | 1 024 byte |
| Outputs, default | 1 024 byte |
| Subprocess images | |
| Number of subprocess images, max. | 1; With PROFINET IO, the length of the user data is limited to 1600 bytes |
| Digital channels | |
| • Inputs | 65 536 |
| — of which central | 1 024 |
| Outputs | 65 536 |
| — of which central | 1 024 |
| Analog channels | |
| • Inputs | 4 096 |
| — of which central | 256 |
| Outputs | 4 096 |
| — of which central | 256 |
| Hardware configuration | |



| lumber of DP masters | |
|--|---|
| • integrated | 2 |
| • 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 |
| ime 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 | Clock continues to run with the time at which the power failure |
| period | occurred |
| Operating hours counter | |
| Number | 4 |
| Number/Number range | 0 to 3 |
| 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 | Yes |
| on Ethernet via NTP | Yes; As client |
| igital inputs | |
| Number of digital inputs | 0 |
| igital outputs | |
| Number of digital outputs | 0 |
| nalog inputs | |
| Number of analog inputs | 0 |





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| Analog outputs | |
|---|---|
| Number of analog outputs | 0 |
| Trainsor of analog carpate | |
| Interfaces | |
| Number of industrial Ethernet interfaces | 1 |
| Number of PROFINET interfaces | 1 |
| Number of RS 485 interfaces | 2 |
| Number of RS 422 interfaces | 0 |
| 1. Interface | |
| Interface type | Integrated RS 485 interface |
| Physics | RS 485 |
| Isolated | Yes |
| Power supply to interface (15 to 30 V DC), max. | 150 mA |
| Protocols | |
| • MPI | Yes |
| PROFIBUS DP master | Yes |
| PROFIBUS DP slave | Yes; A DP slave at both interfaces simultaneously is not possible |
| Point-to-point connection | No |
| MPI | |
| Transmission rate, max. | 12 Mbit/s |
| Services | |
| — PG/OP communication | Yes |
| — Routing | Yes |
| Global data communication | Yes |
| — S7 basic communication | Yes |
| — S7 communication | Yes |
| S7 communication, as client | No; but via CP and loadable FB |
| S7 communication, as server | Yes |
| PROFIBUS DP master | |
| Transmission rate, max. | 12 Mbit/s |
| Number of DP slaves, max. | 124 |
| Services | |
| — PG/OP communication | Yes |
| — Routing | Yes |
| Global data communication | No |
| — S7 basic communication | Yes; I blocks only |
| — S7 communication | Yes |
| — S7 communication, as client | No |
| — S7 communication, as server | Yes |
| — Equidistance | Yes |
| — Isochronous mode | No |
| — SYNC/FREEZE | Yes |
| — STNO/FREEZE | 163 |



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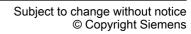
| Activation/deactivation of DP slaves | Yes |
|---|---|
| Number of DP slaves that can be | 8 |
| simultaneously activated/deactivated, max. | |
| — Direct data exchange (slave-to-slave communication) | Yes; as subscriber |
| — DPV1 | Yes |
| Address area | |
| — Inputs, max. | 8 kbyte |
| — Outputs, max. | 8 kbyte |
| User data per DP slave | |
| — Inputs, max. | 244 byte |
| — Outputs, max. | 244 byte |
| PROFIBUS DP slave | |
| 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; with interface active |
| Global data communication | No |
| — S7 basic communication | No |
| — S7 communication | Yes |
| — S7 communication, as client | No |
| S7 communication, as server | Yes; Connection configured on one side only |
| Direct data exchange (slave-to-slave) | Yes |
| communication) | |
| — DPV1 | No |
| Transfer memory | |
| — Inputs | 244 byte |
| — Outputs | 244 byte |
| 2 Interfere | |
| 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 |
| Protocols | |
| • MPI | No |
| PROFINET IO Controller | No |
| PROFINET IO Device | No |
| PROFINET CBA | No |
| PROFIBUS DP master | Yes |
| THO ISOS SI Musici | |



