## SIEMENS

## Data sheet

## 6ES7515-2AN03-0AB0



SIMATIC S7-1500, CPU 1515-2 PN, central processing unit with work memory 1 MB for program and 4.5 MB for data, 1st interface: PROFINET IRT with 2-port switch, 2nd interface: PROFINET RT, 6 ns bit performance, SIMATIC Memory Card required \*\*\* approvals and certificates according to entry 109816732 at support.industry.siemens.com to be considered! \*\*\*

General information	
Product type designation	CPU 1515-2 PN
HW functional status	FS01
Firmware version	V3.0
Product function	
<ul> <li>I&amp;M data</li> </ul>	Yes; I&M0 to I&M3
Isochronous mode	Yes; Distributed and central; with minimum OB 6x cycle of 375 $\mu s$ (distributed) and 1 ms (central)
Engineering with	
<ul> <li>STEP 7 TIA Portal configurable/integrated from version</li> </ul>	V18 (FW V3.0); with older TIA Portal versions configurable as 6ES7515-2AM02-0AB0
Configuration control	
via dataset	Yes
Display	
Screen diagonal [cm]	6.1 cm
Control elements	
Number of keys	8
Mode buttons	2
Supply voltage	
Rated value (DC)	24 V
permissible range, lower limit (DC)	19.2 V
permissible range, upper limit (DC)	28.8 V
Reverse polarity protection	Yes
Mains buffering	
<ul> <li>Mains/voltage failure stored energy time</li> </ul>	5 ms
Repeat rate, min.	1/s
Input current	
Current consumption (rated value)	0.83 A
Current consumption, max.	1.03 A
Inrush current, max.	1.15 A; Rated value
l²t	0.6 A <sup>2</sup> ·s
Power	
Infeed power to the backplane bus	12 W
Power consumption from the backplane bus (balanced)	6.2 W
Power loss	
Power loss, typ.	7.9 W
Memory	
Number of slots for SIMATIC memory card	1
SIMATIC memory card required	Yes
Work memory	



<ul> <li>integrated (for program)</li> </ul>	1 Mbyte
• integrated (for data)	4.5 Mbyte
Load memory	
<ul> <li>Plug-in (SIMATIC Memory Card), max.</li> </ul>	32 Gbyte
Backup	
<ul> <li>maintenance-free</li> </ul>	Yes
CPU processing times	
for bit operations, typ.	6 ns
for word operations, typ.	7 ns
for fixed point arithmetic, typ.	9 ns
for floating point arithmetic, typ.	37 ns
CPU-blocks	
Number of elements (total)	8 000; Blocks (OB, FB, FC, DB) and UDTs
DB	
<ul> <li>Number range</li> </ul>	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.	4.5 Mbyte; For DBs with absolute addressing, the max. size is 64 KB
FB	
Number range	0 65 535
• Size, max.	1 Mbyte
FC	0 65 535
<ul><li>Number range</li><li>Size, max.</li></ul>	0 65 535 1 Mbyte
• Size, max. OB	
• Size, max.	1 Mbyte
Number of free cycle OBs	100
Number of time alarm OBs	20
<ul> <li>Number of delay alarm OBs</li> </ul>	20
Number of cyclic interrupt OBs	20; With minimum OB 3x cycle of 250 µs
<ul> <li>Number of process alarm OBs</li> </ul>	50
Number of DPV1 alarm OBs	3
<ul> <li>Number of isochronous mode OBs</li> </ul>	2
<ul> <li>Number of technology synchronous alarm OBs</li> </ul>	2
Number of startup OBs	100
<ul> <li>Number of asynchronous error OBs</li> </ul>	4
<ul> <li>Number of synchronous error OBs</li> </ul>	2
<ul> <li>Number of diagnostic alarm OBs</li> </ul>	1
Nesting depth	
<ul> <li>per priority class</li> </ul>	24
Counters, timers and their retentivity	
S7 counter	
Number	2 048
Retentivity	
— adjustable	Yes
IEC counter	
• Number	Any (only limited by the main memory)
Retentivity	N .
— adjustable	Yes
S7 times	2.049
Number     Potentivity	2 048
Retentivity	Yes
— adjustable 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.	512 kbyte; In total; available retentive memory for bit memories, timers,
	counters, DBs, and technology data (axes): 472 KB
Extended retentive data area (incl. timers, counters, flags),	4.5 Mbyte; When using PS 6 0W 24/48/60 V DC HF
max.	
Flag	
• Size, max.	16 kbyte
6ES75152AN030AB0	Subject to change without notice



Number of clock memories	8: 8 clock memory bit grouped into one clock memory byte
Number of clock memories     Data blocks	8; 8 clock memory bit, grouped into one clock memory byte
Retentivity adjustable	Yes
Retentivity preset	No
Local data	10
<ul> <li>per priority class, max.</li> </ul>	64 kbyte; max. 16 KB per block
Address area	
Number of IO modules	8 192; max. number of modules / submodules
I/O address area	
• 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)	8 kbyte
— Outputs (volume)	8 kbyte
per CM/CP	
— Inputs (volume)	8 kbyte
— Outputs (volume)	8 kbyte
Subprocess images	
Number of subprocess images, max.	32
Hardware configuration	
Number of distributed IO systems Number of DP masters	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)
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	
Modules per rack, max.	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
Time of day	
Clock	
• Туре	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
• in AS, master	Yes
• in AS, slave	Yes
on Ethernet via NTP	Yes
Interfaces	
Number of PROFINET interfaces	2
1. Interface	
Interface types	
• RJ 45 (Ethernet)	Yes; X1
Number of ports	2
integrated switch	Yes
Protocols  IP protocol	Yes; IPv4
PROFINET IO Controller	Yes, IPV4 Yes
PROFINETIO Controller     PROFINETIO Device	Yes
SIMATIC communication	Yes
Open IE communication	Yes; Optionally also encrypted
Web server	Yes
Media redundancy	Yes



PROFINET IO Controller	
Services	
— PG/OP communication	Yes
— Isochronous mode	Yes
— Direct data exchange	Yes; Requirement: IRT and isochronous mode (MRPD optional)
— IRT	Yes
— PROFlenergy	Yes; per user program
— Prioritized startup	Yes; Max. 32 PROFINET devices
— Number of connectable IO Devices, max.	256; In total, up to 1 000 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFINET
<ul> <li>— Of which IO devices with IRT, max.</li> </ul>	64
<ul> <li>— Number of connectable IO Devices for RT,</li> </ul>	256
max.	
— of which in line, max.	256
<ul> <li>Number of IO Devices that can be</li> </ul>	8; in total across all interfaces
simultaneously activated/deactivated, max.	
