SIEMENS

Data sheet

6ES7510-1DJ01-0AB0

SIMATIC DP, CPU 1510SP-1 PN FOR ET 200SP, CENTRAL PROCESSING UNIT WITH WORKING MEMORY 100 KB FOR PROGRAM AND 750 KB FOR DATA, 1. INTERFACE: PROFINET IRT WITH 3 PORT SWITCH, 72 NS BIT-PERFORMANCE, SIMATIC MEMORY CARD NECESSARY, BUSADAPTER NECESSARY FOR PORT 1 AND 2

| Product type designation CPU 1510SP-1 PN HW functional status FS01 Firmware version V18 Engineering with V13 SP1 Update 4 • STEP 7 TIA Portal configurable/integrated as of version V13 SP1 Update 4 Configuration control Version via dataset Yes Control elements 1 Mode selector switch 1 Supply voltage 24 V DC permissible range, lower limit (DC) 19.2 V permissible range, lower limit (DC) 28.8 V Reverse polarity protection Yes Mains buffering 5 ms Outrent consumption (rated value) 0.6 A Inrush current, max. 4.7 A; Rated value Power 0.14 A*s Power loss 8.75 W Power loss, typ. 5.6 W Memory 1 | General information | |
|---|--|------------------------|
| Firmware version V1.8 Engineering with V13 SP1 Update 4 • STEP 7 TIA Portal configurable/integrated as of version V13 SP1 Update 4 Configuration control Yes Configuration control Yes Control elements Yes Mode selector switch 1 Supply voltage 24 V DC permissible range, lower limit (DC) 19.2 V permissible range, lower limit (DC) 28.8 V Reverse polarity protection Yes Mains buffering • • Mains/voltage failure stored energy time 5 ms Inrush current 0.6 A Inrush current, max. 0.14 A*s Power 0.14 A*s Power loss 5.6 W Power loss 5.6 W | Product type designation | CPU 1510SP-1 PN |
| Engineering with STEP 7 TIA Portal configurable/integrated as of version V13 SP1 Update 4 V13 SP1 Update 4 Supply updates Yes Control elements Mode selector switch 1 Supply voltage Yes of supply voltage Portage V10 DC Yes Supply voltage Yes Yes of supply voltage Yes Yes of supply voltage Yes Yes of supply voltage Yes of supply voltage Yes of supply voltage Yes Nains buffering Mains/voltage failure stored energy time S ms Input current Current consumption (rated value) 0.6 A Inrush current, max. A.7 A; Rated value I² t O.4 A² s Power Infeed power to the backplane bus 8.75 W Power loss, typ. S.6 W Memory Number of slots for SIMATIC memory card 1 | HW functional status | FS01 |
| • STEP 7 TIA Portal configurable/integrated as of version V13 SP1 Update 4 Configuration control via dataset Yes Control elements 1 Mode selector switch 1 Supply voltage 24 V DC permissible range, lower limit (DC) 19.2 V permissible range, upper limit (DC) 28.8 V Reverse polarity protection Yes Mains buffering 5 ms • Mains/voltage failure stored energy time 5 ms Inrush current, max. 4.7 A; Rated value I* 0.14 A²·s Power 8.75 W Power loss, typ. 5.6 W Memory 1 | Firmware version | V1.8 |
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| via dataset Yes Control elements Mode selector switch 1 Supply voltage 24 V DC 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 • Mains/voltage failure stored energy time 5 ms Input current 0.6 A Inrush current, max. 4.7 A; Rated value I²t 0.14 A²-s Power 8.75 W Power loss 5.6 W Memory 1 | | V13 SP1 Update 4 |
| Ontrol elements Mode selector switch 1 Supply voltage Type of supply voltage 24 V DC 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 Input current 0.6 A Inrush current, max. 4.7 A; Rated value I*t 0.14 A*-s Power 1 Infeed power to the backplane bus 8.75 W Power loss 5.6 W Menory 1 | Configuration control | |
| Mode selector switch 1 Supply voltage 24 V DC 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 • Mains/voltage failure stored energy time 5 ms Input current 0.6 A Current consumption (rated value) 0.6 A Inrush current, max. 4.7 A; Rated value I ² t 0.14 A ² s Power 8.75 W Power loss 5.6 W Memory 1 | via dataset | Yes |
| Mode selector switch 1 Supply voltage 24 V DC 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 • Mains/voltage failure stored energy time 5 ms Input current 0.6 A Current consumption (rated value) 0.6 A Inrush current, max. 4.7 A; Rated value I ² t 0.14 A ² ·s Power 8.75 W Power loss 5.6 W Memory 1 | Control elements | |
| Type of supply voltage 24 V DC 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 • Mains/voltage failure stored energy time 5 ms Input current 0.6 A Current consumption (rated value) 0.6 A Inrush current, max. 4.7 A; Rated value I* 0.14 A²-s Power 8.75 W Power loss 8.75 W Power loss, typ. 5.6 W Memory 1 | | 1 |
| Type of supply voltage 24 V DC 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 • Mains/voltage failure stored energy time 5 ms Input current 0.6 A Current consumption (rated value) 0.6 A Inrush current, max. 4.7 A; Rated value I* 0.14 A²-s Power 8.75 W Power loss 8.75 W Power loss, typ. 5.6 W Memory 1 | Supply voltage | |
