## **SIEMENS**

## **Data sheet**



Figuresimilar

SIPLUS S7-1500 CPU 1518-4 PN/DP MFP based on 6ES7518-4AX00-1AC0 with conformal coating, 0...+60 °C, central processing unit with C/C++ Runtime preinstalled, work memory 4 MB for program and 20 MB for data, 1st interface: PROFINET IRT with 2-port switch, 2nd interface: PROFINET RT, 3rd interface: Ethernet, 4th interface: PROFIBUS, 1 ns bit performance, SIMATIC Memory Card (min. 2 GB) required, with OPC UA Runtime license

General information	
Product type designation	CPU 1518-4 PN/DP MFP
Product function	
Isochronous mode	Yes; With minimum OB 6x cycle of 125 µs
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	6
Mode selector switch	1
Supply voltage	
Rated value (DC)	24 V
permissible range, lower limit (DC)	19.2 V
permissible range, upper limit (DC)	28.8 V
Reverse polarity protection	Yes
Mains buffering	
<ul> <li>Mains/voltage failure stored energy time</li> </ul>	5 ms
Repeat rate, min.	1/s
Input current	
Current consumption (rated value)	1.7 A
Current consumption, max.	2 A
Inrush current, max.	2.7 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)	35 W
Power loss	
Power loss, typ.	29 W
Memory	
Number of slots for SIMATIC memory card	1
SIMATIC memory card required	Yes
Work memory	
<ul><li>integrated (for program)</li></ul>	4 Mbyte
integrated (for data)	20 Mbyte

<ul> <li>integrated (for CPU function library of CPU Runtime)</li> </ul>	50 Mbyte; Note: The "CPU function library of the CPU" are C/C++ blocks for the user program that were created using the SIMATIC ODK 1500S or Target 1500S.
Working memory for additional functions	
<ul> <li>Integrated (for C/C++ Runtime application)</li> </ul>	500 Mbyte
Load memory	
<ul> <li>Plug-in (SIMATIC Memory Card), max.</li> </ul>	32 Gbyte; the memory card must have at least 2 GB of space on it
Backup	
maintenance-free	Yes
CPU processing times	
for bit operations, typ.	1 ns
for word operations, typ.	2 ns
for fixed point arithmetic, typ.	2 ns
for floating point arithmetic, typ.	6 ns
	0115
CPU-blocks	
Number of elements (total)	10 000; 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.	16 Mbyte; For non-optimized block accesses, the max. size of the DB is 64 KB
FB	
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 100 µs
Number of cyclic interrupt OBs     Number of process alarm OBs	20, with minimum OB 3x cycle of 100 μs 50
Number of DPV1 alarm OBs	3
Number of isochronous mode OBs	2
<ul> <li>Number of technology synchronous alarm OBs</li> </ul>	2
<ul> <li>Number of startup OBs</li> </ul>	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	
per priority class	24
Counters, timers and their retentivity	
S7 counter	
Number	2 048
Retentivity	
·	Yes
— adjustable	160
IEC counter	Any (only limited by the main memory)
Number  Patantinitar	Any (only limited by the main memory)
Retentivity	V
— adjustable	Yes
S7 times	
Number	2 048
Retentivity	
— adjustable	Yes
IEC timer	
Number	Any (only limited by the main memory)
Retentivity	
— adjustable	Yes

Pata areas and their retentivity  Retentive data area (incl. timers, counters, flags), max.	768 kbyte; In total; available retentive memory for bit memories, timers.
Telemare data area (moi. timore, countere, nage), max.	counters, DBs, and technology data (axes): 700 KB
Extended retentive data area (incl. timers, counters, flags), max.	20 Mbyte; When using PS 6 0W 24/48/60 V DC HF
Flag	
• Size, max.	16 kbyte
<ul> <li>Number of clock memories</li> </ul>	8; 8 clock memory bit, grouped into one clock memory byte
Data blocks	
Retentivity adjustable	Yes
Retentivity preset	No
Local data	
per priority class, max.	64 kbyte; max. 16 KB per block
Address area	,,,,,,,,
Number of IO modules	16 384; max. number of modules / submodules
	10 304, max. humber of modules / submodules
I/O address area	20 khyte. All innute are in the present innute.
• Inputs	32 kbyte; All inputs are in the process image
Outputs	32 kbyte; All outputs are in the process image
per integrated IO subsystem	
— Inputs (volume)	16 kbyte; 16 KB via the integrated PROFINET IO interface X1, 8 KB via the integrated PROFINET IO interface X2 and via the integrated PROFIBUS DP interface
— Outputs (volume)	16 kbyte; 16 KB via the integrated PROFINET IO interface X1, 8 KB via the integrated PROFINET IO interface X2 and via the integrated PROFIBUS DP interface
per CM/CP	
— Inputs (volume)	8 kbyte
— Outputs (volume)	8 kbyte
Subprocess images	o noyto
Number of subprocess images, max.	32
	32
lardware configuration	
Number of distributed IO systems	64; A distributed I/O system is characterized not only by the integration of distributed I/O via PROFINET or PROFIBUS communication modules, but also by the connection of I/O via AS-i master modules or links (e.g. IE/PB-Link)
Number of DP masters	
• integrated	1
• Via CM	8; A maximum of 8 CMs/CPs (PROFIBUS, PROFINET, Ethernet) can be inserted in total
Number of IO Controllers	
integrated	2
• Via CM	8; A maximum of 8 CMs/CPs (PROFIBUS, PROFINET, Ethernet) can be inserted in total
Rack	
<ul> <li>Modules per rack, max.</li> </ul>	32; CPU + 31 modules
Number of lines, max.	1
PtP CM	
Number of PtP CMs	the number of connectable PtP CMs is only limited by the number of available slots
ime of day	
Clock	
• Type	Hardware clock
	6 wk; At 40 °C ambient temperature, typically
Backup time	
<ul><li>Backup time</li><li>Deviation per day, max.</li></ul>	10 s; Typ.: 2 s
Deviation per day, max.	10 s; Typ.: 2 s
Deviation per day, max.  Operating hours counter	
Deviation per day, max.  Operating hours counter     Number	10 s; Typ.: 2 s
Deviation per day, max.  Operating hours counter     Number  Clock synchronization	16
<ul> <li>Deviation per day, max.</li> <li>Operating hours counter</li> <li>Number</li> <li>Clock synchronization</li> <li>supported</li> </ul>	16 Yes
Deviation per day, max.  Operating hours counter     Number  Clock synchronization     supported     to DP, master	16 Yes Yes
<ul> <li>Deviation per day, max.</li> <li>Operating hours counter</li> <li>Number</li> <li>Clock synchronization</li> <li>supported</li> </ul>	16 Yes

Number of PROFINET interfaces  Number of PROFIGUS interfaces  Interface   Yes   Number of ports   2	Interfaces	
Number of PROFIBUS interfaces   1		2
Interface   Interface types		
Interface types  • PL d5 (Ethernet) • Number of ports • Nember of ports • Nember of ports • PROFINET IO Controller • Media redundancy • Web server • Media redundancy • Web server • Media redundancy • PROFINET IO Controller  Services  - Interface startup  - Number of connectable IO Devices, max.  - Number of Connectable IO Devices, max.  - Number of Connectable IO Devices, max.  - Number of LD Devices that can be simultaneously activated/deactivated, max.  - Number of LD Devices per tool, max.  - Updating times  - Update time for IRT  - Tor send cycle of 125 µs  - for send cycle of 137.5 µs  - for send cycle of 1250 µs  - for send cycle of 175 µs  - for send cycle of 175 µs  - for send cycle of 187.5		
Register of the protect of the prot		
Number of ports Integrated switch Protocols Integrated switch Integ	* *	Vas: X1
e integrated switch  Protocols  • IP protocol  • PROFINET IO Controller  • PROFINET IO Device  • SIMATIC communication  • Web server  • Web server  • Weds redundancy  • Wes yes  • Media redundancy  • PROFINET OC controller  • Web server  • Web server  • Web server  • Web server  • PGOP Controller  Services  — PGOP communication  • In a service of Controller  • PROFINET OC controller  Services  — PGOP communication  • In a service of Controller  • PROFINET OC controller  Services  — PGOP communication  • In a service of Controller  • PROFINET OC Controllers with shared device, max.  • Number of IO Controllers with shared device, max.  • PROFINET OC Controllers with shared device, max.		
