



Figure similar

SIMATIC DP, CPU 1512SP-1 PN for ET 200SP, central processing unit with work memory 400 KB for program and 2 MB for data, 1st interface: PROFINET IRT with 3-port switch, 6 ns bit performance, SIMATIC Memory Card required, BusAdapter required for port 1 and 2

| General information  |   |
|--|---|
| Product type designation   | CPU 1512SP-1 PN   |
| HW functional status   | FS04  |
| Firmware version   | V4.0  |
| <ul style="list-style-type: none"> <li>FW update possible</li> </ul>                                     | Yes   |
| Product function   |   |
| <ul style="list-style-type: none"> <li>I&amp;M data</li> </ul>   | Yes; I&M0 to I&M3   |
| <ul style="list-style-type: none"> <li>Module swapping during operation (hot swapping)</li> </ul>        | Yes; Multi-hot swapping   |
| <ul style="list-style-type: none"> <li>Isochronous mode</li> </ul>                                       | Yes; only with PROFINET; with minimum OB 6x cycle of 500 µs   |
| <ul style="list-style-type: none"> <li>SysLog</li> </ul>   | Yes   |
| Engineering with   |   |
| <ul style="list-style-type: none"> <li>STEP 7 TIA Portal configurable/integrated from version</li> </ul> | V20 (FW V4.0) / V18 (FW V3.0) or higher; configurable with older TIA Portal versions as 6ES7 512-1DK01-0AB0 |
| Configuration control  |   |
| via dataset  | Yes   |
| Control elements   |   |
| Mode selector switch   | 1   |
| Supply voltage   |   |
| Rated value (DC)   | 24 V  |
| permissible range, lower limit (DC)  | 19.2 V  |
| permissible range, upper limit (DC)  | 28.8 V  |
| Reverse polarity protection  | Yes   |
| Mains buffering  |   |
| <ul style="list-style-type: none"> <li>Mains/voltage failure stored energy time</li> </ul>               | 10 ms   |
| Input current  |   |
| Current consumption (rated value)  | 0.48 A  |
| Current consumption, max.  | 0.7 A   |
| Inrush current, max.   | 1.34 A; Rated value   |
| I <sup>2</sup> t   | 0.3 A <sup>2</sup> ·s   |
| Power  |   |
| Infeed power to the backplane bus  | 8.05 W  |
| Power loss   |   |
| Power loss, typ.   | 3.5 W   |
| Memory   |   |
| Number of slots for SIMATIC memory card  | 1   |
| SIMATIC memory card required   | Yes   |
| Work memory  |   |
| <ul style="list-style-type: none"> <li>integrated (for program)</li> </ul>                               | 400 kbyte   |
| <ul style="list-style-type: none"> <li>integrated (for data)</li> </ul>                                  | 2 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 Mbyte; For DBs with absolute addressing, the max. size is 64 KB   |
| <b>FB</b>   |   |
| • Number range  | 0 ... 65 535  |
| • Size, max.  | 400 kbyte   |
| <b>FC</b>   |   |
| • Number range  | 0 ... 65 535  |
| • Size, max.  | 400 kbyte   |
| <b>OB</b>   |   |
| • Size, max.  | 400 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                          | 1   |
| • 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   |
| <b>Data areas and their retentivity</b>                   |   |
| 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                           |
| <b>Flag</b>   |   |
| • Size, max.  | 16 kbyte  |
| • Number of clock memories                                | 8; 8 clock memory bit, grouped into one clock memory byte   |
| <b>Data blocks</b>  |   |