| PROFIBUS DP slave | Yes; A DP slave at both interfaces simultaneously is not possible |
|--|--|
| Open IE communication | No |
| Web server | No |
| PROFIBUS DP master | |
| Transmission rate, max. | 12 Mbit/s |
| Number of DP slaves, max. | 124 |
| Services | |
| — PG/OP communication | Yes |
| — Routing | Yes |
| Global data communication | No |
| — S7 basic communication | Yes; I blocks only |
| — S7 communication | Yes |
| — S7 communication, as client | No |
| — S7 communication, as server | Yes; Connection configured on one side only |
| — Equidistance | Yes |
| — Isochronous mode | Yes; OB 61 - isochronous mode is possible either on DP or PROFINET IO (not simultaneously) |
| — SYNC/FREEZE | Yes |
| Activation/deactivation of DP slaves | Yes |
| Number of DP slaves that can be simultaneously activated/deactivated, max. | 8 |
| Direct data exchange (slave-to-slave communication) | Yes; as subscriber |
| — DPV1 | Yes |
| Address area | |
| — Inputs, max. | 8 kbyte |
| — Outputs, max. | 8 kbyte |
| 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; with interface active |
| Global data communication | No |
| — S7 basic communication | No |



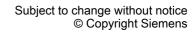
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| — S7 communication | Yes |
|---|---|
| S7 communication, as client | No |
| S7 communication, as server | Yes; Connection configured on one side only |
| Direct data exchange (slave-to-slave communication) | Yes |
| — DPV1 | No |
| Transfer memory | |
| — Inputs | 244 byte |
| — Outputs | 244 byte |

| . Interface Interface type | PROFINET |
|--|--|
| | |
| Physics | Ethernet RJ45 |
| Isolated | Yes |
| automatic detection of transmission rate | Yes; 10/100 Mbit/s |
| Autonegotiation | Yes |
| Autocrossing | Yes |
| Change of IP address at runtime, supported | Yes |
| Interface types | |
| Number of ports | 2 |
| integrated switch | Yes |
| Protocols | |
| • MPI | No |
| PROFINET IO Controller | Yes; Also simultaneously with I-Device functionality |
| PROFINET IO Device | Yes; Also simultaneously with IO Controller functionality |
| • PROFINET CBA | Yes |
| PROFIBUS DP master | No |
| PROFIBUS DP slave | No |
| Open IE communication | Yes; Via TCP/IP, ISO on TCP, and UDP |
| Web server | Yes |
| Media redundancy | Yes |
| PROFINET IO Controller | |
| • Transmission rate, max. | 100 Mbit/s |
| Services | |
| — PG/OP communication | Yes |
| — Routing | Yes |
| — S7 communication | Yes; with loadable FBs, max. configurable connections: 16, max. number of instances: 32 |
| — Isochronous mode | Yes; OB 61 - isochronous mode is possible either on DP or PROFINET IO (not simultaneously) |
| — Shared device | Yes |
| — Prioritized startup | Yes |





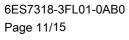
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| Number of IO devices with prioritized startup, max. | 32 |
|---|---|
| — Number of connectable IO Devices, max. | 256 |
| — Of which IO devices with IRT, max. | 64 |
| — of which in line, max. | 64 |
| Number of IO Devices with IRT and the option "high flexibility" | 256 |
| — of which in line, max. | 61 |
| Number of connectable IO Devices for RT, max. | 256 |
| — of which in line, max. | 256 |
| Activation/deactivation of IO Devices | Yes |
| Number of IO Devices that can be simultaneously activated/deactivated, max. | 8 |
| — IO Devices changing during operation (partner ports), supported | Yes |
| Number of IO Devices per tool, max. | 8 |
| Device replacement without swap medium | Yes |
| — Send cycles | $250~\mu s,500~\mu s,1$ ms; 2 ms, 4 ms (not in the case of IRT with "high flexibility" option) |
| — Updating time | 250 μs to 512 ms (depending on the operating mode, see Manual "S7-300 CPU 31xC and CPU 31x, technical Data" for more details) |
| Address area | |
| — Inputs, max. | 8 kbyte |
| — Outputs, max. | 8 kbyte |
| User data consistency, max. | 1 024 byte |
| PROFINET IO Device | |
| Services | |
| — PG/OP communication | Yes |
| — Routing | Yes |
| — S7 communication | Yes; with loadable FBs, max. configurable connections: 16, max. number of instances: 32 |
| — Isochronous mode | No |
| — IRT | Yes |
| — PROFlenergy | |
| - | Yes; With SFB 73 / 74 prepared for loadable PROFlenergy standard FB for I-Device |
| — Shared device | |
| — Shared device — Number of IO Controllers with shared | standard FB for I-Device |
| Number of IO Controllers with shared device, max. | standard FB for I-Device Yes |
| Number of IO Controllers with shared device, max. Transfer memory | standard FB for I-Device Yes 2 |
| Number of IO Controllers with shared device, max. | standard FB for I-Device Yes |



