Data sheet



SIMATIC ET 200SP Open Controllers, CPU 1515SP PC. 4 GB RAM, 30 GB CFAST with WES 7 P 64 bit pre-installed, with S7-1500 software controller CPU 1505SP F pre-installed, 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

Figure similar

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 	No
 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
	INO
Work memory	1 Mbuto
• integrated (for program)	1 Mbyte
• integrated (for GRU function library of CRU	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
DB	
Number, max.	5 999; Number range: 1 to 65535
Size, max.	5 Mbyte
FB	
Number, max.	5 998; Number range: 1 to 65535
Size, max.	512 kbyte
FC	
Number, max.	5 999; Number range: 1 to 65535
• Size, max.	512 kbyte
OB	
• Size, max.	1 048 kbyte
 Number of free cycle OBs 	100
 Number of time alarm OBs 	20
 Number of delay alarm OBs 	20
 Number of cyclic interrupt OBs 	20
 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
Number of startup OBs	100
Number of asynchronous error OBs	4
Number of synchronous error OBs	2
Number of diagnostic alarm OBs	1
Nesting depth	
per priority class	24
Counters, timers and their retentivity	27
S7 counter	2.040
Number Potenti itu	2 048
Retentivity	W
— adjustable	Yes
IEC counter	Anna familia di banda ang
• Number	Any (only limited by the main memory)
Retentivity	
— adjustable	Yes
S7 times	
Number	2 048
Retentivity	
— adjustable	Yes
IEC timer	

Retentivity — adjustable Data areas and their retentivity Retentive data area (incl. timens, counters, flags), max. Retentive data area (incl. timens, counters, flags), max. 16 kbyte Size, max. 16 kbyte No Local data Retentively proset Retentively proset Retentively proset No Local data Per priority class, max. Address area Inputs Propriority class, max. Address area Inputs Propriority class, max. Retentively proset No Local data Per priority class, max. Address area Inputs Propriority class, max. Retentively proset Number of 10 modules Retentively column Retentively proset Number of 10 modules Propriority class, max. Retentively column Retentive column Retentively column Retentive column Retentive colum	Number	Any (only limited by the main memory)
Data stress and their retentivity Retentive data area (mct. timers, counters, flags), max. Flag • Size, max. • Number of clock memories • Retentivity adjustable • Retentivity adjustable • Retentivity preset Local data • per priority class, max. • Style; All inputs are in the process image • Inputs • Outputs • Number of Paccess images, max. • Skyle • Number of subprocess images, max. • Skyle • Number of Demasters • Val CM • Number of PIP CMs • Number of PIP CMs • Number of properties, max. • Number of image, max. • Val CM • Number of image, max. • Number of properties, max. • Number of properties, max. • Number of image, max. • Val CM • Outputs • Val CM • Va	Retentivity	
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Retentive data area (incl. timers, counters, flags), max. Flag	Data areas and their retentivity	
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Data blocks Retentivity preset Retentive R	Size, max.	16 kbyte
Retentivity adjustable Retentivity present No Retentivity present Por priority class, max. 64 kbyte; max. 16 KB per block Address area Number of IO modules 8 192 Number of IO modules 100 address area - Inputs - Outputs	Number of clock memories	8; 8 clock memory bit, grouped into one clock memory byte
Local data	Data blocks	
Local data • per priority class, max. 64 kbyte; max. 16 KB per block Address area Number of IO modules 10 address area • Inputs • Outputs • Outputs • Outputs (volume) — Unjuts (volume) — Unjuts (volume) — Outputs (volume) — Unjuts (volume) — Via CM Integrated power supply Number of distributed IO systems • Via CM Rack • Modules per rack, max. • Number of IPP CMs • Number of IPP CMs • Number of IPP CMs Integrated power supply • Number of IPP CMs • Ves Interfaces Number of IPP CMs Interfaces 1 Number of IPP CMs Interfaces 1 Number of IPP CMs Interfaces 1 Vide on Interfaces 1 Number of IPP CMs Interfaces 1 Number of IPP CMs Interfaces 1 Vide on IPP IPP CMs Interfaces • Carphics interfaces 1 Vide on IPP IPP IPP IPP IPP IPP IPP IPP IPP IP	 Retentivity adjustable 	Yes
Per priority class, max. Address area Number of IO modules I/O address area	Retentivity preset	No
Address area	Local data	
Number of IO modules Io address area	per priority class, max.	64 kbyte; max. 16 KB per block
Inputs 32 kbyte, All inputs are in the process image	Address area	
Inputs Outputs Outputs Outputs Outputs Of which per assigned PC interface —Inputs (volume) —Outputs (volume) —Outputs (volume) —S kbyte Subprocess images Number of subprocess images, max. Integrated power supply Number of Integrated IO systems Via CM Number of DP masters Number of PIP CMs Number of PIP CMs Hardware configuration Integrated power supply Number of Outputs (volume) Number of DP masters Via CM Number of PIP CMs Hardware configuration Integrated power supply Number of DP masters Via CM Number of DP masters Via CM Number of PIP CMs Hardware clock Number of PIP CMs Number of PIP CMs Hardware clock (real-time) —Backup time —Backup time —Deviation per day, max. Integrated power supply Yes No —Deviation per day, max. Clock synchronization Supported —On Ethemet via NTP —On Windows clock, slave Interfaces Number of Industrial Ethernet interfaces Number of PROFINET interfaces Number of PROFINET interfaces Number of SD card slots 1 X DVI-I Number of SD card slots 1 X DVI-I Interfaces Number of SD card slots 1 X DVI-I Interfaces Interfaces Linterfaces Number of SD card slots 1 X DVI-I Interfaces Linterfaces Linterfaces Outputs are in the process image of the p	Number of IO modules	8 192
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Video interfaces ● Graphics interface 1x DVI-I 1. Interface	Number of USB interfaces	
• Graphics interface 1x DVI-I 1. Interface	Number of SD card slots	1
1. Interface	Video interfaces	
	Graphics interface	1x DVI-I
	1. Interface	
Interface type PROFINET	Interface type	PROFINET

