SIEMENS

Data sheet

6ES7511-1FK01-0AB0



*** Spare part *** SIMATIC S7-1500F, CPU 1511F-1 PN, Central processing unit with work memory 225 KB for program and 1 MB for data, 1st interface: PROFINET IRT with 2-port switch, 60 ns bit performance, SIMATIC Memory Card required

| General information | |
|--|--|
| Product type designation | CPU 1511F-1 PN |
| HW functional status | FS03 |
| 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 625 μs (distributed) and 1 ms (central) |
| Engineering with | |
| STEP 7 TIA Portal configurable/integrated from version | V17 (FW V2.9) / V13 SP1 Update 4 (FW V1.8) or higher |
| Configuration control | |
| via dataset | Yes |
| Display | |
| Screen diagonal [cm] | 3.45 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) | 0.7 A |
| Inrush current, max. | 1.9 A; Rated value |
| l²t | 0.02 A ² ·s |
| Power | |
| Infeed power to the backplane bus | 10 W |
| Power consumption from the backplane bus (balanced) | 5.5 W |
| Power loss | |
| Power loss, typ. | 5.7 W |
| Memory | |
| Number of slots for SIMATIC memory card | 1 |
| SIMATIC memory card required | Yes |
| Work memory | |
| integrated (for program) | 225 kbyte |

| integrated (for data) | 1 Mbyte |
|--|---|
| Load memory | T Mbyte |
| Plug-in (SIMATIC Memory Card), max. | 32 Gbyte |
| Backup | 02.005/10 |
| maintenance-free | Yes |
| CPU processing times | |
| for bit operations, typ. | 60 ns |
| for word operations, typ. | 72 ns |
| for fixed point arithmetic, typ. | 96 ns |
| for floating point arithmetic, typ. | 384 ns |
| CPU-blocks | |
| Number of elements (total) | 4 000; Blocks (OB, FB, FC, DB) and UDTs |
| DB | |
| 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 |
| • Size, max. | 1 Mbyte; For DBs with absolute addressing, the max. size is 64 KB |
| FB | |
| Number range | 0 65 535 |
| • Size, max. | 150 kbyte |
| FC | |
| Number range | 0 65 535 |
| • Size, max. | 150 kbyte |
| OB | |
| • Size, max. | 150 kbyte |
| Number of free cycle OBs | 100 |
| Number of time alarm OBs | 20 |
| Number of delay alarm OBs | 20 20: With minimum OD 2: such of 500 up |
| Number of cyclic interrupt OBs | 20; With minimum OB 3x cycle of 500 µs |
| Number of process alarm OBs Number of DPV1 alarm OBs | 50 3 |
| Number of beveralarit Obs Number of isochronous mode OBs | 2 |
| Number of isochronous mode OBs Number of technology synchronous alarm OBs | 2 |
| Number of technology synchronous alarm obs | 100 |
| Number of startup ODS Number of asynchronous error OBs | 4 |
| Number of synchronous error OBs | 2 |
| Number of diagnostic alarm OBs | 1 |
| Nesting depth | · |
| per priority class | 24; Up to 8 possible for F-blocks |
| Counters, timers and their retentivity | a characterization of the second s |
| S7 counter | |
| Number | 2 048 |
| Retentivity | 2010 |
| — 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 |
| Data areas and their retentivity | |
| Retentive data area (incl. timers, counters, flags), max. | 128 kbyte; In total; available retentive memory for bit memories, timers, counters, DBs, and technology data (axes): 88 KB |
| Extended retentive data area (incl. timers, counters, flags), max. | 1 Mbyte; When using PS 6 0W 24/48/60 V DC HF |
| Flag | |
| • Size, max. | 16 kbyte |
| Number of clock memories | 8; 8 clock memory bit, grouped into one clock memory byte |
| | o, o stok momory sk, groupoù into ono olook momory byto |

| 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 | 1 024; 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 | 8 khute |
| — Inputs (volume) — Outputs (volume) | 8 kbyte 8 kbyte |
| 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 | 32; 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 links (e.g. IE/PB-Link) |
| Number of DP masters | |
| ● Via CM | 4; A maximum of 4 CMs/CPs (PROFIBUS, PROFINET, Ethernet) can |
| Number of IO Controllers | be inserted in total |
| Number of IO Controllers integrated | 1 |
| Via CM | 4; A maximum of 4 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 |
| Time of day | |
| Clock | |
| • Туре | 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 |
| • in AS, master | Yes |
| • in AS, slave | Yes |
| on Ethernet via NTP | Yes |
| Interfaces | |
| Number of PROFINET 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, IPV4 Yes |
| PROFINET IO Controller PROFINET IO Device | Yes |
| SIMATIC communication | Yes |
| Open IE communication | Yes; Optionally also encrypted |
| Web server | Yes |
| Media redundancy | Yes; MRP Automanager according to IEC 62439-2 Edition 2.0 |
| 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. | 128; In total, up to 256 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, | 128 |
| max. | |
| — 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 IRT | |
| — for send cycle of 250 μs | 250 µs to 4 ms; Note: In the case of IRT with isochronous mode, the |
| | minimum update time of 625 µs of the isochronous OB is decisive |
| — for send cycle of 500 μs | 500 µs to 8 ms; Note: In the case of IRT with isochronous mode, the |
| | minimum update time of 625 µs of the isochronous OB is decisive |