| permissible range, upper limit (DC) 28.8 V Reverse polarity protection Yes Mains buffering 5 ms • Mains/voltage failure stored energy time 5 ms Input current 0.6 A Inrush current, max. 4.7 A; Rated value I*t 0.14 A²-s Power 8.75 W Power loss 8.75 W Power loss, typ. 5.6 W Memory 1 | | 24 V DC |
| Reverse polarity protection Yes Mains buffering • Mains/voltage failure stored energy time 5 ms • Mains/voltage failure stored energy time 5 ms Input current 0.6 A Inrush current, max. 4.7 A; Rated value I²t 0.14 A²·s Power 1 Infeed power to the backplane bus 8.75 W Power loss 5.6 W Memory 1 | permissible range, lower limit (DC) | 19.2 V |
| Mains buffering 5 ms • Mains/voltage failure stored energy time 5 ms Input current 0.6 A Current consumption (rated value) 0.6 A Inrush current, max. 4.7 A; Rated value I ² t 0.14 A ² ·s Power 8.75 W Power loss 8.75 W Power loss, typ. 5.6 W Memory 1 | permissible range, upper limit (DC) | 28.8 V |
| • Mains/voltage failure stored energy time 5 ms Input current 0.6 A Inrush current, max. 0.6 A Inrush current, max. 4.7 A; Rated value I ² t 0.14 A ² ·s Power 8.75 W Power loss 5.6 W Memory 5.6 W Number of slots for SIMATIC memory card 1 | Reverse polarity protection | Yes |
| Input current 0.6 A Inrush current, max. 4.7 A; Rated value I ² t 0.14 A ² ·s Power Infeed power to the backplane bus 8.75 W Power loss Power loss Power loss typ. 5.6 W Memory Number of slots for SIMATIC memory card 1 | Mains buffering | |
| Current consumption (rated value) 0.6 A Inrush current, max. 4.7 A; Rated value I²t 0.14 A²·s Power 8.75 W Power loss 8.75 W Power loss, typ. 5.6 W Memory 1 | Mains/voltage failure stored energy time | 5 ms |
| Inrush current, max.4.7 A; Rated valueI²t0.14 A²-sPower8.75 WInfeed power to the backplane bus8.75 WPower loss5.6 WMemory1Number of slots for SIMATIC memory card1 | Input current | |
| I ² t 0.14 A ² ·s Power Infeed power to the backplane bus Infeed power to the backplane bus 8.75 W Power loss 8.75 W Power loss, typ. 5.6 W Memory 1 | Current consumption (rated value) | 0.6 A |
| Power Infeed power to the backplane bus 8.75 W Power loss Power loss, typ. 5.6 W Memory Number of slots for SIMATIC memory card 1 | Inrush current, max. | 4.7 A; Rated value |
| Infeed power to the backplane bus 8.75 W Power loss 5.6 W Memory 1 | l²t | 0.14 A ^{2.} s |
| Power loss Power loss, typ. 5.6 W Memory Number of slots for SIMATIC memory card 1 | Power | |
| Power loss, typ. 5.6 W Memory 1 | Infeed power to the backplane bus | 8.75 W |
| Memory Number of slots for SIMATIC memory card 1 | Power loss | |
| Number of slots for SIMATIC memory card 1 | Power loss, typ. | 5.6 W |
| | Memory | |
| | Number of slots for SIMATIC memory card | 1 |
| SIMATIC Memory Card required Yes | SIMATIC Memory Card required | Yes |
| Work memory | Work memory | |

| integrated (for program) | 100 kbyte |
|--|---|
| • integrated (for data) | 750 kbyte |
| Load memory | |
| Plug-in (SIMATIC Memory Card), max. | 32 Gbyte |
| Backup | |
| maintenance-free | Yes |
| | |
| CPU processing times | 72 ns |
| for bit operations, typ. for word operations, typ. | 86 ns |
| for fixed point arithmetic, typ. | 115 ns |
| for floating point arithmetic, typ. | 461 ns |
| | |
| CPU-blocks | |
| Number of elements (total) | 2 000; In addition to blocks such as DBs, FBs and FCs, UDTs, global constants, etc. are also regarded as elements |
| DB | |
| Number range | 1 60 999; subdivided into: number range that can be used by |
| - Number range | the user: 1 59 999, and number range of DBs created via SFC 86: 60 000 60 999 |
| • Size, max. | 750 kbyte; For DBs with absolute addressing, the max. size is 64 KB |
| FB | |
| Number range | 0 65 535 |
| • Size, max. | 100 kbyte |
| FC | |
| Number range | 0 65 535 |
| • Size, max. | 100 kbyte |
| OB | |
| • Size, max. | 100 kbyte |
| Number of free cycle OBs | 100 |
| Number of time alarm OBs | 20 |
| Number of delay alarm OBs | 20 |
| Number of cyclic interrupt OBs | 20 |
| Number of process alarm OBs | 50 |
| Number of DPV1 alarm OBs | 3 |
| Number of isochronous mode OBs | 1 |
| Number of technology synchronous alarm OBs | s 2 |
| 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 | |
| ● 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 |
| Data areas and their retentivity | |
| retentive data area in total (incl. times, counters, | 128 kbyte; Available retentive memory for bit memories, timers, |
| flags), max. | counters, DBs, and technology data (axes): 88 KB |
| Flag | |
| • Number, max. | 16 kbyte |