|   |   |
|---|---|
| <ul style="list-style-type: none"> <li>• Retentivity adjustable</li> <li>• Retentivity preset</li> </ul>  | <p>Yes</p> <p>No</p>  |
| <b>Local data</b>   |   |
| <ul style="list-style-type: none"> <li>• per priority class, max.</li> </ul>  | 64 kbyte; max. 16 KB per block  |
| <b>Address area</b>   |   |
| Number of IO modules  | 2 048; max. number of modules / submodules  |
| <b>I/O address area</b>   |   |
| <ul style="list-style-type: none"> <li>• Inputs</li> <li>• Outputs</li> </ul>   | <p>32 kbyte; All inputs are in the process image</p> <p>32 kbyte; All outputs are in the process image</p>  |
| <b>per integrated IO subsystem</b>  |   |
| — Inputs (volume)   | 8 kbyte   |
| — Outputs (volume)  | 8 kbyte   |
| <b>per CM/CP</b>  |   |
| — Inputs (volume)   | 8 kbyte   |
| — Outputs (volume)  | 8 kbyte   |
| <b>Subprocess images</b>  |   |
| <ul style="list-style-type: none"> <li>• Number of subprocess images, max.</li> </ul>   | 32  |
| <b>Address space per module</b>   |   |
| <ul style="list-style-type: none"> <li>• Address space per module, max.</li> </ul>  | 288 byte; For input and output data respectively  |
| <b>Address space per station</b>  |   |
| <ul style="list-style-type: none"> <li>• Address space per station, max.</li> </ul>   | 2 560 byte; for central inputs and outputs; depending on configuration; 2 048 bytes for ET 200SP modules + 512 bytes for ET 200AL modules   |
| <b>Hardware configuration</b>   |   |
| 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) |
| <b>Number of DP masters</b>   |   |
| <ul style="list-style-type: none"> <li>• Via CM</li> </ul>  | 1   |
| <b>Number of IO Controllers</b>   |   |
| <ul style="list-style-type: none"> <li>• integrated</li> <li>• Via CM</li> </ul>  | <p>1</p> <p>0</p>   |
| <b>Rack</b>   |   |
| <ul style="list-style-type: none"> <li>• Modules per rack, max.</li> <li>• Quantity of operable ET 200SP modules, max.</li> <li>• Quantity of operable ET 200AL modules, max.</li> <li>• Number of lines, max.</li> </ul> | <p>82; CPU + 64 modules + server module (mounting width max. 1 m) + 16 ET 200AL modules</p> <p>64</p> <p>16</p> <p>1</p>  |
| <b>PtP CM</b>   |   |
| <ul style="list-style-type: none"> <li>• Number of PtP CMs</li> </ul>   | the number of connectable PtP CMs is only limited by the number of available slots  |
| <b>Time of day</b>  |   |
| <b>Clock</b>  |   |
| <ul style="list-style-type: none"> <li>• Type</li> <li>• Backup time</li> <li>• Deviation per day, max.</li> </ul>  | <p>Hardware clock</p> <p>6 wk; At 40 °C ambient temperature, typically</p> <p>10 s; Typ.: 2 s</p>   |
| <b>Operating hours counter</b>  |   |
| <ul style="list-style-type: none"> <li>• Number</li> </ul>  | 16  |
| <b>Clock synchronization</b>  |   |
| <ul style="list-style-type: none"> <li>• supported</li> <li>• to DP, master</li> <li>• on DP, device</li> <li>• in AS, master</li> <li>• in AS, device</li> <li>• on Ethernet via NTP</li> </ul>                          | <p>Yes</p> <p>Yes; Via CM DP module</p> <p>Yes; Via CM DP module</p> <p>Yes</p> <p>Yes</p> <p>Yes</p>   |
| <b>Interfaces</b>   |   |
| Number of PROFINET interfaces   | 1   |
| Number of PROFIBUS interfaces   | 1; Via CM DP module   |
| Optical interface   | Yes; Via SIMATIC BusAdapter   |
| <b>1. Interface</b>   |   |
| <b>Interface types</b>  |   |
| <ul style="list-style-type: none"> <li>• RJ 45 (Ethernet)</li> <li>• Number of ports</li> </ul>   | <p>Yes; X1 P3; opt. X1 P1 and X1 P2 via BusAdapter BA 2x RJ45</p> <p>3; 1. Integr. + 2. via BusAdapter</p>  |

