## **SIEMENS**

## **Data sheet**

## 6ES7510-1SK03-0AB0

SIMATIC DP, CPU 1510SP F-1 PN for ET 200SP, central processing unit with work memory 300 KB for program and 1 MB for data, 1st interface: PROFINET IRT with 3-port switch, 25 ns bit performance, SIMATIC Memory Card required, BusAdapter required for port 1 and 2 \* \*\*\* approvals and certificates according to entry 109816889 at support.industry.siemens.com to be observed! \*\*\*\*

General information	
Product type designation	CPU 1510SP F-1 PN
HW functional status	FS01
Firmware version	V3.0
FW update possible	Yes
Product function	
● I&M data	Yes; I&M0 to I&M3
<ul> <li>Module swapping during operation (hot swapping)</li> </ul>	Yes; Multi-hot swapping
• Isochronous mode	Yes; only with PROFINET; with minimum OB 6x cycle of 500 µs
Engineering with	
STEP 7 TIA Portal configurable/integrated from version	V18 (FW V3.0); with older TIA Portal versions configurable as 6ES7510-1SJ01-0AB0
Configuration control	
via dataset	Yes
Control elements	
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	
Mains/voltage failure stored energy time	10 ms
Input current	
Current consumption (rated value)	0.51 A
Current consumption, max.	0.7 A
Inrush current, max.	1.34 A; Rated value
l²t	0.3 A <sup>2</sup> ·s
Power	
Infeed power to the backplane bus	8.05 W
Power loss	
Power loss, typ.	6.5 W
Memory	
Number of slots for SIMATIC memory card	1
SIMATIC memory card required	Yes
Work memory	
integrated (for program)	300 kbyte
• integrated (for data)	1 Mbyte
Load memory	
Plug-in (SIMATIC Memory Card), max.	32 Gbyte
Backup	
maintenance-free	Yes
CPU processing times	
for bit operations, typ.	25 ns
for word operations, typ.	32 ns
for fixed point arithmetic, typ.	42 ns
for floating point arithmetic, typ.	170 ns
CPU-blocks	

Number of elements (total)	4 000: Blooks (OB ED EC DB) and LIDTs
Number of elements (total)	4 000; Blocks (OB, FB, FC, DB) and UDTs
Number range	1 60 999; subdivided into: number range that can be used by the user: 1 59 999, and number range of DBs created via SFC 86: 60 000 60 999
• Size, max.	1 Mbyte; For DBs with absolute addressing, the max. size is 64 KB
FB	
Number range	0 65 535
Size, max.	300 kbyte
FC	
Number range	0 65 535
Size, max.	300 kbyte
OB	
• Size, max.	300 kbyte
Number of free cycle OBs	100
Number of time alarm OBs	20
Number of delay alarm OBs	20 20. With minimum OB 20 male of 050 ma
Number of cyclic interrupt OBs     Number of process clarm OBs	20; With minimum OB 3x cycle of 250 µs
<ul> <li>Number of process alarm OBs</li> <li>Number of DPV1 alarm OBs</li> </ul>	50 3
Number of isochronous mode OBs	1
Number of isochronous mode OBs     Number of technology synchronous alarm OBs	2
Number of technology synchronous alarm OBs     Number of startup OBs	100
Number of startup OBs     Number of asynchronous error OBs	4
Number of synchronous error OBs	2
Number of dynamichous error obs     Number of diagnostic alarm OBs	1
Nesting depth	
per priority class	24; Up to 8 possible for F-blocks
Counters, timers and their retentivity	7 - P P
S7 counter	
Number	2 048
Retentivity	2 040
— adjustable	Yes
IEC counter	
Number	Any (only limited by the main memory)
Retentivity	
— adjustable	Yes
S7 times	
<ul><li>Number</li></ul>	2 048
Retentivity	
— adjustable	Yes
IEC timer	
Number	Any (only limited by the main memory)
Retentivity	
— adjustable	Yes
Data areas and their retentivity	
Retentive data area (incl. timers, counters, flags), max.	256 kbyte; in total; available retentive memory for bit memories, timers, counters, DBs, and technology data (axes): 216 KB
Flag	16 khyto
<ul><li>Size, max.</li><li>Number of clock memories</li></ul>	16 kbyte 8: 8 clack memory bit grouped into one clack memory byte
Data blocks	8; 8 clock memory bit, grouped into one clock memory byte
Retentivity adjustable	Yes
Retentivity adjustable     Retentivity preset	No
Local data	
• per priority class, max.	64 kbyte; max. 16 KB per block
Address area	,
Number of IO modules	2 048; max. number of modules / submodules
I/O address area	2 070, max. number of modules / Submodules
• Inputs	32 kbyte; All inputs are in the process image
Outputs	32 kbyte; All outputs are in the process image
per integrated IO subsystem	52 hayto, All outputs are in the process image
— Inputs (volume)	8 kbyte
— Outputs (volume)	8 kbyte
4 / / /	,

nor CM/CD	
per CM/CP	9 khuto
<ul><li>— Inputs (volume)</li><li>— Outputs (volume)</li></ul>	8 kbyte 8 kbyte
Subprocess images	o kbyte
Number of subprocess images, max.	32
Address space per module	02
Address space per module, max.	288 byte; For input and output data respectively
Address space per station	200 by to, 1 or impact and output data reopeoution
Address space per station, max.	2 560 byte; for central inputs and outputs; depending on configuration; 2
	048 bytes for ET 200SP modules + 512 bytes for ET 200AL modules
Hardware configuration	
Number of distributed IO systems	32; 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	
• Via CM	1
Number of IO Controllers	
<ul><li>integrated</li></ul>	1
Via CM	0
Rack	
<ul> <li>Modules per rack, max.</li> </ul>	82; CPU + 64 modules + server module (mounting width max. 1 m) + 16 ET 200AL modules
<ul> <li>Quantity of operable ET 200SP modules, max.</li> </ul>	64
Quantity of operable ET 200AL modules, max.	16
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
Time of day	
Clock	
• Type	Hardware clock
Backup time	6 wk; At 40 °C ambient temperature, typically
<ul> <li>Deviation per day, max.</li> </ul>	10 s; Typ.: 2 s
Operating hours counter	
Number	16
Clock synchronization	
<ul><li>supported</li></ul>	Yes
<ul> <li>to DP, master</li> </ul>	Yes; Via CM DP module
<ul> <li>to DP, slave</li> </ul>	Yes; Via CM DP module
• in AS, master	Yes
• in AS, slave	Yes
on Ethernet via NTP	Yes
Interfaces	
Number of PROFINET interfaces	
	1
Number of PROFIBUS interfaces	1 1; Via CM DP module
Number of PROFIBUS interfaces Optical interface	
	1; Via CM DP module
Optical interface	1; Via CM DP module
Optical interface  1. Interface	1; Via CM DP module
Optical interface  1. Interface Interface types	1; Via CM DP module No
Optical interface  1. Interface Interface types  • RJ 45 (Ethernet)	1; Via CM DP module No  Yes; X1 P3; opt. X1 P1 and X1 P2 via BusAdapter BA 2x RJ45
Optical interface  1. Interface Interface types  • RJ 45 (Ethernet)  • Number of ports	1; Via CM DP module No  Yes; X1 P3; opt. X1 P1 and X1 P2 via BusAdapter BA 2x RJ45 3; 1. integr. + 2. via BusAdapter
Optical interface  1. Interface Interface types  • RJ 45 (Ethernet) • Number of ports • integrated switch	1; Via CM DP module No  Yes; X1 P3; opt. X1 P1 and X1 P2 via BusAdapter BA 2x RJ45 3; 1. integr. + 2. via BusAdapter Yes
Optical interface  1. Interface Interface types  • RJ 45 (Ethernet)  • Number of ports  • integrated switch  • BusAdapter (PROFINET)	1; Via CM DP module No  Yes; X1 P3; opt. X1 P1 and X1 P2 via BusAdapter BA 2x RJ45 3; 1. integr. + 2. via BusAdapter Yes
