SIEMENS

Data sheet

6AG2511-1AK02-4AB0



SIPLUS S7-1500 CPU 1511-1 PN TX rail based on 6ES7511-1AK02-0AB0 with conformal coating, -40...+70 °C, OT4 with ST1/2 (+85 °C for 10 minutes), heat sink, no PS usable, central processing unit without display with work memory 150 KB for program and 1 MB for data, 1st interface: PROFINET IRT with 2-port switch, 60 ns bit performance, SIMATIC Memory Card required

Figure similar

- * III.	
General information	
Product type designation	CPU 1511-1 PN
based on	6ES7511-1AK02-0AB0
Product function	
• I&M data	Yes; I&M0 to I&M3
Isochronous mode	Yes; Distributed and central; with minimum OB $6x$ cycle of $625~\mu s$ (distributed) and 1 ms (central)
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)	0.7 A
Current consumption, max.	0.95 A
Inrush current, max.	1.9 A; Rated value
l²t	0.02 A ² ·s
Power	
Infeed power to the backplane bus	10 W
Power consumption from the backplane bus (balanced)	5.5 W
Power loss	
Power loss, typ.	5.7 W
Memory	
Number of slots for SIMATIC memory card	1
SIMATIC memory card required	Yes
Work memory	
• integrated (for program)	150 kbyte

• integrated (for data)	1 Mbyte
Load memory	i majic
Plug-in (SIMATIC Memory Card), max.	32 Gbyte
	52 Gbyle
Backup	V
maintenance-free	Yes
CPU processing times	
for bit operations, typ.	60 ns
for word operations, typ.	72 ns
for fixed point arithmetic, typ.	96 ns
for floating point arithmetic, typ.	384 ns
CPU-blocks	
Number of elements (total)	2 000; Blocks (OB, FB, FC, DB) and UDTs
DB	
Number range	1 60 999; subdivided into: number range that can be used by the user: 1 59 999, and number range of DBs created via SFC 86: 60 000 60 999
• Size, max.	1 Mbyte; For DBs with absolute addressing, the max. size is 64 KB
FB	
Number range	0 65 535
• Size, max.	150 kbyte
FC	
Number range	0 65 535
• Size, max.	150 kbyte
ОВ	
• Size, max.	150 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 500 µs
Number of cyclic interrupt OBs Number of process alarm OBs	50
Number of DPV1 alarm OBs	3
Number of Bry Falam OBs Number of isochronous mode OBs	2
Number of technology synchronous alarm OBs	2
Number of startup OBs Number of asymphropous error OPs	100
Number of asynchronous error OBs	4
Number of synchronous error OBs	2
Number of diagnostic alarm OBs	1
Nesting depth	
per priority class	24
Counters, timers and their retentivity	
S7 counter	
Number	2 048
Retentivity	
— adjustable	Yes
IEC counter	
Number	Any (only limited by the main memory)
Retentivity	
— adjustable	Yes
S7 times	
Number	2 048
Retentivity	
— adjustable	Yes
IEC timer	
Number	Any (only limited by the main memory)
Retentivity	, (,,)
— adjustable	Yes
Data areas and their retentivity	
	128 khyte: In total: available retentive memory for hit memories, timere
Retentive data area (incl. timers, counters, flags), max.	128 kbyte; In total; available retentive memory for bit memories, timers, counters, DBs, and technology data (axes): 88 KB
Flag	5,
• Size, max.	16 kbyte
Number of clock memories	8; 8 clock memory bit, grouped into one clock memory byte
• Humber of Good McMones	o, o stock memory are, grouped into one clock memory byte

