SIEMENS

Data sheet



SIMATIC DP, CPU 1510SP F-1 PN for ET 200SP, central processing unit with work memory 300 KB for program and 1 MB for data, 1st interface: PROFINET IRT with 3-port switch, 25 ns bit performance, SIMATIC Memory Card required, BusAdapter required for port 1 and 2 * *** approvals and certificates according to entry 109817615 at support.industry.siemens.com to be observed! ****

Figure similar

* 1000	
General information	
Product type designation	CPU 1510SP F-1 PN
HW functional status	FS01
Firmware version	V3.0
FW update possible	Yes
Product function	
● I&M data	Yes; I&M0 to I&M3
 Module swapping during operation (hot swapping) 	Yes; Multi-hot swapping
Isochronous mode	Yes; only with PROFINET; with minimum OB $6x$ cycle of $500~\mu s$
Engineering with	
STEP 7 TIA Portal configurable/integrated from version	V18 (FW V3.0); with older TIA Portal versions configurable as 6ES7510-1SJ01-0AB0 $$
Configuration control	
via dataset	Yes
Control elements	
Mode selector switch	1
Supply voltage	
Rated value (DC)	24 V
permissible range, lower limit (DC)	19.2 V
permissible range, upper limit (DC)	28.8 V
Reverse polarity protection	Yes
Mains buffering	
 Mains/voltage failure stored energy time 	10 ms
Input current	
Current consumption (rated value)	0.51 A
Current consumption, max.	0.7 A
Inrush current, max.	1.34 A; Rated value
I²t	0.3 A²·s
Power	
Infeed power to the backplane bus	8.05 W
Power loss	
Power loss, typ.	3.5 W
Memory	
Number of slots for SIMATIC memory card	1
SIMATIC memory card required	Yes
Work memory	
• integrated (for program)	300 kbyte
• integrated (for data)	1 Mbyte
Load memory	

Backer Section Secti	 Plug-in (SIMATIC Memory Card), max. 	32 Gbyte
* narriterance-free CPU processing lines for bit operations, typ.		32 dbyte
GPU processing times for bit correlations, typ.	•	Yes
for bit operations, typ. for fixed point arithmetic, byp. 4 2 ns for floating point arithmetic, byp. 4 2 ns for floating point arithmetic, byp. 4 2 ns for floating point arithmetic, byp. 1 nc 0 999, subdivided into: number range that can be used by the user: 1 55 999, and number range of Disk created vis SFC 98, 80 0000 00 999 • Stor, max. 1 Mb/yer For Disk with absolute addressing, the max: abe is 84 KB FB • Number range • Stor, max. 500 btyle • Number range • Stor, max. 500 btyle • Number of story of time arithmetic and Disk • Number of time arithmetic and Disk • Number of time arithmetic and Disk • Number of cycle of time arithmetic and Disk • Number of process arithmetic and Disk • Number of storthronous mode OBs • Number of storthronous mode OBs • Number of storthronous mode OBs • Number of stantip, OBs • Number of alignificat arithmetic • Per portly class Counters • Number of adaption ous error OBs • Number of adaption ous error ous error ous error ou		
for varied operations, typ. for fised operat arithmetic, typ. for fised operat arithmetic, typ. for fised operat arithmetic, typ. for foating pour arithmetic, typ. foating		25 ns
for finating point arithmetic, byp. of rifloating point arithmetic, typ. STOURDERY S		
for floating point arithmetic, typ. CPULISION S CPULISION S CPULISION S A 1 Month of coloments (total) A 2000, Blocks (OB, FB, FC, DB) and UDTs B 1		
GPUB-blocks Number of elements (total) 8		
Number of elements (total) 8 Number range • Number range • Size, max. 1 Mytyle, For Diss with absolute addressing, the max. Size is 64 KB 8 Number range • Size, max. 1 Mytyle, For Diss with absolute addressing, the max. Size is 64 KB 8 Number range • Size, max. 1 Mytyle, For Diss with absolute addressing, the max. Size is 64 KB 8 Number range • Size, max. 300 kbyte 6 Size, max. 300 kbyte 6 Size, max. 300 kbyte 6 Size, max. 1 Number of fine cycle OBs • Number of time alarm OBs • Number of delay atamn OBs • Number of opelic interrupt OBs • Number of delay atamn OBs • Number of technology synchronous alarm OBs • Number of technology synchronous and OBs • Number of startup OBs • Number of synchronous error OBs • Number of diagnostic alarm OBs • Number of synchronous error OBs • Nu		170 IIS