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| Submodules - Number, max User data per submodule, max. - User data per submodule, max. 1 024 byte PROFINET CBA • acyclic transmission • (ves) Open IE communication • Number of connections, max. • Local port numbers used at the system end • Keep-alive function, supported **Yes **Protocols **Redundancy mode Media redundancy - Switchover time on line break, typ Number of stations in the ring, max. **Deat length for connections, max Data length for connection type 01H, max Data length for connection type 11H, max Data length for connections, max Data length, max. **USC)-On-TCP (RFC1006) - Number of connections, max Data length, max. **UDP - Number of connections, max Data length, max. **UDP - Number of connections, max Data length, max. **UDP - Number of connections, max Data length, max. **UDP - Number of connections, max Data length, max. **UDP - Number of connections, max Data length, max. **UDP - Number of connections, max Data length, max. **UDP - Number of connections, max Data length, max. **UDP - Number of connections, max Data length, max. **UDP - Number of connections, max Data length, max. **UDP - Number of connections, max Data length, max. **UDP - Number of connections, max Data length, max. **Ves - Ves, via integrated PROFINET interface and loadable FBs - Number of transmission - Number of connections, max Data length, max. **Ves - Supported - Ves - | | |
|--|---|---|
| - User data per submodule, max. - User data per submodule, max. - exyclic transmission - expclic transmission - expect transmission - Number of connections, max Local port numbers used at the system end - expect transmission - Keep-alive function, supported - expect transmission - Keep-alive function, supported - expect transmission - Number of stations in the ring, max Data length for connection type 01H, max Data length for connection type 11H, max Data length for connection type 11H, max Expect transmission - Expect | Submodules | |
| PROFINET CBA acyclic transmission cyclic transmission cyclic transmission cyclic transmission Poen IE communication Number of connections, max. Local port numbers used at the system end Redundancy Keep-alive function, supported Media redundancy Switchover time on line break, typ. Number of stations in the ring, max. Data length for connection type 01H, max. Data length for connections, max. SiSO-on-TCP (RFC1006) Number of connections, max. Data length, max. Data length, max. Data length, max. 1460 byte 22 768 byte UDP Number of connections, max. Sizo-data length, max. Data length, max. 1472 byte Web server Supported User-defined websites Number of HTTP clients Solon-mours mode Isochronous operation (application synchronized up to terminal) Ves PG/OP communication Yes PG/OP communication Yes Data record routing | — Number, max. | 64 |
| acyclic transmission cyclic transmission cycl | User data per submodule, max. | 1 024 byte |
| Open IE communication Number of connections, max. Local port numbers used at the system end | PROFINET CBA | |
| Open IE communication Number of connections, max. Local port numbers used at the system end Keep-alive function, supported Yes Protocols Redundancy mode Media redundancy Switchover time on line break, typ. Number of stations in the ring, max. Open IE communication TCP/IP Number of connections, max. Data length for connection type 01H, max. Data length, max. Data length, max. Data length, max. UDP Number of connections, max. 22 Number of connections, max. 32 Number of connections, max. 24 Number of connections, max. 25 Number of connections, max. 32 Number of connections, max. 26 Number of connections, max. 27 Number of connections, max. 28 Number of connections, max. 29 Number of connections, max. 20 Number of connections, max. 21 Number of connections, max. 22 Number of connections, max. 23 Number of connections, max. 24 Number of connections, max. 25 Number of connections, max. 26 Number of connections, max. 27 Number of connections, max. 29 Number of connections, max. 20 Nu | acyclic transmission | Yes |
