SIEMENS

Data sheet

6ES7518-4AP00-3AB0



*** spare part *** SIMATIC S7-1500, CPU 1518-4 PN/DP ODK, central processing unit with ODK runtime interface, work memory 6 MB for program and 60 MB for data, 1st interface: PROFINET IRT with 2-port switch, 2nd interface: PROFINET RT, 3rd interface: PROFINET basic services, 4th interface: PROFIBUS, 1 ns bit performance, SIMATIC Memory Card required

| General information | |
|--|--|
| Product type designation | CPU 1518-4 PN/DP ODK |
| HW functional status | FS10 |
| Firmware version | V2.9 |
| Product function | |
| I&M data | Yes; I&M0 to I&M3 |
| Isochronous mode | Yes; Distributed and central; with minimum OB 6x cycle of 125 μs (distributed) and 1 ms (central) |
| Engineering with | |
| STEP 7 TIA Portal configurable/integrated from version | V17 (FW V2.9) / V14 (FW V2.0) or higher |
| Configuration control | |
| via dataset | Yes |
| Display | |
| Screen diagonal [cm] | 6.1 cm |
| Control elements | |
| Number of keys | 6 |
| Mode selector switch | 1 |
| Supply voltage | |
| Rated value (DC) | 24 V |
| permissible range, lower limit (DC) | 19.2 V |
| permissible range, upper limit (DC) | 28.8 V |
| Reverse polarity protection | Yes |
| Mains buffering | |
| Mains/voltage failure stored energy time | 5 ms |
| Repeat rate, min. | 1/s |
| Input current | |
| Current consumption (rated value) | 1.55 A |
| Inrush current, max. | 2.4 A; Rated value |
| l²t | 0.02 A ² ·s |
| Power | |
| Infeed power to the backplane bus | 12 W |
| Power consumption from the backplane bus (balanced) | 30 W |
| Power loss | |
| Power loss, typ. | 24 W |
| Memory | |
| Number of slots for SIMATIC memory card | 1 |
| SIMATIC memory card required | Yes |
| Work memory | |
| • integrated (for program) | 6 Mbyte |

| Integrated (for CPU function library of CPU Rotifier) Bolktyte: Note: The 'CPU function library of the CPU' are CC++ blocks for the user program that were created using the SIMATIC ODM tools or Target 1500S. Constraints and the SIMATIC ODM tools or Target 1500S. Constraints and the SIMATIC ODM tools or Target 1500S. Constraints and the SIMATIC ODM tools or Target 1500S. Constraints and the SIMATIC ODM tools or Target 1500S. Constraints and the SIMATIC ODM tools and the SIMATIC ODM tool and the SIMATIC OD | integrated (for data) | 60 Mbyte |
|--|--|---|
| Ruthins) Biokas for the user program that were created using the SIMATIC ODK 15005 or traget 15005. Lead memory - Plug ing (SIMATIC Memory Card), max. 32 Gbyte Backup - maintenance.free Yes CPU processing times - res - res for disord operations, bp. 2 res - res for faced point antimetic, bp. 2 res - res for faced point antimetic, bp. 2 res - res of rading point antimetic, bp. 2 res - res of rading point antimetic, bp. 2 res - res of rading point antimetic, bp. 2 res - res of rading point antimetic, bp. 2 res - res of rading point antimetic, rep. - res - res of rading point antimetic, rep. - res - res of rading point antimetic, rep. - res - res of rading point antimetic, rep. - res - res of rading point antimetic, rep. - res - res of rading point antimetic, rep. - res - res of res - res - res | | |
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| Plug-in (SIMATIC Memory Card), max. 32 Gbyte adadua inanitenance-free Yes CPU processing times for bit operations, typ, for start point attiturate, typ, for point point attiturate, typ, for po | | 1500S or Target 1500S. |
| Backup intervention of the second sec | - | |
| • maintenance-free Yes CPU processing lunks for bid operations, typ. 1 ns for word operations, typ. 2 ns for kned point attimuted, typ. 6 ns CPU stocks 6 ns Mumber of elements (total) 20:000, Blocks (CB, FB, FC, DB) and UDTs DB - Number range 1 60:399, and number range that can be used by the | | 32 Gbyte |
| GPU processing times 1 ns for bit operations, typ. 1 ns for fixed point arithmetic, typ. 2 ns for fixed point arithmetic, typ. 6 ns CPU-blocks | • | |
| for bit operations, typ. 1 ns for fixed point arithmetic, typ. 2 ns for fixed point arithmetic, typ. 6 ns CPU blocks 20.000, Blocks (OB, FB, FC, DB) and UDTs DB 160.999, and number range of DBs created via SFC 86: 60.00 • Number range 165.999, and number range of DBs created via SFC 86: 60.00 • Size, max. 16 Mbyte; For DBs with absolute addressing, the max, size is 64 KB FE • Nomber range • Number range 065 535 • Size, max. 1 Mbyte; FC • Number of the cycle OBs • Number of the cycle OBs 100 • Number of role cycle OBs 3 • Number of role cycle OBs 3 • Number of sourchonous ande OBs 3 • Number of sourchonous ande OBs 3 • Number of saynchronous ander OBs 1 • Number of saynchronous and OBs 2 • Number of saynchronous and OBs 2 • Number of saynchronous and OBs 2 | maintenance-free | Yes |
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| for fixed point arithmetic, typ. 6 ns CPU-blocks Number of elements (total) 20 000; Blocks (OB, FB, FC, DB) and UDTs DB • Number range • Size, max. 10 999; subdivided into: number range that can be used by the user: 159 999; and number range of DBs created via SFC 58: 60 00 60 999; subdivided into: number range that can be used by the user: 159 999; and number range of DBs created via SFC 58: 60 00 60 535 • Size, max. 10 Mbyte; FO DBs with absolute addressing, the max. size is 64 KB FE • Number range • Number of free cycle OBs • Number of free cycle OBs • Number of free cycle OBs • Number of offee cycle OBs • Number of offee synchrones • Number of free cycle OBs • Number of process alarm OBs • Number of process alarm OBs • Number of process alarm OBs • Number of bree nycle of SS • Number of process alarm OBs • Number of bree of back oncous mode OBs • Number of technology synchronous alarm OBs • Number of dispandem OBs • Number • Augustable • Number • Augustable • Number • Number • Number • Number • Augustable • Number • Augustable • Number • Number • Augustable • Yes • Electower • Number • Augustable • Number • Augustable • Yes • Electower • Number • Augustable • Yes • Deta areas and their rotentivity • Cata areas and their rotentivity • Cata areas and their rotentivity • Cata areas and their rotentivity • C | for bit operations, typ. | 1 ns |