Retentivity adjustable Retentivity preset in the process image retentive process image Retentivity preset retentive presetting Retentive Presetting Retentive Reten	2.11.	
Betainskip present Local data. Perp priority class, max. 64 kbyter, max. 16 KB per block Andress area. Number of IC modules 1 024, max. number of modules / submodules 10 adverses area. Propuls Outputs Outputs Propuls (volume) Propuls	Data blocks	
Local data Per prototy dass, max. 64 kbyte: max. 16 kB per block	· · ·	
Per priority class, max. 04 kbyte; max. 16 kB per block	· ·	No
Number of IO modules	Local data	
Number of IC modules 1 624; max. number of modules / submodules	per priority class, max.	64 kbyte; max. 16 KB per block
Pipulus 32 kbyte; All inputs are in the process image	Address area	
Imputs 33 k byter, All inputs are in the process image 32 k byte. All outputs are in the process image 32 k byte. All outputs are in the process image 32 k byte. All outputs are in the process image 32 k byte. All outputs (volume) 8 k byte 90	Number of IO modules	1 024; max. number of modules / submodules
Outputs 32 kbyte; All outputs are in the process image per integrated (D subsystem — injust (volume) 8 kbyte — Outputs (volume) 8 kbyte — Outputs (volume) 8 kbyte — Outputs (volume) 8 kbyte — Injust (volume) 9 kbyte 9 k	I/O address area	
per inlegated IO subsystem	Inputs	32 kbyte; All inputs are in the process image
Inputs (volume)	Outputs	32 kbyte; All outputs are in the process image
— Outputs (volume) 8 kbyte	per integrated IO subsystem	
per CM/CP - Inputs (volume) 8 kbyte - Outputs (volume) 8 kbyte Subprocess images • Number of subprocess images, max. 32 Handware configuration Number of distributed IO systems 32 **A distributed IV oxystem is characterized not only by the integration of distributed IV oxystem is characterized not only by the integration of distributed IV oxystem is characterized not only by the integration of distributed IV oxystem is characterized not only by the integration of distributed IV oxystem is characterized not only by the integration of distributed IV oxystem is characterized not only by the integration of distributed IV oxystem is characterized not only by the integration of IV oxis PROFINET on PROFIBUS. Sommunication modules, but also by the connection of IV oxis AS-4 master modules or links (e.g. IE/PB-Link) Number of IO Controllers * Integrated	— Inputs (volume)	8 kbyte
- Inputs (volume) 8 kbyte - Outputs (volume) 8 kbyte Subprocess images • Number of subprocess images, max. 32 Number of distributed I/O systems a characterized not only by the integration of distributed I/O system is characterized not only by the integration of distributed I/O system is characterized not only by the integration of distributed I/O system is characterized not only by the integration of distributed I/O system is characterized not only by the integration of distributed I/O system is characterized not only by the integration of distributed I/O system is characterized not only by the integration of distributed I/O system is characterized not only by the integration of distributed I/O system is characterized not only by the integration of distributed I/O system is characterized not only by the integration of distributed I/O system is characterized not only by the integration of distributed I/O system is characterized not only by the integration of distributed I/O system is characterized not only by the integration of distributed I/O system is characterized not only by the integration of distributed I/O system is characterized not only by the integrated in total integrated I/O system power supply (PS) can be used in section of I/O system power supply (PS) can be used in total integrated in total integrated in total integrated in total integrated I/O system power supply (PS) can be used in total integrated I/O system power supply (PS) can be used in total integrated I/O system integrated I/	— Outputs (volume)	8 kbyte
Outputs (volume) Subprocess images Number of subprocess images, max. Number of distributed IO systems Value for Subprocess images, max. Value for distributed IO systems Value of distributed IO systems Value of distributed IO systems Value of DP masters Value CM Value	per CM/CP	
Subprocess images • Number of subprocess images, max. Number of distributed IO systems **Airchare configuration* Number of distributed IO systems **Airchare configuration* Number of DP masters • Via CM **Air maximum of 4 CMs/CPs (PROFIBUS, PROFINET, Ethernet) can be inserted in fotal **RacM **Air CM **	— Inputs (volume)	8 kbyte
• Number of subprocess images, max. **Number of distributed I/O systems is characterized not only by the integration of distributed I/O systems is characterized not only by the integration of distributed I/O systems is characterized not only by the integration of distributed I/O systems is characterized not only by the integrated of DP masters * Via CM	Outputs (volume)	8 kbyte
• Number of subprocess images, max. **Number of distributed I/O systems is characterized not only by the integration of distributed I/O systems is characterized not only by the integration of distributed I/O systems is characterized not only by the integration of distributed I/O systems is characterized not only by the integrated of DP masters * Via CM	Subprocess images	
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Number of distributed IO systems 32: A distributed IO system is characterized not only by the Inseptation of distributed IO system is characterized not only by the Inseptation of distributed IO system is characterized not only by the Inseptation of distributed IO system is characterized not only by the Inseptation of distributed IO system is characterized not only by the Inseptation of distributed IO system is characterized not only only a S-4 master modules or links (e.g. IE/PB-Link) by the connection of IO via AS-4 master modules or links (e.g. IE/PB-Link) inserted in total Number of IO Controllers • Integrated • I 4: A maximum of 4 CMs/CPs (PROFIBUS, PROFINET, Ethernet) can be inserted in total Rack • Nodules per rack, max. • Number of lines, max. • Number of lines, max. • Number of PIP CMs • Number of PIP CMs • Type • Hardware clock • Type • Backup time • Deviation per day, max. • Number of a Seakup time • Number • Deviation per day, max. • Number • Number • Number • Number • Number • Number • Namster • Namster • Namster • Na, Seakue • In AS, master • Lines (AS, Seakue) • In AS, master • Lines (AS, Seakue) • In AS, device • In AS, device • In AS, device • On Ethernet via NTP • Yes • Interfaces • Interface types • Interface types • Integrated switch • Yes; • Number of prots • PROFINET in Controller • PROFINET in Controller • PROFINET IO Device • PROFINET IO Device • SinklaTiC communication • Ves • Open IE communication • Ves • Ves • Open IE communication		
Via CM Altitude of IO Controllers Integrated Integrated switch Integrated in total Integrated in t		distributed I/O via PROFINET or PROFIBUS communication modules, but also
inserted in total Number of IO Controllers integrated ivia CM 4.4 maximum of 4 CMs/CPs (PROFIBUS, PROFINET, Ethernet) can be inserted in total Rack Modules per rack, max. Number of lines, max. PIP CM Number of PIP CMs Number of PIP CMs Type Backup time Ordinary Clock Type Backup time Deviation per day, max. 10 s; Typ:: 2 s Clock synchronization Number Number Number Number Number PROFINET interfaces Rack Number of PROFINET interfaces Rack Protocols ProfineTi O Controller PROFINET IO Controller PROFINET IC Communication Pes Subdaction per day. Pes Since Type: 2 s Protocols Profinet IC Controller PROFINET IC Communication Pes Subdaction per day. Pres Since Type: Protocol PROFINET IC Communication Pes Since Type: Protocol PROFINET IC Communication Pes Signature day. Pres Since Type: Protocol PROFINET IC Communication Pes Signature day. Pres Signature day. Pres Signature day. Pres Signature day. At A maximum of 4 CMs/CPs (PROFIBUS, PROFINET, Ethernet) as used in test and used in test as used	Number of DP masters	
integrated ivia CM	• Via CM	
* Via CM 4; A maximum of 4 CMs/CPs (PROFIBUS, PROFINET, Ethernet) can be inserted in total inserted i	Number of IO Controllers	
Inserted in total	integrated	1
Rack Modules per rack, max. Number of lines, max. Number of lines, max. Number of PtP CMs Number of PtP CMs Number of PtP CMs the number of connectable PtP CMs is only limited by the number of available slots Time of day Clock Type Backup time Backup time Boviation per day, max. Operating hours counter Number Number Number Number Number Number Poviation As, master In As, device On Ethernet via NTP Number of PROFINET interfaces Interface Interface yes RJ 45 (Ethernet) Number of ports Interface yes Protocols Protocol PROFINET IO Controller PROFINET IO Device PROFINET IO Device PROFINET Communication Yes SIMATIC communication Yes Polic Communication Yes SIMATIC communication Yes Open IE communic	• Via CM	
Number of lines, max. 1 PIP CM Number of PIP CMs	Rack	
PIP CM Number of PIP CMs he number of connectable PtP CMs is only limited by the number of available slots Time of day Clock Type Backup time Deviation per day, max. 10 s; Typ.: 2 s Operating hours counter Number Number Number Supported Sup	 Modules per rack, max. 	32; CPU + 31 modules; no system power supply (PS) can be used
the number of PtP CMs is only limited by the number of available slots Films of day Clock Type	 Number of lines, max. 	1
Time of day Clock Type Backup time Deviation per day, max. Operating hours counter Number Number Supported Nin AS, master Nin AS, device Number of PROFINET interfaces Number of PROFINET interfaces Number of PROFINET interfaces Protocols Protocols I P protocol PROFINET IO Controller PROFINET IO Controller PROFINET IO Device SIMIATIC communication Ves Open IE communication Ves; Optionally also encrypted Web server	PtP CM	
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● Type ● Backup time ● Deviation per day, max. Operating hours counter ● Number ● Number ● Supported ● in AS, master ● in AS, device ● on Ethernet via NTP Number of PROFINET interfaces ● RJ 45 (Ethernet) ● Number of ports ● PROFINET IO Controller ● PROFINET IO Controller ● PROFINET IO Device ● PROFINET IO Device ● PROFINET IO Device ● SIMATIC communication ● Yes ● SimATIC communication ● Yes ● Open IE communication ● Yes; Optionally also encrypted	Time of day	
Backup time 6 wk; At 40 °C ambient temperature, typically Deviation per day, max. 10 s; Typ.: 2 s Operating hours counter Number 16 Clock synchronization supported Yes in AS, master Yes in AS, device Yes on Ethernet via NTP Yes Interfaces Number of PROFINET interfaces 1 Interface types RA 45 (Ethernet) Yes; X1 Number of ports 2 integrated switch Yes integrated switch Yes PROFINET IO Controller Yes PROFINET IO Controller Yes SIMATIC communication Yes; Optionally also encrypted Web server Web server	Clock	
	• Type	Hardware clock
Operating hours counter 16 Clock synchronization Yes ● supported Yes ● in AS, master Yes ● in AS, device Yes ● on Ethernet via NTP Yes Interfaces Number of PROFINET interfaces 1. Interface 1 Interface types Yes; X1 ● RJ 45 (Ethernet) Yes; X1 ● Number of ports 2 ● integrated switch Yes Protocols Yes ● PROFINET IO Controller Yes ● PROFINET IO Device Yes ● SIMATIC communication Yes ● Open IE communication Yes; Optionally also encrypted • Web server Yes	Backup time	6 wk; At 40 °C ambient temperature, typically
◆ Number 16 Clock synchronization Yes ◆ supported Yes ◆ in AS, master Yes ◆ on Ethernet via NTP Yes Interfaces Number of PROFINET interfaces 1. Interface 1 Interface types Yes; X1 ◆ Number of ports 2 ◆ integrated switch Yes Protocols Yes; IPv4 ◆ PROFINET IO Controller Yes ◆ PROFINET IO Device Yes ◆ SIMATIC communication Yes ◆ Open IE communication Yes; Optionally also encrypted ◆ Web server Yes	Deviation per day, max.	10 s; Typ.: 2 s
Clock synchronization ● supported Yes ● in AS, master Yes ● in AS, device Yes ● on Ethernet via NTP Yes Interfaces Interface types ● RJ 45 (Ethernet) Yes; X1 ● Number of ports 2 ● integrated switch Yes Protocols Yes; IPv4 ● PROFINET IO Controller Yes ● PROFINET IO Device Yes ● SIMATIC communication Yes ● Open IE communication Yes; Optionally also encrypted ● Web server Yes	Operating hours counter	
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 in AS, device on Ethernet via NTP Yes Interfaces Number of PROFINET interfaces 1 1. Interface Interface types RJ 45 (Ethernet) Number of ports integrated switch Protocols IP protocol PROFINET IO Controller PROFINET IO Device SIMATIC communication Open IE communication Web server Yes Optionally also encrypted Web server 	• supported	Yes
on Ethernet via NTP Interfaces Number of PROFINET interfaces 1 1. Interface Interface types Protocols Integrated switch PROFINET IO Controller PROFINET IO Device SIMATIC communication Open IE communication Web server Yes Yes 1 1 1 1 1 1 1 1 1 1 1 1 1	• in AS, master	Yes
Number of PROFINET interfaces	• in AS, device	Yes
Number of PROFINET interfaces 1. Interface Interface types • RJ 45 (Ethernet) • Number of ports • integrated switch Protocols • IP protocol • PROFINET IO Controller • PROFINET IO Device • SIMATIC communication • Open IE communication • Web server 1	on Ethernet via NTP	Yes
Interface types • RJ 45 (Ethernet) • Number of ports • integrated switch Protocols • IP protocol • PROFINET IO Controller • PROFINET IO Device • SIMATIC communication • Open IE communication • Web server • Web server • Wes • Integrated switch Yes; IPv4 Yes; IPv4 Yes Yes Yes Yes Yes Yes Yes Ye	Interfaces	
Interface types • RJ 45 (Ethernet) • Number of ports • integrated switch Protocols • IP protocol • PROFINET IO Controller • PROFINET IO Device • SIMATIC communication • Open IE communication • Web server • Web server • Wes • Integrated switch Yes; IPv4 Yes; IPv4 Yes Yes Yes Yes Yes Yes Yes Ye		1
Interface types Protocols IP protocol PROFINET IO Device PROFINET IO Device SIMATIC communication Open IE communication Web server Protocols Yes; X1 Yes; X1 Yes Yes Yes Yes Yes Yes Yes Ye		
RJ 45 (Ethernet) Number of ports Number of ports Integrated switch Protocols IP protocol IP protocol PROFINET IO Controller PROFINET IO Device SIMATIC communication Open IE communication Web server Yes; Optionally also encrypted Yes		
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 integrated switch Protocols IP protocol PROFINET IO Controller PROFINET IO Device PROFINET IO Device SIMATIC communication Open IE communication Web server Yes Yes; Optionally also encrypted Yes 		
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 PROFINET IO Controller PROFINET IO Device SIMATIC communication Open IE communication Web server Yes Yes Optionally also encrypted Yes 		Vec: IDv/
 PROFINET IO Device SIMATIC communication Open IE communication Web server Yes Yes; Optionally also encrypted Yes 	·	
 SIMATIC communication Open IE communication Web server Yes Optionally also encrypted Yes 		
 Open IE communication Web server Yes; Optionally also encrypted Yes 		
• Web server Yes		
	·	
Media redundancy Yes	Web server	Yes
	Media redundancy	Yes

