

SIMATIC S7-1500H, CPU 1518HF-4 PN, central processing unit with 18 MB work memory for program and 150 MB for data, 1st interface: PROFINET RT with 2-port switch, 2nd interface: PROFINET with 2-port switch, 3rd interface: PROFINET, 4th/5th interface: H-SYNC, SIMATIC Memory Card required



| General information | |
|--|-----------------------|
| Product type designation | CPU 1518HF-4 PN |
| HW functional status | FS01 |
| Firmware version | V4.0 |
| <ul style="list-style-type: none"> FW update possible | Yes |
| Product function | |
| <ul style="list-style-type: none"> I&M data | Yes; I&M0 to I&M3 |
| <ul style="list-style-type: none"> Isochronous mode | No |
| <ul style="list-style-type: none"> SysLog | Yes |
| Engineering with | |
| <ul style="list-style-type: none"> STEP 7 TIA Portal configurable/integrated from version | V20 (FW V4.0) |
| Redundancy | |
| <ul style="list-style-type: none"> stand-alone operation | No |
| Display | |
| Screen diagonal [cm] | 6.1 cm |
| Control elements | |
| Number of keys | 8 |
| Mode buttons | 2 |
| 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 | |
| <ul style="list-style-type: none"> Mains/voltage failure stored energy time | 5 ms |
| <ul style="list-style-type: none"> Repeat rate, min. | 1/s |
| Input current | |
| Current consumption (rated value) | 1.4 A |
| Current consumption, max. | 1.9 A |
| Inrush current, max. | 1.9 A; Rated value |
| I^2t | 0.5 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. | 22 W |
| Memory | |
| Number of slots for SIMATIC memory card | 1 |
| SIMATIC memory card required | Yes |
| Work memory | |

| | |
|---|---|
| <ul style="list-style-type: none"> integrated (for program) | 18 Mbyte |
| <ul style="list-style-type: none"> integrated (for data) | 150 Mbyte |
| Load memory | |
| <ul style="list-style-type: none"> Plug-in (SIMATIC Memory Card), max. | 32 Gbyte |
| Backup | |
| <ul style="list-style-type: none"> maintenance-free | Yes |
| CPU processing times | |
| for bit operations, typ. | 1 ns |
| for word operations, typ. | 2 ns |
| for fixed point arithmetic, typ. | 2 ns |
| for floating point arithmetic, typ. | 8 ns |
| CPU-blocks | |
| Number of elements (total) | 40 000; Blocks (OB, FB, FC, DB) and UDTs |
| DB | |
| <ul style="list-style-type: none"> Number range | 1 ... 60 999; subdivided into: number range that can be used by the user: 1 ... 59 999, and number range of DBs created via SFC 86: 60 000 ... 60 999 |
| <ul style="list-style-type: none"> Size, max. | 16 Mbyte; For DBs with absolute addressing, the max. size is 64 KB |
| FB | |
| <ul style="list-style-type: none"> Number range | 0 ... 65 535 |
| <ul style="list-style-type: none"> Size, max. | 1 Mbyte |
| FC | |
| <ul style="list-style-type: none"> Number range | 0 ... 65 535 |
| <ul style="list-style-type: none"> Size, max. | 1 Mbyte |
| OB | |
| <ul style="list-style-type: none"> Size, max. | 1 Mbyte |
| <ul style="list-style-type: none"> Number of free cycle OBs | 100 |
| <ul style="list-style-type: none"> Number of time alarm OBs | 20 |
| <ul style="list-style-type: none"> Number of delay alarm OBs | 20 |
| <ul style="list-style-type: none"> Number of cyclic interrupt OBs | 20; with minimum OB 3x cycle of 1 ms |
| <ul style="list-style-type: none"> Number of process alarm OBs | 50 |
| <ul style="list-style-type: none"> Number of DPV1 alarm OBs | 3 |
| <ul style="list-style-type: none"> Number of startup OBs | 100 |
| <ul style="list-style-type: none"> Number of asynchronous error OBs | 4 |
| <ul style="list-style-type: none"> Number of synchronous error OBs | 2 |
| <ul style="list-style-type: none"> Number of diagnostic alarm OBs | 1 |
| Nesting depth | |
| <ul style="list-style-type: none"> per priority class | 24; Up to 8 possible for F-blocks |
| Counters, timers and their retentivity | |
| S7 counter | |
| <ul style="list-style-type: none"> Number | 2 048 |
| Retentivity | |
| — adjustable | Yes |
| IEC counter | |
| <ul style="list-style-type: none"> Number | Any (only limited by the main memory) |
| Retentivity | |
| — adjustable | Yes |
| S7 times | |
| <ul style="list-style-type: none"> Number | 2 048 |
| Retentivity | |
| — adjustable | Yes |
| IEC timer | |
| <ul style="list-style-type: none"> Number | Any (only limited by the main memory) |
| Retentivity | |
| — adjustable | Yes |
| Data areas and their retentivity | |
| Retentive data area (incl. timers, counters, flags), max. | 5 Mbyte; in total; available retentive memory for bit memories, timers, counters, DBs, and technology data: 4.5 MB |
| Extended retentive data area (incl. timers, counters, flags), max. | 100 Mbyte; When using PS 6 0W 24/48/60 V DC HF |
| Flag | |
| <ul style="list-style-type: none"> Size, max. | 16 kbyte |
| <ul style="list-style-type: none"> Number of clock memories | 8; 8 clock memory bit, grouped into one clock memory byte |

