# SIEMENS

## Data sheet

## 6AG2516-3FN02-4AB0



SIPLUS S7-1500 CPU 1516F-3 PN/DP rail based on 6ES7516-3FN02-0AB0 with conformal coating, -40...+70 °C, OT4 with ST1/2 (+85 °C for 10 minutes), heat sink, no PS usable, central processing unit with work memory 1.5 MB for program and 5 MB for data, 1st interface: PROFINET IRT with 2-port switch, 2nd interface: PROFINET RT, 3rd interface: PROFIBUS, 10 ns bit performance, SIMATIC Memory Card required

General information	
Product type designation	CPU 1516F-3 PN/DP
based on	6ES7516-3FN02-0AB0
Product function	
I&M data	Yes; I&M0 to I&M3
Isochronous mode	Yes; Distributed and central; with minimum OB 6x cycle of 375 $\mu s$ (distributed) and 1 ms (central)
Engineering with	
<ul> <li>STEP 7 TIA Portal configurable/integrated from version</li> </ul>	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	
<ul> <li>Mains/voltage failure stored energy time</li> </ul>	5 ms
Repeat rate, min.	1/s
Input current	
Current consumption (rated value)	0.85 A
Current consumption, max.	1.1 A
Inrush current, max.	2.4 A; Rated value
l²t	0.02 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.	7 W
Memory	
Number of slots for SIMATIC memory card	1
SIMATIC memory card required	Yes
Work memory	
• integrated (for program)	1.5 Mbyte
<ul> <li>integrated (for data)</li> </ul>	5 Mbyte

Load memory	
Plug-in (SIMATIC Memory Card), max.	32 Gbyte
Backup	JZ Obyle
maintenance-free	Yes
	Tes
CPU processing times	40
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)	8 000; 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. FB	5 Mbyte; For DBs with absolute addressing, the max. size is 64 KB
Number range	0 65 535
• Size, max.	1 Mbyte
FC	
Number range	0 65 535
• Size, max.	1 Mbyte
OB	
• 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
<ul> <li>Number of technology synchronous alarm OBs</li> </ul>	2
Number of startup OBs	100
<ul> <li>Number of asynchronous error OBs</li> </ul>	4
<ul> <li>Number of synchronous error OBs</li> </ul>	2
<ul> <li>Number of diagnostic alarm OBs</li> </ul>	1
Nesting depth	
<ul> <li>per priority class</li> </ul>	24; Up to 8 possible for F-blocks
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	
	512 khyte: In total: available rotantive memory for hit memories, timera
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
Flag	
• Size, max.	16 kbyte
Number of clock memories	8; 8 clock memory bit, grouped into one clock memory byte
Data blocks	