<ul> <li>Number of IO Devices per tool, max.</li> </ul>	8
— Updating times	The minimum value of the update time also depends on communication
	share set for PROFINET IO, on the number of IO devices, and on the quantity of configured user data
Update time for IRT	
— for send cycle of 250 µs	250 $\mu s$ to 4 ms; Note: In the case of IRT with isochronous mode, the
	minimum update time of 375 $\mu s$ of the isochronous OB is decisive
— for send cycle of 500 μs	500 µs to 8 ms
— for send cycle of 1 ms	1 ms to 16 ms
— for send cycle of 2 ms	2 ms to 32 ms
— for send cycle of 4 ms	4 ms to 64 ms
<ul> <li>— With IRT and parameterization of "odd" send</li> </ul>	Update time = set "odd" send clock (any multiple of 125 µs: 375 µs, 625
cycles	µs 3 875 µs)
Update time for RT	050 1 400
— for send cycle of 250 µs	250 µs to 128 ms
— for send cycle of 500 µs	500 µs to 256 ms
— for send cycle of 1 ms	1 ms to 512 ms
— for send cycle of 2 ms	2 ms to 512 ms
— for send cycle of 4 ms	4 ms to 512 ms
PROFINET IO Device	
Services	Vee
— PG/OP communication	Yes
— Isochronous mode	No
— IRT	Yes
— PROFlenergy	Yes; per user program
— Shared device	Yes
<ul> <li>— Number of IO Controllers with shared device, max.</li> </ul>	4
max. — activation/deactivation of I-devices	Yes; per user program
— Asset management record	Yes; per user program
2. Interface	
Interface types	
RJ 45 (Ethernet)	Yes; X2
Number of ports	1
integrated switch	No
Protocols	
IP protocol	Yes; IPv4
PROFINET IO Controller	Yes
PROFINET IO Device	Yes
SIMATIC communication	Yes
Open IE communication	Yes; Optionally also encrypted
Web server	Yes
Media redundancy	No
PROFINET IO Controller	
Services	
— PG/OP communication	Yes
— Isochronous mode	No
— Direct data exchange	No
— IRT	No



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<ul> <li>Number of connectable I/O Devices, max.</li> <li>Number of connectable I/O Devices for RT, max.</li> <li>- Aumber of Connectable I/O Devices for RT, max.</li> <li>- of which in line, max.</li> <li>- of which in line, max.</li> <li>- and the of I/O Devices for RT.</li> <li>- Number of I/O Devices for I/O Devices for RT.</li> <li>- Number of I/O Devices for I/O Devices for I/O RAME</li> <li>- Number of I/O Devices for I/O RAME</li> <li>- PSOP Communication</li> <li>- Number of Connections reserved for ES-MMUveb</li> <li>- Number of connections reserved for ES-MMUveb</li> <li>- Number of connections reserved for ES-MMUveb</li> <li>-</li></ul>	— PROFlenergy	Yes; per user program
AS-L PROFIGUES or PROFINET AS-L PROFIGUES or PROFINET AS-L PROFIGUES OF PROFINET AS		
<ul> <li>- Number of connectable I/D Devices for RT, max.</li> <li>- of which in line, max.</li> <li>32</li> <li>Number of I/D Devices that can be simultaneously activated/deact/welds, max.</li> <li>Number of I/D Devices parton, max.</li> <li>- Updating times activated/deact/welds, max.</li> <li>- Updating times of I/D Devices parton, max.</li> <li>- The minimum value of the update time also depends on communication stars act of PROFINET I/O, on the number of I/D devices, and on the quantity of configured user data</li> <li>- Or send cycle of 1 ms</li> <li>- For send cycle of 1 ms</li> <li>- For send cycle of 1 ms</li> <li>- PCOP communication</li> <li>- For send cycle of 1 ms</li> <li>- PCOP communication</li> <li>- For send cycle of 1 ms</li> <li>- PCOP communication</li> <li>- For send cycle of 1 ms</li> <li>- PCOP communication</li> <li>- For send cycle of 1 ms</li> <li>- PCOP communication</li> <li>- For send cycle of 1 ms</li> <li>- PCOP communication</li> <li>- For send cycle of 1 ms</li> <li>- PCOP communication</li> <li>- For send cycle of 1 ms</li> <li>- PCOP communication</li> <li>- For send cycle of 1 ms</li> <li>- PCOP communication</li> <li>- For send cycle of 1 ms</li> <li>- PACIP communication</li> <li>- For send cycle of 1 ms</li> <li>- PACIP communication</li> <li>- For send cycle of 1 ms</li> <li>- PACIP communication</li> <li>- For send cycle of 1 ms</li> <li>- Shared device</li> <li>- Asset management record</li> <li>- Yes</li> <li>- Autorossing</li> <li>- Number of connections reavered for ESHML/Web</li> <li>Number of connections relevice in the first set set se</li></ul>	- Number of connectable IO Devices, max.	
max.     32       - Number of IO Devices that can be simultaneoully activated deactivated, max.     8; In total across all interfaces       - Number of IO Devices per tool, max.     - Update time also depends on communication shares set for PROFINET IO, on the number of IO devices, and on the quartity of configured user data       Update time for RT     1 ms to 512 ms       - FROFNET IO Device     -       Services     -       - Information of the service of the update time also depends on communication share set for PROFNET IO.     -       - Information of the update time also depends on communication share set for PROFNET IO.     -       - Information of the update time also depends on communication share set for PROFINET IO.     -       - Information of the update time also depends on communication share set for PROFNET IO.     -       - Information of the update time also depends on communication shares set for PROFNET IO.     -       - Information of the update time also depends on communication shares set for PROFNET IO.     -       - Information of the update time also depends on communication shares set for PROFNET IO.     -       - PROFNET IO Device     -       - Stand device     Yes       - Advatorogen on the update time also depends on communication shares set for PROFNET IO.     -       - Advatorogen on the update time also depends on communication shares set for PROFNET IO.     -       - Advatorogen on the update set management record     Yes	<ul> <li>— Number of connectable IO Devices for RT.</li> </ul>	
Number of IO Devices that can be simultaneously activate/deactivated, max.     8      Number of IO Devices per tool, max.     8      Update time for RT	max.	
simultaneously activated/deactivated, max. - Number of IO Devices per tool, max. - Updating times - Updating times - for send cycle of 1 ms - f		32
		8; in total across all interfaces
— Updating times       The minimum value of the update time also depends on communication equatily of configured user data         — for send cycle of 1 ms       1 ms to 512 ms         — for send cycle of 1 ms       1 ms to 512 ms         PROFINET 100 on the unumber of 10 devices, and on the quantity of configured user data       1000000000000000000000000000000000000		
share set for PROFINET IO, on the number of IO devices, and on the quarter data Update time for RT — for send cycle of 1 ns PROFINET IO Device Services — PG/OP communication — RT — PROFicenergy — PROFicient Swith shared device, — Number of IO Controllers with shared device, — Number of Controllers with shared device, — Number of Controllers with shared device, — Number of connections, max. — Number of Strouting paths — HSP, forwarding — MRP — MRP — MRP — MRP Marconnection, supported — MRP interconnection, secure — PG/OP communication — Strouting the right max. See online help (ST communication, secure — Strouting the right max. — See online help (ST communication, user data size) <b>Deputition</b> — Data length, max. — Obtal len		
update time for RT          for send cycle of 1 ms         1 ms to 512 ms           PROFINET IO Device         -           Services         -           PGUP communication         No           IRT         No           PROFILE risponder         Yes           PROFILE risponder         Yes           PROFILE risponder         Yes           PROFILE risponder         Yes           Profitized startup         No           Shard device         Yes           Number of IO Controllers with shared device, max.         -           diviation/deactivation of I-devices         Yes: per user program           activation/deactivation of Yes         Yes           Momport of IO Controllers with shared device, max.         -           diviation/deactivation of Yes         Yes           Asset management record         Yes           Modive of connections resored for Yes         -           Number of OD Controllers with shared device, max.         -           Modive of connections resored for ESHMU/web         10           Number of connections reserved for ESHMU/web         10           Number of connections reserved for ESHMU/web         126           Media redundancy </td <td></td> <td></td>		