| | |
|--|--|
| Data blocks | |
| • 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 | 8 192; 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) | 16 kbyte |
| — Outputs (volume) | 16 kbyte |
| Subprocess images | |
| • Number of subprocess images, max. | 31 |
| 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, but also by the connection of I/O via IE/PB-Links. |
| Number of IO Controllers | |
| • integrated | 1 |
| Rack | |
| • Modules per rack, max. | 9; CPU + 2 PS + 6 CP |
| 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 | |
| • Number | 16 |
| Clock synchronization | |
| • supported | Yes |
| • on Ethernet via NTP | Yes |
| Interfaces | |
| Number of PROFINET interfaces | 3 |
| 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 |
| • PROFINET IO Device | No |
| • SIMATIC communication | Yes; Only Server |
| • Open IE communication | Yes; Optionally also encrypted |
| • Web server | Yes |
| • Media redundancy | Yes |
| PROFINET IO Controller | |
| Services | |
| — Isochronous mode | No |
| — IRT | No |
| — PROFinergy | Yes; per user program |
| — Number of connectable IO Devices, max. | 256 |
| — 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 |
| — PROFINET Security Class | 1 |
| Update time for RT | |
| — for send cycle of 1 ms | 1 ms to 512 ms |
| 2. Interface | |
| Interface types | |

| | |
|---|---|
| <ul style="list-style-type: none"> • RJ 45 (Ethernet) | Yes; X2 |
| <ul style="list-style-type: none"> • Number of ports | 2 |
| <ul style="list-style-type: none"> • integrated switch | Yes |
| Protocols | |
| <ul style="list-style-type: none"> • IP protocol | Yes; IPv4 |
| <ul style="list-style-type: none"> • PROFINET IO Controller | No |
| <ul style="list-style-type: none"> • PROFINET IO Device | No |
| <ul style="list-style-type: none"> • SIMATIC communication | Yes; Only Server |
| <ul style="list-style-type: none"> • Open IE communication | Yes; Optionally also encrypted |
| <ul style="list-style-type: none"> • Web server | Yes |
| <ul style="list-style-type: none"> • Media redundancy | No |
| 3. Interface | |
| Interface types | |
| <ul style="list-style-type: none"> • RJ 45 (Ethernet) | Yes; X3 |
| <ul style="list-style-type: none"> • Number of ports | 1 |
| <ul style="list-style-type: none"> • integrated switch | No |
| Protocols | |
| <ul style="list-style-type: none"> • IP protocol | Yes; IPv4 |
| <ul style="list-style-type: none"> • SIMATIC communication | Yes; Only Server |
| <ul style="list-style-type: none"> • Open IE communication | Yes; Optionally also encrypted |
| <ul style="list-style-type: none"> • Web server | Yes |
| 4. Interface | |
| Interface type | Pluggable synchronization submodule (FO) |
| Plug-in interface modules | Synchronization module 6ES7960-1CB00-0AA5, 6ES7960-1FB00-0AA5 or 6ES7960-1FE00-0AA5 |
| 5. Interface | |
| Interface type | Pluggable synchronization submodule (FO) |
| Plug-in interface modules | Synchronization module 6ES7960-1CB00-0AA5, 6ES7960-1FB00-0AA5 or 6ES7960-1FE00-0AA5 |
| Interface types | |
| RJ 45 (Ethernet) | |
| <ul style="list-style-type: none"> • 100 Mbps | Yes |
| <ul style="list-style-type: none"> • 1000 Mbps | Yes; Only possible at the X3 interface of the CPU 1518 |
| <ul style="list-style-type: none"> • Autonegotiation | Yes |
| <ul style="list-style-type: none"> • Autocrossing | Yes |
| <ul style="list-style-type: none"> • Industrial Ethernet status LED | Yes |
| Protocols | |
| PROFIsafe | Yes; V2.4 / V2.6 |
| Number of connections | |
| <ul style="list-style-type: none"> • Number of connections, max. | 384; via integrated interfaces of the CPU and connected CPs |
| <ul style="list-style-type: none"> • Number of connections reserved for ES/HMI/web | 10 |
| <ul style="list-style-type: none"> • Number of connections via integrated interfaces | 320 |
| <ul style="list-style-type: none"> • Number of S7 routing paths | 64 |
| Redundancy mode | |
| <ul style="list-style-type: none"> • PROFINET system redundancy (S2) | Yes |
| <ul style="list-style-type: none"> • PROFINET system redundancy (R1) | Yes |
| Media redundancy | |
| — Media redundancy | Yes; only via 1st interface (X1) |
| — MRP | Yes; MRP Automanager according to IEC 62439-2 Edition 2.0 |
| — MRP interconnection, supported | Yes; as MRP ring node according to IEC 62439-2 Edition 3.0 |
| — MRPD | No |
| — Switchover time on line break, typ. | 200 ms; PROFINET MRP |
| — Number of stations in the ring, max. | 50 |
| SIMATIC communication | |
| <ul style="list-style-type: none"> • PG/OP communication | Yes; encryption with TLS V1.3 pre-selected |
| <ul style="list-style-type: none"> • S7 routing | Yes |
| <ul style="list-style-type: none"> • S7 communication, as server | Yes |
| <ul style="list-style-type: none"> • S7 communication, as client | No |
| Open IE communication | |
| <ul style="list-style-type: none"> • TCP/IP | Yes |
| — Data length, max. | 64 kbyte |

