



Figure similar

SIPLUS S7-1500 CPU 1516F-3 PN rail based on 6ES7516-3FP03-0AB0 with conformal coating OT4: -40...+70 °C ST1/2: 85 °C for 10 minutes . central processing unit with work memory 3 MB for program and 7.5 MB for data 1st interface: PROFINET IRT with 2-port switch, 2nd interface: PROFINET RT, 3rd interface: PROFIBUS, 6 ns bit performance, SIMATIC Memory Card required

General information	
Product type designation	CPU 1516F-3 PN/DP
Firmware version	
• FW update possible	Yes
based on	<a href="#">6ES7516-3FP03-0AB0</a>
Product function	
• I&M data	Yes; I&M0 to I&M3
• Isochronous mode	Yes; Distributed and central; with minimum OB 6x cycle of 375 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]	6.1 cm
Control elements	
Number of keys	8
Mode buttons	2
Supply voltage	
Rated value (DC)	24 V
permissible range, lower limit (DC)	19.2 V
permissible range, upper limit (DC)	28.8 V
Reverse polarity protection	Yes
Mains buffering	
• Mains/voltage failure stored energy time	5 ms
• Repeat rate, min.	1/s
Input current	
Current consumption (rated value)	0.87 A
Current consumption, max.	1.08 A
Inrush current, max.	1.15 A; Rated value
I <sup>2</sup> t	0.6 A <sup>2</sup> ·s
Power	
Infeed power to the backplane bus	12 W
Power consumption from the backplane bus (balanced)	6.7 W
Power loss	
Power loss, typ.	4 W
Memory	
Number of slots for SIMATIC memory card	1

SIMATIC memory card required	Yes
<b>Work memory</b>	
• integrated (for program)	3 Mbyte
• integrated (for data)	7.5 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)	8 000; 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.	7.5 Mbyte; For DBs with absolute addressing, the max. size is 64 KB
<b>FB</b>	
• Number range	0 ... 65 535
• Size, max.	1 Mbyte
<b>FC</b>	
• Number range	0 ... 65 535
• Size, max.	1 Mbyte
<b>OB</b>	
• Size, max.	1 Mbyte
• 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	3
• 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; Up to 8 possible for F-blocks
<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.	512 kbyte; In total; available retentive memory for bit memories, timers, counters, DBs, and technology data (axes): 472 KB

Extended retentive data area (incl. timers, counters, flags), max.	7.5 Mbyte; When using PS 6 0W 24/48/60 V DC HF
<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>	
• Retentivity adjustable	Yes
• Retentivity preset	No
<b>Local data</b>	
• per priority class, max.	64 kbyte; max. 16 KB per block
<b>Address area</b>	
Number of IO modules	8 192; max. number of modules / submodules
<b>I/O address area</b>	
• 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
<b>Subprocess images</b>	
• Number of subprocess images, max.	32
<b>Hardware configuration</b>	
Number of distributed IO systems	64; 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>	
• integrated	1
• Via CM	8; A maximum of 8 CMs/CPs (PROFIBUS, PROFINET, Ethernet) can be inserted in total
<b>Number of IO Controllers</b>	
• integrated	2
• Via CM	8; A maximum of 8 CMs/CPs (PROFIBUS, PROFINET, Ethernet) can be inserted in total
<b>Rack</b>	
• Modules per rack, max.	32; CPU + 31 modules
• Number of lines, max.	1
<b>PtP CM</b>	
• Number of PtP CMs	the number of connectable PtP CMs is only limited by the number of available slots
<b>Time of day</b>	
<b>Clock</b>	
• Type	Hardware clock
• Backup time	6 wk; At 40 °C ambient temperature, typically
• Deviation per day, max.	10 s; Typ.: 2 s
<b>Operating hours counter</b>	
• Number	16
<b>Clock synchronization</b>	
• supported	Yes
• to DP, master	Yes
• on DP, device	Yes; via PROFIBUS CM / CP
• in AS, master	Yes
• in AS, device	Yes
• on Ethernet via NTP	Yes
<b>Interfaces</b>	
Number of PROFINET interfaces	2
Number of PROFIBUS interfaces	1
<b>1. Interface</b>	
<b>Interface types</b>	
• RJ 45 (Ethernet)	Yes; X1
• Number of ports	2
• integrated switch	Yes