| Number of clock memories | 8; 8 clock memory bits, 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 | 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 | |
| — Inputs (volume) | 8 kbyte |
| — Outputs (volume) | 8 kbyte |
| | |
| per CM/CP | |
| per CM/CP — Inputs (volume) | 8 kbyte |
| — Inputs (volume) | |
| | 8 kbyte 8 kbyte |

| Address space per module | |
|---|--|
| Address space per module, max. | 32 byte; For input and output data respectively |
| Address space per station | |
| Address space per station, max. | 1 280 byte; for central inputs and outputs; depending on configuration |
| Hardware configuration | |
| Number of distributed IO systems | 20 |
| Number of DP masters | |
| • Via CM | 1 |
| Number of IO Controllers | |
| • integrated | 1 |
| • Via CM | 0 |
| Rack | |
| Modules per rack, max. | 64; CPU + 64 modules + server module (mounting width max. 1 m) |
| Rack, number of rows, 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 |
| • to DP, master | Yes; Via CM DP module |
| ● to DP, slave | Yes; Via CM DP module |
| ● in AS, master | Yes |
| ● in AS, slave | Yes |
| on Ethernet via NTP | Yes |
| Interfaces | |
| Number of PROFINET interfaces | 1 |
| Number of PROFIBUS interfaces | 1; Via CM DP module |
| With optical interface | No |
| 1. Interface | |
| Interface types | |
| Number of ports | 3; 1. integr. + 2. via BusAdapter |
| integrated switch | Yes |

| | Voc: V1 |
|---|---|
| RJ 45 (Ethernet) | Yes; X1 |
| Bus adapter (PROFINET) | Yes; Applicable BusAdapters: BA 2x RJ45, BA 2x FC |
| Functionality | Yes |
| PROFINET IO Controller | |
| PROFINET IO Device | Yes |
| SIMATIC communication | Yes |
| Open IE communication | Yes |
| Web server | Yes |
| Media redundancy | Yes |
| 2. Interface | |
| Interface types | |
| Number of ports | 1 |
| • RS 485 | Yes; Via CM DP module |
| Functionality | |
| PROFIBUS DP master | Yes |
| PROFIBUS DP slave | Yes |
| SIMATIC communication | Yes |
| Interface types | |
| RJ 45 (Ethernet) | |
| • 100 Mbps | Yes |
| Autonegotiation | Yes |
| Autocrossing | Yes |
| Industrial Ethernet status LED | Yes |
| RS 485 | |
| Transmission rate, max. | 12 Mbit/s |
| Protocols | |
| Number of connections | |
| Number of connections, max. | 64 |
| Number of connections reserved for ES/HMI/web | 10 |
| Number of connections via integrated interfaces | 64 |
| Number of S7 routing paths | 16 |
| PROFINET IO Controller | |
| Services | |
| — PG/OP communication | Yes |
| — S7 routing | Yes |
| — Isochronous mode | Yes |
| — Open IE communication | Yes |
| — IRT | Yes |
| | |

| MDD | Yes; As MRP redundancy manager and/or MRP client; max. |
|---|---|
| — MRP | number of devices in the ring: 50 |
| — PROFlenergy | Yes |
| — Prioritized startup | Yes; Max. 32 PROFINET devices |
| — Number of connectable IO Devices, max. | 64; In total, up to 189 distributed I/O devices can be connected via PROFIBUS or PROFINET |
| — Of which IO devices with IRT, max. | 64 |
| — Number of connectable IO Devices for RT, | 64 |
| max. | |
| — of which in line, max. | 64 |
| — Number of IO Devices that can be simultaneously activated/deactivated, max. | 8 |
| — 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 | $250 \ \mu s$ 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 cycles | Update time = set "odd" send clock (any multiple of 125 μs : 375 μs , 625 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 | |
| — PG/OP communication | Yes |
| — S7 routing | Yes |
| — Isochronous mode | No |
| — Open IE communication | Yes |
| — IRT | Yes |
| — MRP | Yes |
| — PROFlenergy | Yes |
| | |

| — Shared device | Yes |
|---|--|
| — Number of IO Controllers with shared | 4 |
| device, max. | |
| SIMATIC communication | |
| 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, supported | Yes |
| • ISO-on-TCP (RFC1006) | Yes |
| — Data length, max. | 64 kbyte |
| • UDP | Yes |
| — Data length, max. | 1 472 byte |
| • DHCP | No |
| • SNMP | Yes |
| • DCP | Yes |
| • LLDP | Yes |
| Web server | |
| • HTTP | Yes; Standard and user-defined pages |
| • HTTPS | Yes; Standard and user-defined pages |
| PROFIBUS DP master | |
| Number of connections, max. | 48 |
| Services | |
| — PG/OP communication | Yes |
| — S7 routing | Yes |
| — Data record routing | Yes |
| — Isochronous mode | No |
| — Equidistance | No |
| — Number of DP slaves | 125 |
| — Activation/deactivation of DP slaves | Yes |
| Further protocols | |
| • MODBUS | Yes; MODBUS TCP |
| Media redundancy | |
| Switchover time on line break, typ. | 200 ms |
| • Number of stations in the ring, max. | 50 |
| Isochronous mode | |
| Isochronous operation (application synchronized up to terminal) | Yes; Only with PROFINET; with minimum OB 6x cycle of 625 μs |