| — 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 µs: 375 µs, 625 |
| cycles | μs 3 875 μs) |
| Update time for RT | |
| — 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 | N/ |
| — PG/OP communication | Yes |
| — Isochronous mode | No |
| — IRT | Yes |
| — 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 |
| Interface types | |
| RJ 45 (Ethernet) | |
| • 100 Mbps | Yes |
| Autonegotiation | Yes |
| • | |
| Autocrossing | Yes |
| Industrial Ethernet status LED | Yes |
| Protocols | |
| PROFIsafe | Yes; V2.4 / V2.6 |
| Number of connections | |
| Number of connections, max. | 96; 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 | 64 |
| | |
| Number of S7 routing paths | 16 |
| Number of S7 routing paths Redundancy mode | 16 |
| Redundancy mode | 16 Yes |
| Redundancy mode • H-Sync forwarding | |
| Redundancy mode • H-Sync forwarding Media redundancy | Yes |
| Redundancy mode • H-Sync forwarding Media redundancy — Media redundancy | Yes only via 1st interface (X1) |
| Redundancy mode • H-Sync forwarding Media redundancy | Yes |

| 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 |
| 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. | 64 kbyte |
| • UDP | Yes |
| — Data length, max. | 2 kbyte; 1 472 bytes for UDP broadcast |
| — UDP multicast | Yes; Max. 5 multicast circuits |
| • 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 |
| 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. | 4 |
| Number of nodes of the client interfaces, | 1 000 |
| recommended max. | |
| — Number of elements for one call of OPC_UA_NodeGetHandleList/OPC_UA_ReadList/C max. | 300 |
| — Number of elements for one call of OPC_UA_NameSpaceGetIndexList, max. | 20 |
| Number of elements for one call of | 100 |
| OPC_UA_MethodGetHandleList, max. | |
| — Number of simultaneous calls of the client instructions for session management, per connection, max. | 1 |
| Number of simultaneous calls of the client instructions for data access, per connection, max. | 5 |
| — Number of registerable nodes, max. | 5 000 |
| — Number of registerable method calls of OPC_UA_MethodCall, max. | 100 |
| — 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 |
| — Number of sessions, max. | 32 |
| Number of accessible variables, max. | 50 000 |
| — Number of registerable nodes, max. | 10 000 |
| Number of subscriptions per session, max. | 20 |
| — Sampling interval, min. | 100 ms |

| | — Publishing interval, min. | 500 ms |
|--|---|--|
| max. - Number of monitored items, recommended max. - Number of notes for user-defined server interfaces, max. - Number of notes for user-defined server - Number of login stations for message functions, max. - Program alors - Yes: - Number of configurable program messages in RUN, max. - Number of configurable program messages max. - Number of configurable program messages, max. - Number of semistications - Number of variables, max. of which statications of which statications, max. of which statications of which control variables, max. of which con | Number of server methods, max. | 20 |
| - Number of nonlande items, recommended max. - Number of deriver interfaces, max. - Number of des for user-defined server interfaces.'' / Companion specification' type and 20 of the pre-Reference namespace'. 1000 Finder protoools - Number of nodes for user-defined server interfaces.'' / Companion specification' type and 20 of the pre-Reference namespace'. 1000 Finder protoools - Number of nodes for user-defined server interfaces.'' / Companion specification' type and 20 of the pre-Reference namespace'. 1000 Finder protoools - Number of nodin stations for message functions, max. Program alems Ves. Since for digurable program messages in RUN, max. Number of softwatheneousy active program alems 6 000 - Number of alems for system diagnostics 1000 - Of which control variables, max. - Of which control resourc | Number of inputs/outputs per server method, | 20 |
| max. 10 of each "Server interfaces, max. 10 of each "Server interfaces, "I"Companion specification" type and 20 of the type "Reference namespace". 1000 It to type "Reference namespace". 1000 It to type "Reference namespace". 1000 It to type and "Reference namespace". 1000 It to type and "Reference namespace". 1000 It to type type type "Reference namespace". 1000 It to type type type "Reference namespace". 1000 It to type type type type "Reference namespa | | |
| Number of server interfaces, max Number of nodes for user-defined server interfaces, max Number of nodes for user-defined server interfaces, max Number of nodes for user-defined server Number of nodin stations for message functions, max | | 1 000; for 1 s sampling interval and 1 s send interval |
| | | 10 of each "Server interfaces" / "Companion specification" type and 20 of the type "Reference namespace" |