| for floating point arithmetic, typ. 6 ns CPU-blocks Number of elements (total) 20 000; Blocks (OB, FB, FC, DB) and UDTs DB | for word operations, typ. | 2 ns |
| CPU-blocks Number of elements (total) 20 000; Blocks (OB, FB, FC, DB) and UDTs DB 160 999; subdivided into: number range that can be used by the user: 159 999. • Size, max. 16 Mbyte; For DBs with absolute addressing, the max. size is 64 KB FB 065 535 • Number range 065 535 • Size, max. 1 Mbyte FC 065 535 • Size, max. 1 Mbyte FC 065 535 • Size, max. 1 Mbyte • Number of free cycle OBs 100 • Number of free cycle OBs 20 • Number of free cycle OBs 20 • Number of cycle interrupt OBs 20 • Number of process alarm OBs 20 • Number of solutionous mode OBs 3 • Number of solutionous mode OBs 3 • Number of solutionous error OBs 2 • Number of disprotonous error OBs 2 • Number 2 048 Retentivity - < | for fixed point arithmetic, typ. | 2 ns |
| Number of elements (total) 20 000; Blocks (OB, FB, FC, DB) and UDTs DB • Number range • Number range | for floating point arithmetic, typ. | 6 ns |
| Number of elements (total) 20 000; Blocks (OB, FB, FC, DB) and UDTs DB • Number range • Number range | CPU-blocks | |
| DB | | 20,000: Blocks (OB_EB_EC_DB) and UDTs |
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| | • Humber Hunge | user: 1 59 999, and number range of DBs created via SFC 86: 60 000 |
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| Size, max. I Mbyte FC Number range Size, max. I Mbyte OB Size, max. I Mbyte Size, max. I Mbyte Size, max. I Mbyte Size, max. I Mbyte Size, max. Number of cleahology synchronous alarn OBs Number of synchronous error OBs Number of asynchronous error OBs Stromet Number of retentivity - adjustable Yes Yes Stromet Number Number Number Ary (only limited by the main m | FB | |
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| Number of cyclic interrupt OBs 20; with minimum OB 3x cycle of 100 µs Number of process alarm OBs Number of process alarm OBs Number of technology synchronous alarm OBs Number of technology synchronous alarm OBs Number of synchronous error OBs Number of synchronous error OBs Number of synchronous error OBs Number of diagnostic alarm OBs Number of diagnostic alarm OBs Number of synchronous error OBs Number of diagnostic alarm OBs Number of synchronous error OBs Number of synchronous error OBs Number of synchronous error OBs Number of asynchronous error OBs Number of asynchronous error OBs Number of asynchronous error OBs Number of synchronous error OBs Number of synchronous error OBs Number of asynchronous error OBs Number Aunor Aunor Aunor Aunor Aunor Yes IEC counter Number Aunor Any (only limited by the main memory) Retentivity adjustable Yes IEC timer Number Any (only limited by the main memory) Retentivity adjustable Yes Data areas and their retentivity 768 kbyte; In totat, available retentive memory for bit memories, timers, counters, flags), max. Totat exclusion of the other of the memories, timers, counters, flags), max. Totat eretentive data area (incl. timers, counters, flags), pax. <td>Number of time alarm OBs</td><td>20</td> | Number of time alarm OBs | 20 |
| • Number of process alarm OBs 50 • Number of pPV1 alarm OBs 3 • Number of isochronous mode OBs 3 • Number of technology synchronous alarm OBs 2 • Number of synchronous error OBs 4 • Number of synchronous error OBs 2 • Number of synchronous error OBs 2 • Number of diagnostic alarm OBs 1 • Number of synchronous error OBs 2 • Number of diagnostic alarm OBs 1 • Number of synchronous error OBs 2 • Number of synchronous error OBs 2 • Number of synchronous error OBs 2 • Number of diagnostic alarm OBs 1 Number of synchronous error OBs 2 • Number of synchronous error OBs 24 Counters, timers and their retentivity - - adjustable Yes IEC counter - • Number Any (only limited by the main memory) Retentivity - - adjustable Yes IEC timer Any (only limited by the main memory) • Number Any (only limited by the main memory) Retentivity | Number of delay alarm OBs | 20 |
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| • Number of isochronous mode OBs 3 • Number of technology synchronous alarm OBs 2 • Number of synchronous error OBs 100 • Number of synchronous error OBs 2 • Number of algnostic alarm OBs 1 • Nesting depth - • per priority class 24 Counters, timers and their retentivity 24 S7 counter - • Number 2 048 Retentivity - - adjustable Yes IEC counter Any (only limited by the main memory) Retentivity - - adjustable Yes S7 times - - adjustable Yes S7 times - - adjustable Yes IEC timer - • Number Any (only limited by the main memory) Retentivity - - adjustable Yes IEC timer - • Number Any (only limited by the main memory) Retentivity - - adjustable Yes IEC timer - | Number of process alarm OBs | 50 |
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| • Number of startup OBs 100 • Number of asynchronous error OBs 4 • Number of synchronous error OBs 2 • Number of diagnostic alarm OBs 1 Nesting depth 24 Counters, timers and their retentivity 24 S7 counter 2 048 Retentivity - adjustable - adjustable Yes IEC counter - adjustable • Number Any (only limited by the main memory) Retentivity - adjustable - adjustable Yes IEC counter - adjustable • Number Any (only limited by the main memory) Retentivity - adjustable - adjustable Yes S7 times - adjustable • Number 2 048 Retentivity - adjustable - adjustable Yes IEC timer - Any (only limited by the main memory) Retentivity - adjustable - adjustable Yes IEC timer - Any (only limited by the main memory) Retentivity - adjustable - adjustable< | Number of technology synchronous alarm OBs | 2 |