Protocols	
• 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
PROFINET IO Controller	
Services	
— 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.	256; in total, up to 1024 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.	256
— of which in line, max.	256
— 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
Update time for IRT	
— for send cycle of 250 µs	250 µs to 4 ms; Note: In the case of IRT with isochronous mode, the minimum update time of 375 µs of the isochronous OB is decisive
— for send cycle of 500 µs	500 µs to 8 ms
— for send cycle of 1 ms	1 ms to 16 ms
— for send cycle of 2 ms	2 ms to 32 ms
— for send cycle of 4 ms	4 ms to 64 ms
— With IRT and parameterization of "odd" send cycles	Update time = set "odd" send clock (any multiple of 125 µs: 375 µs, 625 µs ... 3 875 µs)
Update time for RT	
— for send cycle of 250 µs	250 µs to 128 ms
— for send cycle of 500 µs	500 µs to 256 ms
— for send cycle of 1 ms	1 ms to 512 ms
— for send cycle of 2 ms	2 ms to 512 ms
— for send cycle of 4 ms	4 ms to 512 ms
PROFINET IO Device	
Services	
— 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
2. Interface	
Interface types	
• RJ 45 (Ethernet)	Yes; X2
• Number of ports	1
• integrated switch	No
Protocols	
• 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	No
<b>PROFINET IO Controller</b>	
<b>Services</b>	
— Isochronous mode	No
— Direct data exchange	No
— IRT	No
— PROFINergy	Yes; per user program
— Prioritized startup	No
— Number of connectable IO Devices, max.	32; in total, up to 1024 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFINET
— Number of connectable IO Devices for RT, max.	32
— of which in line, max.	32
— 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 RT</b>	
— for send cycle of 1 ms	1 ms to 512 ms
<b>PROFINET IO Device</b>	
<b>Services</b>	
— Isochronous mode	No
— IRT	No
— PROFINergy	Yes; per user program
— Prioritized startup	No
— 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>3. Interface</b>	
<b>Interface types</b>	
• RS 485	Yes; X3
• Number of ports	1
<b>Protocols</b>	
• PROFIBUS DP master	Yes
• PROFIBUS DP device	No
• SIMATIC communication	Yes
<b>PROFIBUS DP master</b>	
• Number of connections, max.	48; for the integrated PROFIBUS DP interface
• max. number of DP devices	125; In total, up to 1 000 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFINET
<b>Services</b>	
— Equidistance	Yes
— Isochronous mode	Yes
— activation/deactivation of DP devices	Yes
<b>Interface types</b>	
<b>RJ 45 (Ethernet)</b>	
• 100 Mbps	Yes
• Autonegotiation	Yes
• Autocrossing	Yes
• Industrial Ethernet status LED	Yes
<b>RS 485</b>	
• Transmission rate, max.	12 Mbit/s
<b>Protocols</b>	
PROFIsafe	Yes; V2.4 / V2.6
<b>Number of connections</b>	
• Number of connections, max.	256; via integrated interfaces of the CPU and connected CPs / CMs