Number range		4 000 Pleaks (OR ER EQ DR) six d IRTs
Number range Size, max. 1		4 000, Blocks (OB, FB, FC, DB) and ODTS
Size, max. 1 Mbyte; For DBs with absolute addressing, the max. size is 64 KB 1 Mbyte; For DBs with absolute addressing, the max. size is 64 KB 1 Number range 1 0 65 535 2 Size, max. 300 kbyte 60 1 Number range 2 0 65 535 300 kbyte 60 1 Size, max. 300 kbyte 60 20 1 Number of the cycle OBs 100 100 100 100 100 100 100 100 100 10		4 00 000
Size, max. Number range Size, max. Number range Size, max. Number range Size, max. On the size, size, ma	Number range	
Number range 0 65 535	• Size max	•
Number range		, maying, i or 220 min associate data cooming, and make one or the
Size, max. Number range Size, max. OB Size, max. OB Size, max. OB Size, max. OB Size, max. Number of free cycle OBs Number of thee cycle OBs Number of dealy alarm OBs Number of dealy alarm OBs Number of cyclic interrupt OBs Number of process alarm OBs Number of southnous made OBs Number of southnous made OBs Number of startup OBs Number of startup OBs Number of startup OBs Number of startup OBs Number of disquortens and OBs Number of disquortens or OBs Number Any (only limited by the main memory) Retentivity — adjustable Yes ECCounters Number		0 65 535
FC Number range Size, max. 300 kbyte Size, max. 300 kbyte Size, max. 300 kbyte Size, max. Number of free cycle OBs Number of free cycle 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 PPV1 alarm OBS Number of technology synchronous alarm OBs Number of schronous mode OBs Number of startup OBs Number of startup OBs Number of sartup OBs Number of sartup OBs Number of sartup OBs Number of spachronous error OBs Number of synchronous error OBs Number Number, Number, Number Number, Number Number, Number Number, Number, Number Number, Num	-	
Number range Size, max. 0 65 535 Size, max. 300 kbyte Size, max. 300 kbyte Number of free cycle OBs Number of free cycle OBs Number of fee dy alarm OBs 20 Number of cyclic interrupt OBs Number of cyclic interrupt OBs Number of process alarm OBs Number of schornous mode OBs Number of schornous mode OBs Number of startup OBs Number of startup OBs Number of saynchronous error OBs Number of diagnostic alarm OBs Number of saynchronous error OBs Number of diagnostic alarm OBs Number of saynchronous error OBs Number of saynchronous error OBs Number Numbe		ood hayto
• Size, max. • Size, max. • Size, max. • Number of free cycle OBs • Number of free cycle OBs • Number of thine alarm OBs • Number of cycle interrupt OBs • Number of cycle interrupt OBs • Number of process alarm OBs • Number of DPV1 alarm OBs • Number of Interrupt OBs • Number of Synchronous alarm OBs • Number of Synchronous error OBs • Number of Interrupt OBs • Number OBs obsibile for F-blocks Counters, Interes and their retentivity — adjustable • Yes IEC counter • Number of Clock memories		0 65 535
Size, max. Number of free cycle OBs Number of free cycle OBs Number of free dycle internyl OBs Number of cycle internyl OBs Number of process alarm OBs Number of process alarm OBs Number of DPV1 alarm OBs Number of Isochronous mode OBs Number of stachty OBs Number of stachty OBs Number of stachty OBs Number of synchronous error OBs Number of synchronous error OBs Number of synchronous error OBs Number of diagnostic alarm OBs Number of of diagnostic alarm OBs Number of diagnostic alarm OBs Number of diagnostic alarm OBs Number Numbe		
Size, max. Number of free cycle OBs Number of time alarm OBs Number of of time alarm OBs Number of of time alarm OBs Number of cycle interrupt OBs Number of process alarm OBs Number of process alarm OBs Number of sochronous mode OBs Number of sochronous error OBs Number of sartup OBs Number of sochronous error OBs Number of daynothronous error OBs Number of sochronous er		out ruyle