Protocols		
PROPRINET IO Controller PROPRINET IO Device SIMATIC communication Yes SIMATIC communication Yes Web server Yes Media redundancy Yes PROFINET IO Controller Services  PGOP communication Yes Yes MRP Automanager according to IEC 62439-2 Edition 2.0  PROFINET IO Controller Services  PGOP communication PROFINET IO Controller Services  PGOP communication Yes Yes PROFINET OCONTROLL Yes Yes PROFINET OCONTROLL Yes Yes PROFINET OCONTROLL Yes		100
PROFINET IO Controller PROFINET IO Controller PROFINET IO Controller PROFINET IO Communication Pes Profinet IO Communication Pes Profinet IO Controller Profinet IO Controller PROFINET IO Controller  Services  - PGOP communication PROFINET IO Controller  Services  - PGOP communication PROFINET IO Controller  Services  - PROFInentry Profinetry Profine		Yes: IPv4
• SIMATIC communication • Open IE communication • Web server • Media redundancy • Yes • Media redundancy • PROFINET IO Controller  PROFINET IO Controller  Services  - PG/OP communication - Isochronous mode - IRT - PROFlenergy - Prioritized startup - Number of connectable IO Devices, max Of which In line, max Number of connectable IO Devices for RT, max Number of IO Devices that can be simultaneously activated/deactivated, max Number of IO Devices per tool, max Updating times  - For send cycle of 187.5 µs - For send cycle of 187.5 µs - For send cycle of 187.5 µs - For send cycle of 4 ms - For send cycle of 250 µs - For	•	
Open IE communication Web server Media redundancy Yes: MRP Automanager according to IEC 62439-2 Edition 2.0  PROFINET IO Controller  Services  — PG/OP communication — Isochronous mode — IRT — PROFilenergy — Prioritized startup — Number of connectable IO Devices, max. — Of which IO devices with IRT, max. — Number of connectable IO Devices for RT, max. — Number of connectable IO Devices for RT, max. — Number of IO Devices that can be simultaneously activated/deactivated, max. — Number of IO Devices per tool, max. — Updating times  Update time for IRT — for send cycle of 125 µs — for send cycle of 187 5 µs — for send cycle of 500 µs — for send cycle of 1800 µs — for send cycle of 250 µs — for send cycle of 1800 µs — for se	PROFINET IO Device	Yes
Web server  Wedia redundancy  PROFINET IO Controller  Services  — PG/OP communication — Isochronous mode — IRT — PROFlenergy — Prioritized startup — Number of connectable IO Devices, max. — Of which IO devices with IRT, max. — Number of connectable IO Devices for RT, max. — Of which in line, max — Number of IO Devices per tool, max. — Updating times — For send cycle of 125 μs — for send cycle of 125 μs — for send cycle of 175 μs — for send cycle of 187 μs — for send cycle of 188 μs — for send cycle of 189 μs — for send cycle of	<ul> <li>SIMATIC communication</li> </ul>	Yes
PROFINET IO Controller  Services  - PCJCP communication - Isochronous mode - IRT - PROFlenergy - Prioritized startup - Number of connectable IO Devices, max Of which IO devices with IRT, max Of which Io devices with IRT, max Of which in line, max Of which in line, max Of which in line, max Number of IO Devices that can be simultaneously activated/deactivated, max Number of IO Devices per tool, max Updating times  - Update time for IRT - for send cycle of 125 µs - for send cycle of 125 µs - for send cycle of 187.5 µs - for send cycle of 180.0 µs - for send cycle of 187.5 µs - for send cycle of 188.5 µs - for send cycle of 1	Open IE communication	Yes
PROFINET IO Controller  Services  - PSi/OP communication - Isochronous mode - IRT - PROFienergy - Prioritized startup - Number of connectable IO Devices, max Of which IO devices with IRT, max Of which in line, max Number of connectable IO Devices for RT, max Of which in line, max Number of IO Devices that can be simultaneously activated/deactivated, max Number of IO Devices per tool, max Updating times  - Updating times - For send cycle of 125 µs - For send cycle of 125 µs - For send cycle of 125 µs - For send cycle of 150 µs - For se	Web server	Yes
Services  - PG/OP communication - Isochronous mode - IRT - PROFlenergy - Prioritized startup - Number of connectable IO Devices, max Of which IO devices with IRT, max Of which IO devices with IRT, max Number of connectable IO Devices for RT, max Of which Io Devices that can be simultaneously activated/deactivated, max Number of IO Devices that can be simultaneously activated/deactivated, max Number of IO Devices per tool, max Updating times - For send cycle of 125 µs - for send cycle of 187.5 µs - for send cycle of 4 ms - With IRT and parameterization of "odd" send cycles - for send cycle of 180 µs - for	Media redundancy	Yes; MRP Automanager according to IEC 62439-2 Edition 2.0
- PG/OP communication - Isochronous mode - Isochronous mode - IRT - PROFIenergy - Prioritized startup - Number of connectable IO Devices, max Of which IO devices with IRT, max Of which Io devices with IRT, max Number of connectable IO Devices for RT, max Number of IO Devices that can be simultaneously activeted/deactivated, max Number of IO Devices per tool, max Updating times - Of send cycle of 125 µs - for send cycle of 187.5 µs - for send cycle of 4 ms - With IRT and parameterization of "odd" send cycles - for send cycle of 188.5 0µs to 128 ms - for send cycle of 188.5 0µs to 256 ms - for send cycle of 188.5 0µs to 256 ms - for send cycle of 4 ms - for send cycle of 198.5 0µs to 256 ms - for send cycle of 198.5 0µs to 256 ms - for send cycle of 198.5 0µs to 256 ms - for send cycle of 198.5 0µs to 256 ms - for send cycle of 198.5 0µs to 256 ms - for send cycle of 198.5 0µs to 256 ms - for send cycle of 198.5 0µs to 256 ms - for send cycle of 198.5 0µs to 256 ms - for send cycle of 198.5 0µs to 256 ms - for send cycl	PROFINET IO Controller	
- Isochronous mode - IRT - PROFIenergy - Prioritized startup - Number of connectable IO Devices, max Of which IO devices with IRT, max Number of connectable IO Devices for RT, max Number of Connectable IO Devices for RT, max Of which In line, max Number of IO Devices that can be simultaneously activated/deactivated, max Number of IO Devices per tool, max Number of IO Devices per tool, max Updating times  Update time for IRT - for send cycle of 125 μs - for send cycle of 125 μs - for send cycle of 500 μs - for send cycle of 12 ms - for send cycle of 4 ms - With IRT and parameterization of "odd" send cycles  Update time for RT - for send cycle of 500 μs - for send cycle of 500 μs - for send cycle of 500 μs - for send cycle of 4 ms - With IRT and parameterization of "odd" send cycles  Update time for RT - for send cycle of 500 μs - for send cycle of 4 ms - With IRT and parameterization of "odd" send cycles  Update time for RT - for send cycle of 500 μs - fo	Services	
- IRT - PROFlenergy - Prioritized startup - Number of connectable IO Devices, max Of which IO devices with IRT, max Of which in line, max Number of connectable IO Devices for RT, max Of which in line, max Number of IO Devices that can be simultaneously activated (deactivated, max Number of IO Devices per tool, max Number of IO Devices per tool, max Updating times - For send cycle of 125 µs - for send cycle of 187.5 µs - for send cycle of 250 µs - for send cycle of 27 ms - for send cycle of 27 ms - for send cycle of 28 ms - for send cycle of 28 ms - for send cycle of 28 ms - for send cycle of 187.5 µs - for send cycle of 187.5 µs - for send cycle of 28 ms - for send cycle of 28 ms - for send cycle of 187.5 µs - for send cycle of 28 ms - for send cycle of 187.5 µs - for send cycle of 28 ms - for send cycle of 28 ms - for send cycle of 187.5 µs - for send cycle of 187.5 µs - for send cycle of 28 ms - for send cycle of 28 ms - for send cycle of 4 ms - With IRT and parameterization of "odd" send cycles  Update time for RT - for send cycle of 500 µs - for send cycle of 1 ms - for send cycle of 1 ms - for send cycle of 1 ms - for send cycle of 4 ms - for send cycle of 500 µs - for send cycle of 500 µs - for send cycle of 500 µs - for send cycle	<ul><li>— PG/OP communication</li></ul>	Yes
PROFIenergy Prioritized startup Number of connectable IO Devices, max.  Of which IO devices with IRT, max. Number of connectable IO Devices for RT, max. Of which in line, max. Number of IO Devices that can be simultaneously activated/deactivated, max. Number of IO Devices per tool, max.  Updating times  Update time for IRT  for send cycle of 187,5 μs for send cycle of 187,5 μs for send cycle of 500 μs for send cycle of 1 ms for send cycle of 4 ms With IRT and parameterization of "odd" send cycles  Update time for RT  For send cycle of 4 ms With IRT and parameterization of "odd" send cycles  Update time for RT  For send cycle of 500 μs For send cycle of 100 μs Fo	<ul><li>— Isochronous mode</li></ul>	Yes