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| • per priority class 24 Counters, timers and their retentivity S7 counter • Number 2 048 Retentivity adjustable Yes IEC counter • Number Any (only limited by the main memory) Retentivity adjustable Yes S7 times • Number 2 048 Retentivity adjustable Yes IEC timer • Number Any (only limited by the main memory) Retentivity adjustable Yes IEC timer • Number Any (only limited by the main memory) Retentivity adjustable Yes IEC timer • Number Any (only limited by the main memory) Retentivity adjustable Yes IEC timer • Number Any (only limited by the main memory) Retentivity adjustable Yes IEC timer • Number Any (only limited by the main memory) Retentivity adjustable Yes Data areas and their retentivity Retentive data area (incl. timers, counters, flags), max. Extended retentive data area (incl. timers, counters, flags), 20 Mbyte; When using PS 6 0W 24/48/60 V DC HF | - | · |
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| S7 counter • Number 2 048 Retentivity | | |
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| — adjustable Yes IEC counter Any (only limited by the main memory) Retentivity — adjustable — adjustable Yes S7 times | | 2 040 |
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| — adjustable Yes S7 times 2 048 • Number 2 048 Retentivity - adjustable — adjustable Yes IEC timer - Any (only limited by the main memory) Retentivity - adjustable • Number Any (only limited by the main memory) Retentivity - adjustable Yes - adjustable Data areas and their retentivity Yes Data areas and their retentivity 768 kbyte; In total; available retentive memory for bit memories, timers, counters, flags), max. Extended retentive data area (incl. timers, counters, flags), 20 Mbyte; When using PS 6 0W 24/48/60 V DC HF | | Any (only limited by the main memory) |
| S7 times 2 048 • Number 2 048 Retentivity | | Ver |
| Number 2 048 Retentivity adjustable Yes IEC timer Number Any (only limited by the main memory) Retentivity adjustable Yes Data areas and their retentivity Retentive data area (incl. timers, counters, flags), max. Extended retentive data area (incl. timers, counters, flags), 20 Mbyte; When using PS 6 0W 24/48/60 V DC HF | · · | |
| Retentivity Yes IEC timer Any (only limited by the main memory) • Number Any (only limited by the main memory) Retentivity Yes Data areas and their retentivity Yes Retentive data area (incl. timers, counters, flags), max. 768 kbyte; In total; available retentive memory for bit memories, timers, counters, DBs, and technology data (axes): 700 KB Extended retentive data area (incl. timers, counters, flags), 20 Mbyte; When using PS 6 0W 24/48/60 V DC HF | | 0.040 |
| — adjustable Yes IEC timer Any (only limited by the main memory) • Number Any (only limited by the main memory) Retentivity — adjustable — adjustable Yes Data areas and their retentivity Yes Retentive data area (incl. timers, counters, flags), max. 768 kbyte; In total; available retentive memory for bit memories, timers, counters, DBs, and technology data (axes): 700 KB Extended retentive data area (incl. timers, counters, flags), 20 Mbyte; When using PS 6 0W 24/48/60 V DC HF | | 2 048 |
| IEC timer Any (only limited by the main memory) • Number Any (only limited by the main memory) Retentivity — adjustable • Adjustable Yes Data areas and their retentivity Yes Retentive data area (incl. timers, counters, flags), max. 768 kbyte; In total; available retentive memory for bit memories, timers, counters, DBs, and technology data (axes): 700 KB Extended retentive data area (incl. timers, counters, flags), 20 Mbyte; When using PS 6 0W 24/48/60 V DC HF | | Ver |
| Number Any (only limited by the main memory) Retentivity — adjustable Yes Data areas and their retentivity Retentive data area (incl. timers, counters, flags), max. Zextended retentive data area (incl. timers, counters, flags), max. Zextended retentive data area (incl. timers, counters, flags), 20 Mbyte; When using PS 6 0W 24/48/60 V DC HF | · · | Yes |
| Retentivity Yes Data areas and their retentivity Pata area (incl. timers, counters, flags), max. 768 kbyte; In total; available retentive memory for bit memories, timers, counters, DBs, and technology data (axes): 700 KB Extended retentive data area (incl. timers, counters, flags), 20 Mbyte; When using PS 6 0W 24/48/60 V DC HF | | |
| — adjustable Yes Data areas and their retentivity Pate area (incl. timers, counters, flags), max. 768 kbyte; In total; available retentive memory for bit memories, timers, counters, DBs, and technology data (axes): 700 KB Extended retentive data area (incl. timers, counters, flags), 20 Mbyte; When using PS 6 0W 24/48/60 V DC HF | | Any (only limited by the main memory) |
| Data areas and their retentivity Retentive data area (incl. timers, counters, flags), max. 768 kbyte; In total; available retentive memory for bit memories, timers, counters, DBs, and technology data (axes): 700 KB Extended retentive data area (incl. timers, counters, flags), 20 Mbyte; When using PS 6 0W 24/48/60 V DC HF | | |
| Retentive data area (incl. timers, counters, flags), max.768 kbyte; In total; available retentive memory for bit memories, timers, counters, DBs, and technology data (axes): 700 KBExtended retentive data area (incl. timers, counters, flags),20 Mbyte; When using PS 6 0W 24/48/60 V DC HF | — adjustable | Yes |
| counters, DBs, and technology data (axes): 700 KBExtended retentive data area (incl. timers, counters, flags),20 Mbyte; When using PS 6 0W 24/48/60 V DC HF | Data areas and their retentivity | |