• Retentivity presetNoLocal data• per priority class, max.64 kbyte; max. 16 KB per blockAddress areaNumber of IO modules8 192; max. number of modules / submodulesI/O address areaI/O address area• Inputs32 kbyte; All inputs are in the process image• Outputs32 kbyte; All outputs are in the process image• Outputs8 kbyte; All outputs are in the process image• Outputs (volume)8 kbyte- Inputs (volume)8 kbyte- Outputs (volume)8 kbyte- Number of subprocess images, max.32	<ul> <li>Retentivity adjustable</li> </ul>	Yes
Local data		
e-pripriorily class, max.64 ktyle; max. 16 KB per backAttracts in under of forodules6192; max. number of modules / submodulesVariations area25 ktyle; All notes are in the process imageUp dates area25 ktyle; All notes are in the process image Inputs (volume)8 ktyle; Outputs (volume)8 ktyle; Number of distributed I/O system is characterized not only by the integration of top for style; masker modules or insis (e.g., IE-PE-Link)Number of ID masker1 Val CM7 Val CM7<		
Address and         9 192; max. number of modules / submodules           Number of ID modules         9 192; max. number of modules / submodules           Inputs         32 kbyte; All inputs are in the process image           Imputs         32 kbyte; All inputs are in the process image           Imputs         32 kbyte; All subuds are in the process image           Imputs (volume)         8 kbyte           Subprocess images         22           Mander of adsprocess images, max.         32           Mander of adsprocess images, max.         32           Mander of adsprocess images, max.         32           Number of adsprocess images         52           Number of adsprocess images         52           Number of adsprocess images         52           Number of adsproces         52           Number of adsproces         52           Number of ID Controllers         52           Imagrated         52           Via GM         53         72		64 khyte: max_16 KB per block
Number of IO modules         9 192, max, number of modules / submodules           IO address area         2 ktyte; All inputs are in the process image           Inputs         32 ktyte; All outputs are in the process image           Inputs         32 ktyte; All outputs are in the process image           Inputs (volume)         8 ktyte           Number of the process images, max.         32           Viscours         8 ktate           Number of DP maskers         40 kthurb(10 value RPCPRE) REPORENTS, et all allow the the process image in modules, to all allow the the process image in modules or links (e.g. IEPPS LINK)           Number of DP maskers         1           Viscours         2           Viscours         2           Viscours         2           Viscours         2           Viscours         2           Viscours		
I/O defines area		8 192; max. number of modules / submodules
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• clipshs23 ktyte, All outputs are in the process image!per indigrated its subsystem6 ktyte- Outputs (volume)8 ktyte- Outputs (volume)9 ktyte- Outputs (volume)9 ktyte- Number of subprocess images, max.2- Number of distributed IO system is characterized not only by the integration of distributed IO system is characterized not only by the integration of distributed IO system is characterized not only by the integration of distributed IO system is characterized not only by the integration of distributed IO system is characterized not only by the integration of distributed IO system is characterized not only by the integration of distributed IO system is characterized not only by the integration of distributed IO system is characterized not only by the integration of distributed IO system is characterized not only by the integration of distributed IO system is characterized not only by the content of the integration of distributed IO systemNumber of IO Controlers2- Via CM22, CPU + 31 modules, no system power supply (PS) can be used allower only mover supp		32 kbyte; All inputs are in the process image
primisgrated IC subjection         8 kbyte           - inputs (volume)         8 kbyte           - CADUS (volume)         8 kbyte           - Inputs (volume)         8 kbyte           - Inputs (volume)         8 kbyte           - Under (volume)         8 kbyte           - Number of subproces images, max.         32           - Number of subproces images, max.         32           - Number of Subproces images, max.         32           - Number of DP masters         64 A distributed ID og splotmer is characterized not only by the Indegration of distributed ID og splotmer at macharized not only by the Indegration of distributed ID og splotmer at macharized not only by the Indegration of distributed ID og splotmer at macharized not only by the Indegration of distributed ID og splotmer at macharized not only by the Indegration of distributed ID og splotmer at macharized not only by the Indegration of distributed ID og splotmer at macharized not only the Indegration of distributed ID og splotmer at macharized not only the Indegration of distributed ID og splotmer at macharized not only the Indegration of distributed ID og splotmer at macharized not only the Indegration of distributed ID og splotmer at macharized not only the Indegration of distributed ID og splotmer at macharized not only the Indegration of distributed ID og splotmer at macharized not only on a AS in macharized not only the Indegration of distributed ID og splotmer at the Indegration ID of the AS in ASCPs (PROFIBUS, PROFINET, Ethernet) can be inserted in total           Number of ID on at the associate per rank, max.         12, CPU + 31 modules; no system power supply (PS)		
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− Outputs (volume)         8 kbyte           − Outputs (volume)         8 kbyte           − Outputs (volume)         8 kbyte           ● Number of subprocess images, max.         32           ■ Knumber of subprocess images, max.         32           Number of Subprocess images, max.         84, A distributed (I/O system is characterized not only by the integration of databated (I/O use RCF INE To IPROFIBUS communication mobilies, but also databated (I/O use RCF INE To IPROFIBUS communication mobilies, but also databated (I/O use RCF INE To IPROFIBUS, PROFINET, Ethernet) can be discripted in Iodal           Number of DP masters         1           ■ integrated         1           ■ integrated         2           ■ Via CM         8: A maximum of 8 CMsCPs (PROFIBUS, PROFINET, Ethernet) can be discripted in Iodal           ■ integrated         2           ■ Via CM         8: A maximum of 8 CMsCPs (PROFIBUS, PROFINET, Ethernet) can be discripted in Iodal           ■ integrated         2           ■ Via CM         1           ■ integrated         2           ■ Number of DP CMs         8: A maximum of 8 CMsCPs (PROFIBUS, PROFINET, Ethernet) can be discripted in Iodal           ■ integrated         1           ■ Number of DP CMs         8: A do 1C ambeter temperature, typicality           ■ beviation per day, max.         10: Starter <td< td=""><td></td><td>8 kbyte</td></td<>		8 kbyte