Optical interface  1. Interface Interface types  • RJ 45 (Ethernet) • Number of ports • integrated switch • BusAdapter (PROFINET)  Protocols	1; Via CM DP module No  Yes; X1 P3; opt. X1 P1 and X1 P2 via BusAdapter BA 2x RJ45 3; 1. integr. + 2. via BusAdapter Yes Yes; compatible BusAdapters: BA 2x RJ45, BA 2x FC, BA 2x M12
Optical interface  1. Interface Interface types  • RJ 45 (Ethernet) • Number of ports • integrated switch • BusAdapter (PROFINET)  Protocols • IP protocol	1; Via CM DP module No  Yes; X1 P3; opt. X1 P1 and X1 P2 via BusAdapter BA 2x RJ45 3; 1. integr. + 2. via BusAdapter Yes Yes; compatible BusAdapters: BA 2x RJ45, BA 2x FC, BA 2x M12  Yes; IPv4
Optical interface  1. Interface Interface types  • RJ 45 (Ethernet) • Number of ports • integrated switch • BusAdapter (PROFINET)  Protocols  • IP protocol • PROFINET IO Controller • PROFINET IO Device • SIMATIC communication	1; Via CM DP module No  Yes; X1 P3; opt. X1 P1 and X1 P2 via BusAdapter BA 2x RJ45 3; 1. integr. + 2. via BusAdapter Yes Yes; compatible BusAdapters: BA 2x RJ45, BA 2x FC, BA 2x M12  Yes; IPv4 Yes
Optical interface  1. Interface Interface types  • RJ 45 (Ethernet) • Number of ports • integrated switch • BusAdapter (PROFINET)  Protocols • IP protocol • PROFINET IO Controller • PROFINET IO Device	1; Via CM DP module No  Yes; X1 P3; opt. X1 P1 and X1 P2 via BusAdapter BA 2x RJ45 3; 1. integr. + 2. via BusAdapter Yes Yes; compatible BusAdapters: BA 2x RJ45, BA 2x FC, BA 2x M12  Yes; IPv4 Yes Yes
Optical interface  1. Interface Interface types  • RJ 45 (Ethernet) • Number of ports • integrated switch • BusAdapter (PROFINET)  Protocols  • IP protocol • PROFINET IO Controller • PROFINET IO Device • SIMATIC communication	1; Via CM DP module No  Yes; X1 P3; opt. X1 P1 and X1 P2 via BusAdapter BA 2x RJ45 3; 1. integr. + 2. via BusAdapter Yes Yes; compatible BusAdapters: BA 2x RJ45, BA 2x FC, BA 2x M12  Yes; IPv4 Yes Yes Yes Yes Yes; Optionally also encrypted Yes
Optical interface  1. Interface Interface types  RJ 45 (Ethernet) Number of ports integrated switch BusAdapter (PROFINET)  Protocols  IP protocol PROFINET IO Controller PROFINET IO Device SIMATIC communication Open IE communication Web server Media redundancy	1; Via CM DP module No  Yes; X1 P3; opt. X1 P1 and X1 P2 via BusAdapter BA 2x RJ45 3; 1. integr. + 2. via BusAdapter Yes Yes; compatible BusAdapters: BA 2x RJ45, BA 2x FC, BA 2x M12  Yes; IPv4 Yes Yes Yes Yes Yes; Optionally also encrypted
Optical interface  1. Interface Interface types  • RJ 45 (Ethernet) • Number of ports • integrated switch • BusAdapter (PROFINET)  Protocols • IP protocol • PROFINET IO Controller • PROFINET IO Device • SIMATIC communication • Open IE communication • Web server • Media redundancy  PROFINET IO Controller	1; Via CM DP module No  Yes; X1 P3; opt. X1 P1 and X1 P2 via BusAdapter BA 2x RJ45 3; 1. integr. + 2. via BusAdapter Yes Yes; compatible BusAdapters: BA 2x RJ45, BA 2x FC, BA 2x M12  Yes; IPv4 Yes Yes Yes Yes Yes; Optionally also encrypted Yes
Optical interface  1. Interface Interface types  RJ 45 (Ethernet) Number of ports integrated switch BusAdapter (PROFINET)  Protocols  IP protocol PROFINET IO Controller PROFINET IO Device SIMATIC communication Open IE communication Web server Media redundancy	1; Via CM DP module No  Yes; X1 P3; opt. X1 P1 and X1 P2 via BusAdapter BA 2x RJ45 3; 1. integr. + 2. via BusAdapter Yes Yes; compatible BusAdapters: BA 2x RJ45, BA 2x FC, BA 2x M12  Yes; IPv4 Yes Yes Yes Yes Yes; Optionally also encrypted Yes

- Biotrichous mode - Direct data exchange - Direct data exchange - Direct data exchange - Direct data exchange - RET - PROFileneity - PROFileneity - PROFileneity - PROFileneity - Number of connectable to Devices, max Of which in direct max A whater of connectable to Devices for RT Mumber of connectable to Devices for RT Number of IO Devices that can be simultaneously activated discardantated Number of IO Devices that can be simultaneously activated discardantated Number of IO Devices per tool, max Number of IO Devices per tool, max Updating times - Updating times - Update sime for IRT - for send cycle of 250 µs - for send cycle of 500 µs - for send cycle of 250 µs - for send cycle of 1500 µs - for send cycle of 150 µs - for send cycle of 1500 µs - for send cycle of 250 µs - for send cycl	leachronous made	Voe
	— Isochronous mode	Yes
PROFilenergy Prioritized startup Provinch for devices with IRT, max. Of which for devices with IRT, max. Number of connectable ID Devices for RT, max. Of which in line, max. Updatine for IRT For send cycle of 250 μs For send cycle of 1 ms For send cyc	9	
- Prioritized startup - Number of connectable (D Devices, max.) - Of which ID devices with IRT, max Number of connectable (D Devices for RT, max.) - Number of iO Devices that can be amultaneously activated/deactivated, max In which in line, max In which in line, max In which of ID Devices per tool. max Number of IO Devices per tool. max Updating times  - For send cycle of 250 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' sed cycles - For send cycle of 500 µs - For send cycle of 4 ms - With IRT and parameterization of 'odd' sed cycles - For send cycle of 500 µs - For send cycle of 4 ms - With IRT and parameterization of 'odd' sed cycles - For send cycle of 4 ms - For send cycle of 500 µs - For send cy		
- Number of connectable (D Devices, max.  - Of which ID devices with IRT, max Number of connectable (D Devices for RT, max of which in line, max - Number of 100 Devices that can be simultaneously activated decactivated, max Number of 10 Devices per tool, max Updating times  - Updating times  - For send cycle of 250 µs - For send cycle of 500 µs - For send cycle of 1 ms - For send cycle of 1 ms - With IRT and parameterization of "odd" send - With IRT and parameterization of "odd" send - For send cycle of 1 ms - For send cycle of 1 ms - For send cycle of 1 ms - With IRT and parameterization of "odd" send - 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 3 ms - For send cycle of 500 µs - For send cycle of 1 ms - For	0,	, , , ,
- Of which In devices with IRT, max Number of connectable (O Devices for RT, max In which in line, max In which of In (Devices that can be simultaneously activated/deacd/vated, max Number of IO Devices bat can be simultaneously activated/deacd/vated, max Updating times - Updating times - Updating times - Updating times - For send cycle of 250 µs - For send cycle of 250 µs - For send cycle of 100 µs - For send cycle of 100 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 250 µs - For send cycle of 250 µs - For send cycle of 4 ms - With IRT and parameterization of "odd" send cycles - For send cycle of 250 µs - For send cycle of 100 µs - For send cycle of 1	·	•