PROFINET IO Controller	
Services	
— PG/OP communication	Yes
— Isochronous mode	Yes
Direct data exchange	Yes; Requirement: IRT and isochronous mode (MRPD optional)
— IRT	Yes
— PROFlenergy	Yes; per user program
Prioritized startup	Yes; Max. 32 PROFINET devices
Number of connectable IO Devices, max.	128; In total, up to 256 distributed I/O devices can be connected via AS-i,
	PROFIBUS or PROFINET
— Of which IO devices with IRT, max.	
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
Update time for IRT	
— for send cycle of 250 μs	250 μ s to 4 ms; Note: In the case of IRT with isochronous mode, the minimum update time of 625 μ s 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 2 ms — for send cycle of 4 ms	4 ms to 64 ms
With IRT and parameterization of "odd" send cycles	Update time = set "odd" send clock (any multiple of 125 μs: 375 μs, 625 μs 3
	875 μs)
Update time for RT	
— for send cycle of 250 μs	250 μs to 128 ms
— for send cycle of 500 μs	500 μs to 256 ms
— for send cycle of 1 ms	1 ms to 512 ms
— for send cycle of 2 ms	2 ms to 512 ms
— for send cycle of 4 ms	4 ms to 512 ms
PROFINET IO Device	
Services	
— PG/OP communication	Yes
— Isochronous mode	No
— IRT	Yes
— PROFlenergy	Yes; per user program
— Shared device	Yes
Number of IO Controllers with shared device, max.	4
Asset management record	Yes; per user program
nterface types	, , , , , , , , , , , , , , , , ,
RJ 45 (Ethernet)	
• 100 Mbps	Yes
1	Yes
Autoregotiation Autorossing	Yes
Autocrossing Industrial Ethernet status LED	Yes
• Industrial Ethernet status LED Protocols	1 63
	No
PROFIsafe Number of connections	No
Number of connections	OC: via integrated interfaces of the CDU and account of CD / CM
Number of connections, max. Number of connections max.	96; via integrated interfaces of the CPU and connected CPs / CMs
Number of connections reserved for ES/HMI/web	10
Number of connections via integrated interfaces	64
Number of S7 routing paths	16
Redundancy mode	
H-Sync forwarding	Yes
Media redundancy	
— MRP	Yes; as MRP redundancy manager and/or MRP client; max. number of devices in the ring: 50