| | Retentive data area (incl. timers, counters, flags), max. | 768 kbyte; In total; available retentive memory for bit memories, timers, counters, DBs, and technology data (axes): 700 KB |
| max. | Extended retentive data area (incl. timers, counters, flags), | 20 Mbyte; When using PS 6 0W 24/48/60 V DC HF |
| | max. | |

| Flag | |
|--|---|
| • Size, max. | 16 kbyte |
| Number of clock memories | 8; 8 clock memory bit, grouped into one clock memory byte |
| Data blocks | e, e electricane, an, greap a line ene electricane, fagie |
| Retentivity adjustable | Yes |
| Retentivity preset | No |
| Local data | |
| per priority class, max. | 64 kbyte; max. 16 KB per block |
| Address area | |
| Number of IO modules | 16 384; max. number of modules / submodules |
| I/O address area | |
| • Inputs | 32 kbyte; All inputs are in the process image |
| Outputs | 32 kbyte; All outputs are in the process image |
| per integrated IO subsystem | |
| — Inputs (volume) | 32 kbyte; max. 32 KB via X1; max. 8 KB via X2 or X4 |
| — Outputs (volume) | 32 kbyte; max. 32 KB via X1; max. 8 KB via X2 or X4 |
| per CM/CP | |
| – Inputs (volume) | 8 kbyte |
| — Outputs (volume) | 8 kbyte |
| Subprocess images | |
| Number of subprocess images, max. | 32 |
| Hardware configuration | |
| Number of distributed IO systems | 64; A distributed I/O system is characterized not only by the integration |
| | of distributed I/O via PROFINET or PROFIBUS communication modules, but also by the connection of I/O via AS-i master modules or |
| Number of DD monters | links (e.g. IE/PB-Link) |
| Number of DP masters | 1 |
| • integrated | 1 |
| • Via CM | 8; A maximum of 8 CMs/CPs (PROFIBUS, PROFINET, Ethernet) can be inserted in total |
| Number of IO Controllers | |
| • integrated | 2 |
| • Via CM | 8; A maximum of 8 CMs/CPs (PROFIBUS, PROFINET, Ethernet) can |
| | be inserted in total |
| Rack | |
| Modules per rack, max. | 32; CPU + 31 modules |
| Number of lines, max. | 1 |
| PtP CM | |
| Number of PtP CMs | the number of connectable PtP CMs is only limited by the number of available slots |
| The states | |
| Time of day | |
| Clock | |
| • Type | Hardware clock |
| Backup time | 6 wk; At 40 °C ambient temperature, typically |
| Deviation per day, max. | 10 s; Typ.: 2 s |
| Operating hours counter | 16 |
| Number Clock synchronization | 16 |
| Clock synchronization | Vac |
| supported to DP, master | Yes Yes |
| to DP, master in AS, master | Yes |
| In AS, masterin AS, slave | Yes |
| on Ethernet via NTP | Yes |
| | |
| Interfaces | |
| Number of PROFINET interfaces | 3 |
| Number of PROFIBUS interfaces | 1 |
| 1. Interface | |
| Interface types | |
| • RJ 45 (Ethernet) | Yes; X1 |
| Number of ports | 2 |
| integrated switch | Yes |
| Protocols | |
| IP protocol | Yes; IPv4 |
| PROFINET IO Controller | Yes |

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| PROFINET IO Device | Yes |
|---|--|
| SIMATIC communication | Yes |
| Open IE communication | Yes; Optionally also encrypted |
| Web server | Yes |
| Media redundancy | Yes |
| PROFINET IO Controller | |
| Services | |
| — PG/OP communication | Yes |
| — Isochronous mode | Yes |
| — Direct data exchange | Yes; Requirement: IRT and isochronous mode (MRPD optional) |
| — IRT | Yes |
| — PROFlenergy | Yes; per user program |
| - Prioritized startup | Yes; Max. 32 PROFINET devices |
| - Number of connectable IO Devices, max. | 512; In total, up to 1 000 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFINET |
| - Of which IO devices with IRT, max. | 64 |
| — Number of connectable IO Devices for RT, | 512 |
| max. | |
| — of which in line, max. | 512 |
| — Number of IO Devices that can be aimultaneously activated (deactivated may | 8; in total across all interfaces |
| simultaneously activated/deactivated, max. | 0 |
| — Number of IO Devices per tool, max. — Updating times | 8 The minimum value of the undate time also depends on communication |
| — Opdating times | The minimum value of the update time also depends on communication share set for PROFINET IO, on the number of IO devices, and on the quantity of configured user data |
| Update time for IRT | |
| — for send cycle of 125 µs | 125 µs |
| — for send cycle of 187.5 μs | 187.5 µs |
| — for send cycle of 250 μs | 250 µs to 4 ms |
| — for send cycle of 500 μs | 500 µs to 8 ms |
| — for send cycle of 1 ms | 1 ms to 16 ms |
| — for send cycle of 2 ms | 2 ms to 32 ms |
| — for send cycle of 4 ms | 4 ms to 64 ms |
| — With IRT and parameterization of "odd" send | Update time = set "odd" send clock (any multiple of 125 μ s: 375 μ s, 625 |
| cycles Update time for RT | μs 3 875 μs) |
| — for send cycle of 250 µs | 250 µs to 128 ms |
| — for send cycle of 500 µs | 500 µs to 256 ms |
| — for send cycle of 1 ms | 1 ms to 512 ms |
| — for send cycle of 2 ms | 2 ms to 512 ms |
| — for send cycle of 4 ms | 4 ms to 512 ms |
| PROFINET IO Device | |
| Services | |
| — PG/OP communication | Yes |
| — Isochronous mode | No |
| — IRT | Yes; Minimum send cycle of 250 µs |
| — PROFlenergy | Yes; per user program |
| — Shared device | Yes |
| — Number of IO Controllers with shared device, | 4 |
| max. | |
| activation/deactivation of I-devices | Yes; per user program |
| — Asset management record | Yes; per user program |
| 2. Interface | |
| Interface types | |
| RJ 45 (Ethernet) | Yes; X2 |
| Number of ports | 1 |
| integrated switch | No |
| Protocols | |
| IP protocol | Yes; IPv4 |
| PROFINET IO Controller | Yes |
| PROFINET IO Device | Yes |
| SIMATIC communication | Yes |
| Open IE communication | Yes; Optionally also encrypted |
| Web server | Yes |
| Media redundancy | No |

| PROFINET IO Controller | |
|---|--|
| Services | |
| — PG/OP communication | Yes |
| — Isochronous mode | No |
| — Direct data exchange | No |
| — IRT | No |
| — PROFlenergy | Yes; per user program |
