

Figure similar

SIMATIC ET 200SP Open Controllers, CPU 1515SP PC. +HMI 512PT, 4 GB RAM, 30 GB CFAST with WES 7 P 64 bit pre-installed, with S7-1500 software controller CPU 1505SP F pre-installed, with WinCC Runtime Advanced V14 pre-installed with 512 PowerTags license, Interfaces: 1x slot CFAST, 1x slot SD/MMC, 1x connection for ET 200SP bus adapter PROFINET 1x 10/100/1000 Mbit/s Ethernet, 3x USB, 1x DVI-I graphics card connection, Documentation on DVD, Restore DVD

General information	
Product type designation	CPU 1515SP PC
HW functional status	FS05
Firmware version	V2.1
Engineering with	
 STEP 7 TIA Portal configurable/integrated from version 	V14 SP1
Installed software	
Visualization	WinCC Runtime Advanced V14 SP1
• Control	S7-1500 Software Controller CPU 1505SP V2.1
Configuration control	
via dataset	Yes
Control elements	
Mode selector switch	1
Supply voltage	
Type of supply voltage	24 V DC

permissible range, lower limit (DC)	19.2 V
permissible range, upper limit (DC)	28.8 V
Reverse polarity protection	Yes
Mains buffering	
Mains/voltage failure stored energy time	5 ms
Input current	
Current consumption (rated value)	1.5 A; Full processor load, incl. ET 200SP modules and using USB
Current consumption (in no-load operation), typ.	0.6 A
Inrush current, max.	4.7 A; Rated value
Power	
Active power input, max.	36 W; incl. ET 200SP modules and using USB
Infeed power to the backplane bus	8.75 W
Power loss	
Power loss, typ.	15 W; without ET 200SP modules and without using USB
Processor	
Processor type	Dual-Core 1 GHz, AMD G Series APU T40E
Memory	
Type of memory	DDR3-SDRAM
Main memory	4 GB RAM
CFast memory card	Yes; 30 GB flash memory
SIMATIC memory card required	No
Work memory	
• integrated (for program)	1 Mbyte
• integrated (for data)	5 Mbyte
 integrated (for CPU function library of CPU Runtime) 	10 Mbyte
Load memory	
• integrated (on PC mass storage)	320 Mbyte
Backup	
• with UPS	Yes; all memory areas declared retentive
with non-volatile memory	Yes
CPU processing times	
for bit operations, typ.	10 ns
for word operations, typ.	12 ns
for fixed point arithmetic, typ.	16 ns
for floating point arithmetic, typ.	64 ns
CPU-blocks	
Number of elements (total)	6 000; In addition to blocks such as DBs, FBs and FCs, UDTs,
	global constants, etc. are also regarded as elements

