Data sheet

SIPLUS ET 200SP CPU1515SP PC2 RAIL OT2: -40...+55°C ST1/2: 70°C für 10min with Conformal Coating based on 6ES7677-2DB42-0GB0 . 8 GB RAM, 30 GB CFast with Windows 10 IoT Enterprise 64 bit and S7-1500 Software Controller CPU 1505SP pre-installed, Interfaces: 1x slot CFast, 1x slot SD/MMC, 1x connection for ET 200SP bus adapter PROFINET, 1x 10/100/1000 Mbit/s Ethernet 2x USB 3.0; 2x USB 2.0, 1x display port,



Figure similar

General information	
Product type designation	CPU 1515SP PC2
Installed software	
Visualization	No
Control	S7-1500 Software Controller CPU 1505SP
Configuration control	
via dataset	Yes
Control elements	
Mode selector switch	1
Supply voltage	
Type of supply voltage	24 V DC
permissible range, lower limit (DC)	19.2 V
permissible range, upper limit (DC)	28.8 V
Reverse polarity protection	Yes
Mains buffering	
Mains/voltage failure stored energy time	5 ms

Input current	
Current consumption (rated value)	1.8 A; Full processor load, incl. ET 200SP modules and using
	USB
Current consumption (in no-load operation), typ.	0.5 A
Current consumption, max.	2.9 A
l²t	0.426 A ² ·s; with starting current inrush
Power	
Active power input, max.	43 W; incl. ET 200SP modules and using USB
Infeed power to the backplane bus	8.75 W
Power loss	
Power loss, typ.	16 W
Processor	
Processor type	Intel Atom E3940, 1.6 GHz, 4 cores
Memory	
Type of memory	DDR3L
Main memory	8 GB RAM
CFast memory card	Yes; 30 GB flash memory
SIMATIC memory card required	No
Work memory	
• integrated (for program)	1 Mbyte
• integrated (for data)	5 Mbyte
 integrated (for CPU function library of CPU Runtime) 	20 Mbyte
Load memory	
• integrated (on PC mass storage)	320 Mbyte
Backup	·
• with UPS	Yes; all memory areas declared retentive
with non-volatile memory	Yes
CPU processing times	
for bit operations, typ.	10 ns
for word operations, typ.	12 ns
for fixed point arithmetic, typ.	16 ns
for floating point arithmetic, typ.	64 ns
CPU-blocks	
Number of elements (total)	6 000; In addition to blocks such as DBs, FBs and FCs, UDTs, global constants, etc. are also regarded as elements
DB	
Number, max.	5 999; Number range: 1 to 65535
• Size, max.	5 Mbyte
FB	
Number, max.	5 998; Number range: 1 to 65535

• Size, max.	1 024 kbyte
FC	
Number, max.	5 999; Number range: 1 to 65535
• Size, max.	1 024 kbyte
OB	
• Size, max.	1 024 kbyte
 Number of free cycle OBs 	100
 Number of time alarm OBs 	20
 Number of delay alarm OBs 	20
 Number of cyclic interrupt OBs 	20
 Number of process alarm OBs 	50
 Number of DPV1 alarm OBs 	3
 Number of isochronous mode OBs 	1
 Number of technology synchronous alarm OBs 	2
 Number of startup OBs 	100
 Number of asynchronous error OBs 	4
 Number of synchronous error OBs 	2
 Number of diagnostic alarm OBs 	1
Nesting depth	
per priority class	24
Counters, timers and their retentivity	
S7 counter	
Number	2 048
Retentivity	
— adjustable	Yes
IEC counter	
Number	Any (only limited by the main memory)
Retentivity	
— adjustable	Yes
S7 times	
Number	2 048
Retentivity	
— adjustable	Yes
IEC timer	
Number	Any (only limited by the main memory)
Retentivity	
— adjustable	Yes
Data areas and their retentivity	
Retentive data area (incl. timers, counters, flags),	410 kbyte; For storage in NVRAM; for storage in mass storage 5
max.	242 020 bytes
Flag	