PROPINET IO Device         Services            — PGOP communication             — Is activation ande             — Is activation ande             — Is activation ande             — PROFInerry             — PROFinerry             — Protochilded startup             — Protochilded startup             — Shared device             — Number of IO Controllers with shared device,             max.             — activation/deactivation of I-devices             • Industrial Element)             • Autoregotistion             • Autoregotistion             • Mumber of connections, max.             • Number of connections, supported </td <td>Update time for RT</td> <td></td>	Update time for RT	
Services         - PGOP communication       Yes         - Isachronous mode       No         IRT       No         PROFlenergy       Yes; per user program         Prioritized startup       No         Shared device       Yes         Number of IO Controllers with shared device, max.	— for send cycle of 1 ms	1 ms to 512 ms
	PROFINET IO Device	
- Isochronous mode     No       - IRT     No       - PROFlenergy     Yes, per user program       - Number of IO Controllers with shared device, max.     4       - 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, hutches, the status LED       Protectors     Yes       - Number of connections, max.     256; via integrated interfaces of the CPU and connected CPs / CMs       Number of connections reserved for ES/HMI/web     10       Number of connections reserved for ES/HMI/web     10       Number of strong this therfaces     128       Number of strong this therfaces     128       Number of strong this therfaces     128       Number of strong this parted interfaces (X1)     Ves; is a NRP Automanager according to IEC 62439-2 Edition 3.0       - MRP     Yes; is RRP Automanager according to IEC 62439-2 Edition 3.0       - MRP     Yes; is RRP Automanager according to IEC 62439-2 Edition 3.0		
- Prioritized startup     No       - Shared device     Yes       - Number of IO Controllers with shared device, rax.     -       - activation/deactivation of I-devices     Yes; per user program       - Asset management record     Yes; per user program       Interface types     -       RI 45 (Ethernet)     -       • Autorospination     Yes       • Profocols     -       Profocoris     -       • Number of connections, max.     256; via integrated interfaces of the CPU and connected CPs / CMs       • Number of connections via integrated interfaces     128       • Number of connections via integrated interfaces     16       Redundancy mode     -       • H-Sync forwarding     Yes       Media redundancy     -       • MRP     Manager: MRP Clein       • MRPD     Yes       • MRPD     Yes       • Storburg time on line break, typ.     200 ms; For MRP. Jumpless for MRPD       • Data length, max.     See online help (S7 communication, user data size)       Open Le communication, as seitert		
<ul> <li>Shared device</li> <li>Number of IO Controllers with shared device, max.</li> <li>activation/deactivation of 1/devices</li> <li>Yes; per user program</li> <li>activation/deactivation of 1/devices</li> <li>Yes; per user program</li> </ul> Interface types RJ45 (Ethernet) Ves <ul> <li>(100 Mbps</li> <li>Yes</li> <li>Autonegotiation</li> <li>Yes</li> <li>None</li> <li>Number of connections, max.</li> <li>Xes</li> <li>Yes forwarding</li> <li>Number of connections reserved for ES/HMUweb</li> <li>Number of connections via integrated interfaces</li> <li>Number of connections via integrated interfaces</li> <li>Number of connections via integrated interfaces</li> <li>Number of connections with the proves</li> <li>Number of connections with the proves</li> <li>Number of connections with RPN</li> <li>Yes</li> <li>Media redundancy</li> <li>MRP Automanager according to IEC 62439-2 Edition 2.0, MRP</li> <li>Manger, MRP Client</li> <li>MRP Automanager according to IEC 62439-2 Edition 3.0</li> <li>Yes; Recryterment: IRT</li> <li>Switchover time on line break, typ.</li> <li>Out an exerit passive connections actient<td></td><td></td></li></ul>		
max.		
		ч 
Asset management record       Yes; per user program         Interface types         RJ 45 (Ethenet)         • 100 Mbps       Yes         • Autonegolialion       Yes         ProCocols       Yes         ProColosin       256; via integrated interfaces of the CPU and connected CPs / CMs         • Number of connections reserved for ES/HMI/web       10         • Number of connections reserved for ES/HMI/web       16         Redundancy mode       -         • H-Sync forwarding       Yes         Media redundancy       only via 1st interface (X1)         - MRP       Yes; MRP Automanager according to IEC 62439-2 Edition 2.0, MRP Marager, MRP Client         - MRPD       Yes; Requirement: IRT         - Number of stations in the ring, max.       50         SIMATIC communication       Yes; encryption with TLS V1.3 pre-selected         • S7 communication, as server       Yes         • S7 communication, as server       Yes     <		Yes; per user program
Interface types     Interface types       RJ 45 (Ethernet)     Yes       • 100 Mbps     Yes       • Autoregotiation     Yes       • Autoregotiation     Yes       • Autoregotiation     Yes       • Industrial Ethernet status LED     Yes       PROFIsate     No       Number of connections, max.     256; via integrated interfaces of the CPU and connected CPs / CMs       • Number of connections via integrated interfaces     10       • Number of connections via integrated interfaces     128       • Number of S7 routing paths     16       Redundancy mode     Yes       • H-Sync forwarding     Yes       MRP     Only via 1st interface (X1)       - MRP     Yes; MRP Automanager according to IEC 62439-2 Edition 2.0, MRP Manager, MRP Client       - MRP     Yes; NRP Automanager according to IEC 62439-2 Edition 3.0       Yes; Requirement: IRT     200 ms; For MRP, bumpless for MRPD       - Switchover time on line break, typ.     200 ms; For MRP, bumpless for MRPD       - Switchover time on line ing, max.     50       SIMATIC communication     Yes; encryption with TLS V1.3 pre-selected       • S7 communication, as client     Yes       • Data length, max.     G4 kbyte       • User data per job, max.     Ge according to grad asize)       Opent Ec communication     Yes   <		
RJ 45 (Ethernet) <ul> <li>100 Mbps</li> <li>Yes</li> <li>Autocrossing</li> <li>Yes</li> <li>Autocrossing</li> <li>Yes</li> <li>Industrial Ethernet status LED</li> <li>Yes</li> <li>Protocols</li> <li>PROFIsafe</li> <li>No</li> <li>Number of connections, max.</li> <li>Number of connections reserved for ES/HMI/web</li> <li>Number of sonnections reserved for ES/HMI/web</li> <li>Number of sonnections reserved for ES/HMI/web</li> <li>Number of sonnections reserved for ES/HMI/web</li> <li>Number of S7 routing paths</li> <li>Redundancy mode</li> <li>H-Sync forwarding</li> <li>Yes</li> <li>Media redundancy</li> <li>MRP</li> <li>Media redundancy</li> <li>MRP</li> <li>Yes (MRP Automanager according to IEC 62439-2 Edition 2.0, MRP Manager, MRP Client</li> <li>MRPD</li> <li>Switchover time on line break, typ.</li> <li>Number of stations in the ring, max.</li> <li>S0</li> <li>SIMATIC communication</li> <li>Yes (encryption with TLS V1.3 pre-selected</li> <li>Yes</li> <li>Data record routing</li> <li>Yes</li> <li>See online help (S7 communication, as server</li> <li>Yes</li> <li>See online help (S7 communication, as client</li> <li>Yes</li> <li>User data per job, max.</li> <li>See online help (S7 communication, user data size)</li> <li>Open IE communication</li> <li>Yes</li> <li>Data length, max.</li> <li>G4 kbyte</li> <li>Yes</li> <li>Data length, max.</li> <li>G4 kbyte</li> <li>Data length, max.</li> <li>G4 kbyte</li> <li>Data length, max.</li> <li>G4 kbyte</li> <li>Nearching (S7 communication)</li> <li>Max (S6 kbyte</li> <li>Non-TCP (RFC1006)</li></ul>		