- Number of connectable IO Devices for RT, max of which in line, max Number of ID Devices that can be simultaneously activated/deactivated, max Number of ID Devices per tool, max Updating times - Updating times - Updating times - Update time for IRT - for send cycle of 250 μs - for send cycle of 250 μs - for send cycle of 250 μs - for send cycle of 260 μs - for send cycle of 1 ms - for send cycle of 4 ms - With IRT and parameterization of "odd" send cycles of 1 ms - for send cycle of 4 ms - for send cycle of 250 μs - for send cycle of 4 ms - with IRT and parameterization of "odd" send cycles of 1 ms - for send cycle of 250 μs - for send cycle of 350 μs - for send cycle of 4 ms - for s	<ul> <li>Number of connectable IO Devices, max.</li> </ul>	
max. — of which in line, max. — Number of Io Devices that can be simultaneously activate/deactivated, max. — Number of Io Devices per tool, max. — Updating times  Update time for IRT — for send cycle of 250 µs — for send cycle of 500 µs — for send cycle of 4 ms — with IRT and parameterization of "odd" send cycles Update time for IRT — for send cycle of 500 µs — for send cycle	<ul> <li>Of which IO devices with IRT, max.</li> </ul>	64
28	•	128
## State of Devices that can be simultaneously advised/deactivated, max.  - Number of IO Devices per tool, max.  - Updating times    Updating times   Updating		
simultaneously activated/deactivated, max.  — Number of 10 Devices per tool, max.  — Updating times  — Updating times  — Update time for IRT  — for send cycle of 250 µs  — for send cycle of 250 µs  — for send cycle of 350 µs  — for send cycle of 350 µs  — for send cycle of 350 µs  — for send cycle of 4 ms  — for send cycle of 4 ms  — with IRT and parameterization of "odd" send cycles  — for send cycle of 4 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 500 µs  — for send cyc	— of which in line, max.	128
- Number of IO Devices per tool, max.  - Updating times  - Update time for IRT  - For send cycle of 250 µs  - For send cycle of 500 µs  - For send cycle of 2 ms  - With IRT and parameterization of "odd" send cycles  - For send cycle of 2 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 2 ms  - With IRT and parameterization of "odd" send cycles  - For send cycle of 4 ms  - For send cycle of 500 µs  - For send cycle of		8; in total across all interfaces
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  25 up to 4 ms; Note: In the case of IRT with isochronous mode, the minimum update time of 500 us of the isochronous mode, the minimum update time of 500 us of the isochronous mode, the minimum update time of 500 us of the isochronous mode, the minimum update time of 500 us of the isochronous mode, the minimum update time of 500 us of the isochronous mode, the minimum update time of 625 us of the isochronous mode, the minimum update time of 625 us of the isochronous of B is decisive  1 ms to 16 ms  - for send cycle of 2 ms  - for send oycle of 4 ms  - With IRT and parameterization of "odd" send oycles  Update time for RT  - for send cycle of 500 us  - 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 2 ms  - for send cycle of 4 ms  - for send cycle of 2 ms  - for send cycle of 4 ms  - for send cycle of 4 ms  - for send cycle of 500 us  - for send cycle of 500 us  - for send cycle of 2 ms  - for send cycl		
share set for PROFINET IO, on the number of IO devices, and on the quantity of configured user data  — for send cycle of 250 µs — for send cycle of 500 µs — for send cycle of 100 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 — With IRT and parameterization of "odd" send cycles — for send cycle of 1 ms — with IRT and parameterization of "odd" send cycles — for send cycle of 250 µs — for send cycle of 2 ms — in send cycle of 2 ms — for send cycle of 4 ms — in send cycle of 4 ms — with IRT and parameterization — for send cycle of 4 ms — to send cycle of 4 ms — in send cycle of 500 µs — for send cycle of 500 µs — for send cycle of 1 ms — in send cycle of 2 ms — send cycle of 2 ms — with IRT and parameterization — for send cycle of 4 ms — send cycle of 500 µs — respectively on the section of 100 ps.  PROFINET IO Device  Services — PC/G/D communication — send cycle of 4 ms — yes — program — send device of 4 ms — send d	·	
Update time for IRT  - 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 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 4 ms  - with IRT and parameterization of "odd" send cycles  - for send cycle of 2 ps  - for send cycle of 2 ps  - 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 250 µs  - for send cycle of 500 µs  - for send cycle of 250 µs  - for send cycle of 20 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  - for send cycle of 2 ms  - for send cycle of 4 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 500 µs	— Updating times	share set for PROFINET IO, on the number of IO devices, and on the
for send cycle of 250 µs minimum update time of 500 µs of the slockronous OB is decisive 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 for send cycle of 4 ms 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 500 µs for send cycle of 1 ms for send cycle of 4 ms for send cycle of 500 µs for send cy	Update time for IRT	quantity or configurou accordate
minimum update time of 500 µs of the isochronous OB is decisive  - for send cycle of 1 ms - 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 250 µs - for send cycle of 500 µs - for send cycle of 1 ms - for send cycle of 250 µs - for send cycle of 4 ms - for send cycle of 500 µs - for send cycle o	•	250 us to 4 ms. Note: In the case of IRT with isochronous mode, the
- for send cycle of 500 µs minimum update time of 625 µs of the isochronous mode, the minimum update time of 625 µs of the isochronous OB is decisive  - 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 250 µs - for send cycle of 500 µs - 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 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 4 ms - for send cycle of 500 µs - for send cycle of 250 µs - for send cycle of 250 µs - for send cycle of 500 µs - for send cycle of 50	— τοι σότια σ <u>γοίο</u> οι 200 μο	
minimum update time of 625 µs of the isochronous OB is decisive  1 ms to 16 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 500 µs  - for send cycle of 500 µs  - for send cycle of 1 ms  - for send cycle of 4 ms  - For send cycle of 5 ms  - For send cycle	— for send cycle of 500 us	
- for send cycle of 2 ms - for send cycle of 4 ms - with IRT and parameterization of "odd" send cycle image.  - With IRT and parameterization of "odd" send cycle image.  - 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 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 2 ms - for send cycle of 4 ms - for send cycle of 500 μs - for send cycle of 1 ms - 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 1 ms - for send cycle o		