Number of clock memories Retentivity adjustable Retentivity preset No Local data per priority class, max. 64 kbyte; max. 16 KB per block Address area Inputs Outputs Subprocess images Number of lo subprocess images, max. 82 kbyte; All outputs are in the process image Subprocess images Number of distributed IO systems Via CM Number of IO Controllers Via CM Number of IO Controllers Via CM Number of Iines, max. PIP CM Number of P P CMs Integrated Number of PP CMs Number of Rep Controllers Via CM Number of Iines, max. PIP CM Number of PP CMs Image Resckup time Rackup time Hardware clock (real-time) Backup time Supported Pop master Ves Ves Supported Yes Pop Matter Ves Supported PP CMs to enumber of connectable PtP CMs is only limited by the number of available slots Number of lory, max. Ves Supported Yes Supported Yes On Windows clock, slave Ves Number of Industrial Ethernet interfaces Number of PROFINET interfaces 1 conditions 1 conditions 1 conditions 1 conditions 1 conditions 2 conditions 3 conditions 3 conditions 4 conditions 4 conditions 4 conditions 4 conditions 4 conditions 5 conditions 5 conditions 6 cond	Number, max.	16 kbyte
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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 Hardware clock (real-time) Backup time Deviation per day, max. Clock synchronization supported to DP, master on Ethernet via NTP on Windows clock, slave Interfaces Number of industrial Ethernet interfaces to day the number of connectable PtP CMs is only limited by the number of available slots the number of connectable PtP CMs is only limited by the number of available slots Yes; Resolution: 1 s 6 wk; At 40 °C ambient temperature, typically 10 s; Typ.: 2 s Clock synchronization Yes • on Ethernet via NTP • on Windows clock, slave Interfaces Number of industrial Ethernet interfaces	 Number of lines, max. 	1
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 on Ethernet via NTP on Windows clock, slave Interfaces Number of industrial Ethernet interfaces 	• supported	Yes
on Windows clock, slave Yes Interfaces Number of industrial Ethernet interfaces 2	• to DP, master	Yes
Interfaces Number of industrial Ethernet interfaces 2	on Ethernet via NTP	Yes
Number of industrial Ethernet interfaces 2	• on Windows clock, slave	Yes
Number of industrial Ethernet interfaces 2	Interfaces	
Number of PROFINET interfaces 1		2
	Number of PROFINET interfaces	1

Number of PROFIBUS interfaces	1; Via CM DP module
Number of RS 485 interfaces	1; Via CM DP module
Number of USB interfaces	4; 2x USB 2.0, 2x USB 3.0 on front side
Number of SD card slots	1
Video interfaces	
Graphics interface	1x DisplayPort
1. Interface	
Interface type	PROFINET
automatic detection of transmission rate	Yes
Autonegotiation	Yes
Autocrossing	Yes
Number of connections	88
Interface types	
Number of ports	2
• integrated switch	Yes
• RJ 45 (Ethernet)	Yes; Via BusAdapter BA 2x RJ45
— Transmission rate, max.	100 Mbit/s
 Industrial Ethernet status LED 	Yes
BusAdapter (PROFINET)	Yes; Compatible BusAdapter: BA 2x RJ45, BA 2x FC, BA 2x SCRJ (from FS03, V2.2), BA SCRJ / RJ45 (from FS03, V3.1), BA SCRJ / FC (from FS03, V3.1), BA 2x LC (from FS03, V3.3), BA LC / RJ45 (from FS03, V3.3), BA LC / FC (from FS03, V3.3)
Protocols	
PROFINET IO Controller	Yes
PROFINET IO Device	Yes
 SIMATIC communication 	Yes
Open IE communication	Yes
Web server	Yes
PROFINET IO Controller	
Services	
— Isochronous mode	Yes
- shortest clock pulse	500 μs
— IRT	Yes
— MRP	Yes
— MRPD	Yes
— PROFlenergy	Yes
— Prioritized startup	Yes; Max. 32 PROFINET devices; if you want to use the "Prioritized startup" functionality in STEP 7 for the PROFINET interface of the CPU, the CPU and the device must be separated by means of a switch (e.g. SCALANCE X205)
— Number of connectable IO Devices, max.	128
— Of which IO devices with IRT, max.	64
— of which in line, 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
 — IO Devices changing during operation (partner ports), supported 	Yes
 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 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 $\mu s;$ 375 $\mu s,$ 625 μs 3 875 $\mu s)$
Update time for RT	
— 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
Address area	
— Inputs, max.	8 kbyte
— Outputs, max.	8 kbyte
PROFINET IO Device	
Services	
— Isochronous mode	No
 shortest clock pulse 	500 μs
— IRT	Yes
— MRP	Yes
— MRPD	Yes
— PROFlenergy	Yes
 Prioritized startup 	Yes
— Shared device	Yes
 Number of IO Controllers with shared 	4
device, max.	
Asset management record	Yes
2. Interface	
Interface type	Integrated Ethernet interface
automatic detection of transmission rate	Yes