| Number of connections, max. Local port numbers used at the system end Keep-alive function, supported Number of stations in the ring, max. Deata length for connections, max. Data length for connection type 01H, max. Length for connection type 01H, max. Length for connection type 11H, max. Length for connections, max. Length for connections, max. Length functions Length function functions Len | cyclic transmission | Yes |
| Local port numbers used at the system end | Open IE communication | |
| * Keep-alive function, supported **Yes** **Protocols** **Redundancy mode** Media redundancy** - Switchover time on line break, typ Number of stations in the ring, max. Open IE communication **TCP/IP** - Number of connections, max Data length for connection type 01H, max. - Data length for connection type 11H, max. **OData length, max.* - Data length, max. - Data length, max. - Data length, max. **OData length, max.* **OData length, max.* - Data length, max. - Data length, max. **OData length, max.* - Data length, max. - Data length for connections, max. - Data length for c | Number of connections, max. | 32 |
| Protocols Redundancy mode Media redundancy — Switchover time on line break, typ. — Number of stations in the ring, max. Open IE communication • TCP/IP — Number of connections, max. — Data length for connection type 01H, max. — Data length for connection type 11H, max. — Data length for connections, max. — IsO-on-TCP (RFC1006) — Number of connections, max. — Data length, max. — Data length, max. — Data length, max. • UDP — Number of connections, max. — Data length, max. • UDP — Number of connections, max. — Data length, max. • UDP — Number of connections, max. — Data length, max. • UDP — Number of connections, max. — Data length, max. • UDP — Number of connections, max. — Data length, max. • USer-defined websites • Number of HTTP clients Sochronous mode Isochronous operation (application synchronized up to terminal) Communication functions PG/OP communication Yes Data record routing Yes Data record routing Yes | Local port numbers used at the system end | |
| Redundancy mode Media redundancy — Switchover time on line break, typ. — Number of stations in the ring, max. Open IE communication • TCP/IP — Number of connections, max. — Data length for connection type 01H, max. • ISO-on-TCP (RFC1006) — Number of connections, max. • ISO-on-TCP (RFC1006) — Number of connections, max. 23 768 byte • UDP — Number of connections, max. 32 768 byte • UDP — Number of connections, max. 32 768 byte • UDP — Number of connections, max. 32 768 byte • UDP — Number of connections, max. 32 768 byte • UDP — Number of connections, max. 32 768 byte • UDP — Number of connections, max. 32 768 byte • USP — Number of connections, max. 32 768 byte • USP — Number of onnections, max. 32 768 byte • USP — Number of onnections, max. 32 768 byte • USP — Number of onnections, max. 32 768 byte • USP — Number of onnections, max. 32 768 byte • USP — Number of onnections, max. 32 768 byte • USP — Number of onnections, max. 32 768 byte • User-defined websites • Number of HTTP clients Sochronous mode Isochronous operation (application synchronized up to terminal) Communication functions PG/OP communication Yes Data record routing Yes | Keep-alive function, supported | Yes |
| Redundancy mode Media redundancy — Switchover time on line break, typ. — Number of stations in the ring, max. Open IE communication • TCP/IP — Number of connections, max. — Data length for connection type 01H, max. - Data length for connections type 11H, max. • ISO-on-TCP (RFC1006) — Number of connections, max. - Data length, max. • UDP — Number of connections, max. - Data length, max. 9 UDP — Number of connections, max. - UDP — Yes; via integrated PROFINET interface and loadable FBs 32 768 byte 9 USP — Number of connections, max. 32 768 byte 9 USP — Number of connections, max. 1 472 byte Web server • supported • User-defined websites • Number of HTTP clients Sochronous mode Isochronous operation (application synchronized up to terminal) Communication functions PG/OP communication Yes Data record routing 200 ms; PROFINET MRP 200 ms; PROFINET MRP 200 ms; PROFINET interface and loadable FBs 32 4 460 byte 42 768 byte 42 85 94 85 94 94 42 94 94 94 94 94 94 94 94 94 94 94 94 94 | Protocols | |