- 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 cycle of 4 ms - With IRT and parameterization of "odd" send cycle of 250 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 - for send cycle of 4 ms - for send cycle of 4 ms - for send cycle of 8 ms - for send cycle of 9 ms - process - PGOP communication - lsochronous mode - No - lsochronous mode - No - services - PROFIBUS DP master - Number of ports - PROFIBUS DP master - Number of DP slaves, max Number of DP slaves, max Number of DP slaves, max Revices - PGOP communication - Equidistance - No - Revices - PGOP communication - Fequidistance - No - Activation/deactivation of DP slaves - No - No - Activation/deactivation of DP slaves - No - No - Activation/deactivation of DP slaves - No - No - Activation/deactivation of DP slaves - No - No - Activation/deactivation of DP slaves - No	— for send cycle of 1 ms	1 ms to 16 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 1 ms for send cycle of 2 ms for send cycle of 2 ms for send cycle of 4 ms for send cycle of 2 ms for send cycle of 4 ms for send cycle of 500 µs For send cycle of 2 ms for send cycle of 500 µs For send cycle of 2 ms for send cycle of 500 µs For send cycle		2 ms to 32 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 4 ms - for send cycle of 5 ms - for send cycle of 4 ms - for send cycle of 4 ms - for send cycle of 500 μs - for send cycle of 500 μs - 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 of 4 ms - for send cycle - for send cycle - for send cycle - for send cycle - for send cy	•	4 ms to 64 ms
Light   Li	•	
for send cycle of 250 µs		
for send cycle of 250 µs	Update time for RT	
for send cycle of 500 µs   500 µs to 256 ms   for send cycle of 1 ms   1 ms to 512 ms   for send cycle of 2 ms   4 ms to 512 ms   for send cycle of 4 ms   4 ms to 512 ms   for send cycle of 4 ms   4 ms to 512 ms   FORFINET IO Device   Services   PG/OP communication   Yes   Isochronous mode   No   Isor   IRT   Yes   PROFlenergy   Yes; per user program   Shared device   Yes   Number of IO Controllers with shared device, max.   activation/deactivation of I-devices   Yes; per user program   Asset management record   Yes; per user program   Asset management record   Yes; per user program   Asset management record   Yes; per user program   RS 485   Yes; Via CM DP module   Number of ports   1   PROFIBUS DP master   Yes   -	— for send cycle of 250 μs	250 µs to 128 ms
- for send cycle of 1 ms - for send cycle of 2 ms - for send cycle of 4 ms - PG/OP communication - Isochronous mode - IRT - Yes - PROFIenergy - Shared device - Number of IO Controllers with shared device, - Max activation/deactivation of I-devices - Asset management record - Yes; per user program - Asset management record - Yes; per user program - Asset management record - Yes; per user program - Nest program - PROFIBUS DP master - PROFIBUS DP master - PROFIBUS DP slave - SIMATIC communication - Yes - PROFIBUS DP master - Number of DP slaves, max Number of DP slaves, max Number of DP slaves, max PROFIBUS or PROFINET - Services - PG/OP communication - Equidistance - Isochronous mode - Activation/deactivation of DP slaves - Sterices - PG/OB communication - Pes - Sterices - PG/OP communication - Pes - PROFIBUS or PROFINET - Pes - PROFIBUS or PROFINET -	·	
for send cycle of 2 ms		•
for send cycle of 4 ms  PROFINET I/O Device Services  PG/OP communication Yes Isochronous mode No IRT Yes PROFlenergy Yes; per user program Shared device Yes; per user program Shared device Yes; per user program Asset management record Yes; per user program RS 485 Number of ports RS 485 Number of ports PROFIBUS DP master Yes PROFIBUS DP master Yes PROFIBUS DP slave Yes SIMATIC communication Yes SIMATIC communication Yes ROFIBUS DP master Number of connections, max Asset management PROFIBUS or PROFINET  Services PG/OP communication Yes PG/OP communication Yes ROFIBUS or PROFINET  Services PG/OP communication Yes ROFIBUS or PROFINET  Services PG/OP communication Yes Requidistance No Activation/deactivation of DP slaves Yes  Interface types  RJ 45 (Ethernet) 100 Mbps Activation/deactivation of DP slaves Yes  Interface types  RJ 45 (Ethernet) 100 Mbps No		
PROFINET IO Device Services  - PG/OP communication Yes - Isochronous mode No - IRT Yes - PROFlenergy Yes; per user program - Shared device Yes - Number of IO Controllers with shared device, max activation/deactivation of I-devices Yes; per user program - Asset management record Yes; per user program  2. Interface Interface types - RS 485 Yes; Via CM DP module - Number of ports - PROFIBUS DP master - PROFIBUS DP master - PROFIBUS DP slave - SIMATIC communication Yes - Number of connections, max Simulation of DP slaves, max Assert max Assert max Asset max Yes - PROFIBUS DP master - Number of connections, max Simulation communication - PEquidistance - PG/OP communication - Equidistance - Roiled Sistributed I/O devices can be connected via AS Isochronous mode - Activation/deactivation of DP slaves - Activation/deactivation of DP slaves - PROFIBUS DE State - PG/OP communication - PS Services - PS Services - PS Services -		
Services  - PG/OP communication Yes - Isochronous mode No - IRT Yes - PROFlenergy Yes; per user program - Shared device Yes - Number of IO Controllers with shared device, max activation/deactivation of I-devices Yes; per user program - Asset management record Yes; per user program  2. Interface Interface types - RS 485 Yes; Via CM DP module - Number of ports - Number of ports - PROFIBUS DP master - PROFIBUS DP master - SIMATIC communication - PROFIBUS DP master - Number of connections, max Number of DP slaves, max Number of DP slaves, max PROFIBUS OP communication - PROFIBUS DP master - Number of DP slaves, max Number of DP slaves, max Number of DP slaves, max PROFIBUS or PROFINET  Services - PG/OP communication - Equidistance - Isochronous mode - Activation/deactivation of DP slaves - Yes - Interface types  RJ 45 (Ethernet) - 100 Mbps - Yes		
Isochronous mode IRT PROFIenergy Shared device Number of IO Controllers with shared device, max Activation/deactivation of I-devices Asset management record Asset management record Asset management record RS 485 Number of ports Number of ports PROFIBUS DP master PROFIBUS DP slave SIMATIC communication Number of connections, max Number of connections, max Number of DP slaves, max Number of DP slaves, max Number of DP slaves, max PG/OP communication Equidistance Isochronous mode Activation/deactivation of DP slaves RU 48; Of which 4 each reserved for ES and HMI REQUIDING TO PROFIBUS or PROFINET PG/OP communication Services Services Services Servi		Yes