| • MODBUS Yes; MODBUS TCP Incchronous mode Equidisance Yes 57 message functions 32 Program alarms 500; Program messages are generated by the "Program_Alarm" book, ProDiag or GRAPH Number of configurable program messages in RUN, max. 2500 Number of adable program messages in RUN, max. 2000 • Number of adable program messages in RUN, max. 2000 • Number of adable program messages in RUN, max. 2000 • Number of alarms for system diagnostics 800 • Number of alarms for system diagnostics 800 • Status block 800 • Variables 1901 Countrastonics • Variables, max. 2001; per job • Variables, max. 2000; per job • Variables, max. 2000; per job • Variables, max. 200; per job • Orthich control variables, max. 200; per job • Orthich control variables, max. 200 • Orthich co | | |
| Isochronous mode Yes Equidistance Yes St message functions 2 Program alarms 32 Number of configurable program messages, max. 500°. Program messages are generated by the "Program_Alarm" bock. ProDiag or GRAPH Number of configurable program messages in RUN, max. 200 Number of loadable program messages in RUN, max. 200 Number of simultaneously active program alarms 600 Number of alarms for notion technology objects 80 Status block Yes; Up to 8 simultaneously (in total across al ES clients) Number of breakpoints 8 Status slock Yes; Up to 8 simultaneously (in total across al ES clients) Number of breakpoints 8 Status slock Yes; Up to 8 simultaneously (in total across al ES clients) Number of variables, max. 200; per job - of which status variables, max. 200; per job - of which control variables, max. 200; per job Proteing Proteing • Number of configurable, max. 1000 - of which powerfail-proof 500 Traces 4; Up to 512 KB of data per trace | Further protocols | |
| Equidistance Yes ST nessage functions 32 Program alarms 32 Number of configurable program messages, max. 5000.Program messages are generated by the "Program_Alarm" block, ProDiag or GRAPH Number of loadable program messages in RUN, max. 800 Number of loadable program messages in RUN, max. 800 Number of loadable program messages in RUN, max. 800 Number of loadable program messages in RUN, max. 800 Number of alarms for motion technology objects 800 • Number of alarms for motion technology objects 800 Joint commission (Fam Engineering) Yes: Up to 8 simultaneously (in total across all ES clients) Status block Yes: Variables No • Variables 100 • Variables, max. 200; per job • Or which status variables, max. 200; per job • Or which powerfail-proof 500 • Poreing, variables, max. 200; per job • Or which status variables, max. 200; per job • Or which status variables, max. 200; per job • Oring, variables, max. 200 • Oring, variables, max. 200 • Oring variables, max. 200 • Oring variables, max. 200 • Prosent Yes | MODBUS | Yes; MODBUS TCP |
| 57.mossage functions 32 Number of login stations for message functions, max. 32 Pregram alarms Yes Number of loadable program messages, max. 5000, Program messages are generated by the "Program_Alarm" block, ProDiag or GRAPH Number of loadable program dessages, max. 600 • Number of program alarms 600 • Number of alarms for motion technology objects 80 Foreional functions 90 Joint commission (Fear Engineering) Yes, Parallel online access possible for up to 5 engineering systems Status/control variables Yes • Status/control variables Yes • Status/control variables, max. 200; per job • of which status variables, max. 200; per job • of which status variables, max. 200; per job • Or which status variables, max. 200; per job • Or which status variables, max. 200; per job • Or which status variables, max. 200; per job • Or which powerfail-proof 500 • Number of entries, max. 1000 • or which powerfail-proof 500 • Number of entries, max. 1000 • Or which powerfail-proof < | Isochronous mode | |
| Number of login stations for message functions, max. 32 Program aterms Yes Number of configurable program messages, max. 5000. Program messages are generated by the "Program_Alarm" block. ProDig or GRAPH Number of loadable program messages in RUN, max. 5000. Program messages are generated by the "Program_Alarm" block. ProDig or GRAPH Number of loadable program alarms 600 • Number of program alarms for system diagnostics 100 • Number of alarms for motion technology objects 800 Test commission (Team Engineering) Yes. Variable for up to 5 engineering systems Status block Yes. Joint commission (Team Engineering) Yes. Up to 8 simultaneously (in total across all ES clients) Single step No • Number of variables, max. 200: per job • Variables, max. 200: per job • of which control variables, max. 200: per job • Number of variables, max. 200 • Number of variables, max. 200 • Number of variables, max. 200 • of which control variables, max. 200 • of which control variables, max. 200 • of which control variables, | Equidistance | Yes |
| Number of login stations for message functions, max. 32 Program aterms Yes Number of configurable program messages, max. 5000. Program messages are generated by the "Program_Alarm" block. ProDig or GRAPH Number of loadable program messages in RUN, max. 5000. Program messages are generated by the "Program_Alarm" block. ProDig or GRAPH Number of loadable program alarms 600 • Number of program alarms for system diagnostics 100 • Number of alarms for motion technology objects 800 Test commission (Team Engineering) Yes. Variable for up to 5 engineering systems Status block Yes. Joint commission (Team Engineering) Yes. Up to 8 simultaneously (in total across all ES clients) Single step No • Number of variables, max. 200: per job • Variables, max. 200: per job • of which control variables, max. 200: per job • Number of variables, max. 200 • Number of variables, max. 200 • Number of variables, max. 200 • of which control variables, max. 200 • of which control variables, max. 200 • of which control variables, | S7 message functions | |