Prioritized startup  Number of connectable IO Devices, max.  Of which IO devices with IRT, max.  Number of connectable IO Devices for RT, max.  of which in line, max.  Number of IO Devices bert can be simultaneously activated/deactivated, max.  Number of IO Devices per tool, default per tool of the update time also depends on communication per tool of the update time also depends on communication per tool of the update time also depends on communication per tool of the update time also depends on communication per tool of the update time also depends on communication per tool of the update time also depends on communication per tool of the update time also depends on communication per tool of the update time also depends on communication per tool of the update time also depends on communication per tool of the update time also depends on communication per tool of the update time also depends on communication per tool of the update time also depends on communication per tool of the update time a	***	Yes
- Number of connectable IO Devices, max.  - Of which IO devices with IRT, max Number of connectable IO Devices for RT, max Of which in line, max Of which in line, max Of which in line, max Number of IO Devices that can be simultaneously activated/deactivated, max Number of IO Devices per tool, max Number of IO Devices per tool, max Updating times - Item for IRT - For send cycle of 125 μs - For send cycle of 187.5 μs - For send cycle of 250 μs - For send cycle of 250 μs - For send cycle of 150 μs - For send cycle of 250 μs - For	— PROFlenergy	Yes
AS-I, PROFIBUS or PROFINET 64  - 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 activate/dieactivated, max Number of IO Devices per tool, max Updating times  - 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 125 µs - For send cycle of 250 µs - For send cycle of 250 µs - For send cycle of 100 µs - For send cycle of 1 ms - For send cycle of 1 ms - For send cycle of 4 ms - With IRT and parameterization of "odd" send cycles  - Update time for RT  - For send cycle of 550 µs - For send cycle of 550 µs - For send cycle of 500 µs - For send cycle of 4 ms - For send cycle of 500 µs	·	
- Number of connectable IO Devices for RT, max.  - of which in line, max.  - Number of IO Devices that can be simultaneously activated/deactivated, max.  - Number of IO Devices per tool, max.  - Updating times  - Updating times  - Update time for IRT  - for send cycle of 125 μs - for send cycle of 250 μs - for send cycle of 500 μs - for send cycle of 1 ms - for send cycle of 4 ms - With IRT and parameterization of "odd" send cycles  - for send cycle of 250 μs - for send cycle of 500 μs - for send cycle of 500 μs - for send cycle of 500 μs - for send cycle of 4 ms - With IRT and parameterization of "odd" send cycles  - for send cycle of 1 ms - for send cycle of 500 μs - for send cycle of 2 ms - for send cycle of 500 μs - for send cycle of 1 ms - for send cycle of 4 ms - for send cycle of 4 ms - for send cycle of 1 ms - for send cycle of 4 ms - for send cycle of 1 ms - for send cycle of 2 ms - for send cycle of 4 ms - for send cycle of 2 ms - for send cycle of	<ul> <li>Number of connectable IO Devices, max.</li> </ul>	
max. — of which in line, max. — Number of IO Devices that can be simultaneously activated/deactivated, max. — Number of IO Devices per tool, max. — 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 125 μs — for send cycle of 187.5 μs — for send cycle of 500 μs — for send cycle of 500 μs — for send cycle of 1 ms — for send cycle of 4 ms — With IRT and parameterization of "odd" send cycles  Update time for RT  — for send cycle of 250 μs — for send cycle of 500 μs — for send cycle of 1 ms — for send cycle of 500 μs — for send cycle of 500 μs — for send cycle of 1 ms — for send cycle of 1 ms — for send cycle of 500 μs — for send cycle of 1 ms — for send cycle of 2 ms — for		
- of which in line, max.  - Number of IO Devices that can be simultaneously activated/deactivated, max.  - Number of IO Devices per tool, max.  - Number of IO Devices per tool, max.  - Updating times  - 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 125 μs - For send cycle of 500 μs - For send cycle of 500 μs - For send cycle of 1 ms - For send cycle of 1 ms - For send cycle of 4 ms - With IRT and parameterization of "odd" send cycles ups 3 875 μs  - For send cycle of 500 μs - For send cycle of 1 ms - For send cycle of 4 ms - For send cycle of 1 ms - For send cycle of 1 ms - For send cycle of 4 ms - For send cycle of 4 ms - For send cycle of 1 ms - For send cycle of 1 ms - For send cycle of 4 ms - For send cycle of 500 μs - For send cycle of 4 ms - For send cycle of 4	•	512
- Number of IO Devices that can be simultaneously activated/deactivated, max.  - Number of IO Devices per tool, max.  - Updating times  - Updating times  - Update time for IRT  - for send cycle of 125 μs - for send cycle of 187.5 μs - for send cycle of 250 μs - for send cycle of 500 μs - for send cycle of 1 ms - for send cycle of 1 ms - for send cycle of 2 ms - for send cycle of 4 ms - With IRT and parameterization of "odd" send cycles  - for send cycle of 500 μs - for send cycle of 4 ms - With IRT and parameterization of "odd" send cycles  - for send cycle of 500 μs - for send cycle of 4 ms - for send cycle of 500 μs - for se		512
simultaneously activated/deactivated, max.  — 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 125 µs — for send cycle of 187.5 µs — for send cycle of 187.5 µs — for send cycle of 500 µs — for send cycle of 500 µs — for send cycle of 1 ms — for send cycle of 2 ms — for send cycle of 2 ms — with IRT and parameterization of "odd" send cycles  Update time for RT  — for send cycle of 500 µs — for send cycle of 4 ms — to send cycle of 500 µs — for send cycle of 4 ms — for send cycle of 500 µs — for send cycle of 4 ms — to send cycle of 500 µs — for send cycle of 800 µs — for send cycle of 900 µs — to send cyc	•	
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 125 μs — for send cycle of 187.5 μs — for send cycle of 250 μs — for send cycle of 500 μs — for send cycle of 500 μs — for send cycle of 1 ms — for send cycle of 1 ms — for send cycle of 2 ms — for send cycle of 4 ms — With IRT and parameterization of "odd" send cycles — for send cycle of 500 μs — for send cycle of 500 μs — for send cycle of 250 μs — for send cycle of 500 μs — for send cycle of 1 ms — for send cycle of 1 ms — for send cycle of 2 ms — for send cycle of 2 ms — for send cycle of 4 ms  PROFINET IO Device  Services  — PG/OP communication — Yes — Isochronous mode — IRT — PROFlenergy — Shared device — Number of IO Controllers with shared device, max.  The minimum value of the update time also depends on the quantity of configured user data  125 μs  125 μs 125 μs 125 μs 187.5 μs 18		-, 1.10. 00. 00
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 125 μs — for send cycle of 187.5 μs — for send cycle of 520 μs — for send cycle of 500 μs — for send cycle of 500 μs — for send cycle of 1 ms — for send cycle of 1 ms — for send cycle of 4 ms — with IRT and parameterization of "odd" send cycles  Update time for RT — for send cycle of 500 μs — for send cycle of 1 ms — for send cycle of 2 ms — for send cycle of 4 ms  PROFINET IO Device  Services  PG/OP communication — Isochronous mode — IRT — PROFlenergy — Shared device — Number of IO Controllers with shared device, max.  A max of the number of IO devices and on the quantity of configured user data  125 μs  125 μs 125 μs 125 μs 125 μs to 18 ms  1 ms to 64 ms  250 μs to 128 ms  250 μs to 256 ms  1 ms to 512 ms  4 ms to 512 ms  PROFINET IO Device  Services  - PG/OP communication — Yes  - Shared device — Number of IO Controllers with shared device, max.	<ul> <li>Number of IO Devices per tool, max.</li> </ul>	8
Update time for IRT  — for send cycle of 125 μs — for send cycle of 187.5 μs — for send cycle of 250 μs — for send cycle of 500 μs — for send cycle of 500 μs — for send cycle of 1 ms — for send cycle of 1 ms — for send cycle of 2 ms — for send cycle of 4 ms — with IRT and parameterization of "odd" send cycles  Update time for RT — for send cycle of 250 μs — for send cycle of 250 μs — for send cycle of 500 μs — for send cycle of 250 μs — for send cycle of 250 μs — for send cycle of 250 μs — for send cycle of 500 μs — for send cycle of 500 μs — for send cycle of 4 ms — for send cycle of 4 ws	— Updating times	share set for PROFINET IO, on the number of IO devices, and on the