• 100 Mbps     Yes       • Autonegotiation     Yes       • Autorossing     Yes       • Industrial Ethernet status LED     Yes       PROFIsafe     No       Number of connections        • Number of connections via integrated interfaces     256; via integrated interfaces of the CPU and connected CPs / CMs       • Number of connections via integrated interfaces     10       • Number of connections via integrated interfaces     128       • Number of S7 routing paths     16       Redundancy mode        • H-Syne forwarding     Yes       • MRP     Yes (MRP Automanager according to IEC 62439-2 Edition 2.0, MRP Manager; MRP Client       • MRP     Yes; NRP Automanager according to IEC 62439-2 Edition 2.0, MRP Manager; MRP Client       • MRP     Yes; NRP Automanager according to IEC 62439-2 Edition 3.0       Yes; as IMRP Ting node according to IEC 62439-2 Edition 3.0     Yes; Requirement. IRT       • MRP     Yes; sin KRP Client     Yes; sin KRP 2.00       • MRP     Yes; encryption with TLS V1.3 pre-selected     Yes; Stouting       • S7 routing     Yes     Yes       • S16MATIC communication     Yes     Yes       • S7 communication, as server     Yes     Yes       • S7 communication, as server     Yes     Yes       • S7 communication, as server     Yes     Yes<		
• AutonogotiationYes• AutocrossingYes• AutocrossingYes• AutocrossingYes• Industrial Ethemet status LEDYes• Protocols•• RADFleafeNo• Number of connections, max.256; via integrated interfaces of the CPU and connected CPs / CMs• Number of connections via integrated interfaces10• Number of sonnections via integrated interfaces128• Number of Sr outing paths16• Redundancy mode•• H-Sync forwardingYes• Media redundancyonly via 1st interface (X1)- MRPMager; MRP Automanager conding to IEC 62439-2 Edition 2.0, MRP Manager; MRP Client- MRP Interconnection, supportedYes; as MRP ring node according to IEC 62439-2 Edition 3.0- MRPDYes; mager; MRP Client- Switchover time on line break, typ.200 ms; For MRP Dient- Number of stations in the ring, max.50SIMATIC communicationYes; encryption with TLS V1.3 pre-selected• S7 communication, as serverYes• Data record routingYes• S7 communication, as serverYes• User data per job, max.See online help (S7 communication, user data size)Open IE communicationYes• Several passive connections per port, supportedYes• Data length, max.64 kbyte• Data length, max.64 kbyte		Yes
• Autocrossing       Yes         • Industrial Ethernet status LED       Yes         PROFisafe       No         Number of connections max.       256; via integrated interfaces of the CPU and connected CPs / CMs         • Number of connections reserved for ES/HMI/web       10         • Number of connections via integrated interfaces       128         • Number of ST routing paths       16         • Redundancy       redundancy         - Media redundancy       only via 1st interface (X1)         - MRP       Yes; MRP Automanager according to IEC 62439-2 Edition 2.0, MRP         Manager; MRP Client       Yes; Requirement: IRT         - MRPD       Yes; Requirement: IRT         - Switchover time on line break, typ.       200 ms; For MRP, bumpless for MRPD         - Number of stations in the ring, max.       50         SIMATIC communication       Yes; encryption with TLS V1.3 pre-selected         * S7 conting       Yes         • Data record routing       Yes         • S7 communication, as server       Yes         • Data length, max.       See online help (S7 communication, user data size)         <		
Industrial Ethernet status LED Yes  PROFIsafe No No Number of connections, max.     256; via integrated interfaces of the CPU and connected CPs / CMs     Number of connections reserved for ES/HMI/web     Number of connections via integrated interfaces     Number of sonnections via integrated interfaces     Number of ST routing paths     16 Redundancy mode     H-Sync forwarding     Yes Media redundancy     Only via 1st interface (X1)     - MRP     Media redundancy     Only via 1st interface (X1)     - MRP     Manager: MRP Automanager according to IEC 62439-2 Edition 2.0, MRP     Manager: MRP Client     - MRP D     Yes; as MRP ring node according to IEC 62439-2 Edition 3.0     - MRPD     Yes; marphy Client     - MRP Interconnection, supported     Yes; as MRP ring node according to IEC 62439-2 Edition 3.0     - MRPD     Yes; percent regions for MRPD     Yes; marphy Client     Simport of stations in the ring, max.     So SIMATIC communication     Yes     Yes     ST communication     Yes     S7 communication, as client     Yes     S7 communication, as client     Yes     S7 communication     TCP/IP     - Data length, max.     See online help (S7 communication, user data size)     Open IE communication     Yes     See online help (S7 communication, user data size)     Open IE communication     Yes     See online help (S7 communication, user data size)     Open IE communication     Yes     See online help (S7 communication, user data size)     Open IE communication     Yes     See online help (S7 communication, user data size)     Open IE communication     Yes     See online help (S7 communication, user data size)     Open IE communication     Yes     Sec online help (S7 communication, user data size)     Open IE communication     Sec online help (S7 communication, user data size)     Open IE communication     Sec online help (S7 communication, user data size)     Open IE communication     Sec online help (S7 communication, user data size)     Open IE communication     Sec online help (S7 communication, user data	-	
PROFIsafe       No         Number of connections       256; via integrated interfaces of the CPU and connected CPs / CMs         Number of connections reserved for ES/HMI/web       10         Number of connections via integrated interfaces       128         Number of S7 routing paths       16         Redundancy mode       Yes         Media redundancy       Yes         Media redundancy       only via 1st interface (X1)         - MRP       Yes; MRP Automanager according to IEC 62439-2 Edition 2.0, MRP Manager; MRP Client         - MRPD       Yes; Requirement: IRT         - Switchover time on line break, typ.       200 ms; For MRP, bumpless for MRPD         - Number of stations in the ring, max.       50         SIMATIC communication       Yes; encryption with TLS V1.3 pre-selected         • S7 routing       Yes         • Data record routing       Yes         • User data per job, max.       See online help (S7 communication, user data size)         Open IE communication       Yes         • TCP/IP       Yes         - Data length, max.       64 kbyte         • ISO-on-TCP (RFC1006)       Yes         • Data length, max.       64 kbyte	-	
PROFIsafe       No         Number of connections       256; via integrated interfaces of the CPU and connected CPs / CMs         Number of connections reserved for ES/HMI/web       10         Number of connections via integrated interfaces       128         Number of S7 routing paths       16         Redundancy mode       Yes         Media redundancy       Yes         Media redundancy       only via 1st interface (X1)         - MRP       Yes; MRP Automanager according to IEC 62439-2 Edition 2.0, MRP Manager; MRP Client         - MRPD       Yes; Requirement: IRT         - Switchover time on line break, typ.       200 ms; For MRP, bumpless for MRPD         - Number of stations in the ring, max.       50         SIMATIC communication       Yes; encryption with TLS V1.3 pre-selected         • S7 routing       Yes         • Data record routing       Yes         • User data per job, max.       See online help (S7 communication, user data size)         Open IE communication       Yes         • TCP/IP       Yes         - Data length, max.       64 kbyte         • ISO-on-TCP (RFC1006)       Yes         • Data length, max.       64 kbyte		