| Program alarms Yes Number of configurable program messages, max. 500: Program messages are generated by the "Program_Alarm" block, ProDiag or GRAPH Number of landable program messages in RUN, max. 2500 • Number of simultaneously active program alarms 600 • Number of program derms 600 • Number of alarms for system diagnostics 800 • Number of alarms for system diagnostics 800 • Statusfoning functions 90 Joint commission (fean Engineering) Yes; Parallel online access possible for up to 5 engineering systems Status block Yes; Up to 8 simultaneously (in total across all ES clients) Single step No Number of brackpoints 8 Statusfoortrol 9 • Statusfoortrol Yes • Number of variables, max. 200; per job - of which status variables, max. 200; per job • Number of variables, max. 200 - of which status variables, max. 200 • Number of variables, max. 200 • Number of variables, max. 200 • Number of variables, max. 200 • Ownerfail-proof 500 • Number of ontrigurable Traces 4: Up to 512 KB of data per trace are possible Interrupts/// alignostics// align. Information 1000 | | 32 |
| Number of configurable program messages, max. 5 000: Program messages are generated by the "Program_Alarm" block. ProDiag or GRAPH Number of loadable program alarms 600 • Number of alarms for system diagnostics 100 • Number of alarms for notion technology objects 600 • Number of alarms for notion technology objects 80 Test commission (Team Engineering) Yes; Parallel online access possible for up to 5 engineering systems Status block Yes; Up to 8 simultaneously (in total across all ES clients) Single step No Number of variables, max. 200; per job • Variables, max. 200; per job • Variables, max. 200; per job • Forcing, variables, max. 200; per job • Number of variables, max. 200; per job • Or which control variables, max. 200; per job • Forcing, variables, max. 200; per job • Immer of configurable Traces 4; Up to 512 KB of data per trace are possible • RUNSTOP LED Yes • RUNSTOP LED Yes • RUNSTOP LED Yes • RENORTOP LED Yes • Connoticol datable Motion | | |
| bick, ProDiag or GRAPH bick, ProDiag or GRAPH 2500 Number of landable program messages in RUN, max. 2500 Number of simultaneously active program alarms 600 Number of alarms for system diagnostics 100 Number of alarms for motion technology objects 80 fest commissioning functions Joint commission (Team Engineering) Status block Status block Status control variable No No Number of breakpoints 8 Statuscontrol variables, max | • | |
| Number of ladable program messages in RUN, max. 2 500 Number of simultaneously active program alarms 600 • Number of alarms for system diagnostics 100 • Number of alarms for notion technology objects 800 Test commission (feam Engineering) Yes, Parallel online access possible for up to 5 engineering systems Single step No Number of breakpoints 8 Status block Yes, Up to 8 simultaneously (in total across all ES clients) Single step No • Variables Inputs/outputs, bit memories, DBs, peripheral I/Os (without fail-safe), times, counters • Number of variables, max. 200, per job - of which control variables, max. 200 - of which control variables, max. 200 • Number of rongun alables, max. 200 • Number of ondingurables, max. 200 • Diagnostic buffer Yes • Number of contingurable Traces 4. Up to 512 KB of data per trace are possible Interpret/singnostics/sitatus information Yes • Runber of configurable Traces 4. Up to 512 KB of data per trace are possible Interpret/singnostics/sitatu | Number of configurable program messages, max. | |
| Number of simultaneously active program alarms 600 • Number of alarms for system diagnostics 100 • Number of alarms for motion technology objects 80 Pet commissioning functions Joint commission (Team Engineering) Yes, Yes, Parallel online access possible for up to 5 engineering systems Status block Yes, Up to 8 simultaneously (in total across all ES clients) No Status control variable Yes Yes input system • Variables inputs/outputs, bit memories, DBs, peripheral I/Os (without fail-safe), times, counters • Number of variables, max. 200; per job • Or which status variables, max. 200; per job • of which status variables, max. 200; per job • of which status variables, max. 200; per job • of which status variables, max. 200; per job • of which status variables, max. 200 • of which powerial-proof 500 • of which powerial-proof 500 • Present Yes • Number of configurable Traces 4: Up to 512 KB of data per trace are possible Interrupts/diagnostics/status information | Number of loadable program messages in RUN max | • |