| | |
|--|--|
| — several passive connections per port, supported | Yes |
| • ISO-on-TCP (RFC1006) | Yes |
| — Data length, max. | 64 kbyte |
| • UDP | Yes |
| — Data length, max. | 2 kbyte; 1 472 bytes for UDP broadcast |
| — UDP multicast | Yes; max. 128 multicast circuits |
| • DHCP | No |
| • DNS | Yes |
| • SNMP | Yes |
| • DCP | Yes |
| • LLDP | Yes |
| • Encryption | Yes; Optional |
| Web server | |
| • HTTP | No |
| • HTTPS | Yes; only via Web API |
| • web API | Yes |
| — Number of sessions, max. | 200 |
| — number of simultaneous HTTP calls, max. | 4 |
| — HTTP request body, max. | 131 072 byte |
| OPC UA | |
| • Runtime license required | Yes; "Large" license required per CPU |
| • OPC UA Client | No |
| • OPC UA Server | Yes; data access (read, write, subscribe), method call, custom address space, role-based access control |
| — Application authentication | Yes |
| — Security policies | available security policies: None, Basic128Rsa15, Basic256Rsa15, Basic256Sha256, Aes128Sha256RsaOaep, Aes256Sha256RsaPss |
| — User authentication | "anonymous" or by user name & password |
| — GDS support (certificate management) | No |
| — Number of sessions, max. | 32 |
| — Number of subscriptions per session, max. | 25 |
| — Sampling interval, min. | 25 ms |
| — Publishing interval, min. | 25 ms |
| — Number of server methods, max. | 100; max. 20 concurrently running jobs each for asynchronous instructions OPC-UA_ServerMethodPre (V1.1) and OPC-UA_ServerMethodPost (V1.1) |
| — Number of inputs/outputs per server method, max. | 20 |
| — Number of monitored items, recommended max. | 25 000; 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 interfaces, max. | 50 000 |
| • Alarms and Conditions | No |
| Further protocols | |
| • MODBUS | Yes; MODBUS TCP |
| S7 message functions | |
| Number of login stations for message functions, max. | 64 |
| number of subscriptions, max. | 750 |
| number of tags/attributes for subscriptions, max. | 120 000 |
| Program alarms | Yes |
| Number of configurable program messages, max. | 20 000; Program messages are generated by the "Program_Alarm" block, ProDiag or GRAPH |
| Number of loadable program messages in RUN, max. | 20 000 |
| Number of simultaneously active program alarms | |
| • Number of program alarms | 4 000 |
| • Number of alarms for system diagnostics | 1 000 |
| Test commissioning functions | |
| Joint commission (Team Engineering) | Yes |
| Status block | Yes; Up to 16 simultaneously |
| Single step | No |
| Number of breakpoints | 20; Breakpoints are only supported in RUN-Solo status |
| Profiling | Yes |
| Status/control | |