Number of time alarm OBs Number of delay alarm OBs Number of delay alarm OBs Number of delay alarm OBs Number of porcess alarm OBs Number of process alarm OBs Number of porcess alarm OBs Number of DPV1 alarm OBs Number of sterbrology synchronous alarm OBs Number of startup OBs Number of synchronous error oBs Number of synchronous e		200 khyta
Number of time alarm OBs Number of delay alarm OBs Number of optic interrupt OBs Number of optic interrupt OBs Number of process alarm OBs Number of process alarm OBs Number of DPV1 alarm OBs Number of ISS Number Numbe	•	
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 sochronous mode OBs Number of sochronous mode OBs Number of startup OBs Number of startup OBs Number of saynchronous error OBs Number of synchronous error OBs Number of alagnostic alarm OBs Number of diagnostic alarm OBs Number of alagnostic alarm OBs Number of alagnostic alarm OBs Number of precipied of the original ori	·	
Number of cyclic interrupt OBs Number of process 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 asynchronous error OBs Number of asynchronous error OBs Number of diagnostic alarm OBs Number of diagnostic alarm OBs Number of of diagnostic alarm OBs Number of victoria of victo		
Number of process alarm OBs Number of porty alarm OBs Number of sochronous mode OBs Number of technology synchronous alarm OBs Number of technology synchronous alarm OBs Number of sartup OBs Number of asynchronous error OBs Number of synchronous error OBs Number of diagnostic alarm OBs Number of diagnostic alarm OBs Nesting depth per priority class Per priority class Vat; Up to 8 possible for F-blocks Counters, timers and their retentivity Zo counter Number	•	20
Number of DPV1 alarm OBs Number of schronous mode OBs Number of startup OBs Number of startup OBs Number of saynchronous alarm OBs Number of saynchronous error OBs Number of asynchronous error OBs Number of diagnostic alarm OBs Number of diagnostic alarm OBs Number of diagnostic alarm OBs Nesting depth Per priority class Counters, timers and their retentivity Strounter Number	 Number of cyclic interrupt OBs 	20; With minimum OB 3x cycle of 250 μs
Number of isochronous mode OBs Number of startup OBs Number of startup OBs Number of asynchronous error OBs Number of synchronous error OBs Number of Synchro	 Number of process alarm OBs 	50
Number of technology synchronous alarm OBs Number of startup OBs Number of startup OBs Number of synchronous 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) Retentivity — adjustable Retentivity — adjustable Yes S7 times Number Retentivity — adjustable Yes S7 times Number Retentivity — adjustable Yes S6 times Number Retentivity — adjustable Yes S7 times Number Retentivity — adjustable Yes S6 times Number Retentivity — adjustable Yes S7 times Number Retentivity — adjustable Yes S6 timer Number Retentivity — adjustable Yes S7 times Number Retentivity — adjustable Yes S6 kyte, in total, available retentive memory for bit memories, timers, counters, D8s, and technology data (axes): 216 KB Fiag Size, max. Number of clock memories S8 clock memory bit, grouped into one clock memory byte	 Number of DPV1 alarm OBs 	3
Number of startup 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 Numbe	 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 Secures Number of synchronous error OBs Per priority class Secures Number of diagnostic alarm OBs Secures Secures Secures Number of diagnostic alarm OBs Secures Number of diagnostic alarm OBs Secures Secures Number of diagnostic alarm OBs Secures Secures Secures Secures Number of diagnostic alarm OBs Secures Secure	 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 Number Any (only limited by the main memory) Retentivity — adjustable Yes IEC counter Number Any (only limited by the main memory) Retentivity — adjustable Yes S7 times Number Aumber Retentivity — adjustable Yes S7 times Number Any (only