Autonegotiation	Yes
Autocrossing	Yes
Interface types	
Number of ports	1
• RJ 45 (Ethernet)	Yes; Integrated
Transmission rate, max.	1 000 Mbit/s
 Industrial Ethernet status LED 	No
3. Interface	
Interface type	PROFIBUS with CM DP
Number of connections via this interface	44
Interface types	
• RS 485	Yes
Protocols	
 PROFIBUS DP master 	Yes
 PROFIBUS DP slave 	Yes
 SIMATIC communication 	Yes
PROFIBUS DP master	
Number of DP slaves, max.	125
Services	
— Equidistance	No
— Isochronous mode	No
Address area	
— Inputs, max.	8 kbyte
— Outputs, max.	8 kbyte
Interface types	
RS 485	
Transmission rate, max.	12 Mbit/s
Protocols	
Number of connections	
 Number of connections, max. 	88
 Number of connections reserved for ES/HMI/web 	10
 Number of S7 routing paths 	16
Redundancy mode	
Media redundancy	
 Switchover time on line break, typ. 	200 ms
 Number of stations in the ring, max. 	50
SIMATIC communication	
PG/OP communication	Yes
S7 routing	Yes
• S7 communication, as server	Yes

Open IE communication TCP/IP Data length, max. (SO-on-TCP (RFC1006) Data length, max. So-on-TCP (RC1006) Data lengthe, max. So-on-TCP (RC1006) Data length, max. So-on-TCP (RC1006) Data	S7 communication, as client	Yes
Open IE communication TCP/IP Data length, max. (SO-on-TCP (RFC1008) Data length, max. (SW byte UDP Data length, max. SMMP DCP LLDP Ves LLDP Ves LLDP Ves Ves Ves Ves Ves Ves Ves Ve		64 kbyte; BSEND/BRCV: 64 KB; PUT/GET: 960 bytes
Territory policies Security policies Wes MoDBUS Yes MoDBUS Test Commissioning functions Joint commissioning functions Jess Model Jest Parallel online access possible for up to 8 engineering systems Jest Apple as impulse a simultaneously active program alarms Jest Apple as impulsed. Jes		
I SO-on-TCP (RFC1006) Data length, max. UDP Data length, max. 1 472 kbyte SMMP DCP LLDP Web server HTTP HTTP Yes; Via Windows and PROFINET interface HTTPS Yes; Via Windows and PROFINET interface Yes; Via Windows and PROFINET interface PEC UA Runtime license required OPC UA Runtime license required OPC UA Server Yes; Psmall' license required Yes; From SW CPU 150SSP V2.6 Yes; Data access (read, write, subscribe), runtime license required Yes; Available security policies: None, Basic128Rsa15, Basic256Rsa15, Basic256Sha256 Wes was a subscribed by Server wes a subscribed by Server was a s		Yes
I SISO-on-TCP (RFC1006) — Data length, max. UDP — Data length, max. 1 472 kbyte SMMP DCP LLDP Yes ULDP Yes LLDP Web server I HTTP HTTP Yes; Via Windows and PROFINET interface HTTPS Yes; Via Windows and PROFINET interface Yes; Via Windows and PROFINET interface PHTTPS Yes; Via Windows and PROFINET interface PCUA Runtime license required OPC UA Runtime license required OPC UA Client Yes; "Small" license required Yes; From SW CPU 1505SP V2.6 Yes; Data access (read, write, subscribe), runtime license required — Application authentication Yes; Available security policies: None, Basic128Rsa15, Basic256Rsa15, Basic256Sha256 — Security policies — User authentication Further protocols MODBUS Yes; MODBUS TCP Tessage functions Number of login stations for message functions, max. Program alarms Number of simultaneously active program alarms Number of alarms for system diagnostics Number of alarms for motion technology objects Test commissioning functions Joint commissioning functions Yes; up to 8 simultaneously No	— Data length, max.	64 kbyte