| • Number of program alarms 600 • Number of alarms for system diagnostics 100 • Number of alarms for motion technology objects 80 Fot commission (Team Engineering) Yes; Parallel online access possible for up to 5 engineering systems Status block Yes; Up to 8 simultaneously (in total across all ES clients) Number of preakpoints 8 Status: Yes • Variables inputs/outputs, bit memories, DBs, peripheral I/Os (without fail-safe), times, counters • Number of variables, max. 200; per job • of which satus variables, max. 200; per job • Of which satus variables, max. 200; per job • Of which control variables, max. 200; per job • Ording, variables, max. 200 • Ording, variables, max. 1000 • Ording variables, max. 1000 • Recurred for onfigurable Traces 4; Up to 512 KB of data per trace are possible Interrupts/diagnostics/status information Yes Diagnostic indication LED Yes < | | |
| • Number of alarms for system diagnostics 100 • Number of alarms for motion technology objects 80 fost commissioning functions 90 Joint commission (Team Engineering) Yes; Parallel online access possible for up to 5 engineering systems Status block Yes; Up to 8 simultaneously (in total across all ES clients) Single step No Number of breakpoints 8 Statuscontrol - • Statuscontrol variables, max. - • Variables, max. 200; per job - of which status variables, max. 200; per job - of which status variables, max. 200; per job - of which outrol variables, max. 200; per job • Forcing peripheral inputs/outputs (without fail-safe) • Number of variables, max. 200 • of which powerfail-proof 500 Traces 4: Up to 512 KB of data per trace are possible Interrupts/diagnostics/status information Yes Diagnostics indication LED Yes • RUNNSTOP LED Yes • RUNSTOP LED Yes • Connection display LINK TX/RX Yes • Supported technology objects 800 • Per positioning axis 80 • Per positioning axis 80 • per positioning axis | | 600 |
| • Number of alarms for motion technology objects 80 Feet commissioning functions Yes; Parallel online access possible for up to 5 engineering systems Status block. Yes; Up to 8 simultaneously (in total across all ES clients) Number of breakpoints 8 Status/control Yes • Status/control Yes • Variables inputs/outputs, bit memories, DBs, peripheral I/Os (without fail-safe), titrus, counters • Variables, max. 200; per job - of which status variables, max. 200; per job - of which status variables, max. 200; per job - of which control variables, max. 200 • Number of entries, max. 200 • Runsber of variables, max. 200 • Orcing, variables, max. 200 • Runsber of entries, max. 200 - of which powerfail-proof 500 Traces - • Number of configurable Traces 4; Up to 512 KB of data per trace are possible Interrupts/diagnostic/status information - Diagnostics indication LED Yes • RUNSTOP LED Yes Supported technology | | |
| Tost commission (Team Engineering) Yes; Parallel online access possible for up to 5 engineering systems Status block Yes; Up to 8 simultaneously (in total across all ES clients) Single step No Number of breakpoints 8 Status/control variables Yes; inputs/outputs, bit memories, DBs, peripheral I/Os (without fail-safe), times, counters • Variables 200; per job • of which status variables, max. 200; per job • of which status variables, max. 200; per job • Or which oratiols, max. 200; per job • Forcing peripheral inputs/outputs (without fail-safe) • Number of variables, max. 200 • Or which powerfail-proof 500 Traces 4; Up to 512 KB of data per trace are possible • Interrupts/datagnostics/status information Interrupts/datagnostics/status information Diagnostics indication LED Yes • RUNISTOP LED Yes • Monther of available Motion Control resources for technology objects affects the cycle time of the PLC program; selection guide via the TIA Selection Tool 80 Puer synchronous axis 80 • Per positioning axis 80 • | | |
| Joint commission (Team Engineering) Yes; Parallel online access possible for up to 5 engineering systems Status block Yes; Up to 8 simultaneously (in total across all ES clients) Number of breakpoints 8 Status/control 8 • Status/control Yes • Status/control Yes • Variables inputs/outputs, bit memories, DBs, peripheral I/Os (without fail-safe), times, counters • Of which status variables, max. 200; per job - of which control variables, max. 200; per job • Forcing, variables peripheral inputs/outputs (without fail-safe) • Number of variables, max. 200 • Of which control variables, max. 200 • Ording, variables, max. 200 • Ording, variables, max. 200 • Number of variables, max. 200 • Number of entries, max. 1000 - of which powerfail-proof 500 Traces 4: Up to 512 KB of data per trace are possible Interrupts/diagnostics/status information 1000 Diagnostics indication LED Yes • RUNNSTOP LED Yes • ERROR LED Yes; Note: The number of technology objects affects the cyc | | |