limited by the main memory) Retentivity — adjustable Yes IEC timer Number Any (only limited by the main memory) Retentivity — adjustable Yes Retentivity — adjustable Yes Retentivity — adjustable Yes Stata areas and their retentivity Retentivity Retentivity — adjustable Yes Data areas and their retentivity Retentive data area (incl. timers, counters, flags), max. 256 kbyte; in total; available retentive memory for bit memories, timers, counters, DBs, and technology data (axes): 216 KB Flag Size, max. Number of clock memories 8; 8 clock memory bit, grouped into one clock memory byte 	 Number of startup OBs 	100
Number of diagnostic alarm OBs Nesting depth	 Number of asynchronous error OBs 	4
Nesting depth oper priority class Counters, timers and their retentivity S7 counter Number Number Any (only limited by the main memory) Retentivity — adjustable Yes S7 times Number Any (only limited by the main memory) Retentivity — adjustable Yes S7 times Number Any (only limited by the main memory) Retentivity — adjustable Yes S7 times Number Any (only limited by the main memory) Retentivity — adjustable Yes S7 times Number Any (only limited by the main memory) Retentivity — adjustable Yes SEC timer Number Any (only limited by the main memory) Retentivity — adjustable Yes SEC timer Solvation Any (only limited by the main memory) Retentivity — adjustable Yes Set areas and their retentivity Retentive data area (incl. timers, counters, flags), max. SEC timer Solvation total; available retentive memory for bit memories, timers, counters, DBs, and technology data (axes): 216 KB Flag Size, max. Number of clock memories 8; 8 clock memory bit, grouped into one clock memory byte	Number of synchronous error OBs	2
Nesting depth • per priority class Counters, timers and their retentivity S7 counter • Number • Number 2 048 Retentivity — adjustable Yes IEC counter • Number Any (only limited by the main memory) Retentivity — adjustable Yes S7 times • Number • Any (only limited by the main memory) Retentivity — adjustable Yes IEC timer • Number • Number • Any (only limited by the main memory) Retentivity — adjustable Yes IEC timer • Number • Number of clock memories 16 kbyte • Size, max. • Number of clock memories 8; 8 clock memory bit, grouped into one clock memory byte Data blocks	•	1
per priority class Counters, timers and their retentivity S7 counter Number Retentivity — adjustable Pes IEC counter Number Any (only limited by the main memory) Retentivity — adjustable Yes S7 times Number Retentivity — adjustable Yes S7 times Number Retentivity — adjustable Yes IEC timer Number Any (only limited by the main memory) Retentivity — adjustable Yes IEC timer Number Any (only limited by the main memory) Retentivity — adjustable Yes IEC timer Number Retentivity — adjustable Yes Data areas and their retentivity Retentive data area (incl. timers, counters, flags), max. 256 kbyte; in total; available retentive memory for bit memories, timers, counters, DBs, and technology data (axes): 216 KB Flag Size, max. 16 kbyte Number of clock memories 8; 8 clock memory bit, grouped into one clock memory byte		
Counters, timers and their retentivity S7 counter Number Algorithm Any (only limited by the main memory) Retentivity — adjustable Yes S7 times Number Number Number Number Any (only limited by the main memory) Retentivity — adjustable Yes S7 times Number Any (only limited by the main memory) Retentivity — adjustable Yes IEC timer Number Any (only limited by the main memory) Retentivity — adjustable Yes Data areas and their retentivity Retentive data area (incl. timers, counters, flags), max. 256 kbyte; in total; available retentive memory for bit memories, timers, counters, DBs, and technology data (axes): 216 KB Flag Size, max. Number of clock memories S 8 clock memory bit, grouped into one clock memory byte	* '	24: Up to 8 possible for F-blocks