<ul style="list-style-type: none"> <li>• Number of connections reserved for ES/HMI/web</li> </ul>	10
<ul style="list-style-type: none"> <li>• Number of connections via integrated interfaces</li> </ul>	128
<ul style="list-style-type: none"> <li>• Number of S7 routing paths</li> </ul>	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> </ul>	only via 1st interface (X1)
<ul style="list-style-type: none"> <li>— MRP</li> </ul>	Yes; MRP Automanager according to IEC 62439-2 Edition 2.0, MRP Manager; MRP Client
<ul style="list-style-type: none"> <li>— MRP interconnection, supported</li> </ul>	Yes; as MRP ring node according to IEC 62439-2 Edition 3.0
<ul style="list-style-type: none"> <li>— MRPD</li> </ul>	Yes; Requirement: IRT
<ul style="list-style-type: none"> <li>— Switchover time on line break, typ.</li> </ul>	200 ms; For MRP, bumpless for MRPD
<ul style="list-style-type: none"> <li>— Number of stations in the ring, max.</li> </ul>	50
<b>SIMATIC communication</b>	
<ul style="list-style-type: none"> <li>• PG/OP communication</li> </ul>	Yes; encryption with TLS V1.3 pre-selected
<ul style="list-style-type: none"> <li>• S7 routing</li> </ul>	Yes
<ul style="list-style-type: none"> <li>• Data record routing</li> </ul>	Yes
<ul style="list-style-type: none"> <li>• S7 communication, as server</li> </ul>	Yes
<ul style="list-style-type: none"> <li>• S7 communication, as client</li> </ul>	Yes
<ul style="list-style-type: none"> <li>• User data per job, max.</li> </ul>	See online help (S7 communication, user data size)
<b>Open IE communication</b>	
<ul style="list-style-type: none"> <li>• TCP/IP</li> </ul>	Yes
<ul style="list-style-type: none"> <li>— Data length, max.</li> </ul>	64 kbyte
<ul style="list-style-type: none"> <li>— several passive connections per port, supported</li> </ul>	Yes
<ul style="list-style-type: none"> <li>• ISO-on-TCP (RFC1006)</li> </ul>	Yes
<ul style="list-style-type: none"> <li>— Data length, max.</li> </ul>	64 kbyte
<ul style="list-style-type: none"> <li>• UDP</li> </ul>	Yes
<ul style="list-style-type: none"> <li>— Data length, max.</li> </ul>	2 kbyte; 1 472 bytes for UDP broadcast
<ul style="list-style-type: none"> <li>— UDP multicast</li> </ul>	Yes; max. 118 multicast circuits
<ul style="list-style-type: none"> <li>• DHCP</li> </ul>	Yes
<ul style="list-style-type: none"> <li>• DNS</li> </ul>	Yes
<ul style="list-style-type: none"> <li>• SNMP</li> </ul>	Yes
<ul style="list-style-type: none"> <li>• DCP</li> </ul>	Yes
<ul style="list-style-type: none"> <li>• LLDP</li> </ul>	Yes
<ul style="list-style-type: none"> <li>• Encryption</li> </ul>	Yes; Optional
<b>Web server</b>	
<ul style="list-style-type: none"> <li>• HTTP</li> </ul>	Yes; Standard and user pages
<ul style="list-style-type: none"> <li>• HTTPS</li> </ul>	Yes; Standard and user pages
<ul style="list-style-type: none"> <li>• web API</li> </ul>	
<ul style="list-style-type: none"> <li>— Number of sessions, max.</li> </ul>	100
<ul style="list-style-type: none"> <li>— number of simultaneous HTTP calls, max.</li> </ul>	4