- for send cycle of 187.5 μs - for send cycle of 250 μs - for send cycle of 500 μs - for send cycle of 500 μs - for send cycle of 1 ms - for send cycle of 1 ms - for send cycle of 2 ms - for send cycle of 4 ms - for send cycle of 4 ms - With IRT and parameterization of "odd" send cycles - With IRT and parameterization of "odd" send cycles - For send cycle of 250 μs - for send cycle of 500 μs - for send cycle of 500 μs - for send cycle of 1 ms - for send cycle of 1 ms - for send cycle of 2 ms - for send cycle of 2 ms - for send cycle of 4 ms - for send cycle of 4 ms - for send cycle of 500 μs - for send cycle of 4 ms - For send cycle of 500 μs - For send cycle	Update time for IRT	
- for send cycle of 187.5 μs - for send cycle of 250 μs - for send cycle of 500 μs - for send cycle of 500 μs - for send cycle of 1 ms - for send cycle of 1 ms - for send cycle of 2 ms - for send cycle of 4 ms - for send cycle of 4 ms - With IRT and parameterization of "odd" send cycles - With IRT and parameterization of "odd" send cycles - For send cycle of 250 μs - for send cycle of 500 μs - for send cycle of 500 μs - for send cycle of 1 ms - for send cycle of 1 ms - for send cycle of 2 ms - for send cycle of 2 ms - for send cycle of 4 ms - for send cycle of 4 ms - for send cycle of 500 μs - for send cycle of 4 ms - For send cycle of 500 μs - For send cycle	— for send cycle of 125 μs	125 µs
- for send cycle of 500 μs - for send cycle of 1 ms - for send cycle of 2 ms - for send cycle of 4 ms - for send cycle of 4 ms - With IRT and parameterization of "odd" send cycles - With IRT and parameterization of "odd" send cycles  Update time for RT - for send cycle of 250 μs - for send cycle of 500 μs - for send cycle of 500 μs - for send cycle of 500 μs - for send cycle of 1 ms - for send cycle of 2 ms - for send cycle of 2 ms - for send cycle of 4 ms - for send cycle of 4 ms - for send cycle of 4 ms - for send cycle of 500 μs - for send cycle of 7 ms - for send cycle of 8 ms - for send cycle of 9 ms - for s		
- for send cycle of 1 ms - for send cycle of 2 ms - for send cycle of 4 ms - with IRT and parameterization of "odd" send cycles  Update time for RT - for send cycle of 250 μs - for send cycle of 500 μs - for send cycle of 500 μs - for send cycle of 1 ms - for send cycle of 1 ms - for send cycle of 1 ms - for send cycle of 2 ms - for send cycle of 2 ms - for send cycle of 4 ms - for send cycle of 4 ms - for send cycle of 500 μs - for send cycle of 2 ms - for send cycle of 4 ms - for send cycle of 500 μs - f	— for send cycle of 250 µs	250 μs to 4 ms
— for send cycle of 2 ms — for send cycle of 4 ms — With IRT and parameterization of "odd" send cycles  — With IRT and parameterization of "odd" send cycles  — With IRT and parameterization of "odd" send cycles  — for send cycle of 250 μs — for send cycle of 250 μs — for send cycle of 500 μs — for send cycle of 500 μs — for send cycle of 1 ms — for send cycle of 2 ms — for send cycle of 4 ms — for send cycle of 500 μs — for send cycle of 500 μs — for send cycle of 2 ms — for send cycle of 4 ms — PROFINET IO Device  Services  — PG/OP communication — Isochronous mode — IRT — PROFlenergy — Yes — Shared device — Number of IO Controllers with shared device, max.  4 ms to 32 ms  Update time = set "odd" send clock (any multiple of 125 μs: 375 μs, 625 μs 3 875 μs.  1 ms to 64 ms  4 ms to 512 ms  PROFINET IO Device  Yes  — PG/OP communication — Yes — PROFILENETY — PROFILENETY — Yes — Number of IO Controllers with shared device, max.	— for send cycle of 500 μs	500 μs to 8 ms
- for send cycle of 4 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 - for send cycle of 500 μs - for send cycle of 1 ms - for send cycle of 2 ms - for send cycle of 2 ms - for send cycle of 4 ms  - for send cycle of 4 ms  PROFINET IO Device  Services  - PG/OP communication - Isochronous mode - IRT - PROFlenergy - Shared device - Number of IO Controllers with shared device, max.  4 ms to 64 ms - Update time = set "odd" send clock (any multiple of 125 μs: 375 μs, 625 μs 3 875 μs)  Update time = set "odd" send clock (any multiple of 125 μs: 375 μs, 625 μs 3 875 μs)  Ves μs 3 875 μs)  Update time = set "odd" send clock (any multiple of 125 μs: 375 μs, 625 μs 3 875 μs)  Update time = set "odd" send clock (any multiple of 125 μs: 375 μs, 625 μs 3 875 μs)  Update time = set "odd" send clock (any multiple of 125 μs: 375 μs, 625 μs 3 875 μs)  Update time = set "odd" send clock (any multiple of 125 μs: 375 μs, 625 μs 3 875 μs)  Update time = set "odd" send clock (any multiple of 125 μs: 375 μs, 625 μs 3 875 μs	— for send cycle of 1 ms	1 ms to 16 ms
- With IRT and parameterization of "odd" send cycles  Update time for RT  - for send cycle of 250 μs - for send cycle of 500 μs - for send cycle of 1 ms - for send cycle of 2 ms - for send cycle of 2 ms - for send cycle of 2 ms - for send cycle of 4 ms - for send cycle of 500 μs - for send cycle of 4 ms - for send cycle of 4 ms - for send cycle of 4 ms - for send cycle of 500 μs - for send cycle of 2 ms - for send cycle of 3 ms - for send cycle of 1 ms - for send cycle of 1 ms - for send cycle of 1 ms - for send cycle of 2 ms - for send cycle of 1 ms - for send cycle of 2 ms - for send cycle of 3 ms - for send cycle of 2 ms - for send cycle of 3 ms	— for send cycle of 2 ms	2 ms to 32 ms
cycles  Update time for RT  — for send cycle of 250 μs — for send cycle of 500 μs 500 μs to 256 ms — for send cycle of 1 ms — for send cycle of 2 ms — for send cycle of 2 ms — for send cycle of 4 ms 2 ms to 512 ms — for send cycle of 4 ms 4 ms to 512 ms  PROFINET IO Device  Services  — PG/OP communication — Isochronous mode — IRT — PROFlenergy — Shared device — Number of IO Controllers with shared device, max.	— for send cycle of 4 ms	4 ms to 64 ms
Update time for RT  — for send cycle of 250 μs — for send cycle of 500 μs — for send cycle of 500 μs — for send cycle of 1 ms — for send cycle of 2 ms — for send cycle of 2 ms — for send cycle of 4 ms  — to send cycle of 4 ms — to 512 ms — for send cycle of 4 ms  PROFINET IO Device  Services  — PG/OP communication — Isochronous mode — IRT — PROFlenergy — Shared device — Number of IO Controllers with shared device, max.		
<ul> <li>— for send cycle of 250 μs</li> <li>— for send cycle of 500 μs</li> <li>— for send cycle of 1 ms</li> <li>— for send cycle of 2 ms</li> <li>— for send cycle of 2 ms</li> <li>— for send cycle of 4 ms</li> <li>2 ms to 512 ms</li> <li>— for send cycle of 4 ms</li> <li>4 ms to 512 ms</li> </ul> PROFINET IO Device Services <ul> <li>— PG/OP communication</li> <li>— Isochronous mode</li> <li>— IRT</li> <li>— PROFlenergy</li> <li>— Shared device</li> <li>— Number of IO Controllers with shared device, max.</li> </ul>		μs 3 875 μs)
<ul> <li>— for send cycle of 500 μs</li> <li>— for send cycle of 1 ms</li> <li>— for send cycle of 2 ms</li> <li>— for send cycle of 4 ms</li> <li>2 ms to 512 ms</li> <li>— for send cycle of 4 ms</li> <li>4 ms to 512 ms</li> </ul> PROFINET IO Device Services <ul> <li>— PG/OP communication</li> <li>— Isochronous mode</li> <li>— IRT</li> <li>— PROFlenergy</li> <li>— Shared device</li> <li>— Number of IO Controllers with shared device, max.</li> </ul>	·	250 up to 120 mg
- for send cycle of 1 ms - for send cycle of 2 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 - Isochronous mode - IRT - PROFlenergy - Shared device - Number of IO Controllers with shared device, max.		·
<ul> <li>for send cycle of 2 ms</li> <li>for send cycle of 4 ms</li> <li>4 ms to 512 ms</li> </ul> PROFINET IO Device Services <ul> <li>PG/OP communication</li> <li>Isochronous mode</li> <li>IRT</li> <li>PROFlenergy</li> <li>Shared device</li> <li>Number of IO Controllers with shared device, max.</li> </ul> 2 ms to 512 ms 4 ms to 512 ms Yes 4 max.		
— 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 — Shared device Yes — Number of IO Controllers with shared device, max.	·	
PROFINET IO Device  Services  - PG/OP communication Yes - Isochronous mode No - IRT Yes - PROFlenergy Yes - Shared device Yes - Number of IO Controllers with shared device, max.	-	
Services		1 110 00 0 12 1110
<ul> <li>— PG/OP communication</li> <li>— Isochronous mode</li> <li>— IRT</li> <li>— PROFlenergy</li> <li>— Shared device</li> <li>— Number of IO Controllers with shared device, max.</li> </ul>		
<ul> <li>— Isochronous mode</li> <li>— IRT</li> <li>— PROFlenergy</li> <li>— Shared device</li> <li>— Number of IO Controllers with shared device, max.</li> </ul>		Yes
<ul> <li>— IRT</li> <li>— PROFlenergy</li> <li>— Shared device</li> <li>— Number of IO Controllers with shared device, max.</li> </ul> Yes Yes 4		
<ul> <li>— PROFlenergy</li> <li>— Shared device</li> <li>— Number of IO Controllers with shared device, max.</li> </ul> Yes 4		
<ul> <li>— Shared device</li> <li>— Number of IO Controllers with shared device, max.</li> </ul>		
<ul><li>— Number of IO Controllers with shared device, max.</li></ul>		
max.		