S7 counter Number Number Adjustable Yes IEC counter Number Any (only limited by the main memory) Retentivity Any (only limited by the main memory) Retentivity Any (only limited by the main memory) Retentivity And (only limited by the main memory) Yes S7 times Number Number Number Any (only limited by the main memory) Retentivity Any (only limited by the main memory) Retentivity Any (only limited by the main memory) Retentivity Any (only limited by the main memory) Retentive data area and their retentivity Retentive data area (incl. timers, counters, flags), max. 256 kbyte; in total; available retentive memory for bit memories, timers, counters, DBs, and technology data (axes): 216 KB Flag Size, max. Number of clock memories Retentive memory byte		
Number 2 048 Retentivity — adjustable Yes IEC counter • Number Any (only limited by the main memory) Retentivity — adjustable Yes 57 times • Number 2 048 Retentivity — adjustable Yes IEC timer • Number Any (only limited by the main memory) Retentivity — adjustable Yes IEC timer • Number Any (only limited by the main memory) Retentivity — adjustable Yes Data areas and their retentivity Retentive data area (incl. timers, counters, flags), max. 256 kbyte; in total; available retentive memory for bit memories, timers, counters, DBs, and technology data (axes): 216 KB Flag • Size, max. • Size, max. • Number of clock memories 8; 8 clock memory bit, grouped into one clock memory byte		
Retentivity		2 048
adjustable Yes IEC counter • Number Any (only limited by the main memory) Retentivity adjustable Yes 57 times • Number 2 048 Retentivity adjustable Yes IEC timer • Number Any (only limited by the main memory) Retentivity adjustable Yes IEC timer • Number Any (only limited by the main memory) Retentivity adjustable Yes Data areas and their retentivity Retentive data area (incl. timers, counters, flags), max. 256 kbyte; in total; available retentive memory for bit memories, timers, counters, DBs, and technology data (axes): 216 KB Flag • Size, max. 16 kbyte • Number of clock memories 8; 8 clock memory bit, grouped into one clock memory byte		2 040
IEC counter • Number Any (only limited by the main memory) Retentivity — adjustable Yes \$7 times • Number Any (only limited by the main memory) Retentivity — adjustable Yes IEC timer • Number • Number Any (only limited by the main memory) Retentivity — adjustable Yes Data areas and their retentivity Retentive data area (incl. timers, counters, flags), max. \$2 56 kbyte; in total; available retentive memory for bit memories, timers, counters, DBs, and technology data (axes): 216 KB Flag • Size, max. • Number of clock memories \$8; 8 clock memory bit, grouped into one clock memory byte Data blocks	ŕ	Voc
Any (only limited by the main memory) Retentivity — adjustable Yes Number 2 048 Retentivity — adjustable Yes IEC timer Number Any (only limited by the main memory) Retentivity — adjustable Yes IEC timer Number Any (only limited by the main memory) Retentivity — adjustable Yes Data areas and their retentivity Retentive data area (incl. timers, counters, flags), max. 256 kbyte; in total; available retentive memory for bit memories, timers, counters, DBs, and technology data (axes): 216 KB Flag Size, max. Number of clock memories Data blocks		165
Retentivity — adjustable Number Number 2 048 Retentivity — adjustable Yes IEC timer Number Number Any (only limited by the main memory) Retentivity — adjustable Yes Data areas and their retentivity Retentive data area (incl. timers, counters, flags), max. Flag Size, max. Number of clock memories 16 kbyte Bate blocks 16 kbyte Size of the second		Any (only limited by the main memory)
— 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. 256 kbyte; in total; available retentive memory for bit memories, timers, counters, DBs, and technology data (axes): 216 KB Flag ● Size, max. 16 kbyte ● Number of clock memories 8; 8 clock memory bit, grouped into one clock memory byte Data blocks		Any (only limited by the main memory)