- IRT - PROFlenergy - Shared device - Number of IO Controllers with shared device, max activation/deactivation of I-devices - Asset management record  2. Interface Interface types - RS 485 - Number of ports - PROFIBUS DP master - PROFIBUS DP master - Number of connections, max SIMATIC communication - Number of DP slaves, max Number of DP slaves, max RS- Ves - PROFIBUS DP master - Number of DP slaves, max Number of DP slaves, max Number of DP slaves, max PROFIBUS DP master - PROFIBUS DP maxer - PROFIBUS DP maxer - Number of connections, max Number of DP slaves, max Number of DP slaves, max Rejudistance - Interface types - PROFIDED SP May PROFINET - PROFIDED SP MAY P		
- PROFlenergy - Shared device - Number of IO Controllers with shared device, max activation/deactivation of I-devices - Asset management record  2. Interface Interface types  • RS 485 • Number of ports  • PROFIBUS DP master • PROFIBUS DP master • SIMATIC communication PROFIBUS DP master • Number of connections, max. • Number of DP slaves, max. • Number of DP slaves, max.  - PG/OP communication - Equidistance - Isochronous mode - Activation/deactivation of DP slaves  Interface types  RJ 45 (Ethernet) • 100 Mbps  Yes; per user program  Yes; per		
Shared device Number of IO Controllers with shared device, max activation/deactivation of I-devices Asset management record Yes; per user program Asset management record Yes; per user program Asset management record Yes; per user program		
Number of IO Controllers with shared device, max.  activation/deactivation of I-devices Yes; per user program Asset management record Yes; per user program  2. Interface  Interface types  RS 485 RS 485 Number of ports PROFIBUS DP master PROFIBUS DP slave SIMATIC communication PROFIBUS DP master  Number of connections, max Number of DP slaves, max Number of DP slaves, max PG/OP communication Equidistance Isochronous mode Activation/deactivation of DP slaves  Interface types  RJ 45 (Ethernet) 100 Mbps  Yes; Via CM DP module Yes Yes; Via CM DP module Yes PROFIBUS DP master Yes PROFIBUS DP master No humber of connections, max PROFIBUS OF PROFIBUS or PROFINET Services PG/OP communication Equidistance No No Activation/deactivation of DP slaves PG/OP slaves PG/OP communication P		
max. — activation/deactivation of I-devices Yes; per user program — Asset management record Yes; per user program  2. Interface Interface types  • RS 485 • Number of ports  1 Protocols  • PROFIBUS DP master • PROFIBUS DP slave • SIMATIC communication PROFIBUS DP master  • Number of connections, max. • Number of connections, max. • Number of DP slaves, max.  125; In total, up to 512 distributed I/O devices can be connected via ASi, PROFIBUS or PROFINET  Services  — PG/OP communication Yes — Equidistance — Isochronous mode — Isochronous mode — Activation/deactivation of DP slaves  Interface types  RJ 45 (Ethernet) • 100 Mbps  Yes		
activation/deactivation of I-devices Asset management record  7 yes; per user program  7 yes; via CM DP module  1 yes  1 yes  1 yes  1 PROFIBUS DP master  1 yes  1 PROFIBUS DP slave  2 yes  3 yes  3 yes  48; Of which 4 each reserved for ES and HMI  48; Of which 4 each reserved for ES and HMI  48; Of which 4 each reserved for ES and HMI  7 yes  8 yes  1 yes	·	7
- Asset management record  2. Interface  Interface types  • RS 485  • Number of ports  1  Protocols  • PROFIBUS DP master  • PROFIBUS DP slave  • SIMATIC communication  PROFIBUS DP master  • Number of connections, max.  • Number of DP slaves, max.  • Number of DP slaves, max.  • Number of DP slaves, max.  Services  - PG/OP communication  - Equidistance  - Isochronous mode  - Activation/deactivation of DP slaves  Interface types  RJ 45 (Ethernet)  • 100 Mbps  Yes, Via CM DP module  Yes, Via CM DP module  1  Yes, Via CM DP module  1  Yes  Yes  Yes  Yes  Yes  No  - PROFIBUS DP master  • Number of connections, max.  48; Of which 4 each reserved for ES and HMI  125; In total, up to 512 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFINET  Yes  - PG/OP communication  Yes  No  - Activation/deactivation of DP slaves  Yes  Interface types  RJ 45 (Ethernet)  • 100 Mbps		Yes: per user program
2. Interface Interface types  • RS 485  • Number of ports  Protocols  • PROFIBUS DP master  • PROFIBUS DP slave  • SIMATIC communication  PROFIBUS DP master  • Number of connections, max.  • Number of DP slaves, max.  • Number of DP slaves, max.  Services  - PG/OP communication  Yes  - Equidistance - Isochronous mode - Activation/deactivation of DP slaves  Interface types  RJ 45 (Ethernet)  • 100 Mbps  Yes, Via CM DP module  Yes, Via CM DP module   Yes, Via CM DP module   Yes   Yes   Yes   Yes  Yes   Yes  No  No  As', Of which 4 each reserved for ES and HMI  125; In total, up to 512 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFINET  Services  - PG/OP communication  Yes - Ruivation/deactivation of DP slaves  Yes  Interface types  RJ 45 (Ethernet)  • 100 Mbps		
Interface types  RS 485 Number of ports  Protocols  PROFIBUS DP master PROFIBUS DP slave SIMATIC communication PROFIBUS DP master Number of connections, max. Number of DP slaves, max.  Requidistance PG/OP communication Yes PServices  PG/OP communication Yes PROFIBUS DP master No As; Of which 4 each reserved for ES and HMI 125; In total, up to 512 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFINET  Services PG/OP communication Yes Equidistance No Activation/deactivation of DP slaves PS Services PS Services PG/OP communication Yes PS Services PS		100, por usor program
RS 485 Number of ports  Number of ports  Protocols  PROFIBUS DP master PROFIBUS DP slave SIMATIC communication  PROFIBUS DP master Number of connections, max. Number of DP slaves, max.  Number of DP slaves, max.  PROFIBUS OP master Number of DP slaves, max.  Number of DP slaves, max.  PROFIBUS or PROFIBUS or PROFINET  Services  PROFIBUS or PROFINET  Yes		
<ul> <li>Number of ports</li> <li>Protocols</li> <li>PROFIBUS DP master</li> <li>PROFIBUS DP slave</li> <li>SIMATIC communication</li> <li>PROFIBUS DP master</li> <li>Number of connections, max.</li> <li>Number of DP slaves, max.</li> <li>Number of DP slaves, max.</li> <li>PROFIBUS or PROFINET</li> </ul> Services <ul> <li>PG/OP communication</li> <li>Equidistance</li> <li>Isochronous mode</li> <li>Activation/deactivation of DP slaves</li> </ul> Interface types RJ 45 (Ethernet) <ul> <li>Yes</li> <li>Yes</li> </ul> Yes <ul> <li>Yes</li> </ul> Yes <ul> <li>Yes</li> </ul> PJ 45 (Ethernet) <ul> <li>Yes</li> </ul> Yes <ul> <li>Yes <ul> <li>Yes</li> </ul> Yes <ul> <li>Yes <ul> <li>Yes</li> </ul> Yes <ul> <li>Yes <ul> <li>Yes</li> </ul> <ul> <li>Yes</li> </ul> Yes <ul> <li>Yes <ul> <li>Yes</li> </ul> <ul> <li>Yes</li> </ul> Yes <ul> <li>Yes <ul> <li>Yes</li> </ul></li></ul></li></ul></li></ul></li></ul></li></ul>		