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|--|--|
| <ul style="list-style-type: none"> <li>integrated switch</li> <li>BusAdapter (PROFINET)</li> </ul>   | <p>Yes</p> <p>Yes; compatible BusAdapters: BA 2x RJ45, BA 2x M12, BA 2x FC, BA 2x LC, BA LC/RJ45, BA LC/FC, BA 2x SCRJ, BA SCRJ/RJ45, BA SCRJ/FC</p>   |
| <b>Protocols</b>   |  |
| <ul style="list-style-type: none"> <li>IP protocol</li> <li>PROFINET IO Controller</li> <li>PROFINET IO Device</li> <li>SIMATIC communication</li> <li>Open IE communication</li> <li>Web server</li> <li>Media redundancy</li> </ul>  | <p>Yes; IPv4</p> <p>Yes</p> <p>Yes</p> <p>Yes</p> <p>Yes; Optionally also encrypted</p> <p>Yes</p> <p>Yes</p>  |
| <b>PROFINET IO Controller</b>  |  |
| <b>Services</b>  |  |
| <ul style="list-style-type: none"> <li>Isochronous mode</li> <li>Direct data exchange</li> <li>IRT</li> <li>PROFInergy</li> <li>Prioritized startup</li> <li>Number of connectable IO Devices, max.</li> <li>Of which IO devices with IRT, max.</li> <li>Number of connectable IO Devices for RT, max.</li> <li>of which in line, max.</li> <li>Number of IO Devices that can be simultaneously activated/deactivated, max.</li> <li>Number of IO Devices per tool, max.</li> <li>Updating times</li> <li>PROFINET Security Class</li> </ul> | <p>Yes</p> <p>Yes; Requirement: IRT and isochronous mode (MRPD optional)</p> <p>Yes</p> <p>Yes; per user program</p> <p>Yes; Max. 32 PROFINET devices</p> <p>128; In total, up to 512 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFINET</p> <p>64</p> <p>128</p> <p>128</p> <p>8; in total across all interfaces</p> <p>8</p> <p>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</p> <p>1</p> |
| <b>Update time for IRT</b>   |  |
| <ul style="list-style-type: none"> <li>for send cycle of 250 µs</li> <li>for send cycle of 500 µs</li> <li>for send cycle of 1 ms</li> <li>for send cycle of 2 ms</li> <li>for send cycle of 4 ms</li> <li>With IRT and parameterization of "odd" send cycles</li> </ul>   | <p>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</p> <p>500 µs to 8 ms</p> <p>1 ms to 16 ms</p> <p>2 ms to 32 ms</p> <p>4 ms to 64 ms</p> <p>Update time = set "odd" send clock (any multiple of 125 µs: 375 µs, 625 µs ... 3 875 µs)</p>  |
| <b>Update time for RT</b>  |  |
| <ul style="list-style-type: none"> <li>for send cycle of 250 µs</li> <li>for send cycle of 500 µs</li> <li>for send cycle of 1 ms</li> <li>for send cycle of 2 ms</li> <li>for send cycle of 4 ms</li> </ul>   | <p>250 µs to 128 ms</p> <p>500 µs to 256 ms</p> <p>1 ms to 512 ms</p> <p>2 ms to 512 ms</p> <p>4 ms to 512 ms</p>  |
| <b>PROFINET IO Device</b>  |  |
| <b>Services</b>  |  |
| <ul style="list-style-type: none"> <li>Isochronous mode</li> <li>IRT</li> <li>PROFInergy</li> <li>Shared device</li> <li>Number of IO Controllers with shared device, max.</li> <li>activation/deactivation of I-devices</li> <li>Asset management record</li> <li>PROFINET Security Class</li> </ul>  | <p>No</p> <p>Yes</p> <p>Yes; per user program</p> <p>Yes</p> <p>4</p> <p>Yes; per user program</p> <p>Yes; per user program</p> <p>SNMP Configuration and DCP Read Only</p>  |
| <b>2. Interface</b>  |  |
| <b>Interface types</b>   |  |
| <ul style="list-style-type: none"> <li>RS 485</li> <li>Number of ports</li> </ul>  | <p>Yes; Via CM DP module</p> <p>1</p>  |
| <b>Protocols</b>   |  |
| <ul style="list-style-type: none"> <li>PROFIBUS DP master</li> <li>PROFIBUS DP device</li> <li>SIMATIC communication</li> </ul>  | <p>Yes</p> <p>Yes</p> <p>Yes</p>   |