S7 times ● Number Retentivity — adjustable IEC timer ● Number Any (only limited by the main memory) Retentivity — adjustable Yes Data areas and their retentivity Retentive data area (incl. timers, counters, flags), max. 256 kbyte; in total; available retentive memory for bit memories, timers, counters, DBs, and technology data (axes): 216 KB Flag ● Size, max. ● Size, max. ● Number of clock memories 8; 8 clock memory bit, grouped into one clock memory byte Data blocks	·	Von
● Number Retentivity — adjustable Pes IEC timer ● Number Any (only limited by the main memory) Retentivity — adjustable Yes Data areas and their retentivity Retentive data area (incl. timers, counters, flags), max. 256 kbyte; in total; available retentive memory for bit memories, timers, counters, DBs, and technology data (axes): 216 KB Flag ● Size, max. ● Size, max. ● Number of clock memories 8; 8 clock memory bit, grouped into one clock memory byte Data blocks		1 05
Retentivity — adjustable Pes IEC timer Number Any (only limited by the main memory) Retentivity — adjustable Yes Data areas and their retentivity Retentive data area (incl. timers, counters, flags), max. 256 kbyte; in total; available retentive memory for bit memories, timers, counters, DBs, and technology data (axes): 216 kB Flag Size, max. Size, max. Number of clock memories 8; 8 clock memory bit, grouped into one clock memory byte Data blocks		2.040
— adjustable Pes IEC timer Number Any (only limited by the main memory) Retentivity — adjustable Yes Data areas and their retentivity Retentive data area (incl. timers, counters, flags), max. 256 kbyte; in total; available retentive memory for bit memories, timers, counters, DBs, and technology data (axes): 216 KB Flag Size, max. Number of clock memories 8; 8 clock memory bit, grouped into one clock memory byte Data blocks		Z U48
IEC timer	·	V.
● Number Retentivity — adjustable Pata areas and their retentivity Retentive data area (incl. timers, counters, flags), max. 256 kbyte; in total; available retentive memory for bit memories, timers, counters, DBs, and technology data (axes): 216 KB Flag ● Size, max. ● Number of clock memories 8; 8 clock memory bit, grouped into one clock memory byte Data blocks		Yes
Retentivity — adjustable Pata areas and their retentivity Retentive data area (incl. timers, counters, flags), max. 256 kbyte; in total; available retentive memory for bit memories, timers, counters, DBs, and technology data (axes): 216 KB Flag Size, max. Number of clock memories 8; 8 clock memory bit, grouped into one clock memory byte Data blocks		
— adjustable Pata areas and their retentivity Retentive data area (incl. timers, counters, flags), max. 256 kbyte; in total; available retentive memory for bit memories, timers, counters, DBs, and technology data (axes): 216 KB Flag Size, max. Number of clock memories 8; 8 clock memory bit, grouped into one clock memory byte Data blocks		Any (only limited by the main memory)
Pata areas and their retentivity Retentive data area (incl. timers, counters, flags), max. 256 kbyte; in total; available retentive memory for bit memories, timers, counters, DBs, and technology data (axes): 216 KB Flag Size, max. Number of clock memories 8; 8 clock memory bit, grouped into one clock memory byte Data blocks	•	
Retentive data area (incl. timers, counters, flags), max. 256 kbyte; in total; available retentive memory for bit memories, timers, counters, DBs, and technology data (axes): 216 KB Flag Size, max. Number of clock memories 8; 8 clock memory bit, grouped into one clock memory byte Data blocks	·	Yes
counters, DBs, and technology data (axes): 216 KB Flag • Size, max. • Number of clock memories Bata blocks counters, DBs, and technology data (axes): 216 KB 16 kbyte 8; 8 clock memory bit, grouped into one clock memory byte		
Flag	Retentive data area (incl. timers, counters, flags), max.	