automatic detection of transmission rate	Yes
	Yes
Autoreosing	Yes
Autocrossing Number of connections	88
Interface types	00
• RJ 45 (Ethernet)	Yes; Via BusAdapter BA 2x RJ45
— Transmission rate, max.	100 Mbit/s
— Industrial Ethernet status LED	Yes
Number of ports	2
integrated switch	Yes
BusAdapter (PROFINET) Protocols	Yes; Applicable BusAdapter: BA 2x RJ45, BA 2x FC
Protocols • PROFINET IO Controller	Voc
PROFINET TO Controller PROFINET TO Device	Yes Yes
SIMATIC communication	Yes
Open IE communication	Yes
Web server	Yes
PROFINET IO Controller	
Services	V
— Isochronous mode	Yes
— shortest clock pulse	500 μs
— IRT	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 simultaneously activated/deactivated, max. 	8
 IO Devices changing during operation (partner ports), supported 	Yes
 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	4
— 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 2 ms — for send cycle of 4 ms	4 ms to 64 ms
With IRT and parameterization of "odd" send	Update time = set "odd" send clock (any multiple of 125 μs: 375 μs, 62.
cycles	μs 3 875 μs)
Update time for RT	
— for send cycle of 500 μs	500 μs to 256 ms
— for send cycle of 1 ms	1 ms to 512 ms
— for send cycle of 2 ms	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
Prioritized startup	Yes
— Phonized startup — Shared device	Yes
Number of IO Controllers with shared device,	4
max.	7
. Interface	
Interface type	Integrated Ethernet interface
automatic detection of transmission rate	Yes