pc CMCP         -           -         inputs (volume)         8 kbyle           -         Optats (volume)         8 kbyle           Subprocess images         32           Handware configuration         32           Handware configuration         64. At distributed I/O system is characterized not only by the integration of distributed I/O aptem is characterized not only by the integration of distributed I/O aptem is characterized not only by the integration of distributed I/O aptem is characterized not only by the integration of distributed I/O aptem is characterized not only by the integration of distributed I/O aptem is characterized not only by the integration of distributed I/O aptem is characterized not only by the integration of distributed I/O aptem is characterized not only by the integration of distributed I/O aptem is characterized not only by the integration of distributed I/O aptem is characterized not only by the integration of distributed I/O aptem is characterized not only by the integration of distributed I/O aptem is characterized not only by the integration of distributed I/O aptem is characterized not only by the integration of distributed I/O aptem is characterized not only by the integration of distributed I/O aptem is characterized not only by the integration of distributed I/O aptem is characterized not only by the integration of distributed I/O aptem is characterized not only by the integration of distributed I/O aptem is characterized not only by the integration of distributed I/O aptem is characterized not only by the integration of distributed I/O aptem is characterized not only by the integration of distributed I/O aptem is characterized not only by the integration of distributed I/O aptem is characterized not only by the integration of distributed I/O aptem is ch		
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Subprocess images         2           Number of subprocess images, max.         32           Number of distributed ID systems         64: A distributed ID system is characterized not only by the integration of distributed ID and SCONET or RPGFUBUS communication modules, but also by the connection of ID Via AS-I master modules or links (e.g. IE/PB-Link)           Number of DP masters         1           • integrated         1           • integrated         1           • integrated         2           • Via CM         integrated           • Integrated         2           • Via CM         is A maximum of 8 CMs/CPs (PROFIBUS, PROFINET, Ethernet) can be inserted in total           Rack         2           • Via CM         is A maximum of 8 CMs/CPs (PROFIBUS, PROFINET, Ethernet) can be inserted in total           Rack         2           • Via CM         is A maximum of 8 CMs/CPs (PROFIBUS, PROFINET, Ethernet) can be inserted in total           • Number of IPP CMS         the number of consectable PIP CMs is only limited by the number of available stois <b>Cock</b> E           • Supported         Skith and taken cock stois           • Uppe         Hardware clock stois           • lockup time         Ges           • lockup time         Ges           • lockup time         Ges <td>— Inputs (volume)</td> <td>8 kbyte</td>	— Inputs (volume)	8 kbyte
• Number of subprocess images, max.         32           Hardwar configuration         4ardwar configuration           Number of distributed IO systems         64: A distributed IO vay RSOFINET or PROFIBUS communication modules, but and the connection of IO via AS-I master modules or Intex (e.g. IE-PB-Link)           Number of Dates         1           • Integrated         1           • Via CM         Isense integrated           • Via CM         Isense integrated           • Via CM         Isense integrated           • Via CM         2           • Via CM         2           • Via CM         2           • Via CM         2           • Via CM         32, CPU + 31 modules; no system power supply (PS) can be used           • Via CM         32, CPU + 31 modules; no system power supply (PS) can be used           • Number of PP CM         1           • Number of PP CMS         1           • Number of PP CMS         1           • Station prices, max.         10 : Typ: 2 is           • Station prices, max.         10 : Typ: 2 is           • Number of PP CMS         14 order arctock           • Backup time         6 wick, 44 0° C ambient temperature, typically           • Dype mater         10 : Typ: 2 is           • Number of PROFINET Interefa	— Outputs (volume)	8 kbyte
Hardware configuration         64. A distributed I/O system is characterized not only by the integration of distributed I/O via PROFIBUS communication modules, but also by the connection of I/O via AS I meater modules or links (e.g. IE/PS-Link)           Number of DP masters         1           • Integrated         1           • Wa CM         8. A maximum of 8 CMs/CPs (PROFIBUS, PROFINET, Ethernet) can be inserted in total           Number of IO Controllers         2           • Via CM         8. A maximum of 8 CMs/CPs (PROFIBUS, PROFINET, Ethernet) can be inserted in total           Number of IO Controllers         2           • Via CM         8. A maximum of 8 CMs/CPs (PROFIBUS, PROFINET, Ethernet) can be inserted in total           Rack         2           • Via CM         8. A maximum of 8 CMs/CPs (PROFIBUS, PROFINET, Ethernet) can be inserted in total           Number of Ince, max.         1           • Mouldus per rack, max.         32: CPU + 31 modules; no system power supply (PS) can be used           • Number of PP CMs         the number of connectable PtP CMs is only limited by the number of available slots           • Number of PP CMs         the number of connectable PtP CMs is only limited by the number of available slots           • Number of PP CMs         the number of connectable PtP CMs is only limited by the number of available slots           • Operating hours counter         6         wk: At 40 °C ambient temperature, typically	· · ·	
Number of distributed IO systems         64. A distributed IO system is characterized not by the integration of distributed IOV and AS-1 master modules or links (e.g., IE/PB-Link)           Number of DP masters <ul></ul>	· •	32
dishbuled I/O via PROFINET or PROFIBUS communication modules or links (e.g. IE/PB-LINK) Number of DP master  integrated i	Hardware configuration	
• Integrated1• Via CM8: A maximum of 8 CMs/CPs (PROFIBUS, PROFINET, Ethernet) can be inserted in totalNumber of IO Controllers2• Via CM8: A maximum of 8 CMs/CPs (PROFIBUS, PROFINET, Ethernet) can be inserted in totalRack2• Number of CMs/CPs (PROFIBUS, PROFINET, Ethernet) can be inserted in totalRack32; CPU + 31 modules; no system power supply (PS) can be used • Number of fines, max.• Number of FIP CMs32; CPU + 31 modules; no system power supply (PS) can be used • solts• Number of PIP CMsthe number of connectable PIP CMs is only limited by the number of available • solts• Top CM1• ClockHardware clock • 6 wk; At 40 °C ambient temperature, typically • 0 be/valion per day, max.• Operating hours counter6 wk; At 40 °C ambient temperature, typically • 0 be/master• supported16• Clock16• In AS, masterYes• n AS, masterYes• n AS, device2• n POFINET Interfaces1• number of prots2• number of prots2• number of prots2• ProtocolYes; IPv4• PROFINET IO DeviceYes• PRO		distributed I/O via PROFINET or PROFIBUS communication modules, but also
• Via CM         8: A maximum of 8 CMs/CPs (PROFIBUS, PROFINET, Ethemet) can be inserted in total           Number of IO Controllers         2           • Integrated         2           • Via CM         8: A maximum of 8 CMs/CPs (PROFIBUS, PROFINET, Ethemet) can be inserted in total           Rack         32; CPU + 31 modules; no system power supply (PS) can be used in serted in total           • Modules per rack, max.         32; CPU + 31 modules; no system power supply (PS) can be used is total           • Number of PIP CMs         1           • Number of PIP CMs         6 hourber of connectable PIP CMs is only limited by the number of available sits           • Number of PIP CMs         6 wix At 40 °C cambient temperature, typically           • Deviation per day, max.         10 s; Typ: 2 s           • Operating hours counter         6 wix At 40 °C cambient temperature, typically           • Deviation per day, max.         10 s; Typ: 2 s           • Operating hours counter         10 s; Typ: 2 s           • Number of PACFINET interfaces         Yes           • In AS, master         Yes           • In AS, device         2           • In AS, device         4           • In AS, device         2           • In AS, device         2           • In AS, device         4           • Interfaces         <		