Protocols  PROFIBUS DP master PROFIBUS DP slave SIMATIC communication PROFIBUS DP master Number of connections, max. Number of DP slaves, max. Services PG/OP communication PG/OP communic		
<ul> <li>PROFIBUS DP master</li> <li>PROFIBUS DP slave</li> <li>SIMATIC communication</li> <li>PROFIBUS DP master</li> <li>Number of connections, max.</li> <li>Number of DP slaves, max.</li> <li>PROFIBUS or PROFIBUS or PROFINET</li> </ul> Services <ul> <li>PG/OP communication</li> <li>Equidistance</li> <li>Isochronous mode</li> <li>Activation/deactivation of DP slaves</li> </ul> Interface types RJ 45 (Ethernet) <ul> <li>PROFIBUS or PROFINET</li> </ul> Yes <ul> <li>No</li> <li>Yes</li> </ul> Yes <ul> <li>Interface types</li> </ul> RJ 45 (Ethernet) <ul> <li>Yes</li> </ul> Yes <ul> <li>Yes</li> </ul> Yes <ul> <li>Yes</li> </ul> Yes <ul> <li>Yes</li> </ul> Yes <ul> <li>Yes <ul> <li>Yes</li> </ul> Yes <ul> <li>Yes <ul> <li>Yes</li> </ul> </li></ul></li></ul>	Number of ports	1
<ul> <li>PROFIBUS DP slave</li> <li>SIMATIC communication</li> <li>PROFIBUS DP master</li> <li>Number of connections, max.</li> <li>Number of DP slaves, max.</li> <li>Services</li> <li>— PG/OP communication</li> <li>— Equidistance</li> <li>— Isochronous mode</li> <li>— Activation/deactivation of DP slaves</li> <li>Interface types</li> <li>RJ 45 (Ethernet)</li> <li>100 Mbps</li> <li>Yes</li> </ul>		
<ul> <li>SIMATIC communication</li> <li>PROFIBUS DP master</li> <li>Number of connections, max.</li> <li>Number of DP slaves, max.</li> <li>Services</li> <li>— PG/OP communication</li> <li>— Equidistance</li> <li>— Isochronous mode</li> <li>— Activation/deactivation of DP slaves</li> <li>Interface types</li> <li>RJ 45 (Ethernet)</li> <li>■ 100 Mbps</li> <li>Yes</li> </ul>	<ul> <li>PROFIBUS DP master</li> </ul>	Yes
PROFIBUS DP master  ● Number of connections, max.  ● Number of DP slaves, max.  125; In total, up to 512 distributed I/O devices can be connected via ASi, PROFIBUS or PROFINET  Services  — PG/OP communication — Equidistance — Isochronous mode — Activation/deactivation of DP slaves  PJ 45 (Ethernet) ■ 100 Mbps  Yes	<ul> <li>PROFIBUS DP slave</li> </ul>	Yes
<ul> <li>Number of connections, max.</li> <li>Number of DP slaves, max.</li> <li>Number of DP slaves, max.</li> <li>125; In total, up to 512 distributed I/O devices can be connected via ASi, PROFIBUS or PROFINET</li> <li>Services</li> <li>— PG/OP communication</li> <li>— Equidistance</li> <li>— Isochronous mode</li> <li>— Activation/deactivation of DP slaves</li> <li>Interface types</li> <li>RJ 45 (Ethernet)</li> <li>100 Mbps</li> <li>Yes</li> <li>Yes</li> <li>Yes</li> <li>Yes</li> </ul>	SIMATIC communication	Yes
<ul> <li>Number of DP slaves, max.</li> <li>125; In total, up to 512 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFINET</li> <li>Services</li> <li>— PG/OP communication</li> <li>— Equidistance</li> <li>— Isochronous mode</li> <li>— Activation/deactivation of DP slaves</li> <li>Interface types</li> <li>RJ 45 (Ethernet)</li> <li>■ 100 Mbps</li> <li>Yes</li> </ul>	PROFIBUS DP master	
i, PROFIBUS or PROFINET  Services	<ul> <li>Number of connections, max.</li> </ul>	48; Of which 4 each reserved for ES and HMI
Services  - PG/OP communication Yes - Equidistance No - Isochronous mode No - Activation/deactivation of DP slaves Yes  Interface types  RJ 45 (Ethernet)  • 100 Mbps Yes	<ul> <li>Number of DP slaves, max.</li> </ul>	
<ul> <li>— PG/OP communication</li> <li>— Equidistance</li> <li>— Isochronous mode</li> <li>— Activation/deactivation of DP slaves</li> <li>Interface types</li> <li>RJ 45 (Ethernet)</li> <li>■ 100 Mbps</li> <li>Yes</li> </ul>		i, PROFIBUS or PROFINET
<ul> <li>— Equidistance</li> <li>— Isochronous mode</li> <li>— Activation/deactivation of DP slaves</li> <li>Interface types</li> <li>RJ 45 (Ethernet)</li> <li>■ 100 Mbps</li> <li>Yes</li> </ul>	Services	
— Isochronous mode — Activation/deactivation of DP slaves  Interface types  RJ 45 (Ethernet)  ■ 100 Mbps  Yes	<ul><li>— PG/OP communication</li></ul>	Yes
— Activation/deactivation of DP slaves  Interface types  RJ 45 (Ethernet)  ● 100 Mbps  Yes  Yes	— Equidistance	No
Interface types  RJ 45 (Ethernet)  • 100 Mbps  Yes	<ul> <li>Isochronous mode</li> </ul>	No
RJ 45 (Ethernet)  • 100 Mbps  Yes	<ul> <li>Activation/deactivation of DP slaves</li> </ul>	Yes
RJ 45 (Ethernet)  • 100 Mbps  Yes	Interface types	
• 100 Mbps Yes		
		Vas
▼ Autoriegotiation	·	100
		Yes

<ul> <li>Autocrossing</li> </ul>	Yes
Industrial Ethernet status LED	Yes
RS 485	
Transmission rate, max.	12 Mbit/s
Protocols	
PROFIsafe	Yes; V2.4 / V2.6
Number of connections	100, \$2.77 \$2.0
Number of connections, max.	128; via integrated interfaces of the CPU and connected CPs / CMs
Number of connections reserved for ES/HMI/web	10
<ul> <li>Number of connections via integrated interfaces</li> </ul>	88
<ul> <li>Number of connections per CP/CM</li> </ul>	32
Number of S7 routing paths	16
Redundancy mode	
H-Sync forwarding	Yes
Media redundancy	
<ul> <li>Media redundancy</li> </ul>	Yes; only via BusAdapter
— MRP	Yes; MRP Automanager according to IEC 62439-2 Edition 2.0, MRP Manager; MRP Client
<ul> <li>MRP interconnection, supported</li> </ul>	Yes; as MRP ring node according to IEC 62439-2 Edition 3.0
— 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	V
PG/OP communication	Yes; encryption with TLS V1.3 pre-selected
• S7 routing	Yes
Data record routing	Yes
S7 communication, as server	Yes
S7 communication, as client	Yes
User data per job, max.  Open IE communication	See online help (S7 communication, user data size)
TCP/IP	Yes
— Data length, max.	64 kbyte
several passive connections per port,	Yes
supported	
• ISO-on-TCP (RFC1006)	Yes
<ul><li>— Data length, max.</li></ul>	64 kbyte
• UDP	Yes
<ul><li>— Data length, max.</li></ul>	2 kbyte; 1 472 bytes for UDP broadcast
<ul><li>UDP multicast</li></ul>	Yes; max. 78 multicast circuits
• DHCP	Yes
• DNS	Yes
• SNMP	Yes
• DCP	Yes
• LLDP	Yes
Encryption	Yes; Optional
Web server	
• HTTP	Yes; Standard and user pages
• HTTPS	Yes; Standard and user pages
OPC UA	Vac IICaalii liaanaa rasuira d
Runtime license required     ODC LIA Client	Yes; "Small" license required
OPC UA Client  Application authoritiestics	Yes; Data Access (registered Read/Write), Method Call
Application authentication  Security policies	Yes  Available security policies: None Pasic128Psa15 Pasic256Psa15
— Security policies	Available security policies: None, Basic128Rsa15, Basic256Rsa15, Basic256Sha256
User authentication	"anonymous" or by user name & password
<ul><li>— Number of connections, max.</li><li>— Number of nodes of the client interfaces,</li></ul>	4 1 000
— Number of nodes of the client interfaces, recommended max.	1 000
Number of elements for one call of	300
OPC_UA_NodeGetHandleList/OPC_UA_ReadList/C max.	