 Switchover time on line break, typ. 	200 ms; For MRP, bumpless for MRPD
— Number of stations in the ring, max.	50
SIMATIC communication	
S7 routing	Yes
 S7 communication, as server 	Yes
 S7 communication, as client 	Yes
User data per job, max.	See online help (S7 communication, user data size)
Open IE communication	
• TCP/IP	Yes
— Data length, max.	64 kbyte
 several passive connections per port, 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. 5 multicast circuits
• DHCP	No
• SNMP	Yes
• DCP	Yes
• LLDP	Yes
Web server	
• HTTP	Yes; Standard and user pages
• HTTPS	Yes; Standard and user pages
OPC UA	
 Runtime license required 	Yes
OPC UA Client	Yes
 Application authentication 	Yes
— Security policies	Available security policies: None, Basic128Rsa15, Basic256Rsa15, Basic256Sha256
 User authentication 	"anonymous" or by user name & password
— Number of connections, max.	4
 Number of nodes of the client interfaces, recommended max. 	1 000
 Number of elements for one call of OPC_UA_NodeGetHandleList/OPC_UA_ReadList/OPC_I 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, custom address space
 Application authentication 	Yes
— Security policies	Available security policies: None, Basic128Rsa15, Basic256Rsa15, Basic256Sha256
 User authentication 	"anonymous" or by user name & password
Number of sessions, max.	32
 Number of accessible variables, max. 	50 000
 Number of registerable nodes, max. 	10 000
 Number of subscriptions per session, max. 	20
— Sampling interval, min.	100 ms
— Publishing interval, min.	500 ms
 Number of server methods, max. 	20
 Number of inputs/outputs per server method, max. 	20
 Number of monitored items, recommended max. 	1 000; for 1 s sampling interval and 1 s send interval