Asset management record  Yes; per user program	•	
	<ul> <li>Asset management record</li> </ul>	Yes; per user program

2. Interface	
Interface types	
RJ 45 (Ethernet)	Yes; X2
Number of ports	1
• integrated switch	No
Protocols	NO
IP protocol	Yes; IPv4
PROFINET IO Controller	Yes
PROFINET IO Device	Yes
SIMATIC communication	Yes
Open IE communication	Yes
Web server	Yes
Media redundancy	No
PROFINET IO Controller	INO
Services	
— PG/OP communication	Yes
— PG/OP communication      — Isochronous mode	No
— ISOCITIONOUS Mode  — IRT	
***	No Vos
— PROFlenergy	Yes No
<ul><li>— Prioritized startup</li><li>— Number of connectable IO Devices, max.</li></ul>	128; In total, up to 1 000 distributed I/O devices can be connected via
— Number of confidentable to Devices, max.	AS-i, PROFIBUS or PROFINET
<ul> <li>Number of connectable IO Devices for RT,</li> </ul>	128
max.	
— of which in line, max.	128
<ul> <li>Number of IO Devices that can be</li> </ul>	8; in total across all interfaces
simultaneously activated/deactivated, max.	
<ul><li>Updating times</li></ul>	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 RT	quantity of cominguitor accordance
— 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
Prioritized startup	No
— Shared device	Yes
Number of IO Controllers with shared device,	4
max.	
<ul> <li>Asset management record</li> </ul>	Yes; per user program
3. Interface	
Interface types	
RJ 45 (Ethernet)	Yes; X3
Number of ports	1; C/C++ Runtime can also be reached via this port
• integrated switch	No
Protocols	
IP protocol	Yes; IPv4
PROFINET IO Controller	No
PROFINET IO Device	No
SIMATIC communication	Yes
Open IE communication	Yes
Web server	Yes
PROFIBUS DP master	
Number of connections, max.	48; for the integrated PROFIBUS DP interface
	125; In total, up to 1 000 distributed I/O devices can be connected via
<ul> <li>Number of DP slaves, max.</li> </ul>	
Number of DP slaves, max.	AS-i, PROFIBUS or PROFINET
Number of DP slaves, max.  Services	AS-i, PROFIBUS or PROFINET

— Equidistance	Yes
<ul><li>— Isochronous mode</li></ul>	Yes
Activation/deactivation of DP slaves	Yes
4. Interface	
Interface types	
• RS 485	Yes; X4
<ul> <li>Number of ports</li> </ul>	1
Protocols	
<ul> <li>PROFIBUS DP master</li> </ul>	Yes
<ul> <li>PROFIBUS DP slave</li> </ul>	No
<ul> <li>SIMATIC communication</li> </ul>	Yes
Interface types	
RJ 45 (Ethernet)	
• 100 Mbps	Yes
• 1000 Mbps	Yes; Only possible at the X3 interface of the CPU 1518
Autonegotiation	Yes
Autocrossing	Yes
Industrial Ethernet status LED	Yes
RS 485	
Transmission rate, max.	12 Mbit/s
Protocols	
PROFIsafe	No
Number of connections	
Number of connections, max.	384; 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	192
Number of S7 routing paths	64; in total, only 16 S7-Routing connections are supported via
Trainsor of or routing patrio	PROFIBUS
Redundancy mode	
Media redundancy	
— MRP	Yes; as MRP redundancy manager and/or MRP client; max. number of
	devices in the ring: 50
— MRPD	Yes; Requirement: IRT
<ul> <li>Switchover time on line break, typ.</li> </ul>	200 ms; For MRP, bumpless for MRPD
Number of stations in the ring, max.	50
SIMATIC communication	
<ul> <li>S7 routing</li> </ul>	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
User data per job, max.	See online help (S7 communication, user data size)
Open IE communication	
• TCP/IP	Yes
— Data length, max.	64 kbyte
<ul><li>— Data length, max.</li><li>— several passive connections per port,</li></ul>	
<ul><li>— Data length, max.</li><li>— several passive connections per port, supported</li></ul>	64 kbyte Yes
<ul> <li>Data length, max.</li> <li>several passive connections per port, supported</li> <li>ISO-on-TCP (RFC1006)</li> </ul>	64 kbyte Yes
<ul> <li>Data length, max.</li> <li>several passive connections per port, supported</li> <li>ISO-on-TCP (RFC1006)</li> <li>Data length, max.</li> </ul>	64 kbyte Yes Yes 64 kbyte
<ul> <li>Data length, max.</li> <li>several passive connections per port, supported</li> <li>ISO-on-TCP (RFC1006)</li> <li>Data length, max.</li> <li>UDP</li> </ul>	64 kbyte Yes  Yes 64 kbyte Yes
<ul> <li>Data length, max.</li> <li>several passive connections per port, supported</li> <li>ISO-on-TCP (RFC1006)</li> <li>Data length, max.</li> <li>UDP</li> <li>Data length, max.</li> </ul>	64 kbyte Yes  Yes 64 kbyte Yes 2 kbyte; 1 472 bytes for UDP broadcast
<ul> <li>Data length, max.</li> <li>several passive connections per port, supported</li> <li>ISO-on-TCP (RFC1006)</li> <li>Data length, max.</li> <li>UDP</li> <li>Data length, max.</li> <li>UDP multicast</li> </ul>	64 kbyte Yes  Yes 64 kbyte Yes 2 kbyte; 1 472 bytes for UDP broadcast Yes; Max. 5 multicast circuits
<ul> <li>Data length, max.</li> <li>several passive connections per port, supported</li> <li>ISO-on-TCP (RFC1006)</li> <li>Data length, max.</li> <li>UDP</li> <li>Data length, max.</li> <li>UDP multicast</li> <li>DHCP</li> </ul>	64 kbyte Yes  Yes 64 kbyte Yes 2 kbyte; 1 472 bytes for UDP broadcast Yes; Max. 5 multicast circuits No
<ul> <li>— Data length, max.</li> <li>— several passive connections per port, supported</li> <li>ISO-on-TCP (RFC1006)</li> <li>— Data length, max.</li> <li>UDP</li> <li>— Data length, max.</li> <li>— UDP multicast</li> <li>DHCP</li> <li>SNMP</li> </ul>	Yes Yes Yes 64 kbyte Yes 2 kbyte; 1 472 bytes for UDP broadcast Yes; Max. 5 multicast circuits No Yes
<ul> <li>Data length, max.</li> <li>several passive connections per port, supported</li> <li>ISO-on-TCP (RFC1006)</li> <li>Data length, max.</li> <li>UDP</li> <li>Data length, max.</li> <li>UDP multicast</li> <li>DHCP</li> <li>SNMP</li> <li>DCP</li> </ul>	Yes Yes  Yes 64 kbyte Yes 2 kbyte; 1 472 bytes for UDP broadcast Yes; Max. 5 multicast circuits No Yes Yes
<ul> <li>— Data length, max.</li> <li>— several passive connections per port, supported</li> <li>ISO-on-TCP (RFC1006)</li> <li>— Data length, max.</li> <li>UDP</li> <li>— Data length, max.</li> <li>— UDP multicast</li> <li>DHCP</li> <li>SNMP</li> <li>DCP</li> <li>LLDP</li> </ul>	Yes Yes Yes 64 kbyte Yes 2 kbyte; 1 472 bytes for UDP broadcast Yes; Max. 5 multicast circuits No Yes
<ul> <li>Data length, max.</li> <li>several passive connections per port, supported</li> <li>ISO-on-TCP (RFC1006)</li> <li>Data length, max.</li> <li>UDP</li> <li>Data length, max.</li> <li>UDP multicast</li> <li>DHCP</li> <li>SNMP</li> <li>DCP</li> <li>LLDP</li> </ul> Web server	Yes  Yes  Yes  64 kbyte  Yes  2 kbyte; 1 472 bytes for UDP broadcast  Yes; Max. 5 multicast circuits  No  Yes  Yes  Yes  Yes
<ul> <li>— Data length, max.</li> <li>— several passive connections per port, supported</li> <li>ISO-on-TCP (RFC1006)</li> <li>— Data length, max.</li> <li>UDP</li> <li>— Data length, max.</li> <li>— UDP multicast</li> <li>DHCP</li> <li>SNMP</li> <li>DCP</li> <li>LLDP</li> <li>Web server</li> <li>HTTP</li> </ul>	Yes  Yes  Yes  64 kbyte  Yes  2 kbyte; 1 472 bytes for UDP broadcast  Yes; Max. 5 multicast circuits  No  Yes  Yes  Yes  Yes  Yes  Yes  Yes
<ul> <li>— Data length, max.</li> <li>— several passive connections per port, supported</li> <li>ISO-on-TCP (RFC1006)</li> <li>— Data length, max.</li> <li>UDP</li> <li>— Data length, max.</li> <li>— UDP multicast</li> <li>DHCP</li> <li>SNMP</li> <li>DCP</li> <li>LLDP</li> <li>Web server</li> <li>HTTP</li> <li>HTTPS</li> </ul>	Yes  Yes  Yes  64 kbyte  Yes  2 kbyte; 1 472 bytes for UDP broadcast  Yes; Max. 5 multicast circuits  No  Yes  Yes  Yes  Yes
<ul> <li>— Data length, max.</li> <li>— several passive connections per port, supported</li> <li>ISO-on-TCP (RFC1006)</li> <li>— Data length, max.</li> <li>UDP</li> <li>— Data length, max.</li> <li>— UDP multicast</li> <li>DHCP</li> <li>SNMP</li> <li>DCP</li> <li>LLDP</li> <li>Web server</li> <li>HTTP</li> </ul>	Yes  Yes  Yes  64 kbyte  Yes  2 kbyte; 1 472 bytes for UDP broadcast  Yes; Max. 5 multicast circuits  No  Yes  Yes  Yes  Yes  Yes  Yes  Yes

- Application authentication - Security policies - User authentication - Number of sessions, max Number of sessions, max Number of sessions, max Number of respectable notes, max Number of subscriptions per session, max Number of subscriptions per session, max Publishing interval, min Publishing interval, min Number of server methods, max Number of imputishouts per server method, max Number of imputishouts per server method, max Number of monitored items, max Number of server interfaces, max Number of order interfaces, max Number of orders or user-defined server interfaces, max Number of orders or user-defined server interfaces, max Number of server interfaces, max Number of orders or user-defined server interfaces, max Number of orders or user-defined server interfaces, max Number of orders or user-defined server interfaces, max Number of ordigurable program messages, max Number of ordigurable program messages, max Number of ordigurable program messages, max Number of alarms for system diagnostics - Number of alarms for system diagnostics - Number of alarms for system diagnostics - Number of alarms for system technology objects - Statuscontrol variables, max of which status variables, max of which status variables, max of which status variables, max of which control var		
