



Figure similar

SIPLUS S7-1500 CPU 1511-1 PN based on 6ES7511-1AL03-0AB0 with conformal coating -40...+70 °C . central processing unit with work memory 300 KB for program and 1.5 MB for data, 1st interface: PROFINET IRT with 2-port switch, 25 ns bit performance, SIMATIC Memory Card required

| General information                                      |                                                                                                   |
|----------------------------------------------------------|---------------------------------------------------------------------------------------------------|
| Product type designation                                 | CPU 1511-1 PN                                                                                     |
| Firmware version                                         |                                                                                                   |
| • FW update possible                                     | Yes                                                                                               |
| based on                                                 | <a href="#">6ES7511-1AL03-0AB0</a>                                                                |
| Product function                                         |                                                                                                   |
| • I&M data                                               | Yes; I&M0 to I&M3                                                                                 |
| • Isochronous mode                                       | Yes; Distributed and central; with minimum OB 6x cycle of 500 µs (distributed) and 1 ms (central) |
| • SysLog                                                 | Yes                                                                                               |
| Engineering with                                         |                                                                                                   |
| • STEP 7 TIA Portal configurable/integrated from version | see entry ID: 109746275                                                                           |
| Configuration control                                    |                                                                                                   |
| via dataset                                              | Yes                                                                                               |
| Display                                                  |                                                                                                   |
| Screen diagonal [cm]                                     | 3.45 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                                          |                                                                                                   |
| • Mains/voltage failure stored energy time               | 5 ms                                                                                              |
| • Repeat rate, min.                                      | 1/s                                                                                               |
| Input current                                            |                                                                                                   |
| Current consumption (rated value)                        | 0.73 A                                                                                            |
| Current consumption, max.                                | 0.9 A                                                                                             |
| Inrush current, max.                                     | 1.15 A; Rated value                                                                               |
| I <sup>2</sup> t                                         | 0.5 A <sup>2</sup> ·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.                                         | 3.4 W                                                                                             |
| Memory                                                   |                                                                                                   |

|                                               |                                                                                                                                                       |
|-----------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|
| Number of slots for SIMATIC memory card       | 1                                                                                                                                                     |
| SIMATIC memory card required                  | Yes                                                                                                                                                   |
| <b>Work memory</b>                            |                                                                                                                                                       |
| • integrated (for program)                    | 300 kbyte                                                                                                                                             |
| • integrated (for data)                       | 1.5 Mbyte                                                                                                                                             |
| <b>Load memory</b>                            |                                                                                                                                                       |
| • Plug-in (SIMATIC Memory Card), max.         | 32 Gbyte                                                                                                                                              |
| <b>Backup</b>                                 |                                                                                                                                                       |
| • maintenance-free                            | Yes                                                                                                                                                   |
| <b>CPU processing times</b>                   |                                                                                                                                                       |
| for bit operations, typ.                      | 6 ns                                                                                                                                                  |
| for word operations, typ.                     | 7 ns                                                                                                                                                  |
| for fixed point arithmetic, typ.              | 9 ns                                                                                                                                                  |
| for floating point arithmetic, typ.           | 37 ns                                                                                                                                                 |
| <b>CPU-blocks</b>                             |                                                                                                                                                       |
| Number of elements (total)                    | 4 000; Blocks (OB, FB, FC, DB) and UDTs                                                                                                               |
| <b>DB</b>                                     |                                                                                                                                                       |
| • 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.                                  | 1.5 Mbyte; For DBs with absolute addressing, the max. size is 64 KB                                                                                   |
| <b>FB</b>                                     |                                                                                                                                                       |
| • Number range                                | 0 ... 65 535                                                                                                                                          |
| • Size, max.                                  | 300 kbyte                                                                                                                                             |
| <b>FC</b>                                     |                                                                                                                                                       |
| • Number range                                | 0 ... 65 535                                                                                                                                          |
| • Size, max.                                  | 300 kbyte                                                                                                                                             |
| <b>OB</b>                                     |                                                                                                                                                       |
| • Size, max.                                  | 300 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; With minimum OB 3x cycle of 250 µs                                                                                                                |
| • Number of process alarm OBs                 | 50                                                                                                                                                    |
| • Number of DPV1 alarm OBs                    | 3                                                                                                                                                     |
| • Number of isochronous mode OBs              | 2                                                                                                                                                     |
| • Number of technology synchronous alarm OBs  | 2                                                                                                                                                     |
| • Number of startup OBs                       | 100                                                                                                                                                   |
| • Number of asynchronous error OBs            | 4                                                                                                                                                     |
| • Number of synchronous error OBs             | 2                                                                                                                                                     |
| • Number of diagnostic alarm OBs              | 1                                                                                                                                                     |
| <b>Nesting depth</b>                          |                                                                                                                                                       |
| • per priority class                          | 24                                                                                                                                                    |
| <b>Counters, timers and their retentivity</b> |                                                                                                                                                       |
| <b>S7 counter</b>                             |                                                                                                                                                       |
| • Number                                      | 2 048                                                                                                                                                 |
| Retentivity                                   |                                                                                                                                                       |
| — adjustable                                  | Yes                                                                                                                                                   |
| <b>IEC counter</b>                            |                                                                                                                                                       |
| • Number                                      | Any (only limited by the main memory)                                                                                                                 |
| Retentivity                                   |                                                                                                                                                       |
| — adjustable                                  | Yes                                                                                                                                                   |
| <b>S7 times</b>                               |                                                                                                                                                       |
| • Number                                      | 2 048                                                                                                                                                 |
| Retentivity                                   |                                                                                                                                                       |
| — adjustable                                  | Yes                                                                                                                                                   |
| <b>IEC timer</b>                              |                                                                                                                                                       |
| • Number                                      | Any (only limited by the main memory)                                                                                                                 |
| Retentivity                                   |                                                                                                                                                       |
| — adjustable                                  | Yes                                                                                                                                                   |