Instead of I Controllers           Number of IO Controllers         2           • Via CM         8; A maximum of 8 CMs/CPs (PROFIBUS, PROFINET, Ethernet) can be inserted in total           Rack         32; CPU + 31 modules; no system power supply (PS) can be used           Number of Ines, max.         32; CPU + 31 modules; no system power supply (PS) can be used           Number of Ines, max.         1           PIP CM         5           Cook         5           Chype         Hardware clock           • Type         6           • Specified Difference         6 w; At 40 °C ambient temperature, typically           • Deviation per day, max.         16           Clock         5           • Supported         Yes           • supported         Yes           • Supported         Yes           • In As, master         Yes           • In As, master         2           Number of PROFINET interfaces         1           Number of PROFINET interfaces         2           Interface         2           Protecol         Yes; X1           • R44 6 (Ethernet)         Yes; X1           • Number of ports         2           • Interface types         2           •	-	
Number of IO Controllers         Controllers           Integrated         2           Integrated         8: A maximum of 8 CMs/CPs (PROFIBUS, PROFINET, Ethernet) can be inserted in total           Rack         32; CPU + 31 modules; no system power supply (PS) can be used           Indudies per rack, max.         32; CPU + 31 modules; no system power supply (PS) can be used           Number of lines, max.         1           PIP CM         the number of connectable PIP CMs is only limited by the number of available slots           Itime of day         the number of connectable PIP CMs is only limited by the number of available slots           Itime of day         the number of connectable PIP CMs is only limited by the number of available slots           Itime of day         the number of connectable PIP CMs is only limited by the number of available slots           Itime of day         the number of connectable PIP CMs is only limited by the number of available slots           Itime of available slots         the number of connectable PIP CMs is only limited by the number of available slots           Itime of available slots         the number of connectable PIP CMs is only limited by the number of available slots           Itime of available slots         the number of connectable PIP CMs is only limited by the number of available slots           Itime of available slots         the number of connectable PIP CMs is only limited by the number of available slots           Op	• VIA CM	
• integrated2• Via CM8: A maximum of 8 CMs/CP6 (PROFIBUS, PROFINET, Ethernet) can be inserted in totalRack	Number of IO Controllers	
• Via CM       8: A maximum of 8 CMs/CPs (PROFIBUS, PROFINET, Ethemet) can be inserted in total         Rack       32; CPU + 31 modules; no system power supply (PS) can be used 1         • Number of Ines, max.       1         PIP CM       1         • Number of PIP CMs       the number of connectable PIP CMs is only limited by the number of available sites <b>Time of day</b> 5         Clock       6 wk; At 40 °C ambient temperature, typically         • Deviation per day, max.       10 s; Typ. 2 s         Operating hours counter       6 wk; At 40 °C ambient temperature, typically         • Deviation per day, max.       16 c         Clock synchronization       Yes         • In AS, naster       10 s         • In AS, device       2         • In AS, device       Yes         • Interface transces       2         Number of PROFINET interfaces       2         • Interface track       2         • Interface track       Yes; X1         • Number of PROFINET int		2
Inserted in total           Rack           Adduels per rack, max.         32; CPU + 31 modules; no system power supply (PS) can be used           Number of Ines, max.         1           PIP CM         the number of connectable PIP CMs is only limited by the number of available slots           FINE of dy         the number of connectable PIP CMs is only limited by the number of available slots           Clock         the number of connectable PIP CMs is only limited by the number of available slots           Operating hours counter         6 wk; At 40 °C ambient temperature, typically           Operating hours counter         16           Clock synchronization         16           Clock synchronization         Yes           Number of PROFINET interfaces         Yes           Number of PROFINET interfaces         2           Number of prote         2           Number of prote         2           Number of prote         2           Number of PROFINET interfaces         2           Number of PROFINET interfaces         2           Number of PROFINET interfaces         2           Number of prote	-	8; A maximum of 8 CMs/CPs (PROFIBUS, PROFINET, Ethernet) can be
• Modules per rack, max.32; CPU + 31 modules; no system power supply (PS) can be used• Number of lines, max.1PIP CM• Number of PIP CMsthe number of connectable PIP CMs is only limited by the number of available slots <b>Clock</b> • TypeHardware clock 6 wk; At 40 °C ambient temperature, typically • Deviation per day, max.6 wk; At 40 °C ambient temperature, typically • 16Operating hours counter16• Number10• NumberYes• Number16ClockYes• NumberYes• NumberYes• NumberYes• NumberYes• NumberYes• Number of PROFINET interfaces2• Number of PROFINET interfaces2• RU45 (Ethernet) • Number of ports2• Interface typeYes• PROFINET ID Contoller • PROFINET ID DeviceYes• PROFINET ID DeviceYes• SIMATIC communicationYes		
• Number of Ines, max.1PP CM• Number of PIP CMsthe number of connectable PIP CMs is only limited by the number of available isots <b>Time of day</b> Clock• TypeHardware clock• Backup time6 wk; At 40 °C ambient temperature, typically• Deviation per day, max.10 s; Typ.: 2 sOperating hours counter• Number16Clock synchronization• SupportedYes• In AS, masterYes• In AS, deviceYes• Number of PROFINET Interfaces2Number of PROFINET Interfaces1Number of PROFINET Interfaces2Number of profs Store1• Interface types2• RJ 45 (Ethernet)Yes; X1• Number of ports2• Interface types2• Interface typesYes; X1• Interface typesYes; X1• Interface types1• Interface types1• Interface types2• Interface types1• Interface typesYes; X1• Interface types1• Interface types1• Interface typesYes; X1• Interface typesYes; Non-• Interface typesYes; IPv4• PROFINET IO ControllerYes; IPv4• PROFINET IO DeviceYes• SIMATIC communicationYes		
PIP CM         under of PIP CMs         the number of connectable PIP CMs is only limited by the number of available soles           rtme of day               Available soles </td <td>-</td> <td></td>	-	
Number of PtP CMs         the number of connectable PtP CMs is only limited by the number of available slots           Time of day           Clock         Hardware clock                • Type             • Backup time             • Deviation per day, max.             • Deviation             • Number of DPG Per Deviation             • Number of PROFINET Interfaces             • Number of PROFINET Interfaces             • Deviation per deviation             • RJ 45 (Ethernet)             • PROFINET Interfaces             • PROFINET Interface             • PROFINET Interface             • PROFINET IO Controller             • PROFINET		1
slots           Fine of day           Clock           Clock           Type         Hardware clock           Backup time         6 wk; At 40 °C ambient temperature, typically           Deviation per day, max.         10 s; Typ.: 2 s           Operating hours counter         6           Number         16           Clock synchronization         9           supported         Yes           in AS, master         Yes           in AS, device         Yes           on Ethernet via NTP         Yes           Number of PROFINET interfaces         2           Number of PROFINET interfaces         2           Number of profs         2           Interface types         1           Interface types         1           PROFIBUS interfaces         2           Interface types         1           Interface types         1           Interface types         1           IP protocol         Yes; X1           Interface switch         Yes; X1           IP protocol         Yes; IPv4           IP protocol         Yes; IPv4           IP protocol         Yes; IPv4           IP ROFINET ID Contro		the pumper of corrections DID ONE is set if it is the state