<ul> <li>Number of elements for one call of OPC_UA_NameSpaceGetIndexList, max.</li> </ul>	20
Number of elements for one call of OPC_UA_MethodGetHandleList, max.	100

<ul> <li>Number of simultaneous calls of the client</li> </ul>	1
instructions for session management, per	
connection, max.	-
Number of simultaneous calls of the client instructions for data access, per connection, may	5
instructions for data access, per connection, max.	E 000
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, Alarms & Condition (A&C), Custom Address Space
<ul> <li>Application authentication</li> </ul>	Yes
Security policies	available security policies: None, Basic128Rsa15, Basic256Rsa15,
— Security policies	Basic256Sha256, Aes128Sha256RsaOaep, Aes256Sha256RsaPss
<ul> <li>User authentication</li> </ul>	"anonymous" or by user name & password
<ul> <li>— GDS support (certificate management)</li> </ul>	Yes
— Number of sessions, max.	32
Number of accessible variables, max.	50 000
Number of registerable nodes, max.	10 000
Number of subscriptions per session, max.	50
Sampling interval, min.	100 ms
— Sampling Interval, min. — Publishing interval, min.	200 ms
— Publishing interval, min.      — Number of server methods, max.	
	20
<ul> <li>Number of inputs/outputs per server method, max.</li> </ul>	20
- Number of monitored items, recommended	4 000; for 1 s sampling interval and 1 s send interval
max. — Number of server interfaces, max.	10 of each "Server interfaces" / "Companion specification" type and 20
	of the type "Reference namespace"
<ul> <li>Number of nodes for user-defined server interfaces, max.</li> </ul>	15 000
Alarms and Conditions	Yes
Number of program alarms	100
Number of alarms for system diagnostics	50
Further protocols	V MODDIJO TOD
MODBUS	Yes; MODBUS TCP
S7 message functions	Yes; MODBUS TCP
S7 message functions  Number of login stations for message functions, max.	Yes; MODBUS TCP
S7 message functions  Number of login stations for message functions, max.  Program alarms	
S7 message functions  Number of login stations for message functions, max.	32
S7 message functions  Number of login stations for message functions, max.  Program alarms	32 Yes 5 000; Program messages are generated by the "Program_Alarm"
S7 message functions  Number of login stations for message functions, max.  Program alarms  Number of configurable program messages, max.	32 Yes 5 000; Program messages are generated by the "Program_Alarm" block, ProDiag or GRAPH
S7 message functions  Number of login stations for message functions, max.  Program alarms  Number of configurable program messages, max.  Number of loadable program messages in RUN, max.  Test commissioning functions	32 Yes 5 000; Program messages are generated by the "Program_Alarm" block, ProDiag or GRAPH 2 500
Number of login stations for message functions, max.  Program alarms  Number of configurable program messages, max.  Number of loadable program messages in RUN, max.	32 Yes 5 000; Program messages are generated by the "Program_Alarm" block, ProDiag or GRAPH 2 500  Yes; Parallel online access possible for up to 5 engineering systems
S7 message functions  Number of login stations for message functions, max. Program alarms Number of configurable program messages, max.  Number of loadable program messages in RUN, max.  Test commissioning functions  Joint commission (Team Engineering) Status block	32 Yes 5 000; Program messages are generated by the "Program_Alarm" block, ProDiag or GRAPH 2 500
Number of login stations for message functions, max. Program alarms Number of configurable program messages, max.  Number of loadable program messages in RUN, max.  Test commissioning functions  Joint commission (Team Engineering) Status block Single step	32 Yes 5 000; Program messages are generated by the "Program_Alarm" block, ProDiag or GRAPH 2 500  Yes; Parallel online access possible for up to 5 engineering systems Yes; Up to 8 simultaneously (in total across all ES clients)
Number of login stations for message functions, max. Program alarms Number of configurable program messages, max.  Number of loadable program messages in RUN, max.  Test commissioning functions  Joint commission (Team Engineering) Status block Single step Number of breakpoints	32 Yes 5 000; Program messages are generated by the "Program_Alarm" block, ProDiag or GRAPH 2 500  Yes; Parallel online access possible for up to 5 engineering systems Yes; Up to 8 simultaneously (in total across all ES clients) No
Number of login stations for message functions, max. Program alarms Number of configurable program messages, max.  Number of loadable program messages in RUN, max.  Test commissioning functions  Joint commission (Team Engineering) Status block Single step Number of breakpoints Status/control	32 Yes 5 000; Program messages are generated by the "Program_Alarm" block, ProDiag or GRAPH 2 500  Yes; Parallel online access possible for up to 5 engineering systems Yes; Up to 8 simultaneously (in total across all ES clients) No 8
Number of login stations for message functions, max. Program alarms Number of configurable program messages, max.  Number of loadable program messages in RUN, max.  Test commissioning functions  Joint commission (Team Engineering) Status block Single step Number of breakpoints	32 Yes 5 000; Program messages are generated by the "Program_Alarm" block, ProDiag or GRAPH 2 500  Yes; Parallel online access possible for up to 5 engineering systems Yes; Up to 8 simultaneously (in total across all ES clients) No
Number of login stations for message functions, max. Program alarms Number of configurable program messages, max.  Number of loadable program messages in RUN, max.  Test commissioning functions  Joint commission (Team Engineering) Status block Single step Number of breakpoints  Status/control  • Status/control variable	32 Yes 5 000; Program messages are generated by the "Program_Alarm" block, ProDiag or GRAPH 2 500  Yes; Parallel online access possible for up to 5 engineering systems Yes; Up to 8 simultaneously (in total across all ES clients) No 8  Yes; without fail-safe
Number of login stations for message functions, max. Program alarms Number of configurable program messages, max.  Number of loadable program messages in RUN, max.  Test commissioning functions  Joint commission (Team Engineering) Status block Single step Number of breakpoints  Status/control  • Status/control variable	32 Yes 5 000; Program messages are generated by the "Program_Alarm" block, ProDiag or GRAPH 2 500  Yes; Parallel online access possible for up to 5 engineering systems Yes; Up to 8 simultaneously (in total across all ES clients) No 8  Yes; without fail-safe inputs/outputs, bit memories, DBs, peripheral I/Os (without fail-safe),
Number of login stations for message functions, max. Program alarms Number of configurable program messages, max.  Number of loadable program messages in RUN, max.  Test commissioning functions  Joint commission (Team Engineering) Status block Single step Number of breakpoints  Status/control  • Status/control variable • Variables	32 Yes 5 000; Program messages are generated by the "Program_Alarm" block, ProDiag or GRAPH 2 500  Yes; Parallel online access possible for up to 5 engineering systems Yes; Up to 8 simultaneously (in total across all ES clients) No 8  Yes; without fail-safe inputs/outputs, bit memories, DBs, peripheral I/Os (without fail-safe),