- Data length, max. • UDP - Data length, max. • SNMP - Data length, max. • SNMP - DCP • LLDP - DCP • LLDP Wes • SULDP Wes • LLDP Wes • LLDP Web server • HTTP • HTTPS OPC UA • Runtime license required • OPC UA Client • OPC UA Client - Application authentication - Application authentication - Security policies - Security policies - Security policies - Wes Available security policies: None, Basic128Rsa15, Basic256Sha256 - User authentication Further protocols • MODBUS Yes; MODBUS TCP ST message functions Number of login stations for message functions, max. Number of alarms for system diagnostics • Number of alarms for rostem diagnostics • Number of alarms for motion technology objects Status block Yes; up to 8 simultaneously		Yes
UDP — Data length, max. 1 472 kbyte Pope — Data length, max. 1 472 kbyte Yes 1 472 kbyte Yes ODCP — Yes LLDP Web server HTTP — Yes; Via Windows and PROFINET interface PC UA Runtime license required — OPC UA Client — OPC UA Server — Application authentication — Application authentication — Application authentication — Security policies — Security policies — User authentication Further protocols — MODBUS Yes; MODBUS TCP S7 message functions Number of login stations for message functions, max. Program alarms — Number of program alarms — Number of simultaneously active program alarms — Number of salarms for system diagnostics — Number of alarms for motion technology objects Test commissioning functions Joint commission (Team Engineering) Yes; up to 8 simultaneously Yes; up to 8 simultaneously Yes; up to 8 simultaneously Single step No	,	64 kbyte
- Data length, max. • SNMP • DCP • LLDP • Yes • LLDP Web server • HTTP • HTTP • HTTP • Yes; Via Windows and PROFINET interface • HTTPs • Yes; Via Windows and PROFINET interface OPC UA • Runtime license required • OPC UA Client • OPC UA Server — Application authentication — Application authentication — Application authentication — Security policies — Security policies — User authentication Further protocols • MODBUS 7 message functions Number of login stations for message functions, max. Number of simultaneously active program alarms • Number of slarms for system diagnostics • Number of slarms for system diagnostics • Number of alarms for system diagnostics • Number of slarms for sys		Yes
SNMP DCP LLDP Yes Ves LLDP Yes Web server HTTP Yes; Via Windows and PROFINET interface PHTTPS Yes; Via Windows and PROFINET interface Yes; Via Windows and PROFINET interface PHTTPS Yes; Wa Windows and PROFINET interface PCUA Runtime license required OPC UA Client Yes; "Small" license required OPC UA Server Yes; Data access (read, write, subscribe), runtime license required Yes; Available security policies: None, Basic128Rsa15, Basic256Rsa15, Basi		1 472 kbyte
DCP LLDP Yes Web server HTTP Yes; Via Windows and PROFINET interface HTTPS Yes; Via Windows and PROFINET interface PHTTPS Yes; Via Windows and PROFINET interface PROFUA Runtime license required OPC UA Client OPC UA Client Yes; From SW CPU 1505SP V2.6 Papilication authentication Yes; Available security policies: None, Basic128Rsa15, Basic256Rsa15, Basic256R		
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MODBUS Yes; MODBUS TCP S7 message functions Number of login stations for message functions, max. 32 Program alarms Yes Number of configurable program messages, max. 10 000 Number of simultaneously active program alarms 1 000 Number of program alarms 1 000 Number of alarms for system diagnostics 200 Number of alarms for motion technology objects Test commissioning functions Joint commission (Team Engineering) Yes; Parallel online access possible for up to 8 engineering systems Status block Yes; up to 8 simultaneously No	 User authentication 	Yes; "anonymous" or by user name & password