| Status block Yes; Up to 8 simultaneously (in total across all ES clients) Single step No Number of breakpoints 8 Status/control * • Status/control variables inputs/outputs, bit memories, DBs, peripheral I/Os (without fail-safe), times, counters • Number of variables, max. 200; per job - of which status variables, max. 200; per job - of which control variables, max. 200; per job • Forcing, variables, max. 200 • Porsing * • Prosting * • Number of variables, max. 200; per job • Of which control variables, max. 200 • Porcing, variables, max. 200 • Prosting * • Number of variables, max. 200 • Present Yes • Number of ordingurable Traces 4: Up to 512 KB of data per trace are possible Interrupts/diagnostics/status information * Diagnostics indication LED Yes • ERROR LED Yes • Connection display LINK TX/RX Yes • Number of available Motion Control resources for technology objects affects the cycle time of the PLC program; selection guide via the TIA Selection Tool • Number of available Motion Control resources for technology objects 80 • Per positionin | | Vac: Decallel online access needible for up to 5 angineering systems |
| Single step No Number of breakpoints 8 Status/control • • Status/control variables inputs/outputs, bit memories, DBs, peripheral I/Os (without fail-safe), times, counters • Variables inputs/outputs, bit memories, DBs, peripheral I/Os (without fail-safe), times, counters • of which status variables, max. 200; per job – of which control variables, max. 200; per job • Orering • • Poreing • • Number of variables, max. 200 • Number of variables, max. 200 Diagnostic buffer • • present Yes • Number of configurable Traces 4; Up to 512 KB of data per trace are possible Interrupts/diagnostics/status information • Diagnostic solical/status information • Diagnostics indication LED Yes • RAUN/STOP LED Yes • RENOR LED Yes • Number of technology objects * Motion Control Yes; Note: The number of technology objects affects the cycle time of the PLC program; selection guide via the TIA Selection Tool Motion Control * es; Note: The number of technology objects affects the cyc | | |
| Number of breakpoints 8 Status/control | | |
| Status/control Yes • Status/control variables 'Yes • Variables inputs/outputs, bit memories, DBs, peripheral I/Os (without fail-safe), times, counters • Number of variables, max. 200; per job — of which status variables, max. 200; per job Forcing peripheral inputs/outputs (without fail-safe) • Number of variables, max. 200 • Porcing, variables, max. 200 • Parsent Yes • Number of variables, max. 200 Diagnostic buffer peripheral inputs/outputs (without fail-safe) • Number of arriables, max. 1000 — of which powerfail-proof 500 Traces - • Number of configurable Traces 4; Up to 512 KB of data per trace are possible Interrupts/dlagnostics/status information - Diagnostics indication LED Yes • RUNSTOP 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 the PLC program; selection guide via the TIA Selection Tool 80 - per positioning axis 80 | - · · | |
| • Status/control variable Yes • Variables inputs/outputs, bit memories, DBs, peripheral I/Os (without fail-safe), times, counters • Number of variables, max. 200; per job - of which status variables, max. 200; per job - of which control variables, max. 200; per job • Forcing, variables peripheral inputs/outputs (without fail-safe) • Number of variables, max. 200 Diagnostic buffer • • present Yes • Number of ornifigurable Traces 4; Up to 512 KB of data per trace are possible Interrupts/dilagnostics/status information Diagnostics indication LED • RUN/STOP LED Yes • Connection display LINK TX/RX Yes Supported technology objects Yes; Note: The number of technology objects affects the cycle time of the PLC program; selection guide via the TIA Selection Tool 800 • Number of available Motion Control resources for technology objects • Number of available Motion Control resources for technology objects 800 • per synchronous axis 160 • per output cam 20 • per output cam 20 • per output cam 20 • per output cam 20 <td></td> <td>δ</td> | | δ |
| • Variables inputs/outputs, bit memories, DBs, peripheral I/Os (without fail-safe), times, counters • Number of variables, max. 200; per job • of which control variables, max. 200; per job Forcing er of variables, max. • of variables, max. 200; per job Forcing, variables peripheral inputs/outputs (without fail-safe) • Number of variables, max. 200 Diagnostic buffer • • persent Yes • Number of configurable Traces 4; Up to 512 KB of data per trace are possible Interrupts/diagnostics/status information Yes Diagnostics indication LED Yes • ERROR LED Yes • Connection display LINK TX/RX Yes Supported technology objects 800 • Number of available Motion Control resources for technology objects 800 • Required Motion Control resources for technology objects 800 • Per synchronous axis 160 • per synchronous axis 160 | | N. |
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| | - Number of verifields may | limes, counters |
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| Forcing Peripheral inputs/outputs (without fail-safe) • Number of variables, max. 200 Diagnostic buffer • present • present Yes • Number of entries, max. 1 000 - of which powerfail-proof 500 Traces - • Number of configurable Traces 4; Up to 512 KB of data per trace are possible Interrupts/diagnostics/status information Diagnostics indication LED • RUN/STOP LED Yes • Connection display LINK TX/RX Yes Supported technology objects Yes; Note: The number of technology objects affects the cycle time of the PLC program; selection guide via the TIA Selection Tool • Number of available Motion Control resources for technology objects affects 800 - per synchronous axis 40 - per synchronous axis 40 - per synchronous axis 160 | | |