<ul style="list-style-type: none"> <li>— HTTP request body, max.</li> </ul>	131 072 byte
<b>OPC UA</b>	
<ul style="list-style-type: none"> <li>• Runtime license required</li> </ul>	Yes; "Medium" license required
<ul style="list-style-type: none"> <li>• OPC UA Client</li> </ul>	Yes; Data Access (registered Read/Write), Method Call
<ul style="list-style-type: none"> <li>— Application authentication</li> </ul>	Yes
<ul style="list-style-type: none"> <li>— Security policies</li> </ul>	Available security policies: None, Basic128Rsa15, Basic256Rsa15, Basic256Sha256
<ul style="list-style-type: none"> <li>— User authentication</li> </ul>	"anonymous" or by user name & password
<ul style="list-style-type: none"> <li>— Number of connections, max.</li> </ul>	10
<ul style="list-style-type: none"> <li>— Number of nodes of the client interfaces, recommended max.</li> </ul>	2 000
<ul style="list-style-type: none"> <li>— Number of elements for one call of OPC-UA_NodeGetHandleList/OPC-UA_ReadList/OPC-UA_WriteList, max.</li> </ul>	300
<ul style="list-style-type: none"> <li>— Number of elements for one call of OPC-UA_NameSpaceGetIndexList, max.</li> </ul>	20
<ul style="list-style-type: none"> <li>— Number of elements for one call of OPC-UA_MethodGetHandleList, max.</li> </ul>	100
<ul style="list-style-type: none"> <li>— Number of simultaneous calls of the client instructions for session management, per connection, max.</li> </ul>	1
<ul style="list-style-type: none"> <li>— Number of simultaneous calls of the client instructions for data access, per connection, max.</li> </ul>	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.	48
— Number of accessible variables, max.	100 000
— Number of registerable nodes, max.	20 000
— Number of subscriptions per session, max.	50
— Sampling interval, min.	100 ms
— Publishing interval, min.	100 ms
— Number of server methods, max.	50; 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.	30 000
● Alarms and Conditions	Yes
— Number of program alarms	200
— Number of alarms for system diagnostics	100
<b>Further protocols</b>	
● MODBUS	Yes; MODBUS TCP
<b>Isochronous mode</b>	
Equidistance	Yes
<b>S7 message functions</b>	
Number of login stations for message functions, max.	64
number of subscriptions, max.	500
number of tags/attributes for subscriptions, max.	8 000
Program alarms	Yes
Number of configurable program messages, max.	10 000; Program messages are generated by the "Program_Alarm" block, ProDiag or GRAPH
Number of loadable program messages in RUN, max.	10 000
Number of simultaneously active program alarms	
● Number of program alarms	1 000
● Number of alarms for system diagnostics	200
● 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 8 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; without fail-safe
● Variables	inputs/outputs, bit memories, DBs, peripheral I/Os (without fail-safe), times, 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; without fail-safe
● Forcing, variables	peripheral inputs/outputs (without fail-safe)
● Number of variables, max.	200
<b>Diagnostic buffer</b>	