| - Switchover time on line break, typ Number of stations in the ring, max. Open IE communication TCP/IP - Number of connections, max Data length for connection type 01H, max Data length for connection type 11H, max Data length for connection type 11H, max Data length for connection type 11H, max ISO-on-TCP (RFC1006) - Number of connections, max Data length, max Syerial length, max Data length, max Syerial length, max | | |
| Open IE communication TCP/IP TCP/IP Number of connections, max. Data length for connection type 01H, max. ISO-on-TCP (RFC1006) Number of connections, max. ISO-on-TCP (RFC1006) Number of connections, max. Data length, max. ISO-on-TCP (RFC1006) Number of connections, max. Data length, max. ISO-on-TCP (RFC1006) Number of connections, max. Data length, max. ISO-on-TCP (RFC1006) Number of connections, max. ISO-on-TCP (RFC1006) ISO-on-TCP | Media redundancy | |
| Open IE communication • TCP/IP - Number of connections, max. - Data length for connection type 01H, max. - Data length for connection type 11H, max. - Data length for connection type 11H, max. • ISO-on-TCP (RFC1006) - Number of connections, max. - Data length, max. • UDP - Number of connections, max. - Data length, max. • UDP - Number of connections, max. - Data length, max. • UDP - Number of connections, max. - Data length, max. 1 472 byte Web server • supported • User-defined websites • Number of HTTP clients 5 Isochronous mode Isochronous operation (application synchronized up to terminal) Communication functions PG/OP communication Yes Data record routing Yes Yes Yes Yes Page Yes Yes Yes Page Yes Yes Yes Page Page Yes Page Page Yes Yes Page Page Yes Page Page Yes Page Page Yes Page Page Yes Yes Page Page Yes Page Yes Page Page Yes Page Page Yes Page Page Yes Page Yes Page Page Yes Page Page Yes Page Page | — Switchover time on line break, typ. | 200 ms; PROFINET MRP |
| TCP/IP Number of connections, max. Data length for connection type 01H, max. Data length for connection type 11H, max. Data length for connection type 11H, max. Isoo-n-TCP (RFC1006) Number of connections, max. Data length, max. Data length, max. UDP Number of connections, max. Data length, max. Isoo-n-TCP (RFC1006) Yes; via integrated PROFINET interface and loadable FBs Number of connections, max. Data length, max. Isoo-n-TCP (RFC1006) Yes; via integrated PROFINET interface and loadable FBs Isoo-n-TCP (RFC1006) Yes Yes; via integrated PROFINET interface and loadable FBs Yes Veb server Supported Ves Ves Number of HTTP clients Yes Number of HTTP clients Yes; Via 2nd PROFIBUS DP or PROFINET interface Ves; Via 2nd PROFIBUS DP or PROFINET interface Communication functions PG/OP communication Yes Yes | Number of stations in the ring, max. | 50 |
| Number of connections, max Data length for connection type 01H, max Data length for connection type 11H, max Data length for connection type 11H, max Data length for connection type 11H, max Start St | Open IE communication | |
| - Data length for connection type 01H, max Data length for connection type 11H, max. - Data length for connection type 11H, max. • ISO-on-TCP (RFC1006) - Number of connections, max Data length, max. • UDP - Ves; via integrated PROFINET interface and loadable FBs - Number of connections, max Data length, max. • UDP - Number of connections, max Data length, max. 1 472 byte Web server • supported • User-defined websites • Number of HTTP clients Sochronous mode Isochronous operation (application synchronized up to terminal) Communication functions PG/OP communication Yes Yes Tyes Pageon Table 1460 byte 12 768 byte 12 768 byte 13 2768 byte 14 27 8 byte 15 27 8 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 | • TCP/IP | Yes; via integrated PROFINET interface and loadable FBs |
| - Data length for connection type 11H, max. ISO-on-TCP (RFC1006) Number of connections, max. Data length, max. UDP Yes; via integrated PROFINET interface and loadable FBs Number of connections, max. UDP Yes; via integrated PROFINET interface and loadable FBs Number of connections, max. Data length, max. 1472 byte Web server Supported User-defined websites Number of HTTP clients Sochronous mode Isochronous operation (application synchronized up to terminal) Yes; Via 2nd PROFIBUS DP or PROFINET interface Communication functions PG/OP communication Yes Tes Yes Tes Yes Pata record routing Yes | Number of connections, max. | 32 |