| — Prioritized startup | No |
| — Number of connectable IO Devices, max. | 128; In total, up to 1 000 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFINET |
| — Number of connectable IO Devices for RT, max. | 128 |
| — of which in line, max. | 128 |
| - Number of IO Devices that can be | 8; in total across all interfaces |
| simultaneously activated/deactivated, max. | |
| — Number of IO Devices per tool, max. | 8 |
| — Updating times | The minimum value of the update time also depends on communication share set for PROFINET IO, on the number of IO devices, and on the quantity of configured user data |
| Update time for RT | |
| — for send cycle of 1 ms | 1 ms to 512 ms |
| PROFINET IO Device | |
| Services | |
| — PG/OP communication | Yes |
| — Isochronous mode | No |
| — IRT | No |
| — PROFlenergy | Yes; per user program |
| — Prioritized startup | No |
| — Shared device | Yes |
| — Number of IO Controllers with shared device, | 4 |
| max. | 7 |
| activation/deactivation of I-devices | Yes; per user program |
| — Asset management record | Yes; per user program |
| - | |
| 2 Interface | |
| 3. Interface | |
| Interface types | Voc: X2 |
| Interface types • RJ 45 (Ethernet) | Yes; X3 |
| Interface types • RJ 45 (Ethernet) • Number of ports | 1 |
| Interface types • RJ 45 (Ethernet) • Number of ports • integrated switch | |
| Interface types • RJ 45 (Ethernet) • Number of ports • integrated switch Protocols | 1 No |
| Interface types • RJ 45 (Ethernet) • Number of ports • integrated switch Protocols • IP protocol | 1 No Yes; IPv4 |
| Interface types • RJ 45 (Ethernet) • Number of ports • integrated switch Protocols • IP protocol • PROFINET IO Controller | 1 No Yes; IPv4 No |
| Interface types • RJ 45 (Ethernet) • Number of ports • integrated switch Protocols • IP protocol • PROFINET IO Controller • PROFINET IO Device | 1 No Yes; IPv4 No No |
| Interface types • RJ 45 (Ethernet) • Number of ports • integrated switch Protocols • IP protocol • PROFINET IO Controller • PROFINET IO Device • SIMATIC communication | 1 No Yes; IPv4 No No Yes |
| Interface types • RJ 45 (Ethernet) • Number of ports • integrated switch Protocols • IP protocol • PROFINET IO Controller • PROFINET IO Device • SIMATIC communication • Open IE communication | 1 No Yes; IPv4 No No Yes Yes |
| Interface types • RJ 45 (Ethernet) • Number of ports • integrated switch Protocols • IP protocol • PROFINET IO Controller • PROFINET IO Device • SIMATIC communication | 1 No Yes; IPv4 No No Yes |
| Interface types • RJ 45 (Ethernet) • Number of ports • integrated switch Protocols • IP protocol • PROFINET IO Controller • PROFINET IO Device • SIMATIC communication • Open IE communication | 1 No Yes; IPv4 No No Yes Yes |
| Interface types • RJ 45 (Ethernet) • Number of ports • integrated switch Protocols • IP protocol • PROFINET IO Controller • PROFINET IO Device • SIMATIC communication • Open IE communication • Web server | 1 No Yes; IPv4 No No Yes Yes |
| Interface types • RJ 45 (Ethernet) • Number of ports • integrated switch Protocols • IP protocol • PROFINET IO Controller • PROFINET IO Device • SIMATIC communication • Open IE communication • Web server 4. Interface | 1 No Yes; IPv4 No No Yes Yes |
| Interface types • RJ 45 (Ethernet) • Number of ports • integrated switch Protocols • IP protocol • PROFINET IO Controller • PROFINET IO Device • SIMATIC communication • Open IE communication • Web server 4. Interface Interface types | 1 No Yes; IPv4 No No Yes Yes Yes |
| Interface types • RJ 45 (Ethernet) • Number of ports • integrated switch Protocols • IP protocol • PROFINET IO Controller • PROFINET IO Device • SIMATIC communication • Open IE communication • Web server 4. Interface Interface types • RS 485 | 1 No Yes; IPv4 No No Yes Yes Yes Yes Yes |
| Interface types • RJ 45 (Ethernet) • Number of ports • integrated switch Protocols • IP protocol • PROFINET IO Controller • PROFINET IO Device • SIMATIC communication • Open IE communication • Web server 4. Interface Interface types • RS 485 • Number of ports | 1 No Yes; IPv4 No No Yes Yes Yes Yes |
| Interface types • RJ 45 (Ethernet) • Number of ports • integrated switch Protocols • IP protocol • PROFINET IO Controller • PROFINET IO Device • SIMATIC communication • Open IE communication • Web server 4. Interface Interface types • RS 485 • Number of ports Protocols • PROFIBUS DP master | 1 No Yes; IPv4 No No Yes Yes Yes Yes Yes |
| Interface types • RJ 45 (Ethernet) • Number of ports • integrated switch Protocols • IP protocol • PROFINET IO Controller • PROFINET IO Device • SIMATIC communication • Open IE communication • Web server 4. Interface Interface types • RS 485 • Number of ports Protocols • PROFIBUS DP master • PROFIBUS DP slave | 1 No Yes; IPv4 No No Yes Yes Yes Yes Yes X4 1 |
| Interface types • RJ 45 (Ethernet) • Number of ports • integrated switch Protocols • IP protocol • PROFINET IO Controller • PROFINET IO Device • SIMATIC communication • Open IE communication • Web server 4. Interface Interface types • RS 485 • Number of ports Protocols • PROFIBUS DP master • PROFIBUS DP slave • SIMATIC communication | 1 No Yes; IPv4 No No Yes Yes Yes Yes Yes |
| Interface types • RJ 45 (Ethernet) • Number of ports • integrated switch Protocols • IP protocol • PROFINET IO Controller • PROFINET IO Device • SIMATIC communication • Open IE communication • Web server 4. Interface Interface types • RS 485 • Number of ports Protocols • PROFIBUS DP master • PROFIBUS DP slave • SIMATIC communication PROFIBUS DP master | 1 No Yes; IPv4 No No Yes Yes Yes Yes Yes Yes |
| Interface types • RJ 45 (Ethernet) • Number of ports • integrated switch Protocols • IP protocol • PROFINET IO Controller • PROFINET IO Device • SIMATIC communication • Open IE communication • Web server 4. Interface Interface types • RS 485 • Number of ports Protocols • PROFIBUS DP master • PROFIBUS DP slave • SIMATIC communication | 1 No Yes; IPv4 No No Yes Yes Yes Yes Yes X4 1 |