| to torrinnar | |

| Number of login stations for message functions, max. 32 Block related messages Yes Number of configuable alarms, max. 5 000 Number of reserved user alarms 300 • Number of reserved user alarms 300 • Number of reserved alarms for system 100 diagnostics 80 Test commissioning functions 80 Yes: Parallel online access possible for up to 3 engineering systems Status block Yes: Up to 8 simultaneously (in total across all ES clients) Single step No Status/control variables, max. - of which control variables, max. - of which status variables, max. 200; per job Forcing Yes • Forcing Yes • Forcing, variables, max. 200 • Forcing Yes • Forcing Yes • Forcing Yes • Forcing Yes • Number of variables, max. 200 Diagnostic buffer - • pasent Yes • Number of variables, max. 1000 - of which powerfall-proof 500 Traces - • Number of variables, max. 1000 - of which powerfall-proof 500 Traces -< | S7 message functions | |
|--|--|--|
| Number of configurable alarms, max. 5 000 Number of simultaneously active alarms in alarm pool 300 • Number of reserved alarms for system diagnostics 300 • Number of reserved alarms for Motion Control technology objects 80 Test commissioning functions 80 Joint commission (Team Engineering) Yes; Parallel online access possible for up to 3 engineering systems Status block Yes; Up to 8 simultaneously (in total across all ES clients) Single step No Status/control variables, max. - of which status variables, max. - of which status variables, max. 200; per job Forcing Yes Porcing variables, max. 200; per job Forcing Yes • O which control variables, max. 200; per job Forcing Yes • Porcing variables, max. 200 • Porcing variables, max. 200 • Number of entries, max. 1000 • of which powerfail-proof 500 Precenting variables, max. 1000 • Number of onfigurable Traces 4; Up to 512 KB of data per trace are possible < | | 32 |
| Number of simultaneously active alarms in alarm pool 300 • Number of reserved user alarms 300 • Number of reserved alarms for system diagnostics 80 • Number of reserved alarms for Motion Control technology objects 80 Test commission (Team Engineering) Yes; Parallel online access possible for up to 3 engineering systems Status block Yes; Up to 8 simultaneously (In total across all ES clients) Single step No Status/control Yes; • Status/control variable Yes • Variables Yes • Variables, max. 200; per job • of which status variables, max. 200; per job • Forcing Yes • Forcing Yes • Forcing, variables, max. 200; per job Diagnostic buffer Peripheral inputs/outputs • prosent Yes • Number of entries, max. 1000 • of which powerfail-proof 500 Traces 4; Up to 512 KB of data per trace are possible Number of configurable Traces 4; Up to 512 KB of data per trace are possible Interrupts/diagnostics/status information Yes Diagnostic indicat | Block related messages | Yes |
| pool 300 • Number of reserved alarms for system 100 diagnostics 80 • Number of reserved alarms for Motion Control technology objects 80 Test commissioning functions 80 Joint commission (Team Engineering) Yes; Parallel online access possible for up to 3 engineering systems Status block Yes; Up to 8 simultaneously (in total across all ES clients) Single step No Status/control variables, max. Yes - of which status variables, max. 200; per job - of which control variables, max. 200; per job Forcing Yes • Forcing unitables, max. 200; per job • Forcing unitables, max. 200; per job • Forcing unitables, max. 200; per job • Number of variables, max. 200; per job • Forcing unitables, max. 200; per job • Number of variables, max. 200; per job • Number of variables, max. 200; per job • Number of variables, max. 200; • of which powerfall-proof 500 • Number of entries, max. 1000 - of which powerfall-proof 500 <td>Number of configurable alarms, max.</td> <td>5 000</td> | Number of configurable alarms, max. | 5 000 |
| • Number of reserved alarms for system 300 • Number of reserved alarms for Motion Control 80 • Number of reserved alarms for Motion Control 80 • Number of reserved alarms for Motion Control 80 • Test commission (Team Engineering) Yes; Parallel online access possible for up to 3 engineering systems Status block Yes; Up to 8 simultaneously (in total across all ES clients) Single step No Status/control Yes • Variables Yes • Variables Yes • Variables, max. 200; per job - of which status variables, max. 200; per job - of which control variables, max. 200; per job - Forcing Yes • Number of auriables, max. 200; per job - of which status variables, max. 200; per job • Number of auriables, max. 1000 - of which powerfail-proof 500 Diagnostic buffer 9 • Number of configurable Traces 4; Up to 512 KB of data per trace are possible Interrupts/diagnostics/status information 1000 Diagnostic indication LED Yes • RUNSTOP LED Y | Number of simultaneously active alarms in alarm | |