<ul style="list-style-type: none"> <li>• present</li> </ul>	Yes
<ul style="list-style-type: none"> <li>• Number of entries, max.</li> </ul>	3 200
<ul style="list-style-type: none"> <li>— of which powerfail-proof</li> </ul>	500
<b>Traces</b>	
<ul style="list-style-type: none"> <li>• Number of configurable Traces</li> </ul>	4
<ul style="list-style-type: none"> <li>• Memory size per trace, max.</li> </ul>	512 kbyte
<b>Interrupts/diagnostics/status information</b>	
<b>Diagnostics indication LED</b>	
<ul style="list-style-type: none"> <li>• RUN/STOP LED</li> </ul>	Yes
<ul style="list-style-type: none"> <li>• ERROR LED</li> </ul>	Yes
<ul style="list-style-type: none"> <li>• MAINT LED</li> </ul>	Yes
<ul style="list-style-type: none"> <li>• STOP ACTIVE LED</li> </ul>	Yes
<ul style="list-style-type: none"> <li>• Connection display LINK TX/RX</li> </ul>	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
<ul style="list-style-type: none"> <li>• Number of available Motion Control resources for technology objects</li> </ul>	2 400
<ul style="list-style-type: none"> <li>• Required Motion Control resources</li> </ul>	
<ul style="list-style-type: none"> <li>— per speed-controlled axis</li> </ul>	40
<ul style="list-style-type: none"> <li>— per positioning axis</li> </ul>	80
<ul style="list-style-type: none"> <li>— per synchronous axis</li> </ul>	160
<ul style="list-style-type: none"> <li>— per external encoder</li> </ul>	80
<ul style="list-style-type: none"> <li>— per output cam</li> </ul>	20
<ul style="list-style-type: none"> <li>— per cam track</li> </ul>	160
<ul style="list-style-type: none"> <li>— per probe</li> </ul>	40
<ul style="list-style-type: none"> <li>• Positioning axis</li> </ul>	
<ul style="list-style-type: none"> <li>— Number of positioning axes at motion control cycle of 4 ms (typical value)</li> </ul>	11
<ul style="list-style-type: none"> <li>— Number of positioning axes at motion control cycle of 8 ms (typical value)</li> </ul>	20
Controller	
<ul style="list-style-type: none"> <li>• PID_Compact</li> </ul>	Yes; Universal PID controller with integrated optimization
<ul style="list-style-type: none"> <li>• PID_3Step</li> </ul>	Yes; PID controller with integrated optimization for valves
<ul style="list-style-type: none"> <li>• PID-Temp</li> </ul>	Yes; PID controller with integrated optimization for temperature
Counting and measuring	
<ul style="list-style-type: none"> <li>• High-speed counter</li> </ul>	Yes
<b>Isolation</b>	
Isolation tested with	750 V DC (type test) and according to EN 50155 (routine test); internal voltage limitation between internal chassis and ground to $\pm 300$ V (varistor)
<b>Standards, approvals, certificates</b>	
<b>Ecological footprint</b>	
<ul style="list-style-type: none"> <li>• environmental product declaration</li> </ul>	Yes
<b>Global warming potential</b>	
<ul style="list-style-type: none"> <li>— global warming potential, (total) [CO2 eq]</li> </ul>	102 kg
<ul style="list-style-type: none"> <li>— global warming potential, (during production) [CO2 eq]</li> </ul>	26.5 kg
<ul style="list-style-type: none"> <li>— global warming potential, (during operation) [CO2 eq]</li> </ul>	76.7 kg
<ul style="list-style-type: none"> <li>— global warming potential, (after end of life cycle) [CO2 eq]</li> </ul>	-0.898 kg
<b>Highest safety class achievable in safety mode</b>	
<ul style="list-style-type: none"> <li>• Performance level according to ISO 13849-1</li> </ul>	PLe
<ul style="list-style-type: none"> <li>• SIL acc. to IEC 61508</li> </ul>	SIL 3
<ul style="list-style-type: none"> <li>• SIL in accordance with EN 50126, 50128, 50129</li> </ul>	SIL 2; a higher safety integrity level is possible if tested and approved for the specific application under consideration of all local regulations.
<b>Probability of failure (for service life of 20 years and repair time of 100 hours)</b>	
<ul style="list-style-type: none"> <li>— Low demand mode: PFDavg in accordance with SIL3</li> </ul>	< 2.00E-05
<ul style="list-style-type: none"> <li>— High demand/continuous mode: PFH in accordance with SIL3</li> </ul>	< 1.00E-09
<b>Railway application</b>	
<ul style="list-style-type: none"> <li>• EN 50121-3-2</li> </ul>	Yes; EMC for rail vehicles
<ul style="list-style-type: none"> <li>• EN 50121-4</li> </ul>	Yes; EMC for signal and telecommunications systems