| | |
|--|--|
| <ul style="list-style-type: none"> • Status/control variable • Variables | Yes; without fail-safe inputs/outputs, bit memories, DBs, peripheral I/Os (without fail-safe), times, counters |
| <ul style="list-style-type: none"> • Number of variables, max. — of which status variables, max. — of which control variables, max. | 200; per job 200; per job |
| Forcing | |
| <ul style="list-style-type: none"> • Forcing • Forcing, variables • Number of variables, max. | Yes; without fail-safe peripheral inputs/outputs (without fail-safe) 200 |
| Diagnostic buffer | |
| <ul style="list-style-type: none"> • present • Number of entries, max. — of which powerfail-proof | Yes 3 200 1 000 |
| Traces | |
| <ul style="list-style-type: none"> • Number of configurable Traces • Memory size per trace, max. | 8 512 kbyte |
| Interrupts/diagnostics/status information | |
| Diagnostics indication LED | |
| <ul style="list-style-type: none"> • RUN/STOP LED • ERROR LED • MAINT LED • STOP ACTIVE LED • Connection display LINK TX/RX | Yes Yes Yes Yes Yes |
| Supported technology objects | |
| Motion Control | No |
| Controller | |
| <ul style="list-style-type: none"> • PID_Compact • PID_3Step • PID-Temp | Yes; Universal PID controller with integrated optimization Yes; PID controller with integrated optimization for valves Yes; PID controller with integrated optimization for temperature |
| Counting and measuring | Yes |
| Standards, approvals, certificates | |
| Ecological footprint | |
| Global warming potential | |
| — global warming potential, (total) [CO2 eq] | 488 kg |
| — global warming potential, (during production) [CO2 eq] | 78.3 kg |
| — global warming potential, (during operation) [CO2 eq] | 417 kg |
| — global warming potential, (after end of life cycle) [CO2 eq] | -8.21 kg |
| Highest safety class achievable in safety mode | |
| <ul style="list-style-type: none"> • Performance level according to ISO 13849-1 • SIL acc. to IEC 61508 | PLe SIL 3 |
| Probability of failure (for service life of 20 years and repair time of 100 hours) | |
| — Low demand mode: PFDavg in accordance with SIL3 | < 2.00E-05 |
| — High demand/continuous mode: PFH in accordance with SIL3 | < 1.00E-09 |
| product functions / security / header | |
| PROFINET Security Class | 1 |
| signed firmware update | Yes |
| Secure Boot | Yes |
| safely removing data | Yes |
| Ambient conditions | |
| Ambient temperature during operation | |
| <ul style="list-style-type: none"> • horizontal installation, min. • horizontal installation, max. • vertical installation, min. • vertical installation, max. | 0 °C 60 °C; Display: 50 °C, at an operating temperature of typically 50 °C, the display is switched off 0 °C 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 | |
| • 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 | |
| — LAD | Yes; incl. failsafe |
| — FBD | Yes; incl. failsafe |
| — STL | Yes |
| — SCL | Yes |
| — CFC | Yes; either CFC or failsafe functionality |
| — GRAPH | Yes |

Know-how protection

| | |
|---|-----|
| • User program protection/password protection | Yes |
| • Copy protection | No |
| • 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: Write protection for Failsafe | Yes |
| • Protection level: Complete protection | Yes |
| • User administration | Yes; device-wide and centralized |
| • Number of users | 100 |
| • Number of groups | 100 |
| • Number of roles | 50 |

programming / cycle time monitoring / header

| | |
|---------------|-------------------------------|
| • lower limit | adjustable minimum cycle time |
| • upper limit | adjustable maximum cycle time |

Dimensions

| | |
|--------|--------|
| Width | 210 mm |
| Height | 147 mm |
| Depth | 129 mm |

Weights

| | |
|-----------------|---------|
| Weight, approx. | 1 806 g |
|-----------------|---------|