| Interface types • RJ 45 (Ethernet) • Number of ports • integrated switch Protocols • IP protocol • PROFINET IO Controller • PROFINET IO Device • SIMATIC communication • Open IE communication • Web server 4. Interface Interface types • RS 485 • Number of ports Protocols • PROFIBUS DP master • PROFIBUS DP slave • SIMATIC communication PROFIBUS DP master • Number of connections, max. | 1 No Yes; IPv4 No No Yes Yes Yes Yes Yes Yes Yes Yes No Yes No Yes No Yes No Yes No Yes Solution Yes No |
| Interface types • RJ 45 (Ethernet) • Number of ports • integrated switch Protocols • IP protocol • PROFINET IO Controller • PROFINET IO Device • SIMATIC communication • Open IE communication • Web server 4. Interface Interface types • RS 485 • Number of ports Protocols • PROFIBUS DP master • PROFIBUS DP slave • SIMATIC communication PROFIBUS DP master • Number of connections, max. • Number of DP slaves, max. Services | 1 No Yes; IPv4 No No Yes Yes Yes Yes Yes Yes 48; for the integrated PROFIBUS DP interface 125; In total, up to 1 000 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFINET |
| Interface types • RJ 45 (Ethernet) • Number of ports • integrated switch Protocols • IP protocol • PROFINET IO Controller • PROFINET IO Device • SIMATIC communication • Open IE communication • Web server 4. Interface Interface types • RS 485 • Number of ports Protocols • PROFIBUS DP master • PROFIBUS DP master • PROFIBUS DP slave • SIMATIC communication PROFIBUS DP master • Number of connections, max. • Number of DP slaves, max. • Number of DP slaves, max. | 1 No Yes; IPv4 No No Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes |
| Interface types • RJ 45 (Ethernet) • Number of ports • integrated switch Protocols • IP protocol • PROFINET IO Controller • PROFINET IO Device • SIMATIC communication • Open IE communication • Web server 4. Interface Interface types • RS 485 • Number of ports Protocols • PROFIBUS DP master • PROFIBUS DP master • PROFIBUS DP slave • SIMATIC communication PROFIBUS DP master • Number of connections, max. • Number of DP slaves, max. • Number of DP slaves, max. • Number of DP slaves, max. | 1 No Yes; IPv4 No No Yes Yes Yes Yes Yes Yes Yes No Yes No Yes A8; for the integrated PROFIBUS DP interface 48; for the integrated PROFIBUS DP interface 125; In total, up to 1 000 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFINET |
| Interface types • RJ 45 (Ethernet) • Number of ports • integrated switch Protocols • IP protocol • PROFINET IO Controller • PROFINET IO Device • SIMATIC communication • Open IE communication • Web server 4. Interface Interface types • RS 485 • Number of ports Protocols • PROFIBUS DP master • PROFIBUS DP master • PROFIBUS DP slave • SIMATIC communication PROFIBUS DP master • Number of connections, max. • Number of DP slaves, max. • Number of DP slaves, max. • Number of DP slaves, max. • Connections, max. • Definition of the slaves, max. • Connections, max. • Number of DP slaves, max. • Number of DP slaves, max. • Services • PG/OP communication • Equidistance • Isochronous mode | 1 No Yes; IPv4 No No Yes Yes Yes Yes Yes Yes A So Yes Yes No Yes A So Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes |
| Interface types • RJ 45 (Ethernet) • Number of ports • integrated switch Protocols • IP protocol • PROFINET IO Controller • PROFINET IO Device • SIMATIC communication • Open IE communication • Web server 4. Interface Interface types • RS 485 • Number of ports Protocols • PROFIBUS DP master • PROFIBUS DP master • PROFIBUS DP slave • SIMATIC communication PROFIBUS DP master • Number of connections, max. • Number of DP slaves, max. • Number of DP slaves, max. • Number of DP slaves, max. | 1 No Yes; IPv4 No No Yes Yes Yes Yes Yes Yes Yes No Yes A8; for the integrated PROFIBUS DP interface 48; for the integrated PROFIBUS DP interface 125; In total, up to 1 000 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFINET |
| Interface types • RJ 45 (Ethernet) • Number of ports • integrated switch Protocols • IP protocol • PROFINET IO Controller • PROFINET IO Device • SIMATIC communication • Open IE communication • Web server 4. Interface Interface types • RS 485 • Number of ports Protocols • PROFIBUS DP master • PROFIBUS DP master • PROFIBUS DP slave • SIMATIC communication PROFIBUS DP master • Number of connections, max. • Number of DP slaves, max. • Number of DP slaves, max. • Number of DP slaves, max. • Connections, max. • Definition of the slaves, max. • Connections, max. • Number of DP slaves, max. • Number of DP slaves, max. • Services • PG/OP communication • Equidistance • Isochronous mode | 1 No Yes; IPv4 No No Yes Yes Yes Yes Yes Yes A As; for the integrated PROFIBUS DP interface 125; In total, up to 1 000 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFINET |

| • 100 Mbps | Yes |
|---|--|
| • 100 Mbps | Yes; Only possible at the X3 interface of the CPU 1518 |
| Autonegotiation | Yes |
| Autoregoliation Autoregoliation | Yes |
| Industrial Ethernet status LED | Yes |
| RS 485 | 100 |
| Transmission rate, max. | 12 Mbit/s |
| Protocols | |
| PROFIsafe | No |
| Number of connections | |
| Number of connections, max. | 384; via integrated interfaces of the CPU and connected CPs / CMs |
| Number of connections reserved for ES/HMI/web | 10 |
| Number of connections via integrated interfaces | 320 |
| Number of S7 routing paths | 64; in total, only 16 S7-Routing connections are supported via |
| | PROFIBUS |
| Redundancy mode | |
| H-Sync forwarding | Yes |
| Media redundancy | |
| — Media redundancy | only via 1st interface (X1) |
| — MRP | Yes; MRP Automanager according to IEC 62439-2 Edition 2.0, MRP Manager; MRP Client |