Number of login stations for message functions, max. Program alarms Number of configurable program messages, max. Number of simultaneously active program alarms Number of program alarms Number of program alarms Number of alarms for system diagnostics Number of alarms for motion technology Number of alarms for motion technology Signature to a simultaneously Yes; Parallel online access possible for up to 8 engineering systems Status block Yes; up to 8 simultaneously Single step	Further protocols	
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Number of login stations for message functions, max. Program alarms Number of configurable program messages, max. 10 000 Number of simultaneously active program alarms Number of program alarms Number of program alarms Number of alarms for system diagnostics Number of alarms for motion technology objects Test commissioning functions Joint commission (Team Engineering) Yes; Parallel online access possible for up to 8 engineering systems Status block Yes; up to 8 simultaneously Single step No	S7 message functions	
Number of configurable program messages, max. Number of simultaneously active program alarms Number of program alarms Number of program alarms Number of alarms for system diagnostics Number of alarms for motion technology objects Test commissioning functions Joint commission (Team Engineering) Yes; Parallel online access possible for up to 8 engineering systems Status block Yes; up to 8 simultaneously Single step No		32
Number of simultaneously active program alarms Number of program alarms Number of program alarms Number of alarms for system diagnostics Number of alarms for motion technology objects Test commissioning functions Joint commission (Team Engineering) Yes; Parallel online access possible for up to 8 engineering systems Status block Yes; up to 8 simultaneously Single step No	Program alarms	Yes
 Number of program alarms Number of alarms for system diagnostics Number of alarms for motion technology objects Test commissioning functions Joint commission (Team Engineering) Yes; Parallel online access possible for up to 8 engineering systems Status block Yes; up to 8 simultaneously No 	Number of configurable program messages, max.	10 000
 Number of alarms for system diagnostics Number of alarms for motion technology objects Test commissioning functions Joint commission (Team Engineering) Status block Single step Yes; Parallel online access possible for up to 8 engineering systems No	Number of simultaneously active program alarms	1 000
Number of alarms for motion technology objects Test commissioning functions Joint commission (Team Engineering) Yes; Parallel online access possible for up to 8 engineering systems Status block Yes; up to 8 simultaneously No	 Number of program alarms 	1 000
Test commissioning functions Joint commission (Team Engineering) Yes; Parallel online access possible for up to 8 engineering systems Status block Yes; up to 8 simultaneously No	 Number of alarms for system diagnostics 	200
Joint commission (Team Engineering) Yes; Parallel online access possible for up to 8 engineering systems Status block Yes; up to 8 simultaneously No		160
systems Status block Yes; up to 8 simultaneously Single step No	Test commissioning functions	
Single step No	Joint commission (Team Engineering)	
	Status block	Yes; up to 8 simultaneously
Number of breakpoints 8	Single step	No
	Number of breakpoints	8