| • Number of reserved alarms for system 100 diagnostics 80 • Number of reserved alarms for Motion Control technology objects 80 Joint commission (Team Engineering) Yes; Parallel online access possible for up to 3 engineering systems Status block Yes; Up to 8 simultaneously (in total across all ES clients) Single step No Status/control Yes • Status/control variable Yes • Status/control variables, max. 200; per job - of which status variables, max. 200; per job - of which control variables, max. 200; per job Forcing Yes • Forcing variables, max. 200 • Forcing variables, max. 200 • Parcing Peripheral inputs/outputs 200 • Number of entries, max. 200 • Ording of entries, max. 200 • Parcing - present Yes • 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 Yes • RUN/STOP LED Yes | pool | |
| Initiation of the sum of or System All in the sum of the system I variables Number of reserved alarms for Motion Control technology objects Joint commission (Team Engineering) Yes; Parallel online access possible for up to 3 engineering systems Status block Yes; Up to 8 simultaneously (in total across all ES clients) Single step No Status/control Yes • Status/control variable Yes • Variables Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters • Number of variables, max. 200; per job - of which status variables, max. 200; per job - of which status variables, max. 200 Diagnostic buffer 9 • present Yes • Number of configurable Traces 4: Up to 512 KB of data per trace are possible Interrupts/diagnostics/status information 1000 Diagnostic status information 1000 Percent Yes • Number of configurable Traces | Number of reserved user alarms | 300 |
| technology objects Joint commission (Team Engineering) Ves; Parallel online access possible for up to 3 engineering systems Status block Yes; Up to 8 simultaneously (in total across all ES clients) Single step No Status/control • Ves • Variables Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters • Number of variables, max. - of which status variables, max. - of which status variables, max. 200; per job Forcing Yes • Forcing Yes • Forcing, variables, max. 200; per job • Peripheral inputs/outputs 200 • Number of variables, max. 200 • Peripheral inputs/outputs 200 • Number of variables, max. 200 • Procing Yes • Procing variables, max. 200 Diagnostic buffer • present • 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 • RUN/STOP LED Yes • RAROR LED< | - | 100 |
| Joint commission (Team Engineering) Yes; Parallel online access possible for up to 3 engineering systems Status block Yes; Up to 8 simultaneously (in total across all ES clients) Single step No Status/control * • Status/control variable Yes • Variables Inputs/outputs, memory bits, DBs, distributed I/Os, timers, 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 Yes • Forcing, variables Peripheral inputs/outputs • Number of variables, max. 200 Diagnostic buffer • • present Yes • 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 Diagnostics indication LED • RUN/STOP LED Yes • ERROR LED Yes • Monitoring of the supply voltage (PWR-LED) Yes • Monitoring of the supply voltage (PWR-LED) Yes • Connection display LINK TX/RX | | 80 |
| Joint commission (Team Engineering) Yes; Parallel online access possible for up to 3 engineering systems Status block Yes; Up to 8 simultaneously (in total across all ES clients) Single step No Status/control * • Status/control variable Yes • Variables Inputs/outputs, memory bits, DBs, distributed I/Os, timers, 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 Yes • Forcing, variables Peripheral inputs/outputs • Number of variables, max. 200 Diagnostic buffer • • present Yes • 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 Diagnostics indication LED • RUN/STOP LED Yes • ERROR LED Yes • Monitoring of the supply voltage (PWR-LED) Yes • Monitoring of the supply voltage (PWR-LED) Yes • Connection display LINK TX/RX | Test commissioning functions | |
| systems Status block Yes; Up to 8 simultaneously (in total across all ES clients) Single step No Status/control Yes; • Status/control variable Yes • Variables Inputs/outputs, memory bits, DBs, distributed I/Os, timers, 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 Yes • Forcing, variables Peripheral inputs/outputs • Number of variables, max. 200 Diagnostic buffer - • present Yes • Number of entries, max. 1000 - of which powerfail-proof 500 Traces - • RUN/STOP LED Yes • RUN/STOP LED Yes • ERROR LED Yes • Maint LED Yes • Monitoring of the supply voltage (PWR-LED) Yes • Monitoring of the supply voltage (PWR-LED) Yes | | Yes: Parallel online access possible for up to 3 engineering |