| ISO-on-TCP (RFC1006) Number of connections, max. Data length, max. UDP Number of connections, max. UDP Number of connections, max. Data length, max. 1472 byte Web server Supported User-defined websites Number of HTTP clients Isochronous mode Isochronous operation (application synchronized up to terminal) Communication functions PG/OP communication Yes; via integrated PROFINET interface and loadable FBs 32 1472 byte Yes Yes Yes Yes Yes Yes Yes Y | Data length for connection type 01H, max. | 1 460 byte |
| - Number of connections, max. - Data length, max. • UDP Yes; via integrated PROFINET interface and loadable FBs - Number of connections, max. - Data length, max. 32 - Data length, max. 1 472 byte Web server • supported • Supported • User-defined websites • Number of HTTP clients Sochronous mode Isochronous operation (application synchronized up to terminal) Communication functions PG/OP communication Yes Data record routing Yes Yes Yes | Data length for connection type 11H, max. | 32 768 byte |
| - Data length, max. ● UDP Yes; via integrated PROFINET interface and loadable FBs 32 - Number of connections, max. - Data length, max. 1 472 byte Web server ● supported ● User-defined websites ● Number of HTTP clients Sochronous mode Isochronous mode Isochronous operation (application synchronized up to terminal) Communication functions PG/OP communication Yes Pata record routing Yes 32 1 472 byte Yes Yes Yes Yes Yes Yes Yes Y | • ISO-on-TCP (RFC1006) | Yes; via integrated PROFINET interface and loadable FBs |
| UDP | Number of connections, max. | 32 |
| - Number of connections, max Data length, max. 1 472 byte Web server • supported • User-defined websites • Number of HTTP clients Sochronous mode Isochronous operation (application synchronized up to terminal) Communication functions PG/OP communication PG/OP communication Yes Data record routing 32 1 472 byte Yes Yes Yes Yes Yes Yes A 72 Yes Yes Yes Yes Yes Yes Data record routing Yes | — Data length, max. | 32 768 byte |
| — Data length, max. — Data length, max. 1 472 byte Web server • supported • User-defined websites • Number of HTTP clients Sochronous mode Isochronous operation (application synchronized up to terminal) Communication functions PG/OP communication Pata record routing 1 472 byte Yes Yes Yes Yes Yes Tyes Yes Yes Yes Yes Yes Yes Yes | • UDP | Yes; via integrated PROFINET interface and loadable FBs |
| Web server | Number of connections, max. | 32 |
| supported User-defined websites Number of HTTP clients Isochronous mode Isochronous operation (application synchronized up to terminal) Communication functions PG/OP communication Yes Data record routing Yes Yes Yes | — Data length, max. | 1 472 byte |
| ● User-defined websites ● Number of HTTP clients Sochronous mode Isochronous operation (application synchronized up to terminal) Communication functions PG/OP communication Data record routing Yes Yes Yes Yes Yes Yes Yes Ye | Web server | |
| ● Number of HTTP clients 5 Isochronous mode Isochronous operation (application synchronized up to terminal) Communication functions PG/OP communication Pata record routing Yes Yes Yes | • supported | Yes |
| Isochronous mode Isochronous operation (application synchronized up to terminal) Communication functions PG/OP communication Data record routing Yes; Via 2nd PROFIBUS DP or PROFINET interface Yes | User-defined websites | Yes |
| Isochronous operation (application synchronized up to terminal) Communication functions PG/OP communication Pata record routing Yes; Via 2nd PROFIBUS DP or PROFINET interface Yes | Number of HTTP clients | 5 |
| Isochronous operation (application synchronized up to terminal) Communication functions PG/OP communication Pata record routing Yes; Via 2nd PROFIBUS DP or PROFINET interface Yes | Isochronous mode | |
| Communication functions PG/OP communication Pata record routing Yes Yes | | Yes; Via 2nd PROFIBUS DP or PROFINET interface |
| PG/OP communication Yes Data record routing Yes | to terminal) | |
| PG/OP communication Yes Data record routing Yes | Communication functions | |
| | | Yes |
| Global data communication | Data record routing | Yes |
| | Global data communication | |
| • supported Yes | • supported | Yes |
| | | |