| Data areas and their retentivity                                   |                                                                                                                                                                                                                                   |
|--------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Retentive data area (incl. timers, counters, flags), max.          | 256 kbyte; in total; available retentive memory for bit memories, timers, counters, DBs, and technology data (axes): 216 KB                                                                                                       |
| Extended retentive data area (incl. timers, counters, flags), max. | 1.5 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                                                                                                                                                                         |
| 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                                               | 2 048; 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                                                          |                                                                                                                                                                                                                                   |
| — 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 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                                                              |                                                                                                                                                                                                                                   |
| • 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                                                                                                                                                                                                                               |
| • to DP, master                                                    | Yes; via PROFIBUS CM / CP                                                                                                                                                                                                         |
| • on DP, device                                                    | Yes; via PROFIBUS CM / CP                                                                                                                                                                                                         |
| • in AS, master                                                    | Yes                                                                                                                                                                                                                               |
| • in AS, device                                                    | 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                                                                                                                                                                    |
| <b>Protocols</b>                                                              |                                                                                                                                                                        |
| • IP protocol                                                                 | Yes; IPv4                                                                                                                                                              |
| • PROFINET IO Controller                                                      | Yes                                                                                                                                                                    |
| • PROFINET IO Device                                                          | Yes                                                                                                                                                                    |
| • SIMATIC communication                                                       | Yes                                                                                                                                                                    |
| • Open IE communication                                                       | Yes; Optionally also encrypted                                                                                                                                         |
| • Web server                                                                  | Yes                                                                                                                                                                    |
| • Media redundancy                                                            | Yes                                                                                                                                                                    |
| <b>PROFINET IO Controller</b>                                                 |                                                                                                                                                                        |
| <b>Services</b>                                                               |                                                                                                                                                                        |
| — Isochronous mode                                                            | Yes                                                                                                                                                                    |
| — Direct data exchange                                                        | Yes; Requirement: IRT and isochronous mode (MRPD optional)                                                                                                             |
| — IRT                                                                         | Yes                                                                                                                                                                    |
| — PROFINergy                                                                  | Yes; per user program                                                                                                                                                  |
| — Prioritized startup                                                         | Yes; Max. 32 PROFINET devices                                                                                                                                          |
| — Number of connectable IO Devices, max.                                      | 128; In total, up to 512 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, max.                               | 128                                                                                                                                                                    |
| — of which in line, max.                                                      | 128                                                                                                                                                                    |
| — Number of IO Devices that can be simultaneously activated/deactivated, max. | 8; in total across all interfaces                                                                                                                                      |
| — 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 |
| — PROFINET Security Class                                                     | 1                                                                                                                                                                      |
| <b>Update time for IRT</b>                                                    |                                                                                                                                                                        |
| — 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 500 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)                                                                               |
| <b>Update time for RT</b>                                                     |                                                                                                                                                                        |
| — 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                                                                                                                                                         |
| <b>PROFINET IO Device</b>                                                     |                                                                                                                                                                        |
| <b>Services</b>                                                               |                                                                                                                                                                        |
| — Isochronous mode                                                            | No                                                                                                                                                                     |
| — IRT                                                                         | Yes                                                                                                                                                                    |
| — PROFINergy                                                                  | Yes; per user program                                                                                                                                                  |
| — Shared device                                                               | Yes                                                                                                                                                                    |
| — Number of IO Controllers with shared device, max.                           | 4                                                                                                                                                                      |
| — activation/deactivation of I-devices                                        | Yes; per user program                                                                                                                                                  |
| — Asset management record                                                     | Yes; per user program                                                                                                                                                  |
| — PROFINET Security Class                                                     | SNMP Configuration and DCP Read Only                                                                                                                                   |
| <b>Interface types</b>                                                        |                                                                                                                                                                        |
| <b>RJ 45 (Ethernet)</b>                                                       |                                                                                                                                                                        |
| • 100 Mbps                                                                    | Yes                                                                                                                                                                    |
| • Autonegotiation                                                             | Yes                                                                                                                                                                    |
| • Autocrossing                                                                | Yes                                                                                                                                                                    |