Number of connections, max.       256; via integrated interfaces of the CPU and connected CPs / CMs         • Number of connections, reserved for ES/HMI/web       10         • Number of connections via integrated interfaces       128         • Number of S7 routing paths       16         • H-Sync forwarding       Yes         • Hedia redundancy       only via 1st interface (X1)         - Media redundancy       only via 1st interface (X1)         - MRP       Yes; MRP Automanager according to IEC 62439-2 Edition 2.0, MRP Manager; MRP Client         - MRP       Yes; as MRP ring node according to IEC 62439-2 Edition 3.0         - MRPD       Yes; as MRP ring node according to IEC 62439-2 Edition 3.0         - MRPD       Yes; sequirement: IRT         - Switchover time on line break, typ.       200 ms; For MRP, bumpless for MRPD         - Number of stations in the ring, max.       50         SIMATIC communication       Yes; encryption with TLS V1.3 pre-selected         • S7 routing       Yes         • Data record routing       Yes         • S7 communication, as server       Yes         • S7 communication, as server       Yes         • S7 communication, as server       Yes         • Data length, max.       64 kbyte         - several passive connections per port, supported       Yes <td>Protocols</td> <td></td>	Protocols	
• Number of connections, max.       256; via integrated interfaces of the CPU and connected CPs / CMs         • Number of connections reserved for ES/HMI/web       10         • Number of S7 routing paths       16         Redundancy mode       16         • H-Sync forwarding       Yes         Media redundancy       only via 1st interface (X1)         - MRP       Yes; MRP Automanager according to IEC 62439-2 Edition 2.0, MRP         Manager; MRP Client       Yes; as MRP ring node according to IEC 62439-2 Edition 3.0         - MRP interconnection, supported       Yes; as MRP ring node according to IEC 62439-2 Edition 3.0         - MRPD       Yes; Requirement: IRT         - Switchover time on line break, typ.       200 ms; For MRP, bumpless for MRPD         - Number of stations in the ring, max.       50         SIMATIC communication       Yes; encryption with TLS V1.3 pre-selected         • S7 routing       Yes         • Data record routing       Yes         • S7 communication, as server       Yes         • S7 communication, as server       Yes         • S7 communication, as server       Yes         • User data per job, max.       See online help (S7 communication, user data size)         Open IE communication       Yes         • TCP/IP       Yes         • Data le		Νο
• Number of connections reserved for ES/HMI/web       10         • Number of connections via integrated interfaces       128         • Number of S7 routing paths       16         Redundancy mode       -         • H-Sync forwarding       Yes         Media redundancy       only via 1st interface (X1)         - Media redundancy       only via 1st interface (X1)         - Media redundancy       only via 1st interface (X1)         - MRP       Yes; MRP Automanager according to IEC 62439-2 Edition 2.0, MRP Manager; MRP Client         - MRP interconnection, supported       Yes; as MRP ring node according to IEC 62439-2 Edition 3.0         - MRPD       Yes; Requirement: IRT         - Switchover time on line break, typ.       200 ms; For MRP, bumpless for MRPD         - Number of stations in the ring, max.       50         SIMATIC communication       Yes; encryption with TLS V1.3 pre-selected         • S7 routing       Yes         • Data record routing       Yes         • S7 communication, as client       Yes         • User data per job, max.       See online help (S7 communication, user data size)         Open IE communication       Yes         • Data length, max.       64 kbyte         - several passive connections per port, supported       Yes         • ISO-on-TCP (R	PROFIsafe	No
• Number of S7 routing paths16Redundancy modeYes• H-Sync forwardingYesMedia redundancyonly via 1st interface (X1)- MRPYes; MRP Automanager according to IEC 62439-2 Edition 2.0, MRP Manager; MRP Client- MRP interconnection, supportedYes; as MRP rolient- MRPDYes; Requirement: IRT- Switchover time on line break, typ.200 ms; For MRP, bumpless for MRPD- Number of stations in the ring, max.50SIMATIC communicationYes; encryption with TLS V1.3 pre-selected• PG/OP communicationYes• S7 communication, as serverYes• S7 communication, as clientYes• S7 communication, as clientYes• TCP/IPYes• Data length, max.64 kbyte- Data length, max.64 kbyte- Data length, max.64 kbyte- Data length, max.64 kbyte	PROFIsafe Number of connections	
Redundancy mode       Yes         Media redundancy       only via 1st interface (X1)         - MRP       Yes; MRP Automanager according to IEC 62439-2 Edition 2.0, MRP Manager; MRP Client         - MRP       Yes; as MRP ring node according to IEC 62439-2 Edition 3.0         - MRPD       Yes; Requirement: IRT         - Switchover time on line break, typ.       200 ms; For MRP, bumpless for MRPD         - Number of stations in the ring, max.       50         SIMATIC communication       Yes; encryption with TLS V1.3 pre-selected         • S7 routing       Yes         • Data record routing       Yes         • User data per job, max.       See online help (S7 communication, user data size)         Open IE communication       Yes         • TCP/IP       Yes         • Data length, max.       64 kbyte         • ISO-on-TCP (RFC1006)       Yes         • ISO-on-TCP (RFC1006)       Yes         • ISO-on-TCP (RFC1006)       Yes	PROFIsafe Number of connections • Number of connections, max.	256; via integrated interfaces of the CPU and connected CPs / CMs
• H-Sync forwardingYesMedia redundancyonly via 1st interface (X1)- Media redundancyonly via 1st interface (X1)- MRPYes; MRP Automanager according to IEC 62439-2 Edition 2.0, MRP Manager; MRP Client- MRP interconnection, supportedYes; as MRP ring node according to IEC 62439-2 Edition 3.0- MRPDYes; sequirement: IRT- Switchover time on line break, typ.200 ms; For MRP, bumpless for MRPD- Number of stations in the ring, max.50SIMATIC communicationYes; encryption with TLS V1.3 pre-selected• PG/OP communicationYes• Data record routingYes• S7 communication, as serverYes• S7 communication, as clientYes• User data per job, max.See online help (S7 communication, user data size)Open IE communicationYes• TCP/IPYes• Data length, max.64 kbyte• S0-on-TCP (RFC1006)Yes• ISO-on-TCP (RFC1006)Yes• Data length, max.64 kbyte	PROFIsafe Number of connections • Number of connections, max. • Number of connections reserved for ES/HMI/web	256; via integrated interfaces of the CPU and connected CPs / CMs 10
Media redundancy       only via 1st interface (X1)         - MRP       Yes; MRP Automanager according to IEC 62439-2 Edition 2.0, MRP Manager; MRP Client         - MRP       Yes; as MRP find node according to IEC 62439-2 Edition 3.0         - MRPD       Yes; Requirement: IRT         - Switchover time on line break, typ.       200 ms; For MRP, bumpless for MRPD         - Number of stations in the ring, max.       50         SIMATIC communication       Yes; encryption with TLS V1.3 pre-selected         • S7 routing       Yes         • Data record routing       Yes         • S7 communication, as client       Yes         • User data per job, max.       See online help (S7 communication, user data size)         Open IE communication       Yes         • TCP/IP       Yes         • Data length, max.       64 kbyte         • several passive connections per port, supported       Yes         • ISO-on-TCP (RFC1006)       Yes         • Data length, max.       64 kbyte	PROFIsafe Number of connections • Number of connections, max. • Number of connections reserved for ES/HMI/web • Number of connections via integrated interfaces	256; via integrated interfaces of the CPU and connected CPs / CMs 10 128