Number, max. Size, max. Size	DB	
FB Number, max. Size, max. 5 998; Number range: 1 to 65535 Size, max. FC Number, max. Size, max. Size, max. 5 999; Number range: 1 to 65535 Size, max. Size, max. 1 048 kbyte Size, max. Number of free cycle OBs Number of time alarm OBs Number of delay alarm OBs Number of cyclic interrupt OBs Number of process alarm OBs Number of DPV1 alarm OBs Number of DPV1 alarm OBs Number of isochronous mode OBs Number of isochronous mode OBs Number of startup OBs Number of startup OBs Number of startup OBs Number of synchronous error OBs Number of asynchronous error OBs Number of asynchronous error OBs Number of diagnostic alarm OBs Nesting depth per priority class Counter Number Retentivity — adjustable Yes IEC counter Number Number Any (only limited by the main memory)	Number, max.	5 999; Number range: 1 to 65535
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Size, max. Number, max. Size, max. 5 999; Number range: 1 to 65535 Size, max. 1 048 kbyte Size, max. 1 048 kbyte 100 Size, max. Number of free cycle OBS Number of time alarm OBS Number of delay alarm OBS Number of cyclic interrupt OBS Number of process alarm OBS Number of process alarm OBS Number of isochronous mode OBS Number of technology synchronous alarm OBS Number of synchronous error OBS Number of asynchronous error OBS Number of diagnostic alarm OBS Nesting depth per priority class Counters, timers and their retentivity To counter Number Number Any (only limited by the main memory)	FB	
FC Number, max. Size, max. Size, max. 1 048 kbyte Size, max. 1 1048 kbyte Number of free cycle OBs Number of free cycle OBs Number of delay alarm OBs Number of cyclic interrupt OBs Number of process alarm OBs Number of DPV1 alarm OBs Number of sochronous mode OBs Number of startup OBs Number of asynchronous error OBs Number of asynchronous error OBs Number of synchronous error of Short error erro	Number, max.	5 998; Number range: 1 to 65535
Number, max. Size, max. Size, max. 1 048 kbyte Number of free cycle OBs Number of time alarm OBs Number of cyclic interrupt OBs Number of process alarm OBs Number of process alarm OBs Number of process alarm OBs Number of sochronous mode OBs Number of startup OBs Number of asynchronous error OBs Number of asynchronous error OBs Number of synchronous error of Synchro	• Size, max.	512 kbyte
Size, max. Size, max. 1 048 kbyte Number of free cycle OBs Number of firee cycle OBs Number of delay alarm OBs Number of cyclic interrupt OBs Number of process alarm OBs Number of DPV1 alarm OBs Number of isochronous mode OBs Number of startup OBs Number of startup OBs Number of startup OBs Number of asynchronous error OBs Number of asynchronous error OBs Number of diagnostic alarm OBs Number of diagnostic alarm OBs Nesting depth per priority class Counters, timers and their retentivity Tounter Number Number Any (only limited by the main memory)	FC	
Size, max. Number of free cycle OBs Number of time alarm OBs Number of delay alarm OBs Number of cyclic interrupt OBs Number of process alarm OBs Number of DPV1 alarm OBs Number of isochronous mode OBs Number of technology synchronous alarm OBs Number of startup OBs Number of asynchronous error OBs Number of asynchronous error OBs Number of diagnostic alarm OBs Number of diagnostic alarm OBs Nesting depth per priority class Counters, timers and their retentivity Retentivity adjustable Yes IEC counter Number Any (only limited by the main memory)	Number, max.	5 999; Number range: 1 to 65535
Size, max. Number of free cycle OBs Number of time alarm OBs Number of delay alarm OBs Number of delay alarm OBs Number of process alarm OBs Number of process alarm OBs Number of process alarm OBs Number of DPV1 alarm OBs Number of isochronous mode OBs Number of technology synchronous alarm OBs Number of startup OBs Number of asynchronous error OBs Number of asynchronous error OBs Number of diagnostic alarm OBs Nesting depth per priority class Counters, timers and their retentivity S7 counter Number Any (only limited by the main memory)	• Size, max.	512 kbyte
 Number of free cycle OBs Number of time alarm OBs Number of delay alarm OBs Number of delay alarm OBs Number of cyclic interrupt OBs Number of process alarm OBs Number of DPV1 alarm OBs Number of DPV1 alarm OBs Number of isochronous mode OBs Number of technology synchronous alarm OBs Number of startup OBs Number of startup OBs Number of asynchronous error OBs Number of diagnostic alarm OBs Number of diagnostic alarm OBs Per priority class Quality Yes Retentivity adjustable Any (only limited by the main memory) 	OB	
Number of time alarm OBs Number of delay alarm OBs Number of cyclic interrupt OBs Number of process alarm OBs Number of process alarm OBs Number of DPV1 alarm OBs Number of isochronous mode OBs Number of technology synchronous alarm OBs Number of startup OBs Number of asynchronous error OBs Number of asynchronous error OBs Number of diagnostic alarm OBs Nesting depth per priority class Counters, timers and their retentivity To counter Number Any (only limited by the main memory)	• Size, max.	1 048 kbyte