| Single step No Status/control Yes • Variables Inputs/outputs, memory bits, DBs, distributed I/Os, timers, 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 Yes • Forcing, variables, max. 200; per job • Forcing Yes • Forcing, variables, max. 200 • Paripheral inputs/outputs 200 • Number of variables, max. 200 • Paripheral inputs/outputs 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 Index of the supply voltage (PWR-LED) • RUN/STOP LED Yes • ERROR LED Yes • Monitoring of the supply voltage (PWR-LED) Yes | | |
| Status/control • Status/control variable Yes • Variables Inputs/outputs, memory bits, DBs, distributed I/Os, timers, 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 Yes • Forcing, variables, max. 200 Porting Yes • Forcing, variables, max. 200 Diagnostic buffer 9 • present Yes • 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 • RUN/STOP LED Yes • RUN/STOP LED Yes • Maint LED Yes • Monitoring of the supply voltage (PWR-LED) Yes • Connection display LINK TX/RX Yes | Status block | |
| • Status/control variable Yes • Variables Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters • Number of variables, max. 200; per job - of which status variables, max. 200; per job - of which control variables, max. 200; per job - of which control variables, max. 200; per job Forcing Yes • Forcing, variables Peripheral inputs/outputs • Number of variables, max. 200 Diagnostic buffer 200 • present Yes • 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 Diagnostics indicaton LED • RUNSTOP LED Yes • RUNSTOP LED Yes • RUNSTOP LED Yes • RUNSTOP LED Yes • Monitoring of the supply voltage (PWR-LED) Yes • Monitoring of the supply voltage (PWR-LED) Yes • Connection display LINK TX/RX Yes | Single step | No |
| • Variables Input/soutputs, memory bits, DBs, distributed I/Os, timers, 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 Yes • Forcing, variables Peripheral inputs/outputs • Forcing, variables, max. 200 • Number of variables, max. 200 • Number of configurables, max. 200 • Present Yes • Number of entries, max. 1000 - of which powerfail-proof 500 Traces 4; Up to 512 KB of data per trace are possible Interrupts/cliagnostics/status information Image: Status information Diagnostics indication LED Yes • RUN/STOP LED Yes • RUN/STOP LED Yes • Maint LED Yes • Monitoring of the supply voltage (PWR-LED) Yes < | Status/control | |
| counters• Number of variables, max of which status variables, max of which control variables, max.200; per jobForcing• Forcing• Forcing, variables• Forcing, variables, max.200• Forcing, variables, max.200Diagnostic buffer• present• 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 informationDiagnostic indication LED• RUN/STOP LED• RUN/STOP LED• RUN/STOP LED• Sea• Maint LED• Monitoring of the supply voltage (PWR-LED)• Yes• Monitoring of the supply voltage (PWR-LED)• Supported technology objects | Status/control variable | Yes |
| of which status variables, max.200; per job of which control variables, max.200; per jobForcingYes Forcing, variablesPeripheral inputs/outputs Number of variables, max.200Diagnostic bufferYes of which powerfail-proofYes of which powerfail-proof500Traces Number of configurable Traces4; Up to 512 KB of data per trace are possibleInterrupts/diagnostics/status informationDiagnostics indication LEDYes RUN/STOP LEDYes RUN/STOP LEDYes MAINT LEDY | Variables | |
| of which control variables, max.200; per jobForcingYes• Forcing, variablesPeripheral inputs/outputs• Forcing, variables, max.200Diagnostic bufferYes• presentYes• 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 LEDYes• RUN/STOP LEDYes• RUN/STOP LEDYes• MaiNT LEDYes• Monitoring of the supply voltage (PWR-LED)Yes• Connection display LINK TX/RXYesSupported technology objectsYes | Number of variables, max. | |
| ForcingYes• Forcing, variablesPeripheral inputs/outputs• Number of variables, max.200Diagnostic buffer• presentYes• 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 LEDYes• RUN/STOP LEDYes• ERROR LEDYes• MaINT LEDYes• Monitoring of the supply voltage (PWR-LED)Yes• Connection display LINK TX/RXYesSupported technology objects | — of which status variables, max. | 200; per job |
| • ForcingYes• Forcing, variablesPeripheral inputs/outputs• Number of variables, max.200Diagnostic buffer• presentYes• 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 LEDYes• RUN/STOP LEDYes• ERROR LEDYes• Maint LEDYes• Monitoring of the supply voltage (PWR-LED)Yes• Connection display LINK TX/RXYesSupported technology objects | — of which control variables, max. | 200; per job |