| - MRP interconnection, supported | Yes; as MRP ring node according to IEC 62439-2 Edition 3.0 |
| — MRPD | Yes; Requirement: IRT |
| — Switchover time on line break, typ. | 200 ms; For MRP, bumpless for MRPD |
| — Number of stations in the ring, max. | 50 |
| SIMATIC communication | |
| PG/OP communication | Yes; encryption with TLS V1.3 pre-selected |
| S7 routing | Yes |
| Data record routing | Yes |
| S7 communication, as server | Yes |
| S7 communication, as client | Yes |
| User data per job, max. | See online help (S7 communication, user data size) |
| Open IE communication | |
| • TCP/IP | Yes |
| — Data length, max. | 64 kbyte |
| — several passive connections per port, | Yes |
| supported | N . |
| ISO-on-TCP (RFC1006) | Yes |
| — Data length, max. ● UDP | 64 kbyte Yes |
| | |
| — Data length, max. — UDP multicast | 2 kbyte; 1 472 bytes for UDP broadcast Yes; 128 multicast circuits (of which max. 5 via X1) |
| ODF multicast ODF DHCP | Yes |
| • DNS | Yes |
| • SNMP | Yes |
| • DCP | Yes |
| • LLDP | Yes |
| Encryption | Yes; Optional |
| Web server | |
| • HTTP | Yes; Standard and user pages |
| • HTTPS | Yes; Standard and user pages |
| OPC UA | |
| Runtime license required | Yes; "Large" license required |
| OPC UA Client | Yes |
| Application authentication | Yes |
| — Security policies | Available security policies: None, Basic128Rsa15, Basic256Rsa15, Basic256Sha256 |
| — User authentication | "anonymous" or by user name & password |
| — Number of connections, max. | 40 |
| number of nodes of the client interfaces, | 5 000 |
| recommended max. | 000 |
| — Number of elements for one call of OPC_UA_NodeGetHandleList/OPC_UA_ReadList/C | 300 |
| max. | |
| — Number of elements for one call of | 20 |
| | |

| OPC_UA_NameSpaceGetIndexList, max. | |
|--|--|
| — Number of elements for one call of | 100 |
| OPC_UA_MethodGetHandleList, max. | |
| number of simultaneous calls of the client instructions for session management, per | 1 |
| connection, max. — number of simultaneous calls of the client | 5 |
| instructions for data access, per connection, max. | F 000 |
| — Number of registerable nodes, max. — Number of registerable method calls of | 5 000 100 |
| OPC_UA_MethodCall, max. | |
| — Number of inputs/outputs when calling OPC_UA_MethodCall, max. | 20 |
| OPC UA Server | Yes; Data access (read, write, subscribe), method call, custom address |
| | space |
| Application authentication | Yes |
| — Security policies | Available security policies: None, Basic128Rsa15, Basic256Rsa15, Basic256Sha256 |
| — User authentication | "anonymous" or by user name & password |
| — GDS support (certificate management) | Yes |
| - Number of sessions, max. | 64 |
| Number of accessible variables, max. | 200 000 |
| Number of registerable nodes, max. | 50 000 |
| Number of subscriptions per session, max. | 20 |
| — Sampling interval, min. | 10 ms |
| — Publishing interval, min. | 10 ms |
| Number of server methods, max. | 100 |
| — Number of inputs/outputs per server method, max. | 20 |
| — number of monitored items, recommended max. | 10 000; for 1 s sampling interval and 1 s send interval |
| — Number of server interfaces, max. | 10 of each "Server interfaces" / "Companion specification" type and 20 of the type "Reference namespace" |
| — Number of nodes for user-defined server | 30 000 |
| interfaces, max. | |
| | |
| Alarms and Conditions | Yes |
| Alarms and Conditions — Number of program alarms | Yes 400 |
| | |
| — Number of program alarms — Number of alarms for system diagnostics Further protocols | 400 |
| — Number of program alarms — Number of alarms for system diagnostics Further protocols MODBUS | 400 |
| — Number of program alarms — Number of alarms for system diagnostics Further protocols | 400 200 |
| — Number of program alarms — Number of alarms for system diagnostics Further protocols MODBUS | 400 200 |
| Number of program alarms Number of alarms for system diagnostics Further protocols MODBUS Isochronous mode | 400 200 Yes; MODBUS TCP |
| Number of program alarms Number of alarms for system diagnostics Further protocols MODBUS Isochronous mode Equidistance | 400 200 Yes; MODBUS TCP |
| Number of program alarms Number of alarms for system diagnostics Further protocols MODBUS Isochronous mode Equidistance S7 message functions | 400 200 Yes; MODBUS TCP Yes |
| Number of program alarms Number of alarms for system diagnostics Further protocols MODBUS Isochronous mode Equidistance S7 message functions Number of login stations for message functions, max. | 400 200 Yes; MODBUS TCP Yes 64 |
| Number of program alarms Number of alarms for system diagnostics Further protocols MODBUS Isochronous mode Equidistance S7 message functions Number of login stations for message functions, max. Program alarms | 400 200 Yes; MODBUS TCP Yes 64 Yes 10 000; Program messages are generated by the "Program_Alarm" |
| Number of program alarms Number of alarms for system diagnostics Further protocols MODBUS Isochronous mode Equidistance S7 message functions Number of login stations for message functions, max. Program alarms Number of configurable program messages, max. | 400 200 Yes; MODBUS TCP Yes 64 Yes 10 000; Program messages are generated by the "Program_Alarm" block, ProDiag or GRAPH |
| Number of program alarms Number of alarms for system diagnostics Further protocols MODBUS Isochronous mode Equidistance S7 message functions Number of login stations for message functions, max. Program alarms Number of configurable program messages, max. Number of loadable program messages in RUN, max. | 400 200 Yes; MODBUS TCP Yes 64 Yes 10 000; Program messages are generated by the "Program_Alarm" block, ProDiag or GRAPH |