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|--|---|
| <b>PROFIBUS DP master</b>  |   |
| <ul style="list-style-type: none"> <li>• Number of connections, max.</li> <li>• max. number of DP devices</li> </ul>   | 48; Of which 4 each reserved for ES and HMI<br>125; In total, up to 512 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFINET   |
| <b>Services</b>  |   |
| <ul style="list-style-type: none"> <li>— Equidistance</li> <li>— Isochronous mode</li> <li>— activation/deactivation of DP devices</li> </ul>  | No<br>No<br>Yes   |
| <b>Interface types</b>   |   |
| <b>RJ 45 (Ethernet)</b>  |   |
| <ul style="list-style-type: none"> <li>• 100 Mbps</li> <li>• Autonegotiation</li> <li>• Autocrossing</li> <li>• Industrial Ethernet status LED</li> </ul>  | Yes<br>Yes<br>Yes<br>Yes  |
| <b>RS 485</b>  |   |
| <ul style="list-style-type: none"> <li>• Transmission rate, max.</li> </ul>  | 12 Mbit/s   |
| <b>Protocols</b>   |   |
| PROFIsafe  | No  |
| <b>Number of connections</b>   |   |
| <ul style="list-style-type: none"> <li>• Number of connections, max.</li> <li>• Number of connections reserved for ES/HMI/web</li> <li>• Number of connections via integrated interfaces</li> <li>• Number of connections per CP/CM</li> <li>• Number of S7 routing paths</li> </ul>   | 128; via integrated interfaces of the CPU and connected CPs / CMs<br>10<br>88<br>32<br>16   |
| <b>Redundancy mode</b>   |   |
| <ul style="list-style-type: none"> <li>• H-Sync forwarding</li> </ul>  | Yes   |
| <b>Media redundancy</b>  |   |
| <ul style="list-style-type: none"> <li>— Media redundancy</li> <li>— MRP</li> <li>— MRP interconnection, supported</li> <li>— MRPD</li> <li>— Switchover time on line break, typ.</li> <li>— Number of stations in the ring, max.</li> </ul>   | Yes; only via BusAdapter<br>Yes; MRP Automanager according to IEC 62439-2 Edition 2.0, MRP Manager; MRP Client<br>Yes; as MRP ring node according to IEC 62439-2 Edition 3.0<br>Yes; Requirement: IRT<br>200 ms; For MRP, bumpless for MRPD<br>50 |
| <b>SIMATIC communication</b>   |   |
| <ul style="list-style-type: none"> <li>• PG/OP communication</li> <li>• S7 routing</li> <li>• Data record routing</li> <li>• S7 communication, as server</li> <li>• S7 communication, as client</li> <li>• User data per job, max.</li> </ul>  | Yes; encryption with TLS V1.3 pre-selected<br>Yes<br>Yes<br>Yes<br>Yes<br>See online help (S7 communication, user data size)  |
| <b>Open IE communication</b>   |   |
| <ul style="list-style-type: none"> <li>• TCP/IP               <ul style="list-style-type: none"> <li>— Data length, max.</li> <li>— several passive connections per port, supported</li> </ul> </li> <li>• ISO-on-TCP (RFC1006)               <ul style="list-style-type: none"> <li>— Data length, max.</li> </ul> </li> <li>• UDP               <ul style="list-style-type: none"> <li>— Data length, max.</li> <li>— UDP multicast</li> </ul> </li> <li>• DHCP</li> <li>• DNS</li> <li>• SNMP</li> <li>• DCP</li> <li>• LLDP</li> <li>• Encryption</li> </ul> | Yes<br>64 kbyte<br>Yes<br>Yes<br>64 kbyte<br>Yes<br>2 kbyte; 1 472 bytes for UDP broadcast<br>Yes; max. 78 multicast circuits<br>Yes<br>Yes<br>Yes<br>Yes<br>Yes<br>Yes<br>Yes; Optional  |
| <b>Web server</b>  |   |
| <ul style="list-style-type: none"> <li>• HTTP</li> <li>• HTTPS</li> <li>• web API               <ul style="list-style-type: none"> <li>— Number of sessions, max.</li> </ul> </li> </ul>   | Yes; Standard and user pages<br>Yes; Standard and user pages<br>50  |

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|---|--------------|
| — number of simultaneous HTTP calls, max. | 4            |
| — HTTP request body, max.                 | 131 072 byte |