| Forcing, variables Forcing, variables, max. Peripheral inputs/outputs Number of variables, max. 200 Diagnostic buffer present Yes Number of entries, max. 1000 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 ERROR LED Yes MAINT LED Yes Monitoring of the supply voltage (PWR-LED) Yes Connection display LINK TX/RX Yes Supported technology objects | Forcing | |
| • Number of variables, max.200Diagnostic buffer• presentYes• 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 LEDYes• RUN/STOP LEDYes• RUN/STOP LEDYes• MAINT LEDYes• Monitoring of the supply voltage (PWR-LED)Yes• Connection display LINK TX/RXYesSupported technology objects | Forcing | Yes |
| 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 • 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 • ERROR LED Yes • MAINT LED Yes • Monitoring of the supply voltage (PWR-LED) Yes • Connection display LINK TX/RX Yes Supported technology objects Supported technology objects | • Forcing, variables | Peripheral inputs/outputs |
| • presentYes• Number of entries, max.1 000- of which powerfail-proof500Traces4; Up to 512 KB of data per trace are possible• Number of configurable Traces4; Up to 512 KB of data per trace are possibleInterrupts/diagnostics/status informationYes• RUN/STOP LEDYes• RUN/STOP LEDYes• ERROR LEDYes• MAINT LEDYes• Monitoring of the supply voltage (PWR-LED)Yes• Connection display LINK TX/RXYesSupported technology objects | Number of variables, max. | 200 |
| Number of entries, max. 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 RUN/STOP LED Yes ERROR LED Yes MaiNT LED Yes Monitoring of the supply voltage (PWR-LED) Yes Connection display LINK TX/RX Yes | Diagnostic buffer | |
| 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• Monitoring of the supply voltage (PWR-LED)Yes• Connection display LINK TX/RXYesSupported technology objects | ● present | Yes |
| Traces • Number of configurable Traces 4; Up to 512 KB of data per trace are possible Interrupts/diagnostics/status information Diagnostics indication LED Pres • RUN/STOP LED Yes • ERROR LED Yes • MAINT LED Yes • Monitoring of the supply voltage (PWR-LED) Yes • Connection display LINK TX/RX Yes Supported technology objects Supported technology objects | Number of entries, max. | 1 000 |
| • 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• Monitoring of the supply voltage (PWR-LED)Yes• Connection display LINK TX/RXYesSupported technology objects | — of which powerfail-proof | 500 |
| Interrupts/diagnostics/status information Diagnostics indication LED • RUN/STOP LED Yes • ERROR LED Yes • MAINT LED Yes • Monitoring of the supply voltage (PWR-LED) Yes • Connection display LINK TX/RX Yes Supported technology objects | Traces | |
| Diagnostics indication LED • RUN/STOP LED Yes • ERROR LED Yes • MAINT LED Yes • Monitoring of the supply voltage (PWR-LED) Yes • Connection display LINK TX/RX Yes Supported technology objects | Number of configurable Traces | 4; Up to 512 KB of data per trace are possible |
| • RUN/STOP LED Yes • ERROR LED Yes • MAINT LED Yes • Monitoring of the supply voltage (PWR-LED) Yes • Connection display LINK TX/RX Yes Supported technology objects Yes | | |
| | | Yes |
| MAINT LED Yes Monitoring of the supply voltage (PWR-LED) Yes Connection display LINK TX/RX Yes Supported technology objects | | |
| Monitoring of the supply voltage (PWR-LED) Yes Connection display LINK TX/RX Yes Supported technology objects | | |
| Connection display LINK TX/RX Yes Supported technology objects | | |
| Supported technology objects | | |
| | - Connection display LINK TA/KA | 160 |
| Motion Control Yes | | |
| | Motion Control | Yes |

| Speed-controlled axis | |
|---|--|
| — Number of speed-controlled axes, max. | 6; Requirement: There must be no other motion technology objects created; note: The number of axes affects the cycle time of the PLC program; selection guide via the TIA Selection Tool |
| Positioning axis | |
| — Number of positioning axes, max. | 6; Requirement: There must be no other motion technology objects created; note: The number of axes affects the cycle time of the PLC program; selection guide via the TIA Selection Tool |
| Synchronized axes (relative gear synchronization) | |
| — Number of axes, max. | 3; Requirement: There must be no other motion technology objects created; note: The number of axes affects the cycle time of the PLC program; selection guide via the TIA Selection Tool |
| • External encoders | |