| Number of program alarms Number of alarms for system diagnostics Further protocols MODBUS Isochronous mode Equidistance S7 message functions Number of login stations for message functions, max. Program alarms Number of configurable program messages, max. Number of loadable program messages in RUN, max. Number of simultaneously active program alarms Number of program alarms Number of program alarms Number of program alarms Number of program alarms | 400 200 Yes; MODBUS TCP Yes 64 Yes 10 000; Program messages are generated by the "Program_Alarm" block, ProDiag or GRAPH 5 000 |
| Number of program alarms Number of alarms for system diagnostics Further protocols MODBUS Isochronous mode Equidistance S7 message functions Number of login stations for message functions, max. Program alarms Number of configurable program messages, max. Number of loadable program messages in RUN, max. Number of simultaneously active program alarms Number of program alarms Number of program alarms | 400 200 Yes; MODBUS TCP Yes 64 Yes 10 000; Program messages are generated by the "Program_Alarm" block, ProDiag or GRAPH 5 000 4 000 |
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| Number of program alarms Number of alarms for system diagnostics Further protocols MODBUS Isochronous mode Equidistance S7 message functions Number of login stations for message functions, max. Program alarms Number of configurable program messages, max. Number of loadable program messages in RUN, max. Number of simultaneously active program alarms Number of program alarms Number of alarms for system diagnostics Number of alarms for motion technology objects Test commission (Team Engineering) | 400 200 Yes; MODBUS TCP Yes 64 Yes 10 000; Program messages are generated by the "Program_Alarm" block, ProDiag or GRAPH 5 000 4 000 1 000 480 |
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| Number of program alarms Number of alarms for system diagnostics Further protocols MODBUS Isochronous mode Equidistance S7 message functions Number of login stations for message functions, max. Program alarms Number of configurable program messages, max. Number of loadable program messages in RUN, max. Number of simultaneously active program alarms Number of program alarms Number of alarms for system diagnostics Number of alarms for motion technology objects Test commission (Team Engineering) Status block Single step | 400 200 Yes; MODBUS TCP Yes 64 Yes 10 000; Program messages are generated by the "Program_Alarm" block, ProDiag or GRAPH 5 000 4 000 1 000 4 80 Yes; Parallel online access possible for up to 10 engineering systems Yes; Up to 16 simultaneously (in total across all ES clients) No |
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| Diagnostic buffer | |
|--|--|
| • present | Yes |
| • Number of entries, max. | 3 200 |
| — of which powerfail-proof | 1 000 |
| Traces | |
| Number of configurable Traces | 8; Up to 512 KB of data per trace are possible |
| Interrupts/diagnostics/status information | |
| Diagnostics indication LED | |
| RUN/STOP LED | Yes |
| ERROR LED | Yes |
| MAINT LED | Yes |
| Connection display LINK TX/RX | Yes |
| Supported technology objects | |
| Motion Control | Yes; Note: The number of technology objects affects the cycle time of |
| Number of available Motion Control resources for technology objects | the PLC program; selection guide via the TIA Selection Tool 15 360 |
| Required Motion Control resources | |
| — per speed-controlled axis | 40 |
| — per positioning axis | 80 |
| — per synchronous axis | 160 |
| — per external encoder | 80 |
| — per output cam — per cam track | 20 160 |
| — per probe | 40 |
| Positioning axis | |
| Number of positioning axes at motion control cycle of 4 ms (typical value) | 140 |
| Number of positioning axes at motion control cycle of 8 ms (typical value) | 192 |
| Controller | |
| PID_Compact | Yes; Universal PID controller with integrated optimization |
| PID_3Step | Yes; PID controller with integrated optimization for valves |
| • PID-Temp | Yes; PID controller with integrated optimization for temperature |
| Counting and measuring | Mar |
| High-speed counter | Yes |
| Ambient conditions | |
| Ambient temperature during operation horizontal installation, min. | 0 °C |
| horizontal installation, max. | 60 °C; Display: 50 °C, at an operating temperature of typically 50 °C, the |
| vertical installation, min. | display is switched off 0 °C |
| • vertical installation, max. | 40 °C; Display: 40 °C, at an operating temperature of typically 40 °C, the |
| | display is switched off |
| Ambient temperature during storage/transportation | |
| • min. | -40 °C |
| • max. | 70 °C |
| Altitude during operation relating to sea level | E 000 mi Destrictions for installation altitudes (0.000 |
| Installation altitude above sea level, max. | 5 000 m; Restrictions for installation altitudes > 2 000 m, see manual |
| configuration / header | |
| configuration / programming / header | |
| Programming language | Vec |
| — LAD — FBD | Yes Yes |
| — FBD — STL | Yes |
| — STL — SCL | Yes |
| — GRAPH | Yes |
| Know-how protection | |
| User program protection/password protection | Yes |
| Copy protection | Yes |
| Block protection | Yes |
| Access protection | |
| protection of confidential configuration data | Yes |
| Password for display | Yes |
| | |

| Protection level: Write protection | Yes |
|---|-------------------------------|
| Protection level: Read/write protection | Yes |
| Protection level: Complete protection | Yes |
| programming / cycle time monitoring / header | |
| lower limit | adjustable minimum cycle time |
| upper limit | adjustable maximum cycle time |
| Open Development interfaces | |
| Size of ODK SO file, max. | 9.8 Mbyte |
| Dimensions | |
| Width | 175 mm |
| Height | 147 mm |
| Depth | 129 mm |
| Weights | |
| Weight, approx. | 1 988 g |