Number of delay alarm OBs Number of cyclic interrupt OBs Number of process alarm OBs Number of process alarm OBs Number of DPV1 alarm OBs Number of isochronous mode OBs Number of technology synchronous alarm OBs Number of startup OBs Number of asynchronous error OBs Number of asynchronous error OBs Number of diagnostic alarm OBs Number of diagnostic alarm OBs Nesting depth Per priority class Counters, timers and their retentivity S7 counter Number Number Any (only limited by the main memory)	Number of free cycle OBs	100
Number of cyclic interrupt OBs Number of process alarm OBs Number of DPV1 alarm OBs Number of isochronous mode OBs Number of technology synchronous alarm OBs Number of startup OBs Number of asynchronous error OBs Number of synchronous error OBs Number of synchronous error OBs Number of diagnostic alarm OBs Nesting depth per priority class Counters, timers and their retentivity S7 counter Number Number Any (only limited by the main memory)	Number of time alarm OBs	20
 Number of process alarm OBs Number of DPV1 alarm OBs Number of isochronous mode OBs Number of technology synchronous alarm OBs Number of startup OBs Number of asynchronous error OBs Number of synchronous error OBs Number of diagnostic alarm OBs Number of diagnostic alarm OBs Per priority class Counters, timers and their retentivity S7 counter Number Number Auginatable Yes IEC counter Number Any (only limited by the main memory) 	Number of delay alarm OBs	20
 Number of DPV1 alarm OBs Number of isochronous mode OBs Number of technology synchronous alarm OBs Number of startup OBs Number of asynchronous error OBs Number of synchronous error OBs Number of diagnostic alarm OBs Nesting depth per priority class Pumber Aumber Pumber Quality Yes IEC counter Number Any (only limited by the main memory) 	 Number of cyclic interrupt OBs 	20
 Number of isochronous mode OBs Number of technology synchronous alarm OBs Number of startup OBs Number of asynchronous error OBs Number of synchronous error OBs Number of diagnostic alarm OBs Number of diagnostic alarm OBs Per priority class Counters, timers and their retentivity S7 counter Number Number Q 048 Retentivity — adjustable Yes IEC counter Number Any (only limited by the main memory) 	 Number of process alarm OBs 	50
 Number of technology synchronous alarm OBs Number of startup OBs Number of asynchronous error OBs Number of synchronous error OBs Number of diagnostic alarm OBs Nesting depth per priority class per priority class Counters, timers and their retentivity S7 counter Number Augustable Yes IEC counter Number Any (only limited by the main memory) 	 Number of DPV1 alarm OBs 	3
Number of startup OBs Number of asynchronous error OBs Number of synchronous error OBs Number of diagnostic alarm OBs Nesting depth per priority class 24 Counters, timers and their retentivity S7 counter Number Number Any (only limited by the main memory)	Number of isochronous mode OBs	1
Number of asynchronous error OBs Number of synchronous error OBs Number of diagnostic alarm OBs Nesting depth per priority class Counters, timers and their retentivity S7 counter Number Number Number Any (only limited by the main memory)	Number of technology synchronous alarm OBs	2
 Number of synchronous error OBs Number of diagnostic alarm OBs Nesting depth per priority class Counters, timers and their retentivity S7 counter Number 2 048 Retentivity — adjustable IEC counter Number Any (only limited by the main memory) 	Number of startup OBs	100
 Number of diagnostic alarm OBs Nesting depth per priority class Counters, timers and their retentivity S7 counter Number Number Retentivity — adjustable IEC counter Number Any (only limited by the main memory) 	 Number of asynchronous error OBs 	4
Nesting depth • per priority class Counters, timers and their retentivity S7 counter • Number Any (only limited by the main memory)	 Number of synchronous error OBs 	2
 per priority class Counters, timers and their retentivity S7 counter Number Retentivity — adjustable IEC counter Number Any (only limited by the main memory) 	Number of diagnostic alarm OBs	1
Counters, timers and their retentivity S7 counter Number Retentivity — adjustable IEC counter Number Any (only limited by the main memory)	Nesting depth	
S7 counter ● Number 2 048 Retentivity — adjustable Yes IEC counter ● Number Any (only limited by the main memory)	per priority class	24
S7 counter ● Number 2 048 Retentivity — adjustable Yes IEC counter ● Number Any (only limited by the main memory)	Counters, timers and their retentivity	
Retentivity — adjustable Yes IEC counter • Number Any (only limited by the main memory)	<u>`</u>	
 — adjustable Yes IEC counter Number Any (only limited by the main memory) 	Number	2 048
IEC counter • Number Any (only limited by the main memory)	Retentivity	
Number Any (only limited by the main memory)	— adjustable	Yes
	IEC counter	
	• Number	Any (only limited by the main memory)
Retentivity	Retentivity	
— adjustable Yes	— adjustable	Yes
S7 times	S7 times	
• Number 2 048	• Number	2 048
Retentivity	Retentivity	
— adjustable Yes	— adjustable	Yes
IEC timer	IEC timer	
• Number Any (only limited by the main memory)	• Number	Any (only limited by the main memory)
Retentivity	Retentivity	

— adjustable	Yes
Data areas and their retentivity	
Retentive data area (incl. timers, counters, flags),	410 kbyte; For storage in NVRAM; for storage in mass storage 5
max.	242 020 bytes
Flag	
• Number, max.	16 kbyte
 Number of clock memories 	8; 8 clock memory bit, grouped into one clock memory byte
Data blocks	
Retentivity adjustable	Yes
 Retentivity preset 	No
Address area	
Number of IO modules	8 192
I/O address area	
• Inputs	32 kbyte; All inputs are in the process image
Outputs	32 kbyte; All outputs are in the process image
of which per assigned PC interface	
— Inputs (volume)	8 kbyte
— Outputs (volume)	8 kbyte
Subprocess images	
Number of subprocess images, max.	32
Hardware configuration	
Integrated power supply	Yes
Number of distributed IO systems	20
Number of DP masters	
• Via CM	1
Rack	
Modules per rack, max.	64; CPU 1515SP PC + 64 modules + server module
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
 Hardware clock (real-time) 	Yes; Resolution: 1 s
Backup time	6 wk; At 40 °C ambient temperature, typically
 Deviation per day, max. 	10 s; Typ.: 2 s
Clock synchronization	
• supported	Yes
• on Windows clock, slave	Yes

Interfaces	
Number of industrial Ethernet interfaces	2
Number of PROFINET interfaces	1
Number of PROFIBUS interfaces	1
Number of RS 485 interfaces	1; Via CM DP module
Number of USB interfaces	3; 3x USB 2.0 on the front, 500 mA each - of which 2x 500 mA and 1x 100 mA simultaneously
Number of SD card slots	1
Video interfaces	
Graphics interface	1x DVI-I
1. Interface	
Interface type	PROFINET
automatic detection of transmission rate	Yes
Autonegotiation	Yes
Autocrossing	Yes
Number of connections	88
Interface types	
Number of ports	2
• integrated switch	Yes
• RJ 45 (Ethernet)	Yes; Via BusAdapter BA 2x RJ45
— Transmission rate, max.	100 Mbit/s
Industrial Ethernet status LED	Yes
BusAdapter (PROFINET)	Yes; Applicable BusAdapter: BA 2x RJ45, BA 2x FC
Protocols	
PROFINET IO Controller	Yes
PROFINET IO Device	Yes
SIMATIC communication	Yes
Open IE communication	Yes
Web server	Yes
PROFINET IO Controller	
Services	
— Isochronous mode	Yes
— shortest clock pulse	500 μs
— IRT	Yes
— MRP	Yes
— MRPD	Yes
— Prioritized startup	Yes; Max. 32 PROFINET devices
Number of connectable IO Devices, max.	128
Of which IO devices with IRT, max.	64
of which in line, max.	64
Number of connectable IO Devices for RT,	128
max.	

— of which in line, max.	128
 Number of IO Devices that can be 	8
simultaneously activated/deactivated, max.	
 IO Devices changing during operation 	Yes
(partner ports), supported	
 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 500 μs	500 μs to 8 ms
— for send cycle of 1 ms	1 ms to 16 ms
— for send cycle of 2 ms	2 ms to 32 ms
— for send cycle of 4 ms	4 ms to 64 ms
— With IRT and parameterization of "odd" send cycles	Update time = set "odd" send clock (any multiple of 125 $\mu s: 375$ $\mu s, 625$ μs 3 875 $\mu s)$
Update time for RT	
— for send cycle of 500 μs	500 μs to 256 ms
— for send cycle of 1 ms	1 ms to 512 ms
— for send cycle of 2 ms	2 ms to 512 ms
— for send cycle of 4 ms	4 ms to 512 ms
PROFINET IO Device	
Services	
— Isochronous mode	No
— IRT	Yes
— MRP	Yes
— MRPD	Yes
 Prioritized startup 	Yes
— Shared device	Yes
 Number of IO Controllers with shared 	4
device, max.	
2. Interface	
Interface type	Integrated Ethernet interface
automatic detection of transmission rate	Yes
Autonegotiation	Yes
Autocrossing	Yes
Interface types	
Number of ports	1
• RJ 45 (Ethernet)	Yes; Integrated
— Transmission rate, max.	1 000 Mbit/s
 Industrial Ethernet status LED 	No

3. Interface

Number of connections via this interface 44	Interface type	PROFIBUS with CM DP
PROFIBUS DP master PROFIBUS DP slave PROFIBUS DP slave SIMATIC communication PROFIBUS DP master Number of DP slaves, max. 125 Services — Equidistance No No Interface types RS 485 Transmission rate, max. 12 Mbit/s Protocols Number of connections max. Number of connections max. Number of connections reserved for ES/HMI/web Number of S7 routing paths Redundancy mode Media redundancy — Switchover time on line break, typ. — Number of stations in the ring, max. SIMATIC communication PG/OP communication PG/OP communication, as server S7 communication, as client User data per job. max. 64 kbyte Data length, max. 172 kbyte Pes Data length, max. 172 kbyte Pes	Number of connections via this interface	44
Protocols PROFIBUS DP master PROFIBUS DP slave SIMATIC communication PROFIBUS DP master Number of Connections No No Interface types RS 485 Transmission rate, max. 12 Mbit/s Protocols Number of connections Number of connections Number of connections reserved for ES/HMI/web Number of ST routing paths Redundancy mode Media redundancy — Switchover time on line break, typ. — Number of stations in the ring, max. PG/OP communication PG/OP communi	Interface types	
PROFIBUS DP master PROFIBUS DP slave PROFIBUS DP slave SIMATIC communication PROFIBUS DP master Number of DP slaves, max. 125 Services — Equidistance	• RS 485	Yes
PROFIBUS DP slave SIMATIC communication PROFIBUS DP master Number of DP slaves, max. Profocols Number of connections, max. Number of connections reserved for Es/HMI/web Number of 57 routing paths Redundancy Switchover time on line break, typ. Number of stations in the ring, max. Pofoco Redundancy Profoco Redundancy Simatic communication, as server Profoco Redundancy Simatic communication, as server Profoco Redundancy Profoco Redundancy Switchover time on Stations in the ring, max. Profoco Redundancy Profoco Redundancy Simatic communication Profo Redundancy Profo Redundanc	Protocols	
SIMATIC communication PROFIBUS DP master No Interface types RS 485 Transmission rate, max. No Interface types RS 485 Transmission rate, max. No Interface types RS 485 Transmission rate, max. No Interface types RS 485 Transmission rate, max. Number of connections, max. Number of connections, max. Number of connections reserved for 10 ES/HMI/web Number of S7 routing paths 16 Redundancy mode Media redundancy Switchover time on line break, typ. Number of stations in the ring, max. Number of stations in the ring, max. SIMATIC communication PG/OP communicatio	PROFIBUS DP master	Yes
PROFIBUS DP master • Number of DP slaves, max. Services — Equidistance — Isochronous mode No Interface types RS 485 • Transmission rate, max. 12 Mbit/s Protocols Number of connections, max. • Number of connections reserved for ES/HMI/web • Number of S7 routing paths Redundancy mode Media redundancy — Switchover time on line break, typ. — Number of stations in the ring, max. SIMATIC communication • PG/OP communication • PG/OP communication, as server • S7 routing • S7 communication, as client • User data per job, max. Open IE communication • TCP/IP — Data length, max. • SMMP — Data length, max. • Lyps	 PROFIBUS DP slave 	Yes
Number of DP slaves, max. Services — Equidistance	 SIMATIC communication 	Yes
Services	PROFIBUS DP master	
Equidistance Isochronous mode No Interface types RS 485 • Transmission rate, max. 12 Mbit/s Protocols Number of connections. • Number of connections, max. • Number of connections reserved for ES/HMI/web • Number of S7 routing paths Redundancy mode Media redundancy Switchover time on line break, typ Number of stations in the ring, max. SIMATIC communication • PG/OP communication • PG/OP communication • S7 routing • S7 communication, as server • S7 communication, as client • User data per job, max. Open IE communication • TCP/IP Data length, max. • ISO-on-TCP (RFC1006) Data length, max. • UDP Data length, max. • UDP Data length, max. • SNMP Ves SNMP Data length, max SNMP	 Number of DP slaves, max. 	125
Interface types RS 485 Transmission rate, max. 12 Mbit/s Protocols Number of connections Number of connections, max. Number of connections reserved for ES/HMI/web Number of Sr routing paths Redundancy mode Media redundancy — Switchover time on line break, typ. — Number of stations in the ring, max. SIMATIC communication PG/OP communication PG/OP communication, as server S7 routing Yes S7 communication, as client User data per job, max. G4 kbyte PGOPIE communication TCP/IP — Data length, max. F4 Se PG SNMP Pes A Kbyte Pas	Services	
Interface types RS 485 Transmission rate, max. 12 Mbit/s Protocols Number of connections Number of connections, max. Number of connections reserved for ES/HMI/web Number of S7 routing paths Redundancy mode Media redundancy Switchover time on line break, typ. Number of stations in the ring, max. SIMATIC communication PG/OP communicat	— Equidistance	No
RS 485 • Transmission rate, max. 12 Mbit/s Protocols Number of connections • Number of connections, max. • Number of connections reserved for ES/HMI/web • Number of S7 routing paths Redundancy mode Media redundancy — Switchover time on line break, typ. — Number of stations in the ring, max. SIMATIC communication • PG/OP communication • PG/OP communication • S7 routing • S7 communication, as server • S7 communication, as client • User data per job, max. Open IE communication • TCP/IP — Data length, max. • 44 kbyte • UDP — Data length, max. • 44 kbyte • UDP — Data length, max. • 1 472 kbyte • SNMP	— Isochronous mode	No
RS 485 • Transmission rate, max. 12 Mbit/s Protocols Number of connections • Number of connections, max. • Number of connections reserved for ES/HMI/web • Number of S7 routing paths Redundancy mode Media redundancy — Switchover time on line break, typ. — Number of stations in the ring, max. SIMATIC communication • PG/OP communication • PG/OP communication • S7 routing • S7 communication, as server • S7 communication, as client • User data per job, max. Open IE communication • TCP/IP — Data length, max. • 44 kbyte • UDP — Data length, max. • 44 kbyte • UDP — Data length, max. • 1 472 kbyte • SNMP	Interface types	
• Transmission rate, max. Protocols Number of connections • Number of connections, max. • Number of connections reserved for ES/HMI/web • Number of S7 routing paths Redundancy mode Media redundancy — Switchover time on line break, typ. — Number of stations in the ring, max. SIMATIC communication • PG/OP communication • PS routing • S7 routing • S7 communication, as server • S7 communication, as client • User data per job, max. Open IE communication • TCP/IP — Data length, max. • 4 kbyte • UDP — Data length, max. • 44 kbyte • UDP — Data length, max. • 1472 kbyte • SNMP		
Number of connections Number of connections, max. Number of connections reserved for ES/HMI/web Number of S7 routing paths Redundancy mode Media redundancy — Switchover time on line break, typ. — Number of stations in the ring, max. SIMATIC communication PG/OP communication PG/OP communication Yes S7 routing Yes S7 communication, as server Yes S7 communication, as client User data per job, max. Open IE communication TCP/IP — Data length, max. S4 kbyte UDP — Data length, max. G4 kbyte UDP — Data length, max. 1472 kbyte SNMP	Transmission rate, max.	12 Mbit/s
Number of connections Number of connections, max. Number of connections, max. Number of connections reserved for ES/HMI/web Number of S7 routing paths Number of S7 routing paths Redundancy mode Media redundancy — Switchover time on line break, typ. — Number of stations in the ring, max. SIMATIC communication PG/OP communication PG/OP communication Yes S7 routing Yes S7 communication, as server Yes S7 communication, as client Yes User data per job, max. Copen IE communication TCP/IP — Data length, max. G4 kbyte PData length, max. G4 kbyte UDP — Data length, max. G4 kbyte PData length, max. G5 kbyte PData length, max. G6 kbyte PData length, max. G7 kbyte Poata length, max. G8 kbyte PData length, max. G9 kbyte PData length, max. G1 472 kbyte PSNMP		
Number of connections, max. Number of connections reserved for ES/HMI/web Number of S7 routing paths Redundancy mode Media redundancy — Switchover time on line break, typ. — Number of stations in the ring, max. SIMATIC communication PG/OP communication PG/OP communication S7 routing S7 communication, as server S7 communication, as client User data per job, max. PGP/IP — Data length, max. S4 kbyte DDP — Data length, max. S88 10 10 10 10 10 10 10 10 10		
 Number of connections reserved for ES/HMI/web Number of S7 routing paths Redundancy mode Media redundancy — Switchover time on line break, typ. — Number of stations in the ring, max. SIMATIC communication PG/OP communication • S7 routing • S7 routing • S7 communication, as server • S7 communication, as client • User data per job, max. Open IE communication • TCP/IP — Data length, max. • ISO-on-TCP (RFC1006) — Data length, max. • UDP — Data length, max. • UDP — Data length, max. • SNMP Yes 		00
ES/HMI/web • Number of S7 routing paths Redundancy mode Media redundancy — 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. Open IE communication • TCP/IP — Data length, max. • ISO-on-TCP (RFC1006) — Data length, max. • UDP — Data length, max. • 1 472 kbyte • SNMP		
Redundancy mode Media redundancy — 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. Open IE communication • TCP/IP — Data length, max. • ISO-on-TCP (RFC1006) — Data length, max. • UDP — Data length, max. • UDP — Data length, max. • 1 472 kbyte • SNMP		10
Media redundancy — Switchover time on line break, typ. 200 ms — Number of stations in the ring, max. 50 SIMATIC communication • PG/OP communication Yes • S7 routing Yes • S7 communication, as server Yes • S7 communication, as client Yes • User data per job, max. 64 kbyte Open IE communication • TCP/IP Yes — Data length, max. 64 kbyte • ISO-on-TCP (RFC1006) Yes — Data length, max. 64 kbyte • UDP — Data length, max. 1 472 kbyte • SNMP	 Number of S7 routing paths 	16
Switchover time on line break, typ Number of stations in the ring, max. 50 SIMATIC communication PG/OP communication Strouting Stroutin	Redundancy mode	
— Number of stations in the ring, max. SIMATIC communication PG/OP communication Yes S7 routing S7 communication, as server S7 communication, as client User data per job, max. Open IE communication TCP/IP Data length, max. ISO-on-TCP (RFC1006) Data length, max. UDP Data length, max. At 472 kbyte Yes Yes SNMP	Media redundancy	
SIMATIC communication PG/OP communication Yes S7 routing Yes S7 communication, as server Yes S7 communication, as client Yes User data per job, max. 64 kbyte Open IE communication TCP/IP Data length, max. 64 kbyte ISO-on-TCP (RFC1006) Data length, max. 64 kbyte UDP Data length, max. 1472 kbyte SNMP Yes	 Switchover time on line break, typ. 	200 ms
 PG/OP communication S7 routing S7 communication, as server S7 communication, as client User data per job, max. Open IE communication TCP/IP Data length, max. ISO-on-TCP (RFC1006) Data length, max. UDP Data length, max. 1 472 kbyte Yes SNMP 	 Number of stations in the ring, max. 	50
 S7 routing S7 communication, as server S7 communication, as client User data per job, max. Open IE communication TCP/IP Data length, max. ISO-on-TCP (RFC1006) Data length, max. UDP Data length, max. 1472 kbyte SNMP 	SIMATIC communication	
S7 communication, as server S7 communication, as client User data per job, max. Open IE communication TCP/IP Pata length, max. SISO-on-TCP (RFC1006) Pata length, max. UDP Pata length, max. 1 472 kbyte Yes Yes Yes 4 kbyte Yes 1 472 kbyte Yes	 PG/OP communication 	Yes
 S7 communication, as client User data per job, max. 64 kbyte Open IE communication TCP/IP Data length, max. ISO-on-TCP (RFC1006) Data length, max. UDP Data length, max. UDP Data length, max. Yes UDP A t472 kbyte Yes SNMP Yes Yes Yes 	• S7 routing	Yes
 User data per job, max. Open IE communication TCP/IP — Data length, max. ISO-on-TCP (RFC1006) — Data length, max. UDP — Data length, max. UDP — Data length, max. SNMP 64 kbyte Yes 1 472 kbyte Yes 	 S7 communication, as server 	Yes
Open IE communication Yes TCP/IP Yes — Data length, max. 64 kbyte • ISO-on-TCP (RFC1006) Yes — Data length, max. 64 kbyte • UDP Yes — Data length, max. 1 472 kbyte • SNMP Yes	 S7 communication, as client 	Yes
 TCP/IP Yes — Data length, max. 64 kbyte ISO-on-TCP (RFC1006) Yes — Data length, max. 64 kbyte UDP Yes — Data length, max. 1 472 kbyte SNMP Yes 	 User data per job, max. 	64 kbyte
 — Data length, max. ● ISO-on-TCP (RFC1006) — Data length, max. ● UDP — Data length, max. 1 472 kbyte ● SNMP ● SNMP 	Open IE communication	
 ISO-on-TCP (RFC1006) — Data length, max. UDP — Data length, max. 1 472 kbyte SNMP Yes 1 472 kbyte Yes 	• TCP/IP	Yes
 — Data length, max. ● UDP — Data length, max. ● SNMP 64 kbyte Yes 1 472 kbyte Yes 	— Data length, max.	64 kbyte
 ◆ UDP → Data length, max. ◆ SNMP Yes 1 472 kbyte Yes 	• ISO-on-TCP (RFC1006)	Yes
— Data length, max.● SNMP1 472 kbyteYes	— Data length, max.	64 kbyte
• SNMP Yes	• UDP	Yes
	— Data length, max.	1 472 kbyte
• DCP Yes	• SNMP	Yes
	• DCP	Yes

• LLDP	Yes
Web server	
• HTTP	Yes; Via Windows and PROFINET interface
• HTTPS	Yes; Only via PROFINET interface
OPC UA	
OPC UA Server	Yes; Data access (read, write, subscribe), runtime license required
 Application authentication 	Yes; Available security policies: None, Basic128Rsa15, Basic256Rsa15, Basic256Sha256
— Security policies	Yes; Available security policies: None, Basic128Rsa15, Basic256Rsa15, Basic256Sha256
 User authentication 	Yes; "anonymous" or by user name & password
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.	10 000
Number of simultaneously active program alarms	
Number of program alarms	1 000
Number of alarms for system diagnostics	200
Number of alarms for motion technology	160
objects	
objects Test commissioning functions	
-	Yes; Parallel online access possible for up to 8 engineering systems
Test commissioning functions	
Test commissioning functions Joint commission (Team Engineering)	systems
Test commissioning functions Joint commission (Team Engineering) Status block	systems Yes; up to 8 simultaneously
Test commissioning functions Joint commission (Team Engineering) Status block Single step	systems Yes; up to 8 simultaneously
Test commissioning functions Joint commission (Team Engineering) Status block Single step Status/control	systems Yes; up to 8 simultaneously No
Test commissioning functions Joint commission (Team Engineering) Status block Single step Status/control • Status/control variable	systems Yes; up to 8 simultaneously No Yes
Test commissioning functions Joint commission (Team Engineering) Status block Single step Status/control • Status/control • Variables	systems Yes; up to 8 simultaneously No Yes
Test commissioning functions Joint commission (Team Engineering) Status block Single step Status/control • Status/control variable • Variables • Number of variables, max.	systems Yes; up to 8 simultaneously No Yes Inputs, outputs, memory bits, DB, times, counters
Test commissioning functions Joint commission (Team Engineering) Status block Single step Status/control • Status/control variable • Variables • Number of variables, max. — of which status variables, max.	systems Yes; up to 8 simultaneously No Yes Inputs, outputs, memory bits, DB, times, counters
Test commissioning functions Joint commission (Team Engineering) Status block Single step Status/control • Status/control variable • Variables • Number of variables, max. — of which status variables, max. — of which control variables, max.	systems Yes; up to 8 simultaneously No Yes Inputs, outputs, memory bits, DB, times, counters
Test commissioning functions Joint commission (Team Engineering) Status block Single step Status/control • Status/control variable • Variables • Number of variables, max. — of which status variables, max. — of which control variables, max. Forcing	systems Yes; up to 8 simultaneously No Yes Inputs, outputs, memory bits, DB, times, counters 200 200
Test commissioning functions Joint commission (Team Engineering) Status block Single step Status/control • Status/control variable • Variables • Number of variables, max. — of which status variables, max. — of which control variables, max. Forcing • Forcing	systems Yes; up to 8 simultaneously No Yes Inputs, outputs, memory bits, DB, times, counters 200 200 Yes
Test commissioning functions Joint commission (Team Engineering) Status block Single step Status/control • Status/control variable • Variables • Number of variables, max. — of which status variables, max. — of which control variables, max. Forcing • Forcing • Forcing, variables	systems Yes; up to 8 simultaneously No Yes Inputs, outputs, memory bits, DB, times, counters 200 200 Yes Inputs, outputs
Test commissioning functions Joint commission (Team Engineering) Status block Single step Status/control • Status/control variable • Variables • Number of variables, max. — of which status variables, max. — of which control variables, max. Forcing • Forcing • Forcing, variables • Number of variables, max.	systems Yes; up to 8 simultaneously No Yes Inputs, outputs, memory bits, DB, times, counters 200 200 Yes Inputs, outputs
Test commissioning functions Joint commission (Team Engineering) Status block Single step Status/control • Status/control variable • Variables • Number of variables, max. — of which status variables, max. — of which control variables, max. Forcing • Forcing • Forcing • Forcing, variables • Number of variables, max. Diagnostic buffer	systems Yes; up to 8 simultaneously No Yes Inputs, outputs, memory bits, DB, times, counters 200 200 Yes Inputs, outputs 200 200

Traces	
 Number of configurable Traces 	4
 Memory size per trace, max. 	512 kbyte
Interrupts/diagnostics/status information	
Diagnostics indication LED	
• RUN/STOP LED	Yes
• ERROR LED	Yes
• MAINT LED	Yes
Supported technology objects	
Motion Control	Yes
 Number of available Motion Control resources 	2 400
for technology objects	
 Required Motion Control resources 	
per speed-controlled axis	40; per axis
per positioning axis	80; per axis
per synchronous axis	160; per axis
— per external encoder	80; per external encoder
— per output cam	20; per cam
— per cam track	160; per cam track
— per probe	40; per probe
Positioning axis	
Number of positioning axes at motion	5
control cycle of 4 ms (typical value)	40
 Number of positioning axes at motion control cycle of 8 ms (typical value) 	12
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
Standards, approvals, certificates	
CE mark	Yes
CSA approval	Yes
cULus	Yes
FM approval	Yes
RCM (formerly C-TICK)	Yes
Ambient conditions	
Ambient temperature during operation	

 \bullet min.

0 °C

• max.	Up to 60 °C with max. 32 ET 200SP modules and 3x 100 mA USB
	load; up to 55 °C with max. 64 ET 200SP modules and 2x max.
	500 mA and 1x max. 100 mA USB load
horizontal installation, min.	0 °C
horizontal installation, max.	60 °C
 vertical installation, min. 	0 °C
vertical installation, max.	50 °C; With max. 32 ET 200SP modules and 3x 100 mA USB load
Ambient temperature during storage/transportation	
• min.	-40 °C
• max.	70 °C
Vibrations	
 Operation, tested according to IEC 60068-2-6 	Yes
 Transport, tested acc. to IEC 60068-2-6 	Yes
Shock testing	
• tested according to IEC 60068-2-6	Yes
 tested according to IEC 60068-2-27 	Yes
 tested according to IEC 60068-2-29 	Yes
• Storage/transport, tested acc. to IEC 60068-2-	Yes
27	
Operating systems	
pre-installed operating system	Windows Embedded Standard 7 P 64-bit
Configuration	
Programming	
Programming language	
— LAD	Yes
— FBD	Yes
— STL	Yes
— SCL	Yes
— CFC	No
— GRAPH	Yes
Know-how protection	
User program protection/password protection	Yes
Copy protection	Yes
Block protection	Yes
Access protection	
Protection level: Write protection	Yes

Cycle time monitoring

lower limitupper limit

• Protection level: Read/write protection

• Protection level: Complete protection

adjustable minimum cycle time

adjustable maximum cycle time

Yes

Yes

Open Development interfaces	
• Size of ODK SO file, max.	3.8 Mbyte
Peripherals/Options	
SD card	Optionally for additional mass storage
Dimensions	
Width	160 mm
Height	117 mm
Depth	75 mm
Weights	
Weight, approx.	0.83 kg
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