| • Forcing, variables peripheral inputs/outputs (without fail-safe) • Number of variables, max. 200 Diagnostic buffer - • present Yes • Number of entries, max. 1 000 - of which powerfail-proof 500 Traces - • Number of configurable Traces 4; Up to 512 KB of data per trace are possible Interrupts/diagnostics/status information - Diagnostics indication LED Yes • RUN/STOP LED Yes • Connection display LINK TX/RX Yes • Connection display LINK TX/RX Yes Supported technology objects - Motion Control Yes; Note: The number of technology objects affects the cycle time of the PLC program; selection guide via the TIA Selection Tool Number of available Motion Control resources for technology objects 800 • Required Motion Control resources - - per speed-controlled axis 40 - per synchronous axis 160 - per dust and 20 - per dust and 20 - per an track 160 | | 200; per job |
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| Diagnostic buffer • present Yes • Number of entries, max. 1 000 - of which powerfail-proof 500 Traces 4; Up to 512 KB of data per trace are possible Interrupts/diagnostics/status information Diagnostics indication LED PRUN/STOP LED Yes • RUN/STOP LED Yes • Connection display LINK TX/RX Yes • Connection display LINK TX/RX Yes Supported technology objects Yes; Note: The number of technology objects affects the cycle time of the PLC program; selection guide via the TIA Selection Tool 800 * Required Motion Control resources for technology objects • Required Motion Control resources 40 - per speed-controlled axis 40 - per synchronous axis 160 - per contput cam 20 - per cam track 160 | <u>.</u> | |
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| Number of entries, max.1 000 of which powerfail-proof500Traces-• Number of configurable Traces4; Up to 512 KB of data per trace are possibleInterrupts/diagnostics/status informationDiagnostics indication LED• RUN/STOP LEDYes• ERROR LEDYes• MAINT LEDYes• Connection display LINK TX/RXYesSupported technology objectsMotion ControlYes; Note: The number of technology objects affects the cycle time of the PLC program, selection guide via the TIA Selection Tool• Number of available Motion Control resources for technology objects800• Required Motion Control resources for technology objects800• per speed-controlled axis40 a per positioning axis• per output cam - per output cam20 c a• per cam track160 | 5 | Vee |
| — of which powerfail-proof 500 Traces 4; 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 Yes; Note: The number of technology objects affects the cycle time of the PLC program; selection guide via the TIA Selection Tool • Number of available Motion Control resources for technology objects 800 • Required Motion Control resources for technolog axis 40 • per speed-controlled axis 40 • per synchronous axis 160 • per output cam 20 • per cam track 160 | | |
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| • Number of configurable Traces 4; 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 Yes; Note: The number of technology objects affects the cycle time of the PLC program; selection guide via the TIA Selection Tool • Number of available Motion Control resources for technology objects 800 • Required Motion Control resources 40 • per speed-controlled axis 40 • per synchronous axis 160 • per output cam 20 • per cam track 160 | | |
| 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 Yes; Note: The number of technology objects affects the cycle time of the PLC program; selection guide via the TIA Selection Tool • Number of available Motion Control resources for technology objects 800 • Required Motion Control resources 800 - per speed-controlled axis 40 - per positioning axis 80 - per external encoder 80 - per output cam 20 - per cam track 160 | | 4. Up to 540 KD of data participation are passible |
| Diagnostics indication LED • RUN/STOP LED Yes • ERROR LED Yes • MAINT LED Yes • Connection display LINK TX/RX Yes Supported technology objects Yes; Note: The number of technology objects affects the cycle time of the PLC program; selection guide via the TIA Selection Tool • Number of available Motion Control resources for technology objects 800 • Required Motion Control resources for technology axis 40 - per speed-controlled axis 40 - per synchronous axis 160 - per output cam 20 - per cam track 160 | - | |
| • RUN/STOP LEDYes• ERROR LEDYes• MAINT LEDYes• Connection display LINK TX/RXYesSupported technology objectsMotion ControlYes; Note: The number of technology objects affects the cycle time of the PLC program; selection guide via the TIA Selection Tool• Number of available Motion Control resources for technology objects800• Required Motion Control resources40- per speed-controlled axis40- per speed-controlled axis160- per output cam20- per cam track160 | | |