Time of day         Clock <ul> <li>Type</li> <li>Backup time</li> <li>G wk; At 40 °C ambient temperature, typically</li> <li>Deviation per day, max.</li> <li>Operating hours counter</li> <li>Number</li> <li>Number</li> <li>Supported</li> <li>ves</li> <li>to DP, master</li> <li>Ves</li> <li>in AS, master</li> <li>Yes</li> <li>on Ethernet via NTP</li> <li>Yes</li> <li>on Ethernet via NTP</li> <li>Yes</li> <li>Number of PROFINET interfaces</li> <li>2</li> </ul> <li>Number of PROFINET interfaces</li> <li>1</li> <li>Interface</li> <li>Interface types</li> <ul> <li>FL J 45 (Ethernet)</li> <li>Yes; X1</li> <li>Number of ports</li> <li>Ves</li> <li>integrated switch</li> <li>Yes</li> </ul> <li>Protocols</li> <li>PROFINET IO Device</li> <li>Yes</li> <li>PROFINET IO Device</li> <li>Yes</li>		
Clock <ul> <li>Type</li> <li>Backup time</li> <li>Backup time</li> <li>Backup time</li> <li>Backup time</li> <li>Backup time</li> <li>Stype and the second second</li></ul>	Time of day	
• Backup time6 wk; At 40 °C ambient temperature, typically• Deviation per day, max.10 s; Typ.: 2 sOperating hours counter1• Number16Cock synchronizationYes• supportedYes• to DP, masterYes• in AS, masterYes• in AS, deviceYes• on Ethernet via NTPYesNumber of PROFINET interfaces2Number of PROFINET interfaces1Number of PROFINET interfaces2Interface types1• interface types2• interface typesYes; X1• Number of profs2• interface switchYes; X1• ProtocolYes; IPV4• PROFINET ID ControllerYes; IPV4• PROFINET ID DeviceYes• SIMATIC communicationYes		
• Backup time6 wk; At 40 °C ambient temperature, typically• Deviation per day, max.10 s; Typ.: 2 sOperating hours counter1• Number16Cock synchronizationYes• supportedYes• to DP, masterYes• in AS, masterYes• in AS, deviceYes• on Ethernet via NTPYesNumber of PROFINET interfaces2Number of PROFINET interfaces1Number of PROFINET interfaces2Interface types1• interface types2• interface typesYes; X1• Number of profs2• interface switchYes; X1• ProtocolYes; IPV4• PROFINET ID ControllerYes; IPV4• PROFINET ID DeviceYes• SIMATIC communicationYes	• Type	Hardware clock
Operating hours counter         In           • Number         16           Clock synchronization            • supported         Yes           • to DP, master         Yes           • in AS, master         Yes           • in AS, device         Yes           • on Ethernet via NTP         Yes           Number of PROFINET interfaces         2           Number of PROFINET interfaces         1           Interface         1           Number of PROFINET interfaces         2           Interface types         2           • RJ 45 (Ethernet)         Yes; X1           • Number of ports         2           • integrated switch         Yes           Protocol         Yes           • IP protocol         Yes           • PROFINET IO Controller         Yes           • PROFINET IO Device         Yes           • SIMAT		6 wk; At 40 °C ambient temperature, typically
Number16Clock synchronization• supportedYes• to DP, masterYes• in AS, masterYes• in AS, deviceYes• on Ethernet via NTPYesNumber of PROFINET interfaces2Number of PROFIBUS interfaces1InterfaceInterfaceInterface types2• RJ 45 (Ethernet)Yes; X1• Number of ports2• integrated switchYesProtocolsYes; IPv4• PROFINET IO ControllerYes; IPv4• PROFINET IO DeviceYes• SIMATIC communicationYes		10 s; Typ.: 2 s
Clock synchronization• supportedYes• to DP, masterYes• in AS, masterYes• in AS, deviceYes• on Ethernet via NTPYesInterfaces2Number of PROFINET interfaces2Number of PROFIBUS interfaces2InterfaceInterface types• RJ 45 (Ethernet)Yes; X1• Number of ports2• integrated switchYesProtocol• IP protocolYes; IPv4• PROFINET IO ControllerYes• PROFINET IO ControllerYes• SIMATIC communicationYes		
supportedYes• to DP, masterYes• in AS, masterYes• in AS, deviceYes• on Ethernet via NTPYesNumber of PROFINET interfacesNumber of PROFINET interfaces2Number of PROFIBUS interfaces1InterfaceNumber of PROFIBUS interfaces2Number of PROFIBUS interfaces2Interface typesYes; X1• RJ 45 (Ethernet)Yes; X1• Number of ports2• integrated switchYesProtocolsYes; IPv4• IP protocolYes; IPv4• PROFINET IO ControllerYes• PROFINET IO ControllerYes• SIMATIC communicationYes		16
• to DP, masterYes• in AS, masterYes• in AS, deviceYes• on Ethernet via NTPYes• on Ethernet via NTPYes• on Ethernet via NTP2• number of PROFINET interfaces1• Number of PROFIBUS interfaces1• Interface1• Interface typesYes; X1• RJ 45 (Ethernet)Yes; X1• Number of ports2• Integrated switchYes• ProtocolsYes; IPV4• IP protocol IPYes; IPV4• PROFINET IO ControllerYes• PROFINET IO DeviceYes• SIMATIC communicationYes		
• in AS, masterYes• in AS, deviceYes• on Ethernet via NTPYesInterfaces2Number of PROFINET interfaces2Number of PROFIBUS interfaces1• Interface1Interface types• RJ 45 (Ethernet)Yes; X1• Number of ports2• integrated switchYes; Number of ports• ProtocolsYes; IPv4• PROFINET IO ControllerYes; IPv4• PROFINET IO DeviceYes• SIMATIC communicationYes		
• in AS, deviceYes• on Ethernet via NTPYesInterfaces2Number of PROFINET interfaces2Number of PROFIBUS interfaces11. Interface1Interface typesYes; X1• RJ 45 (Ethernet)Yes; X1• Number of ports2• integrated switchYesProtocolsYes; IPv4• PROFINET IO ControllerYes; IPv4• PROFINET IO DeviceYes• SIMATIC communicationYes		
• on Ethernet via NTPYesInterfaces2Number of PROFINET interfaces2Number of PROFIBUS interfaces1Interface1Interface types1• RJ 45 (Ethernet)Yes; X1• Number of ports2• integrated switchYesProtocols1• IP protocolYes; IPv4• PROFINET IO ControllerYes• PROFINET IO DeviceYes• SIMATIC communicationYes		
Interfaces           Number of PROFINET interfaces         2           Number of PROFIBUS interfaces         1           Interface         1           Interface types         -           • 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	,	
Number of PROFINET interfaces2Number of PROFIBUS interfaces1Interface1Interface typesInterface types• RJ 45 (Ethernet)Yes; X1• Number of ports2• integrated switchYesProtocolsYes; IPv4• IP protocolYes; IPv4• PROFINET IO ControllerYes• SIMATIC communicationYes		103
Number of PROFIBUS interfaces1InterfaceInterface typesInterface typesPRJ 45 (Ethernet)Yes; X1Number of ports2integrated switchYesProtocolsProtocolsIP protocolYes; IPv4PROFINET IO ControllerYesPROFINET IO DeviceYesSIMATIC communicationYes		2
1. Interface         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		
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		
• RJ 45 (Ethernet)Yes; X1• Number of ports2• integrated switchYesProtocols• IP protocolYes; IPv4• PROFINET IO ControllerYes• PROFINET IO DeviceYes• SIMATIC communicationYes		
• Number of ports2• Integrated switchYes• ProtocolsYes; IPv4• IP protocolYes; IPv4• PROFINET IO ControllerYes• PROFINET IO DeviceYes• SIMATIC communicationYes		Yes; X1
• integrated switchYesProtocolsYes• IP protocolYes• PROFINET IO ControllerYes• PROFINET IO DeviceYes• SIMATIC communicationYes		
Protocols         • IP protocol       Yes; IPv4         • PROFINET IO Controller       Yes         • PROFINET IO Device       Yes         • SIMATIC communication       Yes	-	
• IP protocolYes; IPv4• PROFINET IO ControllerYes• PROFINET IO DeviceYes• SIMATIC communicationYes		
• PROFINET IO Controller     Yes       • PROFINET IO Device     Yes       • SIMATIC communication     Yes		Yes; IPv4
• PROFINET IO Device     Yes       • SIMATIC communication     Yes		
Open IE communication     Yes; Optionally also encrypted		
	Open IE communication	Yes; Optionally also encrypted