#### OPC UA

|  |   |
|--|---|
| • 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   |
| — 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, role-based access control |
| — Application authentication   | Yes   |
| — Security policies  | available security policies: None, Basic128Rsa15, Basic256Rsa15, Basic256Sha256, Aes128Sha256RsaOaep, Aes256Sha256RsaPss          |
| — User authentication  | "anonymous" or by user name & password  |
| — GDS support (certificate management)   | 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; max. 20 concurrently running jobs each for asynchronous instructions OPC-UA_ServerMethodPre and OPC-UA_ServerMethodPost       |
| — 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  |

#### Further protocols

|          |                 |
|----------|-----------------|
| • MODBUS | Yes; MODBUS TCP |
|----------|-----------------|

#### S7 message functions

|  |  |
|--|--|
| 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  |

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|--|---|
| • 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  | Yes   |
| 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   |
| • Monitoring of the supply voltage (PWR-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  |
| <b>Controller</b>  |   |
| • 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  |
| <b>Counting and measuring</b>  |   |
| • 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]                                 | 83.2 kg   |
| — global warming potential, (during production) [CO2 eq]                     | 22.3 kg   |

|  |           |
|--|-----------|
| — global warming potential, (during operation) [CO2 eq]        | 61.8 kg   |
| — global warming potential, (after end of life cycle) [CO2 eq] | -0.949 kg |

#### product functions / security / header

|                         |     |
|-------------------------|-----|
| PROFINET Security Class | 1   |
| signed firmware update  | Yes |
| Secure Boot             | Yes |
| safely removing data    | Yes |

#### Ambient conditions

|   |  |
|---|--|
| Ambient temperature during operation            |  |
| • horizontal installation, min.                 | -30 °C; No condensation  |
| • horizontal installation, max.                 | 60 °C  |
| • vertical installation, min.                   | -30 °C; No condensation  |
| • vertical installation, max.                   | 50 °C  |
| Altitude during operation relating to sea level |  |
| • Installation altitude above sea level, max.   | 5 000 m; Restrictions for installation altitudes > 2 000 m, see manual |

#### configuration / header

|                                      |     |
|--------------------------------------|-----|
| configuration / programming / header |     |
| Programming language                 |     |
| — LAD                                | Yes |
| — FBD                                | Yes |
| — STL                                | Yes |
| — SCL                                | Yes |
| — CFC                                | Yes |
| — GRAPH                              | Yes |

#### Know-how protection

|   |     |
|---|-----|
| • User program protection/password protection | Yes |
| • Copy protection                             | Yes |
| • Block protection                            | Yes |

#### Access protection

|   |                                  |
|---|----------------------------------|
| • protection of confidential configuration data   | Yes                              |
| • 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                               |

#### programming / cycle time monitoring / header

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

#### Dimensions

|        |        |
|--------|--------|
| Width  | 100 mm |
| Height | 117 mm |
| Depth  | 75 mm  |

#### Weights

|                 |       |
|-----------------|-------|
| Weight, approx. | 265 g |
|-----------------|-------|

#### Classifications

|        | Version | Classification |
|--------|---------|----------------|
| eClass | 14      | 27-24-26-07    |
| eClass | 12      | 27-24-26-07    |
| eClass | 9.1     | 27-24-26-07    |
| eClass | 9       | 27-24-26-07    |
| eClass | 8       | 27-24-26-07    |
| eClass | 7.1     | 27-24-26-07    |
| eClass | 6       | 27-24-26-07    |
| ETIM   | 9       | EC001603       |



|        |    |             |
|--------|----|-------------|
| ETIM   | 8  | EC001603    |
| ETIM   | 7  | EC001603    |
| IDEA   | 4  | 3565        |
| UNSPSC | 15 | 32-15-17-05 |

Approvals / Certificates

General Product Approval

[Manufacturer Declaration](#)



[Miscellaneous](#)



General Product Approval

For use in hazardous locations

[KC](#)



[EM](#)

[CCC-Ex](#)



For use in hazardous locations

Marine / Shipping



[Miscellaneous](#)

[CCC-Ex](#)



Marine / Shipping

other



[NK / Nippon Kaiji Kyokai](#)



[CCS \(China Classification Society\)](#)



other

Environment

[PROFINET](#)



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