|                                                                                                      |                                                                                    |
|------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|
| • Industrial Ethernet status LED                                                                     | Yes                                                                                |
| <b>Protocols</b>                                                                                     |                                                                                    |
| PROFIsafe                                                                                            | No                                                                                 |
| <b>Number of connections</b>                                                                         |                                                                                    |
| • Number of connections, max.                                                                        | 128; 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                                                    | 88                                                                                 |
| • Number of S7 routing paths                                                                         | 16                                                                                 |
| <b>Redundancy mode</b>                                                                               |                                                                                    |
| • H-Sync forwarding                                                                                  | Yes                                                                                |
| <b>Media redundancy</b>                                                                              |                                                                                    |
| — Media redundancy                                                                                   | only via 1st interface (X1)                                                        |
| — MRP                                                                                                | Yes; MRP Automanager according to IEC 62439-2 Edition 2.0, MRP Manager; MRP Client |
| — MRP interconnection, supported                                                                     | Yes; as MRP ring node according to IEC 62439-2 Edition 3.0                         |
| — MRPD                                                                                               | Yes; Requirement: IRT                                                              |
| — Switchover time on line break, typ.                                                                | 200 ms; For MRP, bumpless for MRPD                                                 |
| — Number of stations in the ring, max.                                                               | 50                                                                                 |
| <b>SIMATIC communication</b>                                                                         |                                                                                    |
| • PG/OP communication                                                                                | Yes; encryption with TLS V1.3 pre-selected                                         |
| • S7 routing                                                                                         | Yes                                                                                |
| • Data record routing                                                                                | Yes                                                                                |
| • S7 communication, as server                                                                        | Yes                                                                                |
| • S7 communication, as client                                                                        | Yes                                                                                |
| • User data per job, max.                                                                            | See online help (S7 communication, user data size)                                 |
| <b>Open IE communication</b>                                                                         |                                                                                    |
| • 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. 78 multicast circuits                                                    |
| • DHCP                                                                                               | Yes                                                                                |
| • DNS                                                                                                | Yes                                                                                |
| • SNMP                                                                                               | Yes                                                                                |
| • DCP                                                                                                | Yes                                                                                |
| • LLDP                                                                                               | Yes                                                                                |
| • Encryption                                                                                         | Yes; Optional                                                                      |
| <b>Web server</b>                                                                                    |                                                                                    |
| • HTTP                                                                                               | Yes; Standard and user pages                                                       |
| • HTTPS                                                                                              | Yes; Standard and user pages                                                       |
| • web API                                                                                            |                                                                                    |
| — Number of sessions, max.                                                                           | 50                                                                                 |
| — number of simultaneous HTTP calls, max.                                                            | 4                                                                                  |
| — HTTP request body, max.                                                                            | 131 072 byte                                                                       |
| <b>OPC UA</b>                                                                                        |                                                                                    |
| • Runtime license required                                                                           | Yes; "Small" license required                                                      |
| • OPC UA Client                                                                                      | Yes; Data Access (registered Read/Write), Method Call                              |
| — 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, recommended max.                                         | 1 000                                                                              |
| — Number of elements for one call of OPC-UA_NodeGetHandleList/OPC-UA_ReadList/OPC-UA_WriteList, max. | 300                                                                                |