Web server	Yes
Media redundancy	Yes; MRP Automanager according to IEC 62439-2 Edition 2.0
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
— Prioritized startup	Yes; Max. 32 PROFINET devices
<ul> <li>Number of connectable IO Devices, max.</li> </ul>	256; In total, up to 1 000 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFINET
<ul> <li>— Of which IO devices with IRT, max.</li> </ul>	64
<ul> <li>Number of connectable IO Devices for RT, max.</li> </ul>	256
— of which in line, max.	256
<ul> <li>— Number of IO Devices that can be simultaneously activated/deactivated, max.</li> </ul>	8; in total across all interfaces
<ul> <li>— Number of IO Devices per tool, max.</li> </ul>	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 $\mu s$ to 4 ms; Note: In the case of IRT with isochronous mode, the minimum update time of 375 $\mu s$ 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 $\mu s$ : 375 $\mu s$ , 625 $\mu s$ 3 875 $\mu s)$
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
<ul> <li>— Number of IO Controllers with shared device, max.</li> </ul>	4
— Asset management record	Yes; per user program
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
PROFINET IO Controller	
Services	
— PG/OP communication	Yes
— Isochronous mode	No

- Direct data exchange       No         - IRT       No         - PROFlenergy       Yes         - Prioritized startup       No         - Number of connectable IO Devices, max.       32; In total, up to 1 000 distributed I/O devices can be connected via AS-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	hare
PROFlenergyYes Prioritized startupNo Number of connectable IO Devices, max.32; In total, up to 1 000 distributed I/O devices can be connected via AS- 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	hare
<ul> <li>Prioritized startup</li> <li>No</li> <li>Number of connectable IO Devices, max.</li> <li>Number of connectable IO Devices for RT, max.</li> <li>Number of connectable IO Devices for RT, max.</li> <li>Number of IO Devices that can be simultaneously activated/deactivated, max.</li> <li>No</li> <li>No</li> <li>Signification</li> <li>Signification</li> <li>No</li> <li>No</li> <li>Signification</li> <li>No</li> <li>Signification</li> <li>Signification</li> <li>No</li> <li>Signification</li> <li>Signification</li> <li>No</li> <li>Signification</li> <li>Signification</li></ul>	hare
<ul> <li>Number of connectable IO Devices, max.</li> <li>Number of connectable IO Devices for RT, 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>32</li> </ul>	hare
PROFIBUS or PROFINET         Number of connectable IO Devices for RT, max.         of which in line, max.         of which in line, max.         Number of IO Devices that can be simultaneously activated/deactivated, max.         8; in total across all interfaces	hare
— of which in line, max.       32         — Number of IO Devices that can be simultaneously activated/deactivated, max.       8; in total across all interfaces	
<ul> <li>Number of IO Devices that can be simultaneously activated/deactivated, max.</li> <li>8; in total across all interfaces</li> </ul>	
activated/deactivated, max.	
Number of IO Devices per tool max	
- Number of IO Devices per tool, max. 8	
— Updating times The minimum value of the update time also depends on communication	
set for PROFINET IO, on the number of IO devices, and on the quantity of configured user data	
Update time for RT	
- for send cycle of 1 ms 1 ms to 512 ms	
PROFINET IO Device	
Services	
— PG/OP communication Yes	
— Isochronous mode No	
— IRT No	
- PROFlenergy Yes; per user program	
— Prioritized startup No	
— Shared device Yes	
— Number of IO Controllers with shared device, max. 4	
— Asset management record     Yes; per user program	
3. Interface	
Interface types	
• RS 485 Yes; X3	
Number of ports	
Protocols	
PROFIBUS DP master     Yes	
PROFIBUS DP device     No	
SIMATIC communication     Yes	
PROFIBUS DP master	
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     PROFIBUS or PROFINET	-i,
Services	
— PG/OP communication Yes	
— Equidistance Yes	
— Isochronous mode Yes	
— activation/deactivation of DP devices     Yes	
Interface types	
RJ 45 (Ethernet)	
• 100 Mbps Yes	
Autonegotiation Yes	
Autoregoliation     Autores     Autores     Yes	
Addocrossing     Industrial Ethernet status LED     Yes	
RS 485     • Transmission rate, max. 12 Mbit/s	
Protocols Van	
PROFIsafe Yes	
Number of connections	
Number of connections, max.     256; 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	
Number of S7 routing paths	
Redundancy mode	
H-Sync forwarding Yes	
Media redundancy	
— Media redundancy only via 1st interface (X1)	