Classifications

| | Version | Classification |
|--------|---------|----------------|
| eClass | 14 | 27-24-22-07 |
| eClass | 12 | 27-24-22-07 |
| eClass | 9.1 | 27-24-22-07 |
| eClass | 9 | 27-24-22-07 |
| eClass | 8 | 27-24-22-07 |
| eClass | 7.1 | 27-24-22-07 |
| eClass | 6 | 27-24-22-07 |
| ETIM | 9 | EC000236 |
| ETIM | 8 | EC000236 |
| ETIM | 7 | EC000236 |

Approvals / Certificates

General Product Approval

[Manufacturer Declaration](#)

[KC](#)



[Miscellaneous](#)



| | | |
|---------------------|-----|--------------------------------|
| General Product Ap- | EMV | For use in hazardous locations |
|---------------------|-----|--------------------------------|

proval



[KC](#)



[CCC-Ex](#)

[FM](#)



For use in hazardous locations

Functional Safety

other

Environment

[Type Examination Certificate](#)



[Miscellaneous](#)

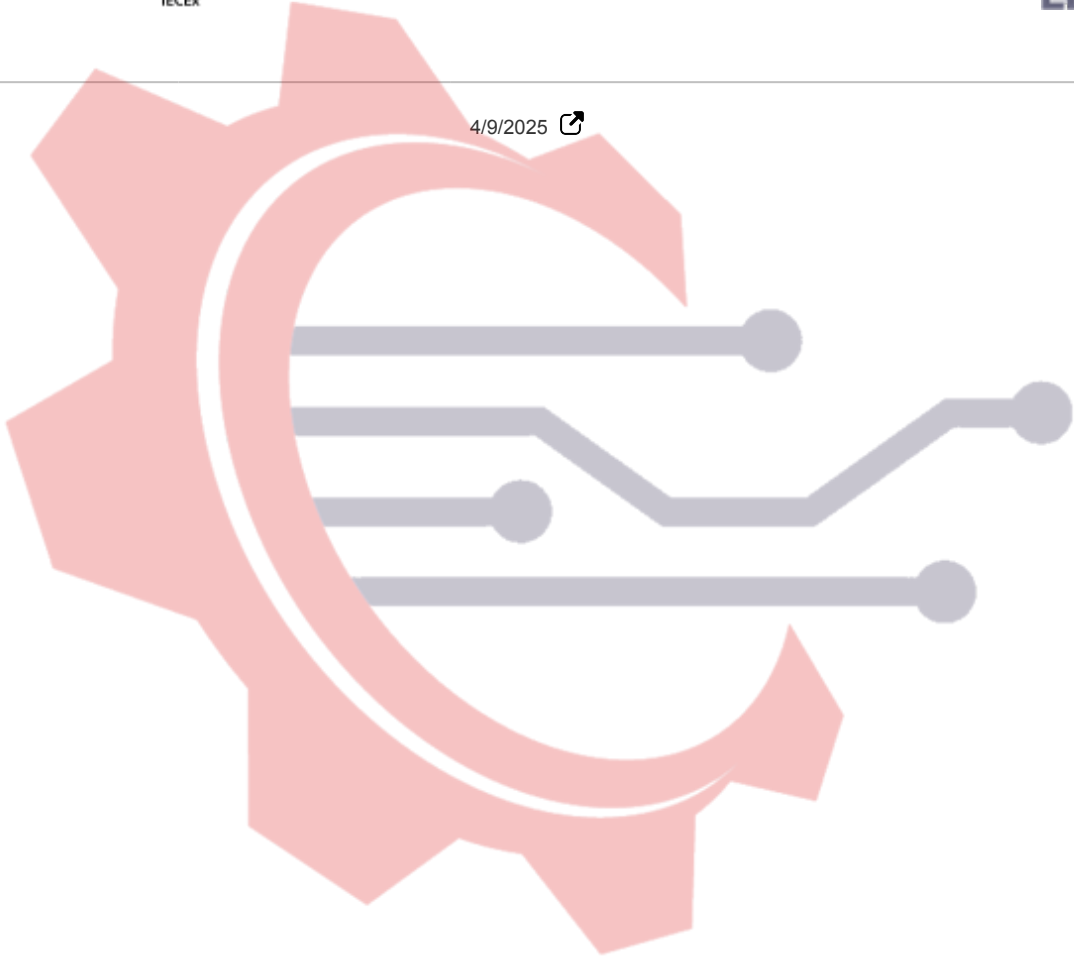
[Type Examination Certificate](#)

[PROFINET](#)



last modified:

4/9/2025



ماکان کنترول