Number of series interfesses	40
Number of server interfaces, max.	10
 Number of nodes for user-defined server interfaces, max. 	1 000
Further protocols	
MODBUS	Yes: MODBUS TCP
Isochronous mode	163, 11055500 101
Equidistance	Yes
	165
S7 message functions	22
Number of login stations for message functions, max.	Yes
Program alarms	- 12
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.	2 500
Number of simultaneously active program alarms	
 Number of program alarms 	300
 Number of alarms for system diagnostics 	100
Number of alarms for motion technology objects	80
Test commissioning functions	
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
Status/control	
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
Forcing	
Forcing, variables	Peripheral inputs/outputs
Number of variables, max.	200
Diagnostic buffer	
• present	Yes
Number of entries, max.	1 000
— of which powerfail-proof	500
Traces	
Number of configurable Traces	4; Up to 512 KB of data per trace are possible
Interrupts/diagnostics/status information	
Diagnostics indication LED	
RUN/STOP LED	Yes
• ERROR LED	Yes
• MAINT LED	Yes
STOP ACTIVE LED	Yes
Connection display LINK TX/RX	Yes
Supported technology objects	
Motion Control	Yes; Note: The number of axes affects the cycle time of the PLC program;
	selection guide via the TIA Selection Tool or SIZER
 Number of available Motion Control resources for technology objects 	800
Required Motion Control resources	
— per speed-controlled axis	40
— per speed-controlled axis — per positioning axis	80
— per positioning axis — per synchronous axis	160
per synchronous axis per external encoder	80
·	20
— per output cam	
— per cam track	160
— per probe	40
 Positioning axis — Number of positioning axes at motion control cycle of 4 ms (typical value) 	5
or 4 ms (typical value) — Number of positioning axes at motion control cycle	10
of 8 ms (typical value)	