Status/control	
Status/control variable	Yes
Variables	Inputs, outputs, memory bits, DB, times, counters
Number of variables, max.	
— of which status variables, max.	200
— of which control variables, max.	200
Forcing	
• Forcing	Yes
Forcing, variables	Inputs, outputs
Number of variables, max.	200
Diagnostic buffer	
• present	Yes
Number of entries, max.	1 000
— of which powerfail-proof	300
Traces	
Number of configurable Traces	4
 Memory size per trace, max. 	512 kbyte
Interrupts/diagnostics/status information	
Diagnostics indication LED	
RUN/STOP LED	Yes
• ERROR LED	Yes
MAINT LED	Yes
Supported technology objects	
Motion Control	Yes
 Number of available Motion Control resources for technology objects 	2 400
 Required Motion Control resources 	
per speed-controlled axis	40; per axis
— per positioning axis	80; per axis
— per synchronous axis	160; per axis
— per external encoder	80; per external encoder
— per output cam	20; per cam
— per cam track	160; per cam track
— per probe	40; per probe
 Positioning axis 	
 Number of positioning axes at motion control cycle of 4 ms (typical value) 	15
 Number of positioning axes at motion control cycle of 8 ms (typical value) 	30
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

Isolation	
Isolation tested with	707 V DC (type test) and according to EN 50155 (routine test)

tandards, approvals, certificates	
Railway application	
● 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 OT2, 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; Rail vehicles - verification on request

Ambient conditions		
Ambient temperature during operation		
• min.	-40 °C; = Tmin (incl. condensation/frost)	
• max.	Up to 60 °C with max. 32 ET 200SP modules; up to 55 °C with max. 64 ET 200SP modules	
 horizontal installation, min. 	-40 °C; = Tmin (incl. condensation/frost)	
 horizontal installation, max. 	60 °C; = Tmax; +70 °C for 10 min (OT2, ST1/ST2 acc. to EN 50155)	
 vertical installation, min. 	-40 °C; = Tmin (incl. condensation/frost)	
 vertical installation, max. 	50 °C; With max. 32 ET 200SP modules	
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	
Vibrations		

• On earthur tested execution to IFO COOCO O C	Yes
Operation, tested according to IEC 60068-2-6	
• Transport, tested acc. to IEC 60068-2-6	Yes
Shock testing	
 tested according to IEC 60068-2-6 	Yes
 tested according to IEC 60068-2-27 	Yes
 tested according to IEC 60068-2-29 	Yes
• Storage/transport, tested acc. to IEC 60068-2-	Yes
27	
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 50155 (ST2); *
 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	
 Note regarding classification of environmental conditions acc. to EN 60721, EN 60654-4 and ANSI/ISA-71.04 	* The supplied plug covers must remain in place over the unused interfaces during 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

Operating systems		
pre-installed operating system	Windows 10 IoT Enterprise 2016 LTSB, 64bit, MUI	
Configuration		
Programming		
Programming language		
— LAD	Yes	
— FBD	Yes	
— STL	Yes	
— SCL	Yes	
— CFC	No	
— GRAPH	Yes	
Know-how protection		
User program protection/password protection	Yes	
Copy protection	Yes	
Block protection	Yes	
Access protection		
Protection level: Write protection	Yes	
 Protection level: Read/write protection 	Yes	
 Protection level: Complete protection 	Yes	
Cycle time monitoring		
• lower limit	adjustable minimum cycle time	
• upper limit	adjustable maximum cycle time	
Open Development interfaces		
• Size of ODK SO file, max.	5.8 Mbyte	
Peripherals/Options		
SD card	Optionally for additional mass storage	
Dimensions		
Width	160 mm	
Height	117 mm	
Depth	75 mm	
Weights		
Weight, approx.	0.83 kg	
Other		
Note:	for use in railway applications, also observe the product information "SIPLUS extreme RAIL" A5E37661960A, Online Support article 109736776	

last modified: 05/28/2020