- Application authentication - Security policides - Security policides - Number of resistance max Number of sessions, max Number of resistance max Number of resistance max Number of resistance max Number of sessions max Number of sessions max Number of sessions max Sampling interval, min Publishing interval, min Number of severe methods, max Number of severe methods, max Number of severe methods, max Number of monitared items, max Number of monitared items, max Number of monitared items, max Number of severe interfaces, max Number of severe interfaces, max Number of monitared items, max Number of severe interfaces, max MODBUS - Yes, MODBUS TCP - Sectionous mode - Regulation of message functions, max Momber of severe message functions, max Number of severe message functions, max Number of severe methods, max Number of veriables, max	OPC UA Server	Yes; Data access (read, write, subscribe), method call, custom address space
User authentication  - Number of accessions, max Number of accessions, max Number of sessions, max Number of september nodes, max Sampling interval, min Number of server methods, max Number of server interfaces, max Number of industryal, min Number of server methods, max Number of industryal, min Number	<ul> <li>Application authentication</li> </ul>	Yes
- Number of registerable nodes, max Number of registerable nodes, max Number of subscriptions per resession, max Sampling interval, min Number of subscriptions per resession, max Sampling interval, min Number of subscriptions per resession, max Number of subscriptions per resession, max Number of subscriptions per resession, max Number of subscriptions per session, max Number of subscriptions per resession, max Number of subscriptions per session, max Number of number of subscriptions per session, max Ves - Number of subscriptions per session, max Ves - Yes, MODBUS	— Security policies	
- Number of accessible variables, max Number of subscriptions per session, max Number of subscriptions per session, max Sampling interval, min Publishing interval, min Number of server methods, max Number of server methods, max Number of monitored items, max Number of server interfaces, max Number of configurable program messages, max Number of server interfaces, max Number of variables, max Of which setus variables, max Of which powerfail-proof - Number of configurable Traces - Num	<ul><li>User authentication</li></ul>	"anonymous" or by user name & password
Number of registerable nodes, max	<ul><li>Number of sessions, max.</li></ul>	64
— Number of subscriptions per session, max.   20	<ul> <li>Number of accessible variables, max.</li> </ul>	200 000
- Sampling Interval, min Publishing interval, min Number of server methods, max Number of server methods, max Number of server interfaces, max Number of londes for user-defined server interfaces, max.  Further protocols - NODBUS - Ves.  Further protocols - NODBUS - Ves.  Further protocols - Number of login stations for message functions, max Yes - Number of login stations for message functions, max Program alarms - Number of login stations for messages, max Number of simultaneously active program alarms - Number of simultaneously active program alarms - Number of alarms for system diagnostics - Number of alarms for system diagnostics - Number of alarms for motion technology objects - Number of alarms for motion technology objects - Number of brackpoints - Status block - Number of brackpoints - Status block - Yes - Program alarms - Number of variables, max John control variable - Variables - Variables - Variables - Variables - Variables, max John control variables, max John con	<ul> <li>Number of registerable nodes, max.</li> </ul>	50 000
- Publishing interval, min Number of server methods, max Number of inputs/outputs per server method. max Number of monitored items, max Number of monitored items, max Number of nonitored items, max Number of program server interfaces, max Number of nonitored items, max Program alarms - Number of oring stations for message functions, max Program alarms - Number of oringurable program messages, max Number of oringurable program alarms - Number of variables, max Of which poture of variables, max Of which poture of variables, max Of which poture of variables, max.	<ul> <li>Number of subscriptions per session, max.</li> </ul>	20
- Number of server methods, max Number of inputs/outputs per server method, max Number of monitored items, max Number of server interfaces, max Number of server interfaces, max Number of oldes for user-defined server interfaces, max Number of modes for user-defined server interfaces, max MOBBUS - MODBUS -	<ul><li>— Sampling interval, min.</li></ul>	10 ms
	<ul><li>— Publishing interval, min.</li></ul>	10 ms
max. — Number of monitored items, max. — Number of server interfaces, max. — Number of ondes for user-defined server interfaces, max. — Number of nodes for user-defined server interfaces, max. — MODBUS — MODBUS — Yes; MODBUS TCP    Southmous mode	<ul> <li>Number of server methods, max.</li> </ul>	100
- Number of monitored items, max Number of server interfaces, max.  Number of nodes for user-defined server interfaces, max.  Further protocols		20
- Number of nodes for user-defined server interfaces, max Number of nodes for user-defined server interfaces, max.  Further protocols  • MODBUS    Section   Yes   Yes	<ul> <li>Number of monitored items, max.</li> </ul>	50 000
Interfaces, max.  Further protocols  MODBUS  MODBUS  Yes, MODBUS TCP  Isochronous mode  Equidistance  Yes  Frogram alarms  Number of login stations for message functions, max.  Program alarms  Number of configurable program messages, max.  Number of oringurable program alarms  Number of program interest or system diagnostics  Number of program darms  Yes; Parallel online access possible for up to 10 engineering systems  Yes; Up to 16 simultaneously (in total across all ES clients)  No  Number of breakpoints  Status Sloots  Yes; Up to 16 simultaneously (in total across all ES clients)  No  Number of breakpoints  Status Sloots  Yes  Up to 16 simultaneously (in total across all ES clients)  Yes  Up to 16 simultaneously (in total across all ES clients)  No  Number of toralbies, max.  Of which status variables, max.  Of which status variables, max.  Of which control variables, max.  Of which status variables, max.  Of which powerfall-proof  Traces  Number of configurable Trace		10
interfaces, max.  Further protocols  • MODBUS  • MODBUS  Yes; MODBUS TCP    Sequidistance		30 000
MODBUS   Yes; MODBUS TCP		
Social States   Yes	Further protocols	
Equidistance Yes  S7 message functions  Number of login stations for message functions, max.  Number of configurable program messages, max.  Number of configurable program messages, max.  Number of simultaneously active program alarms  Number of program alarms  Number of alarms for system diagnostics Number of alarms for system diagnostics Number of alarms for motion technology objects  Number of alarms for motion technology objects  No  Test commissioning functions  Joint commissioning functions  Joint commission (Team Engineering)  Ves; Parallel online access possible for up to 10 engineering systems  Status block  Yes; Up to 16 simultaneously (in total across all ES clients)  Single step  No  Number of breakpoints  Status/control  Status/control variables  Ves  Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters  Number of variables, max.  of which status variables, max.  of which status variables, max.  of which control variables, max.  Peripheral inputs/outputs  Number of variables, max.  Of which status variables, max.  of which powerfail-proof  Forcing  Forcing, variables  Number of entries, max.  of which powerfail-proof  1 000  Traces  Number of configurable Traces	• MODBUS	Yes; MODBUS TCP
Equidistance  S7 message functions  Number of login stations for message functions, max.  Number of configurable program messages, max.  Number of configurable program messages, max.  Number of simultaneously active program alarms  Number of program alarms  Number of alarms for system diagnostics Number of alarms for system diagnostics Number of alarms for motion technology objects  Number of alarms for motion technology objects  Number of maxims for motion technology objects  Test commissioning functions  Joint commissioning functions  Joint commission (Team Engineering)  Yes; Parallel online access possible for up to 10 engineering systems  Status block  Yes; Up to 16 simultaneously (in total across all ES clients)  No  Number of breakpoints  Status/control  Status/control variables  No  Number of variables, max.  Of which status variables, max.  Of which status variables, max.  Of which control variables, max.  Peripheral inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters  Number of variables, max.  Peripheral inputs/outputs  Peripheral inputs/outputs  Number of configurable Traces  Number of configurable Tra	Isochronous mode	
Stressage functions   Sacrostrophysics   Sacrostr		Yes
Number of login stations for message functions, max. Program alarms  Number of configurable program messages, max.  Number of simultaneously active program alarms  Number of simultaneously active program alarms  Number of program alarms  Number of program alarms  Number of program alarms  Number of alarms for system diagnostics  Number of alarms for motion technology objects  7	·	