— MRP	Yes; MRP Automanager acc. to IEC 62439-2 Edition 2.0; MRP Manager; MRP
	Client; max. number of devices in the ring: 50
— MRPD	Yes; Requirement: IRT
- Switchover time on line break, typ.	200 ms; For MRP, bumpless for MRPD
— Number of stations in the ring, max.	50
SIMATIC communication	
S7 routing	Yes
<ul> <li>Data record routing</li> </ul>	Yes
<ul> <li>S7 communication, as server</li> </ul>	Yes
<ul> <li>S7 communication, as client</li> </ul>	Yes
<ul> <li>User data per job, max.</li> </ul>	See online help (S7 communication, user data size)
Open IE communication	
• TCP/IP	Yes
— Data length, max.	64 kbyte
<ul> <li>— several passive connections per port, supported</li> </ul>	Yes
<ul> <li>ISO-on-TCP (RFC1006)</li> </ul>	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.	10
<ul> <li>— Number of nodes of the client interfaces,</li> </ul>	2 000
recommended max.	
<ul> <li>— Number of elements for one call of OPC UA NodeGetHandleList/OPC UA ReadList/OPC I</li> </ul>	300
max.	
- Number of elements for one call of	20
OPC_UA_NameSpaceGetIndexList, max.	
— Number of elements for one call of     OPC_LIA_MethodGetHandleList_max	100
OPC_UA_MethodGetHandleList, max. — Number of simultaneous calls of the client	1
instructions for session management, per connection, max.	
<ul> <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
<ul> <li>— Number of registerable method calls of OPC_UA_MethodCall, max.</li> </ul>	100
<ul> <li>— Number of inputs/outputs when calling OPC_UA_MethodCall, max.</li> </ul>	20
OPC UA Server	Yes; Data access (read, write, subscribe), method call, custom address space
<ul> <li>Application authentication</li> </ul>	Yes
— Security policies	Available security policies: None, Basic128Rsa15, Basic256Rsa15, Basic256Sha256
— User authentication	"anonymous" or by user name & password
<ul> <li>Number of sessions, max.</li> </ul>	48
<ul> <li>Number of accessible variables, max.</li> </ul>	100 000
<ul> <li>Number of registerable nodes, max.</li> </ul>	20 000
<ul> <li>Number of subscriptions per session, max.</li> </ul>	20
— Sampling interval, min.	100 ms
- Publishing interval, min.	200 ms