• Number of GD loops, max.

• Number of GD packets, max.

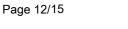


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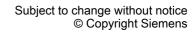
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| Number of GD packets, transmitter, max. | 8 |
|--|---|
| Number of GD packets, receiver, max. | 8 |
| Size of GD packets, max. | 22 byte |
| Size of GD packet (of which consistent), max. | 22 byte |
| S7 basic communication | |
| • supported | Yes |
| 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 integrated PROFINET interface and loadable FB or via CP and loadable FB |
| User data per job, max. | See online help of STEP 7 (shared parameters of the SFBs/FBs and of the SFCs/FCs of S7 Communication) |
| S5 compatible communication | |
| • supported | Yes; via CP and loadable FC |
| PROFINET CBA (at set setpoint communication load) | |
| Setpoint for the CPU communication load | 20 % |
| Number of remote interconnection partners | 32 |
| Number of functions, master/slave | 50 |
| Total of all master/slave connections | 3 000 |
| Data length of all incoming connections master/slave, max. | 24 000 byte |
| Data length of all outgoing connections master/slave, max. | 24 000 byte |
| Number of device-internal and PROFIBUS interconnections | 1 000 |
| Data length of device-internal und PROFIBUS interconnections, max. | 8 000 byte |
| Data length per connection, max. | 1 400 byte |
| Remote interconnections with acyclic transmission | |
| — Sampling interval, min. | 200 ms |
| Number of incoming interconnections | 100 |
| Number of outgoing interconnections | 100 |
| Data length of all incoming interconnections, max. | 3 200 byte |
| Data length of all outgoing interconnections, max. | 3 200 byte |
| — Data length per connection, max. | 1 400 byte |
| Remote interconnections with cyclic transmission | |



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| Transmission frequency: Transmission | 1 ms |
|--|---|
| interval, min. | |
| Number of incoming interconnections | 300 |
| Number of outgoing interconnections | 300 |
| Data length of all incoming | 4 800 byte |
| interconnections, max. | |
| Data length of all outgoing | 4 800 byte |
| interconnections, max. | |
| Data length per connection, max. | 450 byte |
| HMI variables via PROFINET (acyclic) | |
| Number of stations that can log on for HMI variables (PN OPC/iMap) | 3; 2x PN OPC/1x iMap |
| HMI variable updating | 500 ms |
| Number of HMI variables | 600 |
| Data length of all HMI variables, max. | 9 600 byte |
| PROFIBUS proxy functionality | |
| — supported | Yes |
| Number of linked PROFIBUS devices | 32 |
| Data length per connection, max. | 240 byte; Slave-dependent |
| Number of connections | |
| • overall | 32 |
| usable for PG communication | 31 |
| reserved for PG communication | 1 |
| adjustable for PG communication, min. | 1 |
| adjustable for PG communication, max. | 31 |
| usable for OP communication | 31 |
| reserved for OP communication | 1 |
| adjustable for OP communication, min. | 1 |
| adjustable for OP communication, max. | 31 |
| usable for S7 basic communication | 30 |
| reserved for S7 basic communication | 0 |
| adjustable for S7 basic communication, | 0 |
| min. | |
| adjustable for S7 basic communication, | 30 |
| max. • usable for S7 communication | 16 |
| - reserved for S7 communication | 0 |
| | 0 |
| adjustable for S7 communication, min. | 16 |
| — adjustable for S7 communication, max. | 32 |
| • total number of instances, max. | |
| usable for routing | X1 as MPI: max. 10; X1 as DP master: max. 24; X1 as DP slave (active): max. 14; X2 as DP master: max. 24; X2 as DP slave (active): max. 14; X3 as PROFINET: 48 max. |



| S7 message functions | |
|---|--|
| Number of login stations for message functions, max. | 32; Depending on the configured connections for PG/OP and S7 |
| | basic communication |
| Process diagnostic messages | Yes |
| simultaneously active Alarm-S blocks, max. | 300 |
| Tost commissioning functions | |
| 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 |
| Number of entries readable in RUN, max. | 499 |
| — adjustable | Yes; From 10 to 499 |
| — preset | 10 |
| Service data | |
| • can be read out | Yes |
| A. L. C. Britan | |
| Ambient conditions Ambient temperature during operation | |
| min. | 0 °C |
| | 60 °C |
| • max. | |
| Configuration | |
| Configuration software | |
| • STEP 7 | Yes; V5.5 or higher |
| 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 | |
| Dimensions Width | 120 mm |
| | 120 mm 125 mm |
| Width | |
| Width Height | 125 mm |
| Width Height Depth | 125 mm |