Program alarms Yes Number of configurable program messages, max. 10 000 Number of configurable program alarms 10000 Number of program alarms 10000 Number of program alarms 10000 Number of alarms for system diagnostics 200 Number of alarms for system diagnostics 160  Test commissioning functions  Joint commission (Team Engineering) Yes; Parallel online access possible for up to 10 engineering systems Status block Yes; Up to 16 simultaneously (in total across all ES clients)  Single step No Number of breakpoints 20  Status/control  Status/control variable Yes Number of variables, max. 200; per job Number of variables, max. 200; per job Forcing Forcing Peripheral inputs/outputs Number of variables, max. 200 Diagnostic buffer  present Yes Number of ordingurable Traces SUpport Status information  Diagnostics indication LED RUN/STOP LED RUN/STO		32
Number of configurable program messages, max.  Number of simultaneously active program alarms  Number of program alarms  Number of alarms for system diagnostics Number of alarms for system diagnostics Number of alarms for motion technology objects  160  Test commissioning functions  Joint commission (Team Engineering)  Yes; Parallel online access possible for up to 10 engineering systems Status block Yes; Up to 16 simultaneously (in total across all ES clients)  No Number of breakpoints  Status/control  Status/control variable Variables Number of variables, max. — of which status variables, max. — of which control variables, max. — of which control variables, max. — of which orbital variables, max. — of which orbital variables, max. 200; per job  Forcing Forcing Forcing Forcing Forcing Peripheral inputs/outputs Peripheral inputs/outputs  Number of variables, max. 200  Diagnostic buffer  Present Yes Number of configurable Traces Number of configurable T		
Number of simultaneously active program alarms  Number of program alarms Number of program alarms Number of program alarms Number of alarms for system diagnostics Number of alarms for motion technology objects  Test commission (Team Engineering)  Joint commission (Team Engineering)  Status block Yes; Up to 16 simultaneously (in total across all ES clients)  Single step No Number of breakpoints  Status/control Status/control variable Variables Number of variables, max. — of which status variables, max. — of which control variables, max. 200; per job Forcing Forcing Forcing Forcing Forcing Forcing Forcing Forcing Number of variables, max. — of which control variables, max. 200; per job Forcing F		
Number of program alarms Number of alarms for system diagnostics Number of alarms for motion technology objects Number of alarms for motion technology objects  Test commissioning functions  Joint commission (Team Engineering) Yes; Parallel online access possible for up to 10 engineering systems Status block Yes; Up to 16 simultaneously (in total across all ES clients)  No Number of breakpoints 20  Status/control Status/control variable Variables Number of variables, max. — of which control variables, max. — of which control variables, max. 200; per job  Forcing, variables Number of variables, max. 200 per job  Forcing variables, max. 200 Diagnostic buffer  Persent Number of entries, max. 3 200 — of which powerfall-proof 1 000  Traces Number of configurable Traces Number of configurable Traces Number of configurable LTD Person Status information  Diagnostics indication LED Person LED Perso		10 000
Number of alarms for system diagnostics Number of alarms for motion technology objects  Test commissioning functions  Ves; Parallel online access possible for up to 10 engineering systems  Status block Yes; Up to 16 simultaneously (in total across all ES clients)  Single step No Number of breakpoints 20  Status/control Status/control variable Variables Number of variables, max. of which status variables, max. of which control variable, max. Peroring, variables, max. Of which control variables, max. Of which or four alards, max. Of which control variables, max. Of which status variables, max. Of which control variables, max. Of which status variables, max. Of which control variables, max. Of which status variables, max. Of which control variables, max. Of which provided to the variables, max. Of which powerfail-proof Oraces Number of configurable Traces Number		1 000
• Number of alarms for motion technology objects  Test commissioning functions  Joint commission (Team Engineering)  Status block  Single step  No  Number of breakpoints  • Status/control  • Status/control variable  • Variables  • Number of variables, max.  — of which control variables, max.  — of which powerfail-proof  • Number of entries, max.  — of which powerfail-proof  • Number of configurable Traces  •	· -	
Test commissioning functions  Joint commission (Team Engineering)  Yes; Parallel online access possible for up to 10 engineering systems  Status block  Yes; Up to 16 simultaneously (in total across all ES clients)  No Number of breakpoints  Status/control  Status/control variable  Yes  Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters  Number of variables, max.  of which status variables, max.  of which control variables, max.  Peripheral inputs/outputs  Peripheral inputs/outputs  Number of variables, max.  200; per job  Forcing  Forcing, variables  Number of variables, max.  200  Diagnostic buffer  present  present  Number of entries, max.  of which powerfail-proof  1 000  Traces  Number of configurable Traces  Number of configurable Traces  Right Status information  Diagnostics indication LED  RRIN/STOP LED  RRIN/		
Joint commission (Team Engineering)  Yes; Parallel online access possible for up to 10 engineering systems Yes; Up to 16 simultaneously (in total across all ES clients)  No Number of breakpoints  20  Status/control  Status/control variable  Variables  Number of variables, max.  — of which status variables, max.  — of which control variables, max.  — of which control variables, max.  200; per job  Forcing  Forcing, variables  Number of variables, max.  200 per job  Peripheral inputs/outputs  Number of variables, max.  200  Diagnostic buffer  present  present  present  present  Number of entries, max.  — of which powerfail-proof  Traces  Number of configurable Traces  Number of configurable Traces  Number of configurable Traces  Number of endities, indication LED  RUN/STOP LED  RUN/STOP LED  REROR LED  MAINT LED  MAINT LED  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		100
Status block Single step No Number of breakpoints Status/control  Status/control  Status/control  Status/control  Status/control variable Variables Number of variables, max. Of which status variables, max. Storing Forcing Forcing Forcing Forcing Forcing Forcing variables, max.  Number of variables, max.  Number of variables, max.  Supported technology objects  Yes Variables		
Single step  No Number of breakpoints  20 Status/control  • Status/control variable  • Variables  • Number of variables, max.  — of which status variables, max.  — of which control variables, max.  200; per job  • Forcing, variables  • Number of variables, max.  200; per job  Forcing  • Forcing, variables  • Number of variables, max.  200 Diagnostic buffer  • present  • Number of entries, max.  — of which powerfail-proof  Traces  • Number of configurable Traces at the cycle time of the PLC program; selection guide via the TIA Selection Tool or SIZER		
Number of breakpoints  Status/control  Status/control variable  Variables  Number of variables, max.  of which status variables, max.  of which control variables, max.  Peripheral inputs/outputs  Number of variables, max.  200; per job  Forcing  Forcing, variables  Number of variables, max.  200 per job  Peripheral inputs/outputs  Number of variables, max.  200  Diagnostic buffer  present  present  present  present  Number of entries, max.  of which powerfail-proof  Traces  Number of configurable Traces to configurable Traces  Number of configurable Tr		
Status/control  Status/control variable  Variables  Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters  200; per job  Peripheral inputs/outputs  Peripheral inputs/outputs  Number of variables, max.  200  Diagnostic buffer  Inputs/outputs/outputs  Inputs/outputs/outputs  Inputs/outputs/outputs  Inputs/outputs/outputs/outputs  Inputs/outputs/outputs/outputs  Inputs/outputs/outputs/outputs/outputs  Inputs/outputs/outputs/outputs/outputs/outputs  Inputs/outputs/		
Status/control variable Variables Variables Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters  Number of variables, max. — of which status variables, max. — of which control variables, max. 200; per job  Forcing Forcing Forcing Forcing Peripheral inputs/outputs Number of variables, max. 200  Diagnostic buffer  present Persent Number of entries, max. — of which powerfail-proof 1 000  Traces Number of configurable Traces Number of con	·	20