|                                                                                                        |                                                                                                                          |
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| — Number of elements for one call of OPC-UA_NameSpaceGetIndexList, max.                                | 20                                                                                                                       |
| — Number of elements for one call of OPC-UA_MethodGetHandleList, max.                                  | 100                                                                                                                      |
| — 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, Alarms & Condition (A&C), Custom Address Space                   |
| — 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)                                                                 | Yes                                                                                                                      |
| — 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.                                                            | 50                                                                                                                       |
| — Sampling interval, min.                                                                              | 100 ms                                                                                                                   |
| — Publishing interval, min.                                                                            | 200 ms                                                                                                                   |
| — Number of server methods, max.                                                                       | 20                                                                                                                       |
| — Number of inputs/outputs per server method, max.                                                     | 20                                                                                                                       |
| — Number of monitored items, recommended max.                                                          | 4 000; 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.                                             | 15 000                                                                                                                   |
| ● Alarms and Conditions                                                                                | Yes                                                                                                                      |
| — Number of program alarms                                                                             | 100                                                                                                                      |
| — Number of alarms for system diagnostics                                                              | 50                                                                                                                       |
| <b>Further protocols</b>                                                                               |                                                                                                                          |
| ● MODBUS                                                                                               | Yes; MODBUS TCP                                                                                                          |
| <b>S7 message functions</b>                                                                            |                                                                                                                          |
| Number of login stations for message functions, max.                                                   | 32                                                                                                                       |
| number of subscriptions, max.                                                                          | 250                                                                                                                      |
| number of tags/attributes for subscriptions, max.                                                      | 2 000                                                                                                                    |
| Program alarms                                                                                         | Yes                                                                                                                      |
| Number of configurable program messages, max.                                                          | 5 000; Program messages are generated by the "Program_Alarm" block, ProDiag or GRAPH                                     |
| Number of loadable program messages in RUN, max.                                                       | 5 000                                                                                                                    |
| Number of simultaneously active program alarms                                                         |                                                                                                                          |
| ● Number of program alarms                                                                             | 600                                                                                                                      |
| ● Number of alarms for system diagnostics                                                              | 100                                                                                                                      |
| ● Number of alarms for motion technology objects                                                       | 160                                                                                                                      |
| <b>Test commissioning functions</b>                                                                    |                                                                                                                          |
| 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                                                                                                                        |
| Profiling                                                                                              | Yes                                                                                                                      |
| <b>Status/control</b>                                                                                  |                                                                                                                          |
| ● Status/control variable                                                                              | Yes                                                                                                                      |
| ● Variables                                                                                            | Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters                                                     |
| ● Number of variables, max.                                                                            |                                                                                                                          |
| — of which status variables, max.                                                                      | 200; per job                                                                                                             |