| • ERROR LEDYes• MAINT LEDYes• Connection display LINK TX/RXYesSupported technology objectsYes; Note: The number of technology objects affects the cycle time of the PLC program; selection guide via the TIA Selection Tool• Number of available Motion Control resources for technology objects800• Required Motion Control resources40- per speed-controlled axis40- per positioning axis80- per synchronous axis160- per output cam20- per cam track160 | 5 | |
| • MAINT LEDYes• Connection display LINK TX/RXYesSupported technology objectsYes; Note: The number of technology objects affects the cycle time of the PLC program; selection guide via the TIA Selection Tool• Number of available Motion Control resources for technology objects800• Required Motion Control resources40- per speed-controlled axis40- per spitioning axis80- per synchronous axis160- per output cam20- per cam track160 | | |
| • Connection display LINK TX/RXYesSupported technology objectsYes; Note: The number of technology objects affects the cycle time of the PLC program; selection guide via the TIA Selection Tool• Number of available Motion Control resources for technology objects800• Required Motion Control resources900- per speed-controlled axis40- per positioning axis800- per synchronous axis160- per output cam20- per cam track160 | | |
| Supported technology objects Motion Control Yes; Note: The number of technology objects affects the cycle time of the PLC program; selection guide via the TIA Selection Tool • Number of available Motion Control resources for technology objects 800 • Required Motion Control resources 800 — per speed-controlled axis 40 — per synchronous axis 160 — per output cam 20 — per cam track 160 | | |
| Motion Control Yes; Note: The number of technology objects affects the cycle time of the PLC program; selection guide via the TIA Selection Tool • Number of available Motion Control resources for technology objects 800 • Required Motion Control resources 40 — per speed-controlled axis 40 — per positioning axis 80 — per synchronous axis 160 — per output cam 20 — per cam track 160 | Connection display LINK TX/RX | Yes |
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| Number of available Motion Control resources for technology objects Required Motion Control resources per speed-controlled axis per positioning axis per synchronous axis flo0 per external encoder per output cam per cam track | Motion Control | |
| technology objects• Required Motion Control resources- per speed-controlled axis40- per positioning axis80- per synchronous axis160- per external encoder80- per output cam20- per cam track160 | | the PLC program; selection guide via the TIA Selection Tool |
| Required Motion Control resources per speed-controlled axis per positioning axis per synchronous axis per external encoder per output cam per cam track 160 | | 800 |
| per speed-controlled axis40per positioning axis80per synchronous axis160per external encoder80per output cam20per cam track160 | | |
| — per positioning axis80— per synchronous axis160— per external encoder80— per output cam20— per cam track160 | | |
| — per synchronous axis160— per external encoder80— per output cam20— per cam track160 | | |
| — per external encoder80— per output cam20— per cam track160 | | |
| — per output cam20— per cam track160 | | |
| — per cam track 160 | | |
| | | |
| — per probe 40 | | |
| | — per probe | 40 |

| Positioning axis | |
|---|--|
| — Number of positioning axes at motion control | 5 |
| cycle of 4 ms (typical value) | |
| - Number of positioning axes at motion control | 10 |
| cycle of 8 ms (typical value) | |
| 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 | |
| High-speed counter | Yes |
| Standards, approvals, certificates | |
| Highest safety class achievable in safety mode | |
| Performance level according to ISO 13849-1 | PLe |
| • SIL acc. to IEC 61508 | SIL 3 |
| Probability of failure (for service life of 20 years and repa | ir time of 100 hours) |
| - Low demand mode: PFDavg in accordance | < 2.00E-05 |
| with SIL3 | |
| High demand/continuous mode: PFH in | < 1.00E-09 |
| accordance with SIL3 | |
| 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 |
| | display is switched off |
| vertical installation, min. | 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 | display is switched on |
| 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 | Vos: insl. failasfa |
| | Yes; incl. failsafe |
| — FBD | Yes; incl. failsafe |
| — STL | Yes |
| - SCL | Yes |
| — GRAPH | Yes |
| Know-how protection | Y. |
| User program protection/password protection | Yes |
| Copy protection | Yes |
| Block protection | Yes |
| Access protection | Vee |
| Password for display | Yes |
| Protection level: Write protection | Yes; Specific write protection both for Standard and for Failsafe |
| 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 |
| Dimensions | |
| Width | 35 mm |
| Height | 147 mm |
| Depth | 129 mm |
| Weights | |
| Weight, approx. | 430 g |
| | |

Pobrano z: https://sterowniki-plc.net/sterownik-plc-simatic-s7-1500f-cpu-1511f-1-pn-siemens-6es7511-1fk01-0ab0