Number of login stations for message functions, max. Program alarms Number of configurable program messages, max.  Number of loadable program messages in RUN, max.  Test commissioning functions  Joint commission (Team Engineering) Status block Single step Number of breakpoints  Status/control  Status/control variable Variables  Number of variables, max.	32 Yes 5 000; Program messages are generated by the "Program_Alarm" block, ProDiag or GRAPH 2 500  Yes; Parallel online access possible for up to 5 engineering systems Yes; Up to 8 simultaneously (in total across all ES clients) No 8  Yes; without fail-safe inputs/outputs, bit memories, DBs, peripheral I/Os (without fail-safe), times, counters
Number of login stations for message functions, max. Program alarms Number of configurable program messages, max.  Number of loadable program messages in RUN, max.  Test commissioning functions  Joint commission (Team Engineering) Status block Single step Number of breakpoints  Status/control  Status/control  Status/control variable Variables  Number of variables, max. — of which status variables, max.	32 Yes 5 000; Program messages are generated by the "Program_Alarm" block, ProDiag or GRAPH 2 500  Yes; Parallel online access possible for up to 5 engineering systems Yes; Up to 8 simultaneously (in total across all ES clients) No 8  Yes; without fail-safe inputs/outputs, bit memories, DBs, peripheral I/Os (without fail-safe), times, counters  200; per job
Number of login stations for message functions, max. Program alarms Number of configurable program messages, max.  Number of loadable program messages in RUN, max.  Test commissioning functions  Joint commission (Team Engineering) Status block Single step Number of breakpoints  Status/control  Status/control  Status/control variable Variables  Number of variables, max. — of which status variables, max. — of which control variables, max.	32 Yes 5 000; Program messages are generated by the "Program_Alarm" block, ProDiag or GRAPH 2 500  Yes; Parallel online access possible for up to 5 engineering systems Yes; Up to 8 simultaneously (in total across all ES clients) No 8  Yes; without fail-safe inputs/outputs, bit memories, DBs, peripheral I/Os (without fail-safe), times, counters  200; per job
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Number of login stations for message functions, max. Program alarms Number of configurable program messages, max.  Number of loadable program messages in RUN, max.  Test commissioning functions  Joint commission (Team Engineering) Status block Single step Number of breakpoints  Status/control  Status/control variable Variables  Number of variables, max. — of which status variables, max. — of which control variables, max. Forcing Forcing Forcing, variables	32 Yes 5 000; Program messages are generated by the "Program_Alarm" block, ProDiag or GRAPH 2 500  Yes; Parallel online access possible for up to 5 engineering systems Yes; Up to 8 simultaneously (in total across all ES clients) No 8  Yes; without fail-safe inputs/outputs, bit memories, DBs, peripheral I/Os (without fail-safe), times, counters  200; per job 200; per job Yes; without fail-safe peripheral inputs/outputs (without fail-safe)
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Number of login stations for message functions, max. Program alarms Number of configurable program messages, max.  Number of loadable program messages in RUN, max.  Test commissioning functions  Joint commission (Team Engineering) Status block Single step Number of breakpoints  Status/control  Status/control  Status/control variable  Variables  Number of variables, max. — of which status variables, max. — of which control variables, max.  Forcing  Forcing  Forcing  Forcing, variables  Number of variables, max.  Diagnostic buffer  present  Number of entries, max.	Yes 5 000; Program messages are generated by the "Program_Alarm" block, ProDiag or GRAPH 2 500  Yes; Parallel online access possible for up to 5 engineering systems Yes; Up to 8 simultaneously (in total across all ES clients) No 8  Yes; without fail-safe inputs/outputs, bit memories, DBs, peripheral I/Os (without fail-safe), times, counters  200; per job 200; per job Yes; without fail-safe peripheral inputs/outputs (without fail-safe) 200 Yes
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Number of login stations for message functions, max. Program alarms Number of configurable program messages, max.  Number of loadable program messages in RUN, max.  Test commissioning functions  Joint commission (Team Engineering) Status block Single step Number of breakpoints  Status/control  Status/control  Status/control  Variables  Number of variables, max.  — of which status variables, max.  — of which control variables, max.  Forcing  Forcing  Forcing  Forcing, variables  Number of variables, max.  Diagnostic buffer  present  Number of entries, max.  — of which powerfail-proof  Traces	Yes 5 000; Program messages are generated by the "Program_Alarm" block, ProDiag or GRAPH 2 500  Yes; Parallel online access possible for up to 5 engineering systems Yes; Up to 8 simultaneously (in total across all ES clients) No 8  Yes; without fail-safe inputs/outputs, bit memories, DBs, peripheral I/Os (without fail-safe), times, counters  200; per job 200; per job Yes; without fail-safe peripheral inputs/outputs (without fail-safe) 200  Yes 1 000 500

Diagnostics indication LED	
RUN/STOP LED	Yes
• ERROR LED	Yes
MAINT LED	Yes
Monitoring of the supply voltage (PWR-LED)     Connection display LINK TY/DY	Yes
Connection display LINK TX/RX	Yes
Supported technology objects	
Motion Control	Yes; Note: The number of technology objects affects the cycle time of the PLC program; selection guide via the TIA Selection Tool
<ul> <li>Number of available Motion Control resources for technology objects</li> </ul>	1 120
<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
— per external encoder	80
— per output cam	20
— per cam track	160
— per probe	40
Positioning axis	
Number of positioning axes at motion control	11
cycle of 4 ms (typical value)	
<ul> <li>Number of positioning axes at motion control cycle of 8 ms (typical value)</li> </ul>	14
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	υ, το το το το 3 το 3 το 1 το 1 το 1 το 1
High-speed counter	Yes
Standards, approvals, certificates	100
Highest safety class achievable in safety mode     Performance level according to ISO 13849-1	PLe
SIL acc. to IEC 61508	SIL 3
Probability of failure (for service life of 20 years and repa  — Low demand mode: PFDavg in accordance	< 2.00E-05
with SIL3	\ 2.00E-03
High demand/continuous mode: PFH in accordance with SIL3	< 1.00E-09
Ambient conditions	
Ambient temperature during operation	00 00 N
horizontal installation, min.	-30 °C; No condensation
<ul> <li>horizontal installation, max.</li> </ul>	60 °C
vertical installation, min.	-30 °C; No condensation
vertical installation, max.	50 °C
Altitude during operation relating to sea level	
Installation altitude above sea level, max.	5 000 m; Restrictions for installation altitudes > 2 000 m, see manual
configuration / header	
configuration / programming / header	
Programming language	
— LAD	Yes; incl. failsafe
— FBD	Yes; incl. failsafe
— STL	Yes
— SCL	Yes
— GRAPH	Yes
Know-how protection	100
·	Yes
User program protection/password protection     Convergetion	Yes
Copy protection     Plack protection	
Block protection	Yes
Access protection	V
protection of confidential configuration data	Yes
<ul> <li>Protection level: Write protection</li> </ul>	Yes
<ul> <li>Protection level: Read/write protection</li> </ul>	Yes
- Destantion level: White marketic C. E. T. C.	V
<ul> <li>Protection level: Write protection for Failsafe</li> </ul>	Yes

<ul> <li>Protection level: Complete protection</li> </ul>	Yes
programming / cycle time monitoring / header	
<ul> <li>lower limit</li> </ul>	adjustable minimum cycle time
• upper limit	adjustable maximum cycle time
Dimensions	
Width	100 mm
Height	117 mm
Depth	75 mm
Weights	
Weight, approx.	265 g
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