- Media redundancyonly via 1st interface (X1)- MRPYes; MRP Automanager according to IEC 62439-2 Edition 2.0, MRP Manager; MRP Client- MRP interconnection, supportedYes; as MRP ring node according to IEC 62439-2 Edition 3.0- MRPDYes; Requirement: IRT- Switchover time on line break, typ. - Number of stations in the ring, max.200 ms; For MRP, bumpless for MRPD- Number of stations in the ring, max.50SIMATIC communicationYes; encryption with TLS V1.3 pre-selected• PG/OP communicationYes; Yes• Data record routingYes• S7 communication, as serverYes• S7 communication, as clientYes• User data per job, max.See online help (S7 communication, user data size)Open IE communicationYes• TCP/IPYes- Data length, max.64 kbyte- several passive connections per port, supportedYes• ISO-on-TCP (RFC1006)Yes- Data length, max.64 kbyte	PROFIsafe Number of connections • Number of connections, max. • Number of connections reserved for ES/HMI/web • Number of connections via integrated interfaces • Number of S7 routing paths	256; via integrated interfaces of the CPU and connected CPs / CMs 10 128
MRPYes; MRP Automanager according to IEC 62439-2 Edition 2.0, MRP Manager; MRP Client MRP interconnection, supportedYes; as MRP ring node according to IEC 62439-2 Edition 3.0 MRPDYes; Requirement: IRT Switchover time on line break, typ.200 ms; For MRP, bumpless for MRPD Number of stations in the ring, max.50SIMATIC communication•- PG/OP communicationYes; encryption with TLS V1.3 pre-selected• S7 routingYes• Data record routingYes• S7 communication, as serverYes• S7 communication, as clientYes• User data per job, max.See online help (S7 communication, user data size)Open IE communicationYes• TCP/IPYes• Data length, max.64 kbyte- several passive connections per port, supportedYes• ISO-on-TCP (RFC1006)Yes• Data length, max.64 kbyte	PROFIsafe Number of connections • Number of connections, max. • Number of connections reserved for ES/HMI/web • Number of connections via integrated interfaces • Number of S7 routing paths Redundancy mode	256; via integrated interfaces of the CPU and connected CPs / CMs 10 128 16
Manager; MRP Client MRP interconnection, supportedYes; as MRP ring node according to IEC 62439-2 Edition 3.0 MRPDYes; Requirement: IRT Switchover time on line break, typ.200 ms; For MRP, bumpless for MRPD Number of stations in the ring, max.50SIMATIC communicationPG/OP communicationYes; encryption with TLS V1.3 pre-selected• S7 routingYes• Data record routingYes• S7 communication, as serverYes• S7 communication, as clientYes• User data per job, max.See online help (S7 communication, user data size)Open IE communicationYes- Data length, max.64 kbyte- several passive connections per port, supportedYes• ISO-on-TCP (RFC1006)Yes- Data length, max.64 kbyte	PROFIsafe Number of connections • Number of connections, max. • Number of connections reserved for ES/HMI/web • Number of connections via integrated interfaces • Number of S7 routing paths Redundancy mode • H-Sync forwarding Media redundancy	256; via integrated interfaces of the CPU and connected CPs / CMs 10 128 16
- MRP interconnection, supportedYes; as MRP ring node according to IEC 62439-2 Edition 3.0- MRPDYes; Requirement: IRT- Switchover time on line break, typ.200 ms; For MRP, bumpless for MRPD- Number of stations in the ring, max.50SIMATIC communicationYes; encryption with TLS V1.3 pre-selected• PG/OP communicationYes• PG/OP communicationYes• PG/OP communication, as serverYes• Data record routingYes• S7 communication, as serverYes• S7 communication, as clientYes• User data per job, max.See online help (S7 communication, user data size)Open IE communicationYes• Data length, max.64 kbyte- several passive connections per port, supportedYes• ISO-on-TCP (RFC1006)Yes• Data length, max.64 kbyte	PROFIsafe Number of connections • Number of connections, max. • Number of connections reserved for ES/HMI/web • Number of connections via integrated interfaces • Number of S7 routing paths Redundancy mode • H-Sync forwarding Media redundancy	256; via integrated interfaces of the CPU and connected CPs / CMs 10 128 16 Yes only via 1st interface (X1)
- MRPDYes; Requirement: IRT- Switchover time on line break, typ.200 ms; For MRP, bumpless for MRPD- Number of stations in the ring, max.50SIMATIC communication• PG/OP communicationYes; encryption with TLS V1.3 pre-selected• S7 routingYes• Data record routingYes• S7 communication, as serverYes• S7 communication, as clientYes• User data per job, max.See online help (S7 communication, user data size)Open IE communicationYes• TCP/IPYes• Data length, max.64 kbyte• ISO-on-TCP (RFC1006)Yes• ISO-on-TCP (RFC1006)Yes• Data length, max.64 kbyte	PROFIsafe Number of connections • Number of connections, max. • Number of connections reserved for ES/HMI/web • Number of connections via integrated interfaces • Number of S7 routing paths Redundancy mode • H-Sync forwarding Media redundancy — Media redundancy	256; via integrated interfaces of the CPU and connected CPs / CMs 10 128 16 Yes only via 1st interface (X1) Yes; MRP Automanager according to IEC 62439-2 Edition 2.0, MRP
- Switchover time on line break, typ.200 ms; For MRP, bumpless for MRPD- Number of stations in the ring, max.50SIMATIC communicationYes; encryption with TLS V1.3 pre-selected• PG/OP communicationYes; encryption with TLS V1.3 pre-selected• S7 routingYes• Data record routingYes• S7 communication, as serverYes• S7 communication, as serverYes• S7 communication, as clientYes• User data per job, max.See online help (S7 communication, user data size)Open IE communicationYes- Data length, max.64 kbyte- several passive connections per port, supportedYes• ISO-on-TCP (RFC1006)Yes- Data length, max.64 kbyte	PROFIsafe Number of connections • Number of connections, max. • Number of connections reserved for ES/HMI/web • Number of connections via integrated interfaces • Number of S7 routing paths Redundancy mode • H-Sync forwarding Media redundancy — Media redundancy — MRP	256; via integrated interfaces of the CPU and connected CPs / CMs 10 128 16 Yes only via 1st interface (X1) Yes; MRP Automanager according to IEC 62439-2 Edition 2.0, MRP Manager; MRP Client
Number of stations in the ring, max.50SIMATIC communicationYes; encryption with TLS V1.3 pre-selected• PG/OP communicationYes; encryption with TLS V1.3 pre-selected• S7 routingYes• Data record routingYes• S7 communication, as serverYes• S7 communication, as clientYes• User data per job, max.See online help (S7 communication, user data size)Open IE communicationYes• TCP/IPYes- Data length, max.64 kbyte- several passive connections per port, supportedYes• ISO-on-TCP (RFC1006)Yes- Data length, max.64 kbyte	PROFIsafe Number of connections • Number of connections, max. • Number of connections reserved for ES/HMI/web • Number of connections via integrated interfaces • Number of S7 routing paths Redundancy mode • H-Sync forwarding Media redundancy — Media redundancy — MRP — MRP interconnection, supported	256; via integrated interfaces of the CPU and connected CPs / CMs 10 128 16 Yes only via 1st interface (X1) Yes; MRP Automanager according to IEC 62439-2 Edition 2.0, MRP Manager; MRP Client Yes; as MRP ring node according to IEC 62439-2 Edition 3.0