<ul> <li>Variables</li> <li>Number of variables, max.</li> <li>— of which status variables, max.</li> <li>— of which control variables, max.</li> <li>— of which control variables, max.</li> <li>— of which control variables, max.</li> <li>Forcing</li> <li>Forcing, variables</li> <li>Number of variables, max.</li> <li>Diagnostic buffer</li> <li>• present</li> <li>• Number of entries, max.</li> <li>— of which powerfail-proof</li> <li>1 000</li> <li>Traces</li> <li>• Number of configurable Traces</li> <li>• Number of configurable Traces</li> <li>8; Up to 512 KB of data per trace are possible</li> <li>Interrupts/diagnostics/status information</li> <li>Diagnostics indication LED</li> <li>• RUN/STOP LED</li> <li>• ERROR LED</li> <li>• MAINT LED</li> <li>• Connection display LINK TX/RX</li> <li>Yes</li> <li>Supported technology objects</li> <li>Motion Control</li> <li>Yes; Note: The number of axes affects the cycle time of the PLC program; selection guide via the TIA Selection Tool or SIZER</li> </ul>		V
<ul> <li>Number of variables, max.</li></ul>		
- of which status variables, max of which control variables, max. 200; per job 200; per job  Forcing  Forcing  Forcing, variables Number of variables, max. 200  Diagnostic buffer  present Number of entries, max of which powerfail-proof 1 000  Traces Number of configurable Traces Number of configurable Traces RUN/STOP LED REROR LED REROR LED MAINT LED Connection display LINK TX/RX  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		inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters
Forcing  Forcing, variables Number of variables, max.  Peripheral inputs/outputs  Number of variables, max.  Peripheral inputs/outputs  Number of variables, max.  Peripheral inputs/outputs  Number of variables, max.  Persont  Pe		0000
Forcing  Forcing, variables Number of variables, max.  Peripheral inputs/outputs 200  Diagnostic buffer  present Number of entries, max. 3 200  - of which powerfail-proof 1 000  Traces Number of configurable Traces Number of configurable Traces Number of configurable Traces RUN/STOP LED RUN/STOP LED REROR LED MAINT LED MAINT LED Connection display LINK TX/RX  Yes  Supported technology objects  Motion Control  Peripheral inputs/outputs  Yes  Yes  Yes  Yes  Yes  Yes  Yes  Y	•	
Peripheral inputs/outputs Number of variables, max.  Peripheral inputs/outputs 200  Diagnostic buffer  Present Present Present Number of entries, max.  Of which powerfail-proof 1000  Traces Number of configurable Traces Number of configurable Traces RUN/STOP LED RUN/STOP LED PERROR LED MAINT LED Connection display LINK TX/RX  Supported technology objects  Motion Control  Peripheral inputs/outputs 200  Peripheral inputs/outputs 200  Yes  Yes  Supported technology objects  Peripheral inputs/outputs Yes  Yes  Yes  Yes  Peripheral inputs/outputs Yes  1000  Yes  Yes  Yes  Yes  Yes  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		200; per Job
Number of variables, max.  Diagnostic buffer  present  Number of entries, max.  of which powerfail-proof  Traces  Number of configurable Traces  Number of configurable Traces  Number of configurable Traces  Number of configurable Traces  RUN/STOP LED  RUN/STOP LED  REROR LED  MAINT LED  MAINT LED  Connection display LINK TX/RX  Yes  Supported technology objects  Motion Control  Motion Control  Pyes  Note: The number of axes affects the cycle time of the PLC program; selection guide via the TIA Selection Tool or SIZER	-	B. H. H. A. A. A.
Diagnostic buffer	<b>5</b> .	
Present     Number of entries, max.     Of which powerfail-proof     1000  Traces     Number of configurable Traces     Number of configu		200
Number of entries, max. Of which powerfail-proof  Traces  Number of configurable Traces  Number of configurable Traces  Style to 512 KB of data per trace are possible  Interrupts/diagnostics/status information  Diagnostics indication LED  RUN/STOP LED FEROR LED FIROR LED MAINT LED MAINT LED 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		V
— of which powerfail-proof  Traces  Number of configurable Traces  8; Up to 512 KB of data per trace are possible  Interrupts/diagnostics/status information  Diagnostics indication LED  RUN/STOP LED  ERROR LED  MAINT LED  MAINT LED  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		
Traces  Number of configurable Traces  Interrupts/diagnostics/status information  Diagnostics indication LED  RUN/STOP LED  ERROR LED  MAINT LED  Connection display LINK TX/RX  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 configurable Traces</li> <li>Interrupts/diagnostics/status information</li> <li>Diagnostics indication LED</li> <li>RUN/STOP LED</li> <li>ERROR LED</li> <li>MAINT LED</li> <li>Connection display LINK TX/RX</li> <li>Supported technology objects</li> <li>Motion Control</li> <li>8; Up to 512 KB of data per trace are possible</li> <li>Yes</li> <li>Yes</li> <li>Yes</li> <li>Yes</li> <li>Yes</li> <li>Yes</li> <li>Yes</li> <li>Supported technology objects</li> <li>Yes; Note: The number of axes affects the cycle time of the PLC program; selection guide via the TIA Selection Tool or SIZER</li> </ul>	— of which powerfail-proof	1 000
Interrupts/diagnostics/status information  Diagnostics indication LED  • RUN/STOP LED • ERROR LED • MAINT LED • MAINT LED • Connection display LINK TX/RX  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		
Diagnostics indication LED  • RUN/STOP LED • ERROR LED • MAINT LED • Connection display LINK TX/RX  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		8; Up to 512 KB of data per trace are possible
RUN/STOP LED     Yes     ERROR LED     Yes     MAINT LED     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	Interrupts/diagnostics/status information	
ERROR LED     Yes     MAINT LED     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	Diagnostics indication LED	
MAINT 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	RUN/STOP LED	Yes
<ul> <li>Connection display LINK TX/RX</li></ul>	• ERROR LED	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	MAINT LED	Yes
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>Connection display LINK TX/RX</li> </ul>	Yes
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	Motion Control	program; selection guide via the TIA Selection Tool or SIZER
• Number of available widton control resources for	Number of available Motion Control resources for	10 240

technology objects	
<ul> <li>Required Motion Control resources</li> </ul>	
<ul><li>per speed-controlled axis</li></ul>	40
<ul><li>per positioning axis</li></ul>	80
<ul><li>per synchronous axis</li></ul>	160
<ul> <li>per external encoder</li> </ul>	80
— per output cam	20
— per cam track	160
— per probe	40
<ul> <li>Positioning axis</li> </ul>	
<ul> <li>Number of positioning axes at motion control cycle of 4 ms (typical value)</li> </ul>	128
<ul> <li>Number of positioning axes at motion control cycle of 8 ms (typical value)</li> </ul>	128
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	1.55, 1.15 controller with integrated optimization for temperature
High-speed counter	Yes
	160
Ambient conditions	
Ambient temperature during operation	
• horizontal installation, min.	0 °C; = Tmin (incl. condensation/frost)
horizontal installation, max.	60 °C; Display: 50 °C, at an operating temperature of typically 50 °C, the display is switched off
<ul> <li>vertical installation, min.</li> </ul>	0 °C; = Tmin
vertical installation, max.	40 °C; 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>	5 000 m
<ul> <li>Ambient air temperature-barometric pressure- altitude</li> </ul>	Tmin Tmax at 1 140 hPa 795 hPa (-1 000 m +2 000 m) // Tmin (Tmax - 10 K) at 795 hPa 658 hPa (+2 000 m +3 500 m) // Tmin (Tmax -20 K) at 658 hPa 540 hPa (+3 500 m +5 000 m)
Relative humidity	
With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; incl. condensation / frost permitted (no commissioning under condensation conditions)
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 ships/at sea	
to biologically active substances according to EN 60721-3-6	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request
to chemically active substances according to EN 60721-3-6	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52
— to mechanically active substances according to	(severity degree 3); * Yes; Class 6S3 incl. sand, dust; *
EN 60721-3-6	
Usage in industrial process technology	Vac Class 2 (avaluding high-settled-set)
<ul> <li>Against chemically active substances acc. to</li> </ul>	Yes; Class 3 (excluding trichlorethylene)
EN 60654-4	
EN 60654-4  — Environmental conditions for process, measuring and control systems acc. to ANSI/ISA-71.04  Remark	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)

<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
<ul> <li>Military testing according to MIL-I-46058C, Amendment 7</li> </ul>	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
— FBD	Yes
— STL	Yes
— SCL	Yes
— GRAPH	Yes
Know-how protection	
<ul> <li>User program protection/password protection</li> </ul>	Yes
<ul> <li>Copy protection</li> </ul>	Yes
Block protection	Yes
Access protection	
<ul> <li>Password for display</li> </ul>	Yes
<ul> <li>Protection level: Write protection</li> </ul>	Yes
<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
Open Development interfaces	
Size of ODK SO file, max.	9.8 Mbyte
Dimensions	
Width	175 mm
Height	147 mm
Depth	129 mm
Weights	
Weight, approx.	1 988 g

last modified: 11/3/2021 **C**