<ul style="list-style-type: none"> <li>• EN 50121-5</li> <li>• EN 50124-1</li> </ul>	<p>Yes; EMC for fixed installations and railway power supply equipment</p> <p>Yes; Railway applications - overvoltage category OV2; pollution degree PD2; rated surge voltage UNi = 0.5 kV; UNm = 24 V DC</p>
<ul style="list-style-type: none"> <li>• EN 50125-1</li> <li>• EN 50125-2</li> <li>• EN 50125-3</li> </ul>	<p>Yes; Rail vehicles - see ambient conditions</p> <p>Yes; Stationary electrical equipment - see ambient conditions</p> <p>Yes; Signal and telecommunications systems - see ambient conditions; vibrations and shocks: Application point outside of tracks (1 m to 3 m away from track)</p>
<ul style="list-style-type: none"> <li>• EN 50155</li> </ul>	<p>Yes; Rail vehicles - temperature class OT4, ST1/ST2, horizontal mounting position</p>
<ul style="list-style-type: none"> <li>• EN 61373</li> <li>• Fire protection acc. to EN 45545-2</li> </ul>	<p>Yes; Rail vehicles - vibrations and shocks: Category 1 Class A/B</p> <p>Yes; For proof of conformity, see Service &amp; Support</p>
<b>Ambient conditions</b>	
<b>Ambient temperature during operation</b>	
<ul style="list-style-type: none"> <li>• horizontal installation, min.</li> <li>• horizontal installation, max.</li> <li>• vertical installation, min.</li> <li>• vertical installation, max.</li> </ul>	<p>-40 °C; = Tmin (incl. condensation/frost)</p> <p>70 °C; = Tmax; +85 °C for 10 min (OT4, ST1/ST2 acc. to EN 50155); display: 50 °C, the display is switched off at an operating temperature of typically 50 °C</p> <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> <li>• Ambient air temperature-barometric pressure-altitude</li> </ul>	<p>2 000 m</p> <p>Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m)</p>
<b>Relative humidity</b>	
<ul style="list-style-type: none"> <li>• With condensation, tested in accordance with IEC 60068-2-38, max.</li> </ul>	<p>100 %; RH incl. condensation / frost (no commissioning in bedewed state), horizontal installation</p>
<b>Resistance</b>	
<b>Coolants and lubricants</b>	
<ul style="list-style-type: none"> <li>— Resistant to commercially available coolants and lubricants</li> </ul>	<p>Yes; Incl. diesel and oil droplets in the air</p>
<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 land craft, rail vehicles and special-purpose vehicles</b>	
<ul style="list-style-type: none"> <li>— to biologically active substances according to EN 60721-3-5</li> <li>— to chemically active substances according to EN 60721-3-5</li> <li>— to mechanically active substances according to EN 60721-3-5</li> </ul>	<p>Yes; Class 5B2 mold, fungus and dry rot spores (with the exception of fauna); Class 5B3 on request</p> <p>Yes; Class 5C3 (RH &lt; 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *</p> <p>Yes; Class 5S3 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>	<p>* The supplied plug covers must remain in place over the unused interfaces during operation!</p>
<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>• Electronic equipment on rolling stock acc. to EN 50155</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; class PC2 protective coating acc. to EN 50155</p> <p>Yes; Discoloration of coating possible during service life</p> <p>Yes; Conformal coating, Class A</p>
<b>configuration / header</b>	

configuration / programming / header		
<b>Programming language</b>		
— LAD	Yes; incl. failsafe	
— FBD	Yes; incl. failsafe	
— STL	Yes	
— SCL	Yes	
— CFC	Yes; either CFC or failsafe functionality	
— GRAPH	Yes	
<b>Know-how protection</b>		
• User program protection/password protection	Yes	
• Copy protection	Yes	
• Block protection	Yes	
<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	Yes	
• Protection level: Complete protection	Yes	
• User administration	Yes; device-wide and centralized	
• Number of users	100	
• Number of groups	100	
• Number of roles	50	
<b>programming / cycle time monitoring / header</b>		
• lower limit	adjustable minimum cycle time	
• upper limit	adjustable maximum cycle time	
<b>Dimensions</b>		
Width	70 mm	
Height	147 mm	
Depth	129 mm	
<b>Weights</b>		
Weight, approx.	545 g	
<b>Other</b>		
Note:	for use in railway applications, also observe the product information "SIPLUS extreme RAIL" A5E37661960A, Online Support article 109736776	
<b>Classifications</b>		
	<b>Version</b>	<b>Classification</b>
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
<b>Approvals / Certificates</b>		
<b>General Product Approval</b>	<b>EMV</b>	



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