SIMATIC communication       Yes; encryption with TLS V1.3 pre-selected         • 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.       See online help (S7 communication, user data size)         Open IE communication       Yes         • TCP/IP       Yes         - Data length, max.       64 kbyte         - several passive connections per port, supported       Yes         • ISO-on-TCP (RFC1006)       Yes         - Data length, max.       64 kbyte	PROFIsafe Number of connections Number of connections, max. Number of connections reserved for ES/HMI/web Number of connections via integrated interfaces Number of S7 routing paths Redundancy mode H-Sync forwarding Media redundancy — Media redundancy — MRP — MRP — MRP interconnection, supported — MRPD	256; via integrated interfaces of the CPU and connected CPs / CMs 10 128 16 Yes only via 1st interface (X1) Yes; MRP Automanager according to IEC 62439-2 Edition 2.0, MRP Manager; MRP Client Yes; as MRP ring node according to IEC 62439-2 Edition 3.0 Yes; Requirement: IRT
• PG/OP communicationYes; encryption with TLS V1.3 pre-selected• S7 routingYes• Data record routingYes• Data record routingYes• S7 communication, as serverYes• S7 communication, as clientYes• User data per job, max.See online help (S7 communication, user data size)Open IE communicationYes• TCP/IPYes- Data length, max.64 kbyte- several passive connections per port, supportedYes• ISO-on-TCP (RFC1006)Yes- Data length, max.64 kbyte	PROFIsafe Number of connections Number of connections, max. Number of connections reserved for ES/HMI/web Number of connections via integrated interfaces Number of S7 routing paths Redundancy mode H-Sync forwarding Media redundancy — Media redundancy — MRP — MRP — MRP interconnection, supported — MRPD — Switchover time on line break, typ.	256; via integrated interfaces of the CPU and connected CPs / CMs 10 128 16 Yes only via 1st interface (X1) Yes; MRP Automanager according to IEC 62439-2 Edition 2.0, MRP Manager; MRP Client Yes; as MRP ring node according to IEC 62439-2 Edition 3.0 Yes; Requirement: IRT 200 ms; For MRP, bumpless for MRPD
S7 routingYesData record routingYesS7 communication, as serverYesS7 communication, as clientYesUser data per job, max.See online help (S7 communication, user data size)Open IE communicationYesTCP/IPYes- Data length, max.64 kbyte- several passive connections per port, supportedYes- ISO-on-TCP (RFC1006)Yes- Data length, max.64 kbyte	PROFIsafe         Number of connections         • Number of connections, max.         • Number of connections reserved for ES/HMI/web         • Number of connections via integrated interfaces         • Number of S7 routing paths         Redundancy mode         • H-Sync forwarding         Media redundancy         — MRP         — MRP         — MRP Interconnection, supported         — MRPD         — Switchover time on line break, typ.         — Number of stations in the ring, max.	256; via integrated interfaces of the CPU and connected CPs / CMs 10 128 16 Yes only via 1st interface (X1) Yes; MRP Automanager according to IEC 62439-2 Edition 2.0, MRP Manager; MRP Client Yes; as MRP ring node according to IEC 62439-2 Edition 3.0 Yes; Requirement: IRT 200 ms; For MRP, bumpless for MRPD
Data record routingYesS7 communication, as serverYesS7 communication, as clientYesUser data per job, max.See online help (S7 communication, user data size)Open IE communicationYesTCP/IPYes- Data length, max.64 kbyte- several passive connections per port, supportedYes- ISO-on-TCP (RFC1006)Yes- Data length, max.64 kbyte	PROFIsafe Number of connections Number of connections, max. Number of connections reserved for ES/HMI/web Number of connections via integrated interfaces Number of S7 routing paths Redundancy mode H-Sync forwarding Media redundancy — Media redundancy — MRP — MRP — MRP interconnection, supported — MRPD — Switchover time on line break, typ. — Number of stations in the ring, max. SIMATIC communication	256; via integrated interfaces of the CPU and connected CPs / CMs 10 128 16 Yes only via 1st interface (X1) Yes; MRP Automanager according to IEC 62439-2 Edition 2.0, MRP Manager; MRP Client Yes; as MRP ring node according to IEC 62439-2 Edition 3.0 Yes; Requirement: IRT 200 ms; For MRP, bumpless for MRPD 50
<ul> <li>S7 communication, as client</li> <li>User data per job, max.</li> <li>See online help (S7 communication, user data size)</li> <li>Open IE communication</li> <li>TCP/IP</li> <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>64 kbyte</li> <li>Mes</li> <li>Several passive connections per port, supported</li> <li>Several passive connections per port, supported</li></ul>	PROFIsafe Number of connections Number of connections, max. Number of connections reserved for ES/HMI/web Number of connections via integrated interfaces Number of S7 routing paths Redundancy mode H-Sync forwarding Media redundancy — Media redundancy — MRP — MRP — MRP — MRP — Switchover time on line break, typ. — Number of stations in the ring, max. SIMATIC communication PG/OP communication	256; via integrated interfaces of the CPU and connected CPs / CMs 10 128 16 Yes only via 1st interface (X1) Yes; MRP Automanager according to IEC 62439-2 Edition 2.0, MRP Manager; MRP Client Yes; as MRP ring node according to IEC 62439-2 Edition 3.0 Yes; Requirement: IRT 200 ms; For MRP, bumpless for MRPD 50 Yes; encryption with TLS V1.3 pre-selected
• User data per job, max.       See online help (S7 communication, user data size)         Open IE communication          • TCP/IP       Yes         - Data length, max.       64 kbyte         - several passive connections per port, supported       Yes         • ISO-on-TCP (RFC1006)       Yes         - Data length, max.       64 kbyte	PROFIsafe Number of connections Number of connections, max. Number of connections reserved for ES/HMI/web Number of connections via integrated interfaces Number of S7 routing paths Redundancy mode H-Sync forwarding Media redundancy — Media redundancy — MRP — MRP — MRP — MRP — Switchover time on line break, typ. — Number of stations in the ring, max. SIMATIC communication • PG/OP communication • S7 routing	256; via integrated interfaces of the CPU and connected CPs / CMs 10 128 16 Yes only via 1st interface (X1) Yes; MRP Automanager according to IEC 62439-2 Edition 2.0, MRP Manager; MRP Client Yes; as MRP ring node according to IEC 62439-2 Edition 3.0 Yes; Requirement: IRT 200 ms; For MRP, bumpless for MRPD 50 Yes; encryption with TLS V1.3 pre-selected Yes
Open IE communication       Yes         • TCP/IP       Yes         — Data length, max.       64 kbyte         — several passive connections per port, supported       Yes         • ISO-on-TCP (RFC1006)       Yes         — Data length, max.       64 kbyte	PROFIsafe Number of connections Number of connections, max. Number of connections reserved for ES/HMI/web Number of connections via integrated interfaces Number of S7 routing paths Redundancy mode H-Sync forwarding Media redundancy — Media redundancy — MRP — MRP interconnection, supported — MRPD — Switchover time on line break, typ. — Number of stations in the ring, max. SIMATIC communication § S7 routing Data record routing	256; via integrated interfaces of the CPU and connected CPs / CMs 10 128 16 Yes only via 1st interface (X1) Yes; MRP Automanager according to IEC 62439-2 Edition 2.0, MRP Manager; MRP Client Yes; as MRP ring node according to IEC 62439-2 Edition 3.0 Yes; Requirement: IRT 200 ms; For MRP, bumpless for MRPD 50 Yes; encryption with TLS V1.3 pre-selected Yes Yes