#### - Number of server methods, max.

- Number of inputs/outputs per server method, max.
- Number of monitored items, recommended max.
- Number of server interfaces, max.
- Number of nodes for user-defined server interfaces, max.

### 50 20

2 000; for 1 s sampling interval and 1 s send interval 10; or 20, depending on type of server interface

5 000

max.	
Further protocols	
MODBUS	Yes; MODBUS TCP
Isochronous mode	
Equidistance	Yes
S7 message functions	
Number of login stations for message functions, max.	32
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.	5 000
Number of simultaneously active program alarms	
Number of program alarms	1 000
<ul> <li>Number of alarms for system diagnostics</li> </ul>	200
Number of alarms for motion technology objects	160
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 (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.	3 200
— 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
<ul> <li>Number of available Motion Control resources for technology objects</li> </ul>	2 400
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	
<ul> <li>Number of positioning axes at motion control cycle</li> </ul>	7
- Number of positioning axes at motion control Cycle	

of 4 ms (typical value)	
<ul> <li>— Number of positioning axes at motion control cycle</li> </ul>	14
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
Isolation	
Isolation tested with	750 V DC (type test) and according to EN 50155 (routine test)
Standards, approvals, certificates	
Highest safety class achievable in safety mode	
Performance level according to ISO 13849-1	PLe
• SIL acc. to IEC 61508	SIL 3
• SIL in accordance with EN 50126, 50128, 50129	SIL 2; a higher safety integrity level is possible if tested and approved for the specific application under consideration of all local regulations.
Probability of failure (for service life of 20 years and repair time	e of 100 hours)
<ul> <li>Low demand mode: PFDavg in accordance with SIL3</li> </ul>	< 2.00E-05
<ul> <li>High demand/continuous mode: PFH in accordance with SIL3</li> </ul>	< 1.00E-09
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 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
Ambient conditions	
Ambient temperature during operation	
<ul> <li>horizontal installation, min.</li> </ul>	-40 °C; = Tmin (incl. condensation/frost)
<ul> <li>horizontal installation, max.</li> </ul>	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
<ul> <li>vertical installation, min.</li> </ul>	-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	
<ul> <li>Installation altitude above sea level, max.</li> </ul>	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	Yes; Incl. diesel and oil droplets in the air
lubricants	
Use in stationary industrial systems — to biologically active substances according to EN	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna);
60721-3-3 — to chemically active substances according to EN	Class 3B3 on request Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity
60721-3-3 — to mechanically active substances according to EN 60721-3-3	degree 3); * Yes; Class 3S4 incl. sand, dust, *
Use on land craft, rail vehicles and special-purpose vehicles	

<ul> <li>— to biologically active substances according to EN 60721-3-5</li> </ul>	Yes; Class 5B2 mold, fungus and dry rot spores (with the exception of fauna); Class 5B3 on request
<ul> <li>— to chemically active substances according to EN 60721-3-5</li> </ul>	Yes; Class 5C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
<ul> <li>— to mechanically active substances according to EN 60721-3-5</li> </ul>	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)
<ul> <li>Environmental conditions for process, measuring and control systems acc. to ANSI/ISA-71.04</li> </ul>	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	
<ul> <li>— Note regarding classification of environmental conditions acc. to EN 60721, EN 60654-4 and ANSI/ISA-71.04</li> </ul>	* The supplied plug covers must remain in place over the unused interfaces during operation!
Conformal coating	
<ul> <li>Coatings for printed circuit board assemblies acc. to EN 61086</li> </ul>	Yes; Class 2 for high reliability
<ul> <li>Protection against fouling acc. to EN 60664-3</li> </ul>	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
<ul> <li>Qualification and Performance of Electrical Insulating Compound for Printed Board Assemblies according to IPC- CC-830A</li> </ul>	Yes; Conformal coating, Class A
configuration / header	
configuration / programming / header	
Programming language	
— LAD	Yes; incl. failsafe
— FBD	Yes; incl. failsafe
— STL	Yes
— SCL	Yes
— GRAPH	Yes
Know-how protection	
<ul> <li>User program protection/password protection</li> </ul>	Yes
Copy protection	Yes
Block protection	Yes
Access protection	
<ul> <li>Password for display</li> </ul>	Yes
Protection level: Write protection	Yes; Specific write protection both for Standard and for Failsafe
<ul> <li>Protection level: Read/write protection</li> </ul>	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	105 mm
Height	147 mm
Depth	129 mm
Weights	
Weight, approx.	830 g
Other	
Note:	for use in railway applications, also observe the product information "SIPLUS extreme RAIL" A5E37661960A, Online Support article 109736776
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