| — Number of external encoders, max. | 6; Requirement: There must be no other motion technology objects created; note: The number of axes affects the cycle time of the PLC program; selection guide via the TIA Selection Tool |
| 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 |
| | |
| Ambient conditions | |
| Ambient conditions Ambient temperature during operation | |
| | 0 °C |
| Ambient temperature during operation | 60 °C |
| Ambient temperature during operation horizontal installation, min. | |
| Ambient temperature during operation horizontal installation, min. horizontal installation, max. vertical installation, min. vertical installation, max. | 60 °C |
| Ambient temperature during operation horizontal installation, min. horizontal installation, max. vertical installation, min. | 60 °C 0 °C 50 °C |
| Ambient temperature during operation horizontal installation, min. horizontal installation, max. vertical installation, min. vertical installation, max. | 60 °C 0 °C 50 °C -40 °C |
| Ambient temperature during operation horizontal installation, min. horizontal installation, max. vertical installation, min. vertical installation, max. Ambient temperature during storage/transportation | 60 °C 0 °C 50 °C |
| Ambient temperature during operation horizontal installation, min. horizontal installation, max. vertical installation, min. vertical installation, max. Ambient temperature during storage/transportation min. | 60 °C 0 °C 50 °C -40 °C |
| Ambient temperature during operation horizontal installation, min. horizontal installation, max. vertical installation, min. vertical installation, max. Ambient temperature during storage/transportation min. max. | 60 °C 0 °C 50 °C -40 °C |
| Ambient temperature during operation horizontal installation, min. horizontal installation, max. vertical installation, min. vertical installation, max. Ambient temperature during storage/transportation min. max. Configuration | 60 °C 0 °C 50 °C -40 °C 70 °C |
| Ambient temperature during operation • horizontal installation, min. • horizontal installation, max. • vertical installation, min. • vertical installation, max. Ambient temperature during storage/transportation • min. • max. Configuration Programming | 60 °C 0 °C 50 °C -40 °C |
| Ambient temperature during operation • horizontal installation, min. • horizontal installation, max. • vertical installation, min. • vertical installation, max. Ambient temperature during storage/transportation • min. • max. Configuration Programming Programming language | 60 °C 0 °C 50 °C -40 °C 70 °C |
| Ambient temperature during operation • horizontal installation, min. • horizontal installation, max. • vertical installation, min. • vertical installation, max. Ambient temperature during storage/transportation • min. • max. Configuration Programming Programming language — LAD | 60 °C 0 °C 50 °C -40 °C 70 °C |
| Ambient temperature during operation • horizontal installation, min. • horizontal installation, max. • vertical installation, min. • vertical installation, max. Ambient temperature during storage/transportation • min. • max. Configuration Programming Programming language — LAD — FBD | 60 °C 0 °C 50 °C -40 °C 70 °C Yes Yes |
| Ambient temperature during operation • horizontal installation, min. • horizontal installation, max. • vertical installation, min. • vertical installation, max. Ambient temperature during storage/transportation • min. • max. Configuration Programming Programming language - LAD - FBD - STL | 60 °C 0 °C 50 °C -40 °C 70 °C Yes Yes Yes Yes |
| Ambient temperature during operation • horizontal installation, min. • horizontal installation, max. • vertical installation, min. • vertical installation, max. Ambient temperature during storage/transportation • min. • max. Configuration Programming Programming language - LAD - STL - SCL | 60 °C 0 °C 50 °C -40 °C 70 °C Yes Yes Yes Yes Yes |
| Ambient temperature during operation • horizontal installation, min. • horizontal installation, max. • vertical installation, min. • vertical installation, max. Ambient temperature during storage/transportation • min. • max. Configuration Programming Programming language - LAD - STL - SCL - GRAPH | 60 °C 0 °C 50 °C -40 °C 70 °C Yes Yes Yes Yes Yes |

| Block protection | Yes |
|---|-------------------------------|
| Access protection | |
| Protection level: Write protection | Yes |
| Protection level: Read/write protection | Yes |
| Protection level: Complete protection | Yes |
| Cycle time monitoring | |
| lower limit | adjustable minimum cycle time |
| • upper limit | adjustable maximum cycle time |
| | |
| Dimensions | |
| Dimensions Width | 100 mm |
| | 100 mm 117 mm |
| Width | |
| Width Height | 117 mm |
| Width Height Depth | 117 mm |