Controller	
PID_Compact	Yes; Universal PID controller with integrated optimization
PID_3Step	Yes; PID controller with integrated optimization for valves
PID-Temp	Yes; PID controller with integrated optimization for temperature
Counting and measuring	
High-speed counter	Yes
solation	
Isolation tested with	750 V DC (type test) and according to EN 50155 (routine test)
	730 V DC (type test) and according to EN 30133 (fourthe test)
Standards, approvals, certificates	
Railway application	V FMOC 11 111
• EN 50121-3-2	Yes; EMC for rail vehicles
• EN 50121-4	Yes; EMC for signal and telecommunications systems
• EN 50124-1	Yes; Railway applications - overvoltage category OV2; pollution degree PD2; rated surge voltage UNi = 0.5 kV; UNm = 24 V DC
● EN 50125-1	Yes; Rail vehicles - see ambient conditions
● EN 50125-2	Yes; Stationary electrical equipment - see ambient conditions
● EN 50125-3	Yes; Signal and telecommunications systems - see ambient conditions; vibrations and shocks: Application point outside of tracks (1 m to 3 m away from track)
● EN 50155	Yes; Rail vehicles - temperature class OT4, ST1/ST2, horizontal mounting position
• EN 61373	Yes; Rail vehicles - vibrations and shocks: Category 1 Class A/B
• Fire protection acc. to EN 45545-2	Yes; For proof of conformity, see Service & Support
mbient conditions	
Ambient temperature during operation	
horizontal installation, min.	-40 °C; = Tmin (incl. condensation/frost)
• horizontal installation, max.	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
 vertical installation, min. 	-40 °C; = Tmin
vertical installation, max.	40 °C; = Tmax; display: 40 °C, at an operating temperature of typically 40 °C,
	the display is switched off
Ambient temperature during storage/transportation	
• min.	-40 °C
• max.	70 °C
Altitude during operation relating to sea level	
 Installation altitude above sea level, max. 	2 000 m
 Ambient air temperature-barometric pressure-altitude 	Tmin Tmax at 1 140 hPa 795 hPa (-1 000 m +2 000 m)
Relative humidity	
With condensation, tested in accordance with IEC 60068- 2-38, max.	100 %; RH incl. condensation / frost (no commissioning in bedewed state), horizontal installation
Resistance	
Coolants and lubricants	
Resistant to commercially available coolants and lubricants	Yes; Incl. diesel and oil droplets in the air
Use in stationary industrial systems	
to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
— to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust, *
Use on land craft, rail vehicles and special-purpose vehicles	
to biologically active substances according to EN 60721-3-5	Yes; Class 5B2 mold, fungus and dry rot spores (with the exception of fauna); Class 5B3 on request
to chemically active substances according to EN 60721-3-5	Yes; Class 5C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
to mechanically active substances according to EN 60721-3-5	Yes; Class 5S3 incl. sand, dust; *
Usage in industrial process technology	
— Against chemically active substances acc. to EN 60654-4	Yes; Class 3 (excluding trichlorethylene)
Environmental conditions for process, measuring and control systems acc. to ANSI/ISA-71.04	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)
Remark	