● Size, max. • Number of clock memories 16 kbyte 8; 8 clock memory bit, grouped into one clock memory byte Data blocks	Fire	counters, DBs, and technology data (axes): 216 KB
 Number of clock memories Data blocks 8; 8 clock memory bit, grouped into one clock memory byte 	-	
Data blocks		
		8; 8 clock memory bit, grouped into one clock memory byte
Retentivity adjustable Yes		
	Retentivity adjustable	Yes



Retentivity preset	No
Local data	NU
• per priority class, max.	64 kbyte; max. 16 KB per block
Address area	04 kbyte, max. 10 kb per block
Number of IO modules	2 048; max. number of modules / submodules
I/O address area	2 040, max. number of modules / submodules
• Inputs	32 kbyte; All inputs are in the process image
Outputs	32 kbyte; All inputs are in the process image
per integrated IO subsystem	32 kbyte, All outputs are in the process image
— Inputs (volume)	8 kbyte
— Outputs (volume)	8 kbyte
per CM/CP	O ROYCO
— Inputs (volume)	8 kbyte
— Outputs (volume)	8 kbyte
Subprocess images	O KDyto
Number of subprocess images, max.	32
Address space per module	J2
	288 hyte: For input and output data respectively
Address space per module, max. Address space per station.	288 byte; For input and output data respectively
Address space per station	2.560 byte: for central inputs and outputs; depending an configuration; 2.040
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. IF/DB Link)
Number of DP macters	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
	1
Number of IO Controllers	4
• integrated	1
• Via CM	0
Rack	CO. ODII - CA
Modules per rack, max. Over the of a county of the second of the s	82; CPU + 64 modules + server module (mounting width max. 1 m) + 16 ET 200AL modules
Quantity of operable ET 200SP modules, max.	64
Quantity of operable ET 200AL modules, max. PIP CM	16
● Number of PtP CMs	the number of connectable PtP CMs is only limited by the number of available slots
Time of day	5,500
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	10 0, 1 yp.: 2 0
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	110
Interface types	Voc. V1 D2: ont V1 D1 and V1 D2 via Dual denter D1 D1 D145
RJ 45 (Ethernet) Number of parts	Yes; X1 P3; opt. X1 P1 and X1 P2 via BusAdapter BA 2x RJ45
Number of ports integrated quiteb	3; 1. integr. + 2. via BusAdapter
• integrated switch	Yes
BusAdapter (PROFINET)	Yes; compatible BusAdapters: BA 2x RJ45, BA 2x FC, BA 2x M12



Protocols	
IP protocol	Yes; IPv4
PROFINET IO Controller	Yes
PROFINET IO Device	Yes
 SIMATIC communication 	Yes
Open IE communication	Yes; Optionally also encrypted
Web server	Yes
Media redundancy	Yes
PROFINET IO Controller	
Services	
— PG/OP communication	Yes
— Isochronous mode	Yes
Direct data exchange	Yes; Requirement: IRT and isochronous mode (MRPD optional)
— IRT	Yes
— PROFlenergy	Yes; per user program
Prioritized startup	Yes; Max. 32 PROFINET devices
•	
Number of connectable IO Devices, max.	128; In total, up to 512 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFINET
— Of which IO devices with IRT, max.	64
Number of connectable IO Devices for RT, max.	128
— of which in line, max.	128
 Number of IO Devices that can be simultaneously activated/deactivated, max. 	8; in total across all interfaces
 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 500 μs of the isochronous OB is decisive
— for send cycle of 500 μs	500 μ s to 8 ms; Note: In the case of IRT with isochronous mode, the minimum update time of 625 μ s 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 μ s: 375 μ s, 625 μ s 3 875 μ s)
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	Yes
Isochronous mode	No
— ISOCITIONOUS Mode — 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
2. Interface	
Interface types	Ver Vir ON DD weekle
• RS 485	Yes; Via CM DP module
Number of ports	1
Protocols	
PROFIBUS DP master	Yes
PROFIBUS DP slave	Yes
SIMATIC communication	Yes
PROFIBUS DP master	
Number of connections, max.	48; Of which 4 each reserved for ES and HMI



Number of DP slaves, max.	125; In total, up to 512 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFINET
Services	
— PG/OP communication	Yes
— Equidistance	No
— Isochronous mode	No
Activation/deactivation of DP slaves	Yes
Interface types	160
RJ 45 (Ethernet)	Von
• 100 Mbps	Yes
Autonegotiation	Yes
Autocrossing	Yes
Industrial Ethernet status LED	Yes
RS 485	