Autonogotiation	Yes
Autoregotiation	
Autocrossing	Yes
Interface types • RJ 45 (Ethernet)	Yes; Integrated
— Transmission rate, max.	1 000 Mbit/s
— Industrial Ethernet status LED	No
Number of ports	1
3. Interface	
	PROFIDURE 'IL OM PR
Interface type	PROFIBUS with CM DP
Number of connections via this interface	44
Interface types	V
• RS 485	Yes
Protocols	V
PROFIBUS DP master	Yes
PROFIBUS DP slave	Yes
SIMATIC communication	Yes
PROFIBUS DP master	105
Number of DP slaves, max.	125
Services	
— Equidistance	No
— Isochronous mode	No
Interface types	
RS 485	
Transmission rate, max.	12 Mbit/s
Protocols	
Number of connections	
 Number of connections, max. 	88
 Number of connections reserved for ES/HMI/web 	10
 Number of S7 routing paths 	16
Redundancy mode	
Media redundancy	
— MRP	Yes
— MRPD	Yes
 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	Yes
— Data length, max.	1 472 kbyte
• SNMP	Yes
• DCP	Yes
• LLDP	Yes
Web server	
• HTTP	Yes; Via Windows and PROFINET interface
• HTTPS	Yes; Only via PROFINET interface
OPC UA	. 55, 5mj na i no me i mondo
OPC UA Server	Yes; Data access (read, write, subscribe), runtime license required
Application authentication	Yes; Available security policies: None, Basic128Rsa15, Basic256Rsa15,
- Approximent water of the detection	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 objects 	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
Single step	No
Status/control	
Status/control variable	Yes
Variables	Inputs, outputs, memory bits, DB, times, counters
 Number of variables, max. 	
— of which status variables, max.	200
of which control variables, max.	200
Forcing	
• Forcing	Yes
 Forcing, variables 	Inputs, outputs
 Number of variables, max. 	200
Diagnostic buffer	
present	Yes
 Number of entries, max. 	1 000
— of which powerfail-proof	300
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 for technology objects 	2 400
 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 control cycle of 4 ms (typical value) 	5
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	Tes, Fib controller with integrated optimization for temperature
High-speed counter	Yes
Standards, approvals, certificates	1.00
CE mark	Yes
CSA approval	Yes
cULus	Yes
FM approval	Yes
RCM (formerly C-TICK)	Yes
Ambient conditions	
Ambient temperature during operation	
● min.	0 °C
• max.	Up to 60 $^{\circ}\text{C}$ with max. 32 ET 200SP modules and 3x 100 mA USB load; up to 55 $^{\circ}\text{C}$ 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	Yes
 Operation, tested according to IEC 60068-2-6 Transport, tested acc. to IEC 60068-2-6 	Yes
Shock testing	165
tested according to IEC 60068-2-6	Yes
tested according to IEC 60068-2-27	Yes
• tested according to IEC 60068-2-29	Yes
1 100104 4000141119 10 120 00000 2 20	100
 Storage/transport_tested acc_to_IEC 60068-2-27 	Yes
Storage/transport, tested acc. to IEC 60068-2-27 Operating systems	Yes
Operating systems	Yes Windows Embedded Standard 7 P 64-bit
Operating systems pre-installed operating system	
Operating systems pre-installed operating system Configuration	
Operating systems pre-installed operating system Configuration Programming	
Operating systems pre-installed operating system Configuration	
Operating systems pre-installed operating system Configuration Programming Programming language	Windows Embedded Standard 7 P 64-bit
Operating systems pre-installed operating system Configuration Programming Programming language — LAD	Windows Embedded Standard 7 P 64-bit Yes
Operating systems pre-installed operating system Configuration Programming Programming language — LAD — FBD	Windows Embedded Standard 7 P 64-bit Yes Yes
Operating systems pre-installed operating system Configuration Programming Programming language — LAD — FBD — STL	Windows Embedded Standard 7 P 64-bit Yes Yes Yes
Operating systems pre-installed operating system Configuration Programming Programming language — LAD — FBD — STL — SCL	Windows Embedded Standard 7 P 64-bit Yes Yes Yes Yes Yes
Operating systems pre-installed operating system Configuration Programming Programming language — LAD — FBD — STL — SCL — CFC	Windows Embedded Standard 7 P 64-bit Yes Yes Yes Yes Yes No
Operating systems pre-installed operating system Configuration Programming Programming language — LAD — FBD — STL — SCL — CFC — GRAPH	Windows Embedded Standard 7 P 64-bit Yes Yes Yes Yes Yes No
Operating systems pre-installed operating system Configuration Programming Programming language — LAD — FBD — STL — SCL — CFC — GRAPH Know-how protection	Windows Embedded Standard 7 P 64-bit Yes Yes Yes Yes Yes No Yes
Operating systems pre-installed operating system Configuration Programming Programming language — LAD — FBD — STL — SCL — CFC — GRAPH Know-how protection • User program protection/password protection	Windows Embedded Standard 7 P 64-bit Yes Yes Yes Yes No Yes Yes
Operating systems pre-installed operating system Configuration Programming Programming language — LAD — FBD — STL — SCL — CFC — GRAPH Know-how protection • User program protection/password protection • Copy protection	Windows Embedded Standard 7 P 64-bit Yes Yes Yes Yes No Yes Yes Yes
pre-installed operating system Configuration Programming Programming language — LAD — FBD — STL — SCL — CFC — GRAPH Know-how protection • User program protection/password protection • Copy protection • Block protection Access protection • Protection level: Write protection	Windows Embedded Standard 7 P 64-bit Yes Yes Yes Yes No Yes Yes Yes Yes Yes Yes
Operating systems pre-installed operating system Configuration Programming Programming language — LAD — FBD — STL — SCL — CFC — GRAPH Know-how protection • User program protection/password protection • Copy protection • Block protection Access protection • Protection level: Write protection • Protection level: Read/write protection	Windows Embedded Standard 7 P 64-bit Yes Yes Yes Yes No Yes Yes Yes Yes Yes Yes Yes Yes
Operating systems pre-installed operating system Configuration Programming Programming language — LAD — FBD — STL — SCL — CFC — GRAPH Know-how protection • User program protection/password protection • Copy protection • Block protection Access protection • Protection level: Write protection • Protection level: Read/write protection • Protection level: Complete protection	Windows Embedded Standard 7 P 64-bit Yes Yes Yes Yes No Yes Yes Yes Yes Yes Yes
pre-installed operating system Configuration Programming Programming language — LAD — FBD — STL — SCL — CFC — GRAPH Know-how protection • User program protection/password protection • Copy protection • Block protection Access protection • Protection level: Write protection • Protection level: Read/write protection • Protection level: Complete protection Cycle time monitoring	Windows Embedded Standard 7 P 64-bit Yes Yes Yes Yes Yes No Yes Yes Yes Yes Yes Yes Yes Yes Yes Ye
pre-installed operating system Configuration Programming Programming language — LAD — FBD — STL — SCL — CFC — GRAPH Know-how protection • User program protection/password protection • Copy protection • Block protection Access protection • Protection level: Write protection • Protection level: Read/write protection • Protection level: Complete protection Cycle time monitoring • lower limit	Windows Embedded Standard 7 P 64-bit Yes Yes Yes Yes No Yes Yes Yes Yes Yes Yes Yes Yes Yes Adjustable minimum cycle time
pre-installed operating system Configuration Programming Programming language — LAD — FBD — STL — SCL — CFC — GRAPH Know-how protection • User program protection/password protection • Copy protection • Block protection Access protection • Protection level: Write protection • Protection level: Read/write protection • Protection level: Complete protection Cycle time monitoring • lower limit • upper limit	Windows Embedded Standard 7 P 64-bit Yes Yes Yes Yes Yes No Yes Yes Yes Yes Yes Yes Yes Yes Yes
pre-installed operating system Configuration Programming Programming language — LAD — FBD — STL — SCL — CFC — GRAPH Know-how protection • User program protection/password protection • Copy protection • Block protection • Protection level: Write protection • Protection level: Read/write protection • Protection level: Complete protection Cycle time monitoring • lower limit • upper limit Open Development interfaces	Windows Embedded Standard 7 P 64-bit Yes Yes Yes Yes No Yes Yes Yes Yes Yes Yes Yes Yes Yes Y
pre-installed operating system Configuration Programming Programming language — LAD — FBD — STL — SCL — CFC — GRAPH Know-how protection • User program protection/password protection • Copy protection • Block protection Access protection • Protection level: Write protection • Protection level: Read/write protection • Protection level: Complete protection Cycle time monitoring • lower limit • upper limit Open Development interfaces • Size of ODK SO file, max.	Windows Embedded Standard 7 P 64-bit Yes Yes Yes Yes No Yes Yes Yes Yes Yes Yes Yes Yes Yes Adjustable minimum cycle time
pre-installed operating system Configuration Programming Programming language — LAD — FBD — STL — SCL — CFC — GRAPH Know-how protection • User program protection/password protection • Copy protection • Block protection Access protection • Protection level: Write protection • Protection level: Read/write protection • Protection level: Complete protection Cycle time monitoring • lower limit • upper limit Open Development interfaces • Size of ODK SO file, max. Peripherals/Options	Vindows Embedded Standard 7 P 64-bit Yes Yes Yes Yes Yes No Yes Yes Yes Yes Yes Yes Yes Adjustable minimum cycle time adjustable maximum cycle time 3.8 Mbyte
Operating systems pre-installed operating system Configuration Programming Programming language — LAD — FBD — STL — SCL — CFC — GRAPH Know-how protection • User program protection/password protection • Copy protection • Block protection Access protection • Protection level: Write protection • Protection level: Read/write protection • Protection level: Complete protection Cycle time monitoring • lower limit • upper limit Open Development interfaces • Size of ODK SO file, max. Peripherals/Options SD card	Windows Embedded Standard 7 P 64-bit Yes Yes Yes Yes No Yes Yes Yes Yes Yes Yes Yes Yes Yes Y
pre-installed operating system Configuration Programming Programming language — LAD — FBD — STL — SCL — CFC — GRAPH Know-how protection • User program protection/password protection • Copy protection • Block protection Access protection • Protection level: Write protection • Protection level: Read/write protection • Protection level: Complete protection Cycle time monitoring • lower limit • upper limit Open Development interfaces • Size of ODK SO file, max. Peripherals/Options	Vindows Embedded Standard 7 P 64-bit Yes Yes Yes Yes Yes No Yes Yes Yes Yes Yes Yes Yes Adjustable minimum cycle time adjustable maximum cycle time 3.8 Mbyte

Height	117 mm
Depth	75 mm
Weights	
Weight, approx.	0.83 kg

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