|                                                                              |                                                                                                                                   |
|------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|
| — of which control variables, max.                                           | 200; per job                                                                                                                      |
| <b>Forcing</b>                                                               |                                                                                                                                   |
| • Forcing                                                                    | Yes                                                                                                                               |
| • Forcing, variables                                                         | Peripheral inputs/outputs                                                                                                         |
| • Number of variables, max.                                                  | 200                                                                                                                               |
| <b>Diagnostic buffer</b>                                                     |                                                                                                                                   |
| • present                                                                    | Yes                                                                                                                               |
| • Number of entries, max.                                                    | 1 000                                                                                                                             |
| — of which powerfail-proof                                                   | 500                                                                                                                               |
| <b>Traces</b>                                                                |                                                                                                                                   |
| • Number of configurable Traces                                              | 4                                                                                                                                 |
| • Memory size per trace, max.                                                | 512 kbyte                                                                                                                         |
| <b>Interrupts/diagnostics/status information</b>                             |                                                                                                                                   |
| <b>Diagnostics indication LED</b>                                            |                                                                                                                                   |
| • RUN/STOP LED                                                               | Yes                                                                                                                               |
| • ERROR LED                                                                  | Yes                                                                                                                               |
| • MAINT LED                                                                  | Yes                                                                                                                               |
| • STOP ACTIVE LED                                                            | Yes                                                                                                                               |
| • Connection display LINK TX/RX                                              | Yes                                                                                                                               |
| <b>Supported technology objects</b>                                          |                                                                                                                                   |
| 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        | 1 120                                                                                                                             |
| • Required Motion Control resources                                          |                                                                                                                                   |
| — per speed-controlled axis                                                  | 40                                                                                                                                |
| — per positioning axis                                                       | 80                                                                                                                                |
| — per synchronous axis                                                       | 160                                                                                                                               |
| — per external encoder                                                       | 80                                                                                                                                |
| — per output cam                                                             | 20                                                                                                                                |
| — per cam track                                                              | 160                                                                                                                               |
| — per probe                                                                  | 40                                                                                                                                |
| • Positioning axis                                                           |                                                                                                                                   |
| — Number of positioning axes at motion control cycle of 4 ms (typical value) | 11                                                                                                                                |
| — Number of positioning axes at motion control cycle of 8 ms (typical value) | 14                                                                                                                                |
| 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                                                                                                                               |
| <b>Standards, approvals, certificates</b>                                    |                                                                                                                                   |
| <b>Ecological footprint</b>                                                  |                                                                                                                                   |
| • environmental product declaration                                          | Yes                                                                                                                               |
| <b>Global warming potential</b>                                              |                                                                                                                                   |
| — global warming potential, (total) [CO2 eq]                                 | 80.1 kg                                                                                                                           |
| — global warming potential, (during production) [CO2 eq]                     | 23.8 kg                                                                                                                           |
| — global warming potential, (during operation) [CO2 eq]                      | 57.4 kg                                                                                                                           |
| — global warming potential, (after end of life cycle) [CO2 eq]               | -1.29 kg                                                                                                                          |
| <b>Security</b>                                                              |                                                                                                                                   |
| PROFINET Security Class                                                      | 1                                                                                                                                 |
| signed firmware update                                                       | Yes                                                                                                                               |
| Secure Boot                                                                  | Yes                                                                                                                               |
| safely removing data                                                         | Yes                                                                                                                               |
| <b>Ambient conditions</b>                                                    |                                                                                                                                   |
| Ambient temperature during operation                                         |                                                                                                                                   |