conditions acc. to EN 60721, EN 60654-4 and	during operation!
ANSI/ISA-71.04	daming operation.
Conformal coating	
 Coatings for printed circuit board assemblies acc. to EN 61086 	Yes; Class 2 for high reliability
 Protection against fouling acc. to EN 60664-3 	Yes; Type 1 protection
 Electronic equipment on rolling stock acc. to EN 50155 	Yes; Class PC2 protective coating acc. to EN 50155:2017
 Military testing according to MIL-I-46058C, Amendment 7 	Yes; Discoloration of coating possible during service life
 Qualification and Performance of Electrical Insulating Compound for Printed Board Assemblies according to IPC- CC-830A 	Yes; Conformal coating, Class A
configuration / header	
configuration / programming / header	
Programming language	
— LAD	Yes
— FBD	Yes
— STL	Yes
— SCL	Yes
— GRAPH	Yes
Know-how protection	
 User program protection/password protection 	Yes
Copy protection	Yes
Block protection	Yes
Access protection	
 Password for display 	Yes
 Protection level: Write protection 	Yes
 Protection level: Read/write protection 	Yes
Protection level: Complete protection	Yes
programming / cycle time monitoring / header	
• lower limit	adjustable minimum cycle time
• upper limit	adjustable maximum cycle time
Dimensions	
Width	70 mm
Height	147 mm
Depth	129 mm
Weights	
Weight, approx.	590 g
Other	
Note:	for use in railway applications, also observe the product information "SIPLUS extreme RAIL" A5E37661960A, Online Support article 109736776

7/13/2024

last modified: