## **SIEMENS**

## **Data sheet**



SIMATIC DP, CPU 1510SP-1 PN for ET 200SP, Central processing unit with Work memory 100 KB for program and 750 KB for data, 1st interface: PROFINET IRT with 3-port switch, 72 ns bit performance, SIMATIC Memory Card required, BusAdapter required for Port 1 and 2

General information	
Product type designation	CPU 1510SP-1 PN
HW functional status	FS05
Firmware version	V2.9
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 625 µs
Engineering with	
<ul> <li>STEP 7 TIA Portal configurable/integrated from version</li> </ul>	V17 (FW V2.9) / V13 SP1 Update 4 (FW V1.8) or higher
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	
<ul> <li>Mains/voltage failure stored energy time</li> </ul>	5 ms
Input current	
Current consumption (rated value)	0.6 A
Current consumption, max.	0.9 A
Inrush current, max.	4.7 A; Rated value
I <sup>2</sup> t	0.14 A²·s
Power	
Infeed power to the backplane bus	8.75 W
Power loss	
Power loss, typ.	5.6 W
Memory	
Number of slots for SIMATIC memory card	1
SIMATIC memory card required	Yes
Work memory	
<ul><li>integrated (for program)</li></ul>	100 kbyte
• integrated (for data)	750 kbyte
Load memory	
<ul> <li>Plug-in (SIMATIC Memory Card), max.</li> </ul>	32 Gbyte
Backup	
maintenance-free	Yes

CPU processing times	
for bit operations, typ.	72 ns
	86 ns
for word operations, typ.	
for fixed point arithmetic, typ.	115 ns
for floating point arithmetic, typ.	461 ns
CPU-blocks	
Number of elements (total)	4 000; Blocks (OB, FB, FC, DB) and UDTs
DB	
Number range	1 60 999; subdivided into: number range that can be used by the user: 1 59 999, and number range of DBs created via SFC 86: 60 000 60 999
• Size, max.	750 kbyte; For DBs with absolute addressing, the max. size is 64 KB
FB	700 kByte, 1 of BBS with absolute addressing, the max. Size to 04 kB
Number range	0 65 535
• Size, max.	100 kbyte
FC	100 kbyte
	0 65 535
Number range     Size may	
• Size, max.	100 kbyte
OB	100 khyto
Size, max.  Number of free evels OPs	100 kbyte
Number of free cycle OBs     Number of time clarm OBs	100
Number of time alarm OBs     Number of delay clarm OBs	20
Number of delay alarm OBs     Number of qualic interrupt OBs	20 20. With minimum OR 3v avala of F00 vs
Number of cyclic interrupt OBs	20; With minimum OB 3x cycle of 500 μs
Number of process alarm OBs	50
Number of DPV1 alarm OBs	3
Number of isochronous mode OBs	1
Number of technology synchronous alarm OBs	2
<ul> <li>Number of startup OBs</li> </ul>	100
<ul> <li>Number of asynchronous error OBs</li> </ul>	4
<ul> <li>Number of synchronous error OBs</li> </ul>	2
Number of diagnostic alarm OBs	1
Nesting depth	
per priority class	24
Counters, timers and their retentivity	
S7 counter	
Number	2 048
Retentivity	
— adjustable	Yes
IEC counter	
Number	Any (only limited by the main memory)
Retentivity	
— adjustable	Yes
S7 times	
Number	2 048
Retentivity	
— adjustable	Yes
IEC timer	
Number	Any (only limited by the main memory)
Retentivity	
— adjustable	Yes
Data areas and their retentivity	
Retentive data area (incl. timers, counters, flags), max.	128 kbyte; Available retentive memory for bit memories, timers, counters, DBs,
	and technology data (axes): 88 KB
Flag	
• Size, max.	16 kbyte
	•
Number of clock memories	8; 8 clock memory bit, grouped into one clock memory byte
Number of clock memories  Data blocks	
Data blocks	8; 8 clock memory bit, grouped into one clock memory byte
Data blocks  • Retentivity adjustable	8; 8 clock memory bit, grouped into one clock memory byte  Yes



Address area	
Number of IO modules	1 024; max. number of modules / submodules
I/O address area	
• Inputs	32 kbyte; All inputs are in the process image
<ul><li>Outputs</li></ul>	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
Address space per module	
Address space per module, max.	288 byte; For input and output data respectively
Address space per station	
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	,
• integrated	1
• Via CM	0
Rack  ● Modules per rack, max.	80; 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
Deviation per day, max.	10 s; Typ.: 2 s
Operating hours counter	
Number	16
Clock synchronization	
• supported	Yes
• to DP, master	Yes; Via CM DP module
● to DP, slave	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; Via CM DP module
Optical interface	No
1. Interface	
Interface types	
• RJ 45 (Ethernet)	Yes; X1 P3; opt. X1 P1 and X1 P2 via BusAdapter BA 2x RJ45
<ul><li>Number of ports</li></ul>	3; 1. integr. + 2. via BusAdapter
• integrated switch	Yes
BusAdapter (PROFINET)	Yes; compatible BusAdapters: BA 2x RJ45, BA 2x FC, BA 2x M12
Protocols	V ID 4
IP protocol	Yes; IPv4



Yes PROFINET IO Controller PROFINET IO Device Yes • SIMATIC communication Yes • Open IE communication Yes; Optionally also encrypted Yes • Web server Media redundancy Yes; MRP Automanager according to IEC 62439-2 Edition 2.0 **PROFINET IO Controller** Services - PG/OP communication Yes Yes Isochronous mode Yes; Requirement: IRT and isochronous mode (MRPD optional) Direct data exchange — IRT Yes - PROFlenergy Yes; per user program - Prioritized startup Yes; Max. 32 PROFINET devices - Number of connectable IO Devices, max. 64; In total, up to 256 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFINET - Of which IO devices with IRT, max. - Number of connectable IO Devices for RT, max. 64 - of which in line, max. - Number of IO Devices that can be simultaneously 8: in total across all interfaces activated/deactivated, max Number of IO Devices per tool, max. 8 - Updating times The minimum value of the update time also depends on communication share set for PROFINET IO, on the number of IO devices, and on the quantity of configured user data Update time for IRT — for send cycle of 250 µs 250 µs to 4 ms; Note: In the case of IRT with isochronous mode, the minimum update time of 625  $\mu s$  of the isochronous OB is decisive — for send cycle of 500  $\mu s$  $500\;\mu\text{s}$  to 8 ms; Note: In the case of IRT with isochronous mode, the minimum update time of 625 µs of the isochronous OB is decisive - for send cycle of 1 ms 1 ms to 16 ms - for send cycle of 2 ms 2 ms to 32 ms - for send cycle of 4 ms 4 ms to 64 ms - With IRT and parameterization of "odd" send cycles Update time = set "odd" send clock (any multiple of 125  $\mu$ s: 375  $\mu$ s, 625  $\mu$ s ... 3 875 µs) Update time for RT — for send cycle of 250 µs 250 µs to 128 ms — for send cycle of 500 µs 500 µs to 256 ms - for send cycle of 1 ms 1 ms to 512 ms - for send cycle of 2 ms 2 ms to 512 ms - for send cycle of 4 ms 4 ms to 512 ms PROFINET IO Device Services - PG/OP communication - Isochronous mode Nο - IRT Yes — PROFlenergy Yes; per user program - Shared device Yes - 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 Interface types Yes: Via CM DP module RS 485 Number of ports 1 Protocols • PROFIBUS DP master Yes PROFIBUS DP slave Yes • SIMATIC communication Yes PROFIBUS DP master 48; Of which 4 each reserved for ES and HMI Number of connections, max. 125; In total, up to 256 distributed I/O devices can be connected via AS-i, Number of DP slaves, max.



PROFIBUS or PROFINET

Services PEODP communication Sections are described by the section of DP staves Sections and Sections are described by the section of DP staves Sections are described by the section of DP staves Sections are described by the section of DP staves Section of Secti		
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Isochronous mode Activorodovideadration of DP slaves  Microface types  82 49 (Ememes) 100 Mbps 100 Mbp		
	·	
Interface types		
Substitute   Sub		Yes
Old Mips     Authoregotation     Authoreg		
Autocrassing Auto		
Authorousing   Yes   Items	·	
Industrial Ethernet status LED  Infraremission rate, max.  It Mbatis  Protocols  Process  No Number of connections, max.  Number of connections reserved for ESHMI/web  Number of connections via integrated interfaces  Number of connections via integrated interfaces  Number of connections via integrated interfaces  Number of strouting paths  No Number of ST routing paths	-	
**Ratundancy mode on Part Structure on line break, typ	-	
PROFisarie No Number of connections, max.  No Number of connections reserved for ESHMI/web 10 Number of connections via integrated interfaces 64 Number of ST routing paths 16 Redundancy Media redundancy Yes, only via BusAdapter — Media redundancy Yes, MRP Automanager according to IEC 82439-2 Edition 2.0, MRP Manager, MRP Count MRP		Yes
PROFisarie  PROFisarie  No Number of connections, max.  Number of connections, max.  Number of connections reserved for ESHMI/web  Number of ST routing paths  Redundancy mode  H-Ryc Forwarding  Media redundancy  MRP  Yes, only via BusAdapter  Yes, MFP Automanager according to IEC 62439-2 Edition 2.0, MRP Manager, MRP Client  MRP  Yes, MFP Automanager according to IEC 62439-2 Edition 3.0  Yes, as MFP ring node according to IEC 62439-2 Edition 3.0  Yes, Requirement. IRT  Yes, Requirement. IRT  SON misser of MRPD  Switchwer time on line break, typ.  Number of stations in the ring, max.  SON misser of MRPD  Now in the ring, max.  PCPOP communication  *Yes, encryption with TLS V1.3 pre-selected  *ST routing  Yes  *ST communication, as server  Yes  *ST communication, as server  Yes  *ST communication, as server  *Yes  *ST communication, as client  *Yes  *ST communication, user data size)  *Yes  *ST communication  *TCPIP  *PC  *PC BL bl length, max.  *Peel Bl lengt		12 Mhit/o
PROFisarle Number of connections  Number of connections, max.  Number of connections reserved for ES/HMI/web  Number of connections reserved for ES/HMI/web  Number of connections per CPI/CM  Number of S7 routing paths  Number of S7 routing paths  Neguration of S7 routing paths pa		12 MDWS
Number of connections, max.  • Number of connections, max.  • Number of connections reserved for ES/HMI/web  • Number of connections via integrated interfaces  • Number of connections per CPCM  • Number of S7 routing paths  • H-Sync Forwarding  • H-Sync Forwarding  • Hest aredundancy  — Metal redundancy  — MRP  — MRP  — MRP interconnection, supported  — MRPD  — Switchover time on line break, typ.  — Number of stations in the ring, max.  • S1MATIC communication, as server  • S7 routing  • S7 communication, as server  • S7 communication, as a server  • S7 communication, as a server  • User data per job, max.   Open It communication  • CPCIP  — Data length, max.  — Several passive connections per port, supported  • S0 On-TCP (RFC1006)  — Data length, max.  — UDP multicast  • ONS  • SNMP  • CPCP  • SNMP  • CPCP  • SNMP  • CPCP  • CREST CONS  • SNMP  • SNMP  • SNMP  • SNMP  • CPCP  • CREST CONS  • SNMP  • CPCP  • CREST CONS  • SNMP  • CPCP  • CREST CONS  • CR		No
Number of connections, max.  Number of connections reserved for ES/HMI/web Number of connections for served for ES/HMI/web Number of connections was integrated interfaces Number of connections per CPCM Number of S7 routing paths  Redundancy		INO
Number of connections reserved for ES/HMI/web     Number of connections via integrated interfaces     Number of S7 routing paths     H-Sync forwarding     H-Sync forwardi		96: via integrated interfaces of the CPLI and connected CPs / CMs
Number of connections via integrated interfaces Number of S7 routing paths Nedundancy mode  Nedundancy mode  Nedia redundancy  Media redundancy  NRP did reducted reduced resument. IT  NRP did reducted reducted reducted reducted reducted reducted		_
Number of connections per CP/CM Number of \$7 rotring paths  Redundancy Media redundancy Me		
Redundancy mode  H-Sync forwarding  Media redundancy  - Media redundancy  - Media redundancy  - MRP  MRP  - MRP  - MRP interconnection, supported  - MRP Client  - MRPD  - Switchover time on line break, typ.  - Number of stations in the ring, max.  SIMATIC communication  - PG/OP communication  - PG/OP communication  - PS or communication  - PG/OP communication, as erver  - ST communication, as eitent  - Ves  - ST communication, as client  - Yes  - ST communication, as client  - Yes  - St communication  - TCP/IP  - Data length, max.  - several passive connections per port, supported  - ISO-on-TCP (RFC1006)  - Data length, max.  - UDP multicast  - UDP  - Data length, max.  - UDP multicast  - DHCP  - Data length, max.  - UDP multicast  - PG/OP  - Data length, max.  - UDP multicast  - PG/OP	-	
Redundancy mode  In-Sync forwarding Media redundancy  - Media redundancy - MRP - MRP - MRP - MRP	·	
Media redundancy		
Media redundancy  — Media redundancy  — MRP  — MRP  — MRP interconnection, supported  — MRP interconnection, supported  — MRPD  — Switchover time on line break, typ.  — Number of stations in the ring, max.  SIMATIC communication  • PG/OP communication, as server  • S7 communication, as server  • S7 communication, as client  • User data per job, max.  See online help (S7 communication, user data size)  Open IE communication  • TCP/IP  — Data length, max.  — several passive connections per port, supported  • ISO-on-TCP (RFC1006)  — Data length, max.  — UDP  — Data length, max.  — UDP multicast  • DHCP  • DNS  • Yes  • SNMP  • DCP  • LLDP  • LDP  • LETT SAMP  • SNMP  • PCP  • LLDP  • LTP	•	Yes
- Media redundancy Yes; only via BusAdapter - 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 Switchover time on line break, typ Number of stations in the ring, max.  50  SIMATIC communication - PG/OP communication - PG/OP communication - S7 routing - S7 routing - S7 routing - S7 communication, as server - S7 communication - TCPIP - Data length, max See online help (S7 communication, user data size)  Open IE communication - TCPIP - Data length, max See online help (S7 communication, user data size) - Data length, max See online help (S7 communication, user data size) - Communication - TCPIP - Data length, max See online help (S7 communication, user data size) - Polata length, max See online help (S7 communication, user data size) - Yes - S7 communication - Yes - Data length, max See online help (S7 communication, user data size) - Yes - Data length, max See online help (S7 communication, user data size) - Yes - S8 (A kbyte - S9 (A k		
	·	Yes; only via BusAdapter
	•	Yes; MRP Automanager according to IEC 62439-2 Edition 2.0, MRP Manager;
	- MRP interconnection, supported	Yes; as MRP ring node according to IEC 62439-2 Edition 3.0
- Number of stations in the ring, max.  SIMATIC communication  PG/OP communication  PG/OP communication  ST routing  Data record routing  ST communication, as server  ST communication, as server  ST communication, as server  ST communication, as server  SEE online help (ST communication, user data size)  Open IE communication  TCP/IP  Data length, max.  See online help (ST communication, user data size)  Open IE communication  TCP/IP  Data length, max.  SEE ONS  SEE	**	
SIMATIC communication  PG/OP communication  Yes; encryption with TLS V1.3 pre-selected  Yes  Data record routing  Yes  Tommunication, as server  Yes  Tommunication, as server  Yes  Tommunication, as client  Yes  User data per job, max.  Pata length, max.  See online help (S7 communication, user data size)  Poper IE communication  TCP/IP  Data length, max.  See online help (S7 communication, user data size)  Poper IE communication  Yes  A kbyte  Data length, max.  Wes  Data length, max.  UDP  Data length, max.  Wes  DHCP  DHCP  Yes  See online help (S7 communication, user data size)  A kbyte  Yes  A kbyte  Yes  See online help (S7 communication, user data size)  A kbyte  Yes  A kbyte  Yes  See online help (S7 communication, user data size)  A kbyte  Yes  A kbyte  Yes  See online help (S7 communication, user data size)  Yes  A kbyte  Yes  See online help (S7 communication, user data size)  Yes  A kbyte  Yes  A kbyte  Yes  See online help (S7 communication, user data size)  Yes  A kbyte  Yes  See online help (S7 communication, user data size)  Yes  A kbyte  Yes  Yes  A kbyte  A kbyte  Yes  A kbyte  A kbyte  Yes  A kbyte  A kbyte  A kbyte  Yes  A kbyte  A kby	<ul> <li>Switchover time on line break, typ.</li> </ul>	200 ms; For MRP, bumpless for MRPD
PG/OP communication S7 routing Data record routing S7 communication, as server S7 communication, as server S7 communication, as client User data per job, max.  Pes Data length, max. See online help (S7 communication, user data size)  Pes Data length, max. See online help (S7 communication, user data size)  Pes Data length, max. See online help (S7 communication, user data size)  Pes Data length, max. See online help (S7 communication, user data size)  Pes Data length, max. See online help (S7 communication, user data size)  Pes Data length, max. See online help (S7 communication, user data size)  Pes Data length, max. See online help (S7 communication, user data size)  Pes Data length, max. See online help (S7 communication, user data size)  Pes Data length, max. See online help (S7 communication, user data size)  Pes See online help (S7 communication, user data size)  Pes See online help (S7 communication, user data size)  Pes See online help (S7 communication, user data size)  Pes See online help (S7 communication, user data size)  Pes See online help (S7 communication, user data size)  Pes See online help (S7 communication, user data size)  Pes See online help (S7 communication, user data size)  Pes See online help (S7 communication, user data size)  Pes See online help (S7 communication, user data size)  Pes See online help (S7 communication)  Pes See online help (S7 communication, user data size)  Pes See online help (S7 communication, user data size)  Pes See online help (S7 communication, user data size)  Pes See online help (S7 communication, user data size)  Pes See online help (S7 communication, user data size)  Pes See online help (S7 communication, user data size)  Pes See online help (S7 communication, user data size)  Pes See online help (S7 communication, user data size)  Pes See online help (S7 communication, user data size)  Pes See online help (S7 communication)  Pes See onl	<ul> <li>Number of stations in the ring, max.</li> </ul>	50
	SIMATIC communication	
Data record routing S7 communication, as server S7 communication, as client User data per job, max.  Open IE communication  TCP/IP Data length, max. See online help (S7 communication, user data size)  OPEN IE communication  TCP/IP Data length, max. See online help (S7 communication, user data size)  OPEN IE communication  TCP/IP  Data length, max. See online help (S7 communication, user data size)  OPEN IE communication  TCP/IP  Yes See online help (S7 communication, user data size)  OPEN IE communication  Yes S4 kbyte S6 kbyte S8 kbyte S8 kbyte S8 kbyte S9 kbyte; 1 472 bytes for UDP broadcast Yes; Max. 5 multicast circuits  OPHCP Yes S8 SNMP Yes SEA SEA Standard and user pages SPENTIPS Yes; Standard and user pages OPC UA SEA STANDARD SEA SEA STANDARD SEA STA	<ul> <li>PG/OP communication</li> </ul>	Yes; encryption with TLS V1.3 pre-selected
• S7 communication, as server • S7 communication, as client • User data per job, max.  Open IE communication • TCP/IP  - Data length, max several passive connections per port, supported • ISO-on-TCP (RFC1006) - Data length, max UDP - Data length, max UDP - Data length, max UDP willicast - UDP willicast • DHCP • DNS • SNMP • DCP • LLDP • Encryption  Web server  • HTTPS  OPC UA  • Runtime license required • OPC UA Client - Application authentication	<ul> <li>S7 routing</li> </ul>	Yes
S7 communication, as client User data per job, max.  See online help (S7 communication, user data size)  Open IE communication  TCP/IP  - Data length, max several passive connections per port, supported ISO-on-TCP (RFC1006) - Data length, max UDP - Data length, max UDP - Data length, max UDP multicast - UDP multicast - DHCP - DNS - SNMP - DCP - LLDP - Encryption  Web server  ITTP - Yes; Standard and user pages  OPC UA  Runtime license required - OPC UA Client - Application authentication  Yes  See online help (S7 communication, user data size)	<ul> <li>Data record routing</li> </ul>	Yes
User data per job, max.  Open IE communication  TCP/IP  Data length, max. See online help (S7 communication, user data size)  TCP/IP  Data length, max. See online help (S7 communication, user data size)  Yes  64 kbyte  ISO-on-TCP (RFC1006) Yes  Data length, max. See online help (S7 communication, user data size)  Yes  64 kbyte  Ves  UDP  Ves  Data length, max. Ves  Switch  DIP Wes  DIP Wes  DIP Wes  Nes  SNMP Yes  SNMP Yes  DCP  LLDP Yes  Encryption  Web server  HTTP  Yes; Standard and user pages  PCD UA  Runtime license required OPC UA Client  Yes  Yes  Yes  Yes  Yes  Yes  Small" license required OPC UA Client Yes  Yes  Yes  Yes  Yes  Yes  Yes  Yes	<ul> <li>S7 communication, as server</li> </ul>	Yes
Open IE communication  TCP/IP  Data length, max. Set kbyte Several passive connections per port, supported ISO-on-TCP (RFC1006) Data length, max. Set kbyte Supported	<ul> <li>S7 communication, as client</li> </ul>	Yes
<ul> <li>TCP/IP  — Data length, max. — several passive connections per port, supported  • ISO-on-TCP (RFC1006) — Data length, max.  • UDP — Data length, max.  • UDP — Data length, max. — UDP multicast — UDP multicast  • DHCP • DNS • SNMP • DNS • SNMP • DCP • LLDP • Encryption  Web server  • HTTP  • HTTP  • Runtime license required • OPC UA Client — Application authentication</li> <li>Yes  64 kbyte Yes  44 kbyte Yes  45 kbyte; 1 472 bytes for UDP broadcast Yes  46 kbyte Yes  47 bytes for UDP broadcast Yes  48 Abyte  48 Abyte Yes  48 Abyte  49 kbyte; 1 472 bytes for UDP broadcast Yes  48 Abyte  49 kbyte; 1 472 bytes for UDP broadcast Yes  48 Abyte  49 kbyte; 1 472 bytes for UDP broadcast Yes  48 Abyte  49 kbyte; 1 472 bytes for UDP broadcast Yes  48 Abytes  49 kbyte; 1 472 bytes for UDP broadcast Yes  48 Abytes  49 kbytes  40 kbytes  40</li></ul>	User data per job, max.	See online help (S7 communication, user data size)
Data length, max several passive connections per port, supported  ISO-on-TCP (RFC1006) Data length, max.  UDP Data length, max UDP multicast UDP multicast UDP multicast UDP multicast UDP multicast Yes; Max. 5 multicast circuits DNS SNMP SNMP Yes Encryption  Web server  HTTP Yes; Standard and user pages OPC UA  Runtime license required OPC UA Client Application authentication  Yes  Yes  Yes  64 kbyte  1472 bytes for UDP broadcast  Yes  64 kbyte  Yes  64 kbyte  Yes  64 kbyte  Yes  64 kbyte  1472 bytes for UDP broadcast  Yes  64 kby	·	
several passive connections per port, supported  ISO-on-TCP (RFC1006) Data length, max.  UDP Data length, max UDP multicast UDP multicast UDP multicast UDP multicast Ves; Max. 5 multicast circuits  DHCP DNS SNMP SNMP DCP LLDP Encryption  Web server  HTTP Yes; Standard and user pages  OPC UA  Runtime license required OPC UA Client Application authentication  Yes  4 kbyte Yes Sk kbyte 1 472 bytes for UDP broadcast Yes Max. 5 multicast circuits Yes Sk Max. 5 multicast circuits Yes Ves Yes Ves Ves Ves Ves Ves Standard and user pages Ves; "Standard and user pages Ves; "Standard and user pages Ves; "Small" license required Yes Yes Ves		
ISO-on-TCP (RFC1006) Data length, max.  Data length, max.  UDP Yes  Data length, max.  UDP multicast Yes; Max. 5 multicast circuits  DHCP Yes  DNS Yes SNMP Yes DCP Yes  LLDP Yes Encryption  Web server  HTTP Yes; Standard and user pages  OPC UA  Runtime license required OPC UA Client Yes  4 kbyte Yes  4 kbyte  Yes  4 kbyte  Yes  4 kbyte; 1 472 bytes for UDP broadcast  Yes; Max. 5 multicast circuits  Yes; Wax. 5 multicast circuits  Yes  Yes  Yes  Yes  Yes  Yes  Standard and user pages  Yes; Standard and user pages  Yes; Standard and user pages  Yes; "Small" license required  Yes  Pes  Pes  Pes  Pes  Pes  Pes  Pes	•	
- Data length, max.  • UDP  - Data length, max.  - UDP multicast  • DHCP  • DNS  • SNMP  • DCP  • Encryption  Web server  • HTTP  • Runtime license required  • OPC UA Client  - Application authentication  • UDP multicast  2 kbyte; 1 472 bytes for UDP broadcast  Yes; Max. 5 multicast circuits  Yes; Max. 5 multicast circuits  Yes  9 kes  Yes  Yes  Yes  Yes  Yes  Yes  Yes		
UDP Data length, max. UDP multicast  Ves; Max. 5 multicast circuits  DHCP  DNS  SNMP  DCP  LLDP  Encryption  Web server  HTTP  HTTP  Runtime license required  OPC UA Client  Application authentication  Yes  kbyte; 1 472 bytes for UDP broadcast  Yes; Max. 5 multicast circuits  Yes; Wax. 5 multicast circuits  Yes  Yes  Yes  Yes  Yes  Yes  Yes  Y	,	
- Data length, max UDP multicast  • DHCP  • DNS  • SNMP  • DCP  • LLDP  • Encryption  Web server  • HTTP  • HTTP  • Runtime license required • OPC UA Client  - Application authentication  2 kbyte; 1 472 bytes for UDP broadcast  Yes; Max. 5 multicast circuits  Yes  Yes  Yes  Yes  Yes  Yes  Yes  Y	-	
- UDP multicast  • DHCP  • DNS  • DNS  • SNMP  • DCP  • LLDP  • Encryption  Web server  • HTTP  • HTTPS  OPC UA  • Runtime license required  • OPC UA Client  — Application authentication  Yes  Yes  Yes  Yes  Yes  Yes  Yes  Ye		
<ul> <li>DHCP</li> <li>DNS</li> <li>Yes</li> <li>SNMP</li> <li>DCP</li> <li>LLDP</li> <li>Encryption</li> <li>Yes; Optional</li> <li>Web server</li> <li>HTTP</li> <li>HTTPS</li> <li>Yes; Standard and user pages</li> <li>HTTPS</li> <li>Yes; Standard and user pages</li> <li>OPC UA</li> <li>Runtime license required</li> <li>OPC UA Client</li> <li>— Application authentication</li> <li>Yes</li> </ul>	-	
<ul> <li>DNS</li> <li>SNMP</li> <li>DCP</li> <li>LLDP</li> <li>Encryption</li> <li>Yes; Optional</li> </ul> Web server <ul> <li>HTTP</li> <li>Yes; Standard and user pages</li> <li>HTTPS</li> <li>Yes; Standard and user pages</li> </ul> OPC UA <ul> <li>Runtime license required</li> <li>OPC UA Client</li> <li>Application authentication</li> </ul> Yes <ul> <li>Yes</li> </ul> Yes <ul> <li>Yes</li> </ul>		
<ul> <li>SNMP</li> <li>DCP</li> <li>Yes</li> <li>LLDP</li> <li>Encryption</li> <li>Yes; Optional</li> </ul> Web server <ul> <li>HTTP</li> <li>Yes; Standard and user pages</li> <li>HTTPS</li> <li>Yes; Standard and user pages</li> </ul> OPC UA <ul> <li>Runtime license required</li> <li>OPC UA Client</li> <li>OPC UA Client</li> <li>Application authentication</li> </ul> Yes <ul> <li>Small" license required</li> <li>Yes</li> </ul>		
DCP     Yes     LLDP     Yes     Encryption     Yes; Optional  Web server      HTTP     Yes; Standard and user pages     HTTPS     Yes; Standard and user pages  OPC UA      Runtime license required     OPC UA Client     — Application authentication  Yes  Yes  Yes  Yes  Yes  Yes  Yes  Ye		
<ul> <li>LLDP</li></ul>		
<ul> <li>Encryption</li> <li>Yes; Optional</li> <li>Web server</li> <li>HTTP</li> <li>Yes; Standard and user pages</li> <li>HTTPS</li> <li>Yes; Standard and user pages</li> <li>OPC UA</li> <li>Runtime license required</li> <li>OPC UA Client</li> <li>Application authentication</li> <li>Yes</li> </ul>		
Web server  • HTTP  • HTTP  Yes; Standard and user pages  • HTTPS  Yes; Standard and user pages  OPC UA  • Runtime license required  • OPC UA Client  — Application authentication  Yes		
HTTP     Yes; Standard and user pages     HTTPS     Yes; Standard and user pages  OPC UA  Runtime license required OPC UA Client Application authentication  Yes  Yes; "Small" license required Yes  Yes		. co, optional
HTTPS     Yes; Standard and user pages  OPC UA  Runtime license required  OPC UA Client  Application authentication  Yes  Yes; "Small" license required  Yes  Yes		Yes: Standard and user pages
OPC UA  • Runtime license required  • OPC UA Client  — Application authentication  Yes, "Small" license required  Yes  Yes		
<ul> <li>Runtime license required</li> <li>OPC UA Client</li> <li>Application authentication</li> <li>Yes</li> <li>Yes</li> </ul>		
OPC UA Client     Yes     Application authentication     Yes		Yes; "Small" license required
— Application authentication Yes	· · · · · · · · · · · · · · · · · · ·	
		Available security policies: None, Basic128Rsa15, Basic256Rsa15,



	Basic256Sha256
— User authentication	"anonymous" or by user name & password
<ul> <li>Number of connections, max.</li> </ul>	4
<ul> <li>Number of nodes of the client interfaces, recommended max.</li> </ul>	1 000
<ul> <li>Number of elements for one call of OPC_UA_NodeGetHandleList/OPC_UA_ReadList/OPC_L 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, custom address space
<ul> <li>Application authentication</li> </ul>	Yes
— Security policies	Available security policies: None, Basic128Rsa15, Basic256Rsa15, Basic256Sha256
<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
<ul> <li>Number of accessible variables, max.</li> </ul>	50 000
<ul> <li>Number of registerable nodes, max.</li> </ul>	10 000
<ul> <li>Number of subscriptions per session, max.</li> </ul>	20
— Sampling interval, min.	100 ms
— Publishing interval, min.	500 ms
Number of server methods, max.	20
Number of inputs/outputs per server method, max.	20
<ul><li>— Number of monitored items, recommended max.</li><li>— Number of server interfaces, max.</li></ul>	1 000; for 1 s sampling interval and 1 s send interval  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>	1 000
Alarms and Conditions	Yes
Number of program alarms	100
Number of alarms for system diagnostics	50
Further protocols	
• MODBUS	Yes; MODBUS TCP
S7 message functions	
Number of login stations for message functions, max.	32
Program alarms	Yes
Number of configurable program messages, max.	5 000; Program messages are generated by the "Program_Alarm" block, ProDiag or GRAPH
Number of loadable program messages in RUN, max.	2 500
Test commissioning functions	
Joint commission (Team Engineering)	Yes; Parallel online access possible for up to 5 engineering systems
Status block	Yes; Up to 8 simultaneously (in total across all ES clients)
Single step	No
Number of breakpoints	8
Status/control	Von
Status/control variable     Variables	Yes
Variables     Number of variables, max.	Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters
Number of variables, max.  of which status variables, max.	200: par job
<ul><li>— of which status variables, max.</li><li>— of which control variables, max.</li></ul>	200; per job 200; per job
— of which control variables, max.	200, poi juu
• Forcing	Yes
- i sioning	



- Foreign voriable -	Parinharal innuta/autouta
• Forcing, variables	Peripheral inputs/outputs
Number of variables, max.  Diagnostic buffer	200
	Von
Number of entries, may	Yes 1 000
Number of entries, max.  of which powerfail proof	500
— of which powerfail-proof  Traces	500
Number of configurable Traces	4; Up to 512 KB of data per trace are possible
Interrupts/diagnostics/status information	4, Op to 312 No or data per trace are possible
Diagnostics indication LED	
RUN/STOP LED	Yes
• ERROR LED	Yes
MAINT LED	Yes
Monitoring of the supply voltage (PWR-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
Wollon Control	program; selection guide via the TIA Selection Tool
<ul> <li>Number of available Motion Control resources for</li> </ul>	800
technology objects	
<ul> <li>Required Motion Control resources</li> </ul>	
— per speed-controlled axis	40
— per positioning axis	80
— per synchronous axis	160
— per external encoder	80
— per output cam	20
— per cam track	160
— per probe	40
<ul> <li>Positioning axis</li> </ul>	
<ul> <li>Number of positioning axes at motion control cycle of 4 ms (typical value)</li> </ul>	5
<ul> <li>Number of positioning axes at motion control cycle of 8 ms (typical value)</li> </ul>	10
Controller	
PID_Compact	Yes; Universal PID controller with integrated optimization
• PID_3Step	Yes; PID controller with integrated optimization for valves
PID-Temp	Yes; PID controller with integrated optimization for temperature
Counting and measuring	
High-speed counter	Yes
Ambient conditions	
Ambient temperature during operation	
horizontal installation, min.	-25 °C; No condensation
horizontal installation, max.	60 °C
vertical installation, min.	-25 °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
— FBD	Yes
— STL	Yes
— SCL	Yes
— GRAPH	Yes
Know-how protection	
User program protection/password protection	Yes
Copy protection	Yes
Block protection	Yes
Access protection	
protection     protection of confidential configuration data	Yes
Protection level: Write protection	Yes
* 1 Totoodon level. Wille protection	100



<ul> <li>Protection level: Read/write protection</li> </ul>	Yes
<ul> <li>Protection level: Complete protection</li> </ul>	Yes
programming / cycle time monitoring / header	
• lower limit	adjustable minimum cycle time
• upper limit	adjustable maximum cycle time
Dimensions	
Width	100 mm
Height	117 mm
Depth	75 mm
Weights	
Weight, approx.	310 g

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