<ul> <li>TCP/IP</li> <li>Yes</li> <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>64 kbyte</li> </ul>	PROFIsafe Number of connections Number of connections, max. Number of connections reserved for ES/HMI/web Number of connections via integrated interfaces Number of S7 routing paths Redundancy mode H-Sync forwarding Media redundancy — Media redundancy — MRP — MRP — MRP — MRP — MRP — Switchover time on line break, typ. — Number of stations in the ring, max. SIMATIC communication	256; via integrated interfaces of the CPU and connected CPs / CMs 10 128 16 Yes only via 1st interface (X1) Yes; MRP Automanager according to IEC 62439-2 Edition 2.0, MRP Manager; MRP Client Yes; as MRP ring node according to IEC 62439-2 Edition 3.0 Yes; Requirement: IRT 200 ms; For MRP, bumpless for MRPD 50 Yes; encryption with TLS V1.3 pre-selected 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>64 kbyte</li> </ul>	PROFIsafe Number of connections Number of connections, max. Number of connections reserved for ES/HMI/web Number of connections via integrated interfaces Number of S7 routing paths Redundancy mode H-Sync forwarding Media redundancy — Media redundancy — MRP — MRP — MRP — MRP — MRP — Switchover time on line break, typ. — Number of stations in the ring, max. SIMATIC communication PG/OP communication S7 routing S7 communication, as server S7 communication, as client User data per job, max.	256; via integrated interfaces of the CPU and connected CPs / CMs 10 128 16 Yes only via 1st interface (X1) Yes; MRP Automanager according to IEC 62439-2 Edition 2.0, MRP Manager; MRP Client Yes; as MRP ring node according to IEC 62439-2 Edition 3.0 Yes; Requirement: IRT 200 ms; For MRP, bumpless for MRPD 50 Yes; encryption with TLS V1.3 pre-selected Yes Yes Yes Yes
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— Data length, max.	2 kbyte; 1 472 bytes for UDP broadcast
— UDP multicast	Yes; max. 118 multicast circuits
• DHCP	Yes
• DNS	Yes
• SNMP	Yes
• DCP	Yes
• LLDP	Yes
Encryption	Yes; Optional
Web server	
	Yes; Standard and user pages
HTTPS     OPC UA	Yes; Standard and user pages
Runtime license required	Yes; "Medium" license required
OPC UA Client	Yes; Data Access (registered Read/Write), Method Call
- Application authentication	Yes
— Security policies	Available security policies: None, Basic128Rsa15, Basic256Rsa15, Basic256Sha256
<ul> <li>User authentication</li> </ul>	"anonymous" or by user name & password
<ul> <li>— Number of connections, max.</li> </ul>	10
<ul> <li>Number of nodes of the client interfaces,</li> </ul>	2 000
recommended max.	000
<ul> <li>— Number of elements for one call of OPC_UA_NodeGetHandleList/OPC_UA_ReadList/C max.</li> </ul>	300
<ul> <li>Number of elements for one call of OPC_UA_NameSpaceGetIndexList, max.</li> </ul>	20
<ul> <li>— Number of elements for one call of OPC_UA_MethodGetHandleList, max.</li> </ul>	100
<ul> <li>Number of simultaneous calls of the client instructions for session management, per connection, max.</li> </ul>	1
<ul> <li>Number of simultaneous calls of the client instructions for data access, per connection, max.</li> </ul>	5
<ul> <li>— Number of registerable nodes, max.</li> </ul>	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, Basic256Sha256, Aes128Sha256RsaOaep, Aes256Sha256RsaPss
— User authentication	"anonymous" or by user name & password
— GDS support (certificate management)	Yes
— Number of sessions, max.	48
<ul> <li>Number of accessible variables, max.</li> </ul>	100 000
<ul> <li>Number of registerable nodes, max.</li> </ul>	20 000
<ul> <li>— Number of subscriptions per session, max.</li> <li>— Sampling interval, min.</li> </ul>	50 100 ms
— Publishing interval, min.	100 ms
— Number of server methods, max.	50
<ul> <li>Number of server methods, max.</li> <li>Number of inputs/outputs per server method,</li> </ul>	20
max.	20
<ul> <li>— Number of monitored items, recommended max.</li> </ul>	4 000; for 1 s sampling interval and 1 s send interval
- 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>	30 000
Alarms and Conditions	Yes
<ul> <li>— Number of program alarms</li> </ul>	200
<ul> <li>— Number of alarms for system diagnostics</li> </ul>	100
Further protocols	
MODBUS	Yes; MODBUS TCP
S7 message functions	
Number of login stations for message functions, max.	64



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Program alarms	Yes
Number of configurable program messages, max.	10 000; Program messages are generated by the "Program_Alarm"
	block, ProDiag or GRAPH
Number of loadable program messages in RUN, max.	5 000
Number of simultaneously active program alarms	
Number of program alarms	1 000
Number of alarms for system diagnostics	200
<ul> <li>Number of alarms for motion technology objects</li> </ul>	160
Test commissioning functions	
Joint commission (Team Engineering)	Yes; Parallel online access possible for up to 8 engineering systems
Status block	Yes; Up to 8 simultaneously (in total across all ES clients)
Single step	No
Number of breakpoints	8
Status/control	
<ul> <li>Status/control variable</li> </ul>	Yes
Variables	Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters
<ul> <li>Number of variables, max.</li> </ul>	
— of which status variables, max.	200; per job
<ul> <li>— of which control variables, max.</li> </ul>	200; per job
Forcing	
• Forcing	Yes
Forcing, variables	Peripheral inputs/outputs
Number of variables, max.	200
Diagnostic buffer	
• present	Yes
<ul> <li>Number of entries, max.</li> </ul>	3 200
— of which powerfail-proof	500
Traces	
<ul> <li>Number of configurable Traces</li> </ul>	4; Up to 512 KB of data per trace are possible
Interrupts/diagnostics/status information	
Diagnostics indication LED	
RUN/STOP LED	Yes
ERROR LED	Yes
MAINT LED	Yes
STOP ACTIVE LED	Yes
Connection display LINK TX/RX	Yes
Supported technology objects	
Motion Control	Yes; Note: The number of 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</li> </ul>	2 400
technology objects	2 400
Required Motion Control resources	
— per speed-controlled axis	40
— per positioning axis	80
— per synchronous axis	160
— per external encoder	80
— per external encoder — per output cam	20
— per cam track	160
— per probe	40
Positioning axis	
<ul> <li>Positioning axis</li> <li>— Number of positioning axes at motion control</li> </ul>	11
cycle of 4 ms (typical value)	
— Number of positioning axes at motion control	20
cycle of 8 ms (typical value)	
Controller	
<ul> <li>PID_Compact</li> </ul>	Yes; Universal PID controller with integrated optimization
PID_3Step	Yes; PID controller with integrated optimization for valves
PID-Temp	Yes; PID controller with integrated optimization for temperature
Counting and measuring	
High-speed counter	Yes
Ambient conditions	
Ambient temperature during operation	
Ambient temperature during operation	-30 °C: No condensation
<ul> <li>horizontal installation, min.</li> </ul>	-30 °C; No condensation 60 °C: Display: 50 °C, at an operating temperature of typically 50 °C, the
	-30 °C; No condensation 60 °C; Display: 50 °C, at an operating temperature of typically 50 °C, the



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Weight, approx.	456 g
Weights	
Depth	129 mm
Height	147 mm
Width	70 mm
Dimensions	
• upper limit	adjustable maximum cycle time
lower limit	adjustable minimum cycle time
programming / cycle time monitoring / header	
<ul> <li>Protection level: Complete protection</li> </ul>	Yes
<ul> <li>Protection level: Write protection for Failsafe</li> </ul>	No
<ul> <li>Protection level: Read/write protection</li> </ul>	Yes
Protection level: Write protection	Yes
<ul> <li>Password for display</li> </ul>	Yes
<ul> <li>protection of confidential configuration data</li> </ul>	Yes
Access protection	
Block protection	Yes
Copy protection	Yes
User program protection/password protection	Yes
Know-how protection	
— GRAPH	Yes
— 302 — CFC	Yes
— STL — SCL	Yes
— STL	Yes
— FBD	Yes
— LAD	Yes
configuration / programming / header Programming language	
configuration / header	
Installation altitude above sea level, max.	5 000 m; Restrictions for installation altitudes > 2 000 m, see manual
Altitude during operation relating to sea level	70 0
• mm. • max.	-40 °C
Ambient temperature during storage/transportation <ul> <li>min.</li> </ul>	-40 °C
Ambient temperature during storage/traper attation	display is switched off
<ul> <li>vertical installation, max.</li> </ul>	40 °C; Display: 40 °C, at an operating temperature of typically 40 °C, the
<ul> <li>vertical installation, min.</li> </ul>	-30 °C; No condensation
	display is switched off