|                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                        |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> <li>horizontal installation, min.</li> <li>horizontal installation, max.</li> </ul>                                                                                                                                                                                                                                                  | <p>-40 °C; = Tmin (incl. condensation/frost)</p> <p>70 °C; = Tmax; display: 50 °C, the display is switched off at an operating temperature of typically 50 °C</p>                                                                                      |
| <ul style="list-style-type: none"> <li>vertical installation, min.</li> <li>vertical installation, max.</li> </ul>                                                                                                                                                                                                                                                      | <p>-40 °C; = Tmin</p> <p>40 °C; = Tmax; display: 40 °C, at an operating temperature of typically 40 °C, the display is switched off</p>                                                                                                                |
| <b>Ambient temperature during storage/transportation</b>                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                        |
| <ul style="list-style-type: none"> <li>min.</li> <li>max.</li> </ul>                                                                                                                                                                                                                                                                                                    | <p>-40 °C</p> <p>70 °C</p>                                                                                                                                                                                                                             |
| <b>Altitude during operation relating to sea level</b>                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                        |
| <ul style="list-style-type: none"> <li>Installation altitude above sea level, max.</li> </ul>                                                                                                                                                                                                                                                                           | 5 000 m; Restrictions for installation altitudes > 2 000 m, see manual                                                                                                                                                                                 |
| <b>Relative humidity</b>                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                        |
| <ul style="list-style-type: none"> <li>With condensation, tested in accordance with IEC 60068-2-38, max.</li> </ul>                                                                                                                                                                                                                                                     | 100 %; RH incl. condensation / frost (no commissioning in bedewed state), horizontal installation                                                                                                                                                      |
| <b>Resistance</b>                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                        |
| <b>Coolants and lubricants</b>                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                        |
| <ul style="list-style-type: none"> <li>Resistant to commercially available coolants and lubricants</li> </ul>                                                                                                                                                                                                                                                           | Yes; Incl. diesel and oil droplets in the air                                                                                                                                                                                                          |
| <b>Use in stationary industrial systems</b>                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                        |
| <ul style="list-style-type: none"> <li>to biologically active substances according to EN 60721-3-3</li> <li>to chemically active substances according to EN 60721-3-3</li> <li>to mechanically active substances according to EN 60721-3-3</li> </ul>                                                                                                                   | <p>Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request</p> <p>Yes; Class 3C4 (RH &lt; 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *</p> <p>Yes; Class 3S4 incl. sand, dust, *</p> |
| <b>Use on ships/at sea</b>                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                        |
| <ul style="list-style-type: none"> <li>to biologically active substances according to EN 60721-3-6</li> <li>to chemically active substances according to EN 60721-3-6</li> <li>to mechanically active substances according to EN 60721-3-6</li> </ul>                                                                                                                   | <p>Yes; Class 6B2 mold, fungal and dry rot spores (excluding fauna)</p> <p>Yes; Class 6C3 (RH &lt; 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *</p> <p>Yes; Class 6S3 incl. sand, dust; *</p>                                   |
| <b>Usage in industrial process technology</b>                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                        |
| <ul style="list-style-type: none"> <li>Against chemically active substances acc. to EN 60654-4</li> <li>Environmental conditions for process, measuring and control systems acc. to ANSI/ISA-71.04</li> </ul>                                                                                                                                                           | <p>Yes; Class 3 (excluding trichlorethylene)</p> <p>Yes; Level GX group A/B (excluding trichlorethylene; harmful gas concentrations up to the limits of EN 60721-3-3 class 3C4 permissible); level LC3 (salt spray) and level LB3 (oil)</p>            |
| <b>Remark</b>                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                        |
| <ul style="list-style-type: none"> <li>Note regarding classification of environmental conditions acc. to EN 60721, EN 60654-4 and ANSI/ISA-71.04</li> </ul>                                                                                                                                                                                                             | * The supplied plug covers must remain in place over the unused interfaces during operation!                                                                                                                                                           |
| <b>Conformal coating</b>                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                        |
| <ul style="list-style-type: none"> <li>Coatings for printed circuit board assemblies acc. to EN 61086</li> <li>Protection against fouling acc. to EN 60664-3</li> <li>Military testing according to MIL-I-46058C, Amendment 7</li> <li>Qualification and Performance of Electrical Insulating Compound for Printed Board Assemblies according to IPC-CC-830A</li> </ul> | <p>Yes; Class 2 for high reliability</p> <p>Yes; Type 1 protection</p> <p>Yes; Discoloration of coating possible during service life</p> <p>Yes; Conformal coating, Class A</p>                                                                        |
| <b>Configuration</b>                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                        |
| <b>Programming</b>                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                        |
| <b>Programming language</b>                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                        |
| <ul style="list-style-type: none"> <li>LAD</li> <li>FBD</li> <li>STL</li> <li>SCL</li> <li>CFC</li> <li>GRAPH</li> </ul>                                                                                                                                                                                                                                                | <p>Yes</p> <p>Yes</p> <p>Yes</p> <p>Yes</p> <p>Yes</p> <p>Yes</p>                                                                                                                                                                                      |
| <b>Know-how protection</b>                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                        |
| <ul style="list-style-type: none"> <li>User program protection/password protection</li> <li>Copy protection</li> <li>Block protection</li> </ul>                                                                                                                                                                                                                        | <p>Yes</p> <p>Yes</p> <p>Yes</p>                                                                                                                                                                                                                       |
| <b>Access protection</b>                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                        |

- 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 No
- Protection level: Complete protection Yes
- User administration Yes; device-wide and centralized
- Number of users 100
- Number of groups 100
- Number of roles 50

- Cycle time monitoring**
- 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. | 400 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   | 10      | EC000236       |
| ETIM   | 9       | EC000236       |
| ETIM   | 8       | EC000236       |
| ETIM   | 7       | EC000236       |
| IDEA   | 4       | 3565           |
| UNSPSC | 15      | 32-15-17-05    |

**Approvals / Certificates**

**General Product Approval**



[China RoHS](#)



[TUEV](#)

**General Product Approval**

**EMV**

**For use in hazardous locations**

[China RoHS](#)



**For use in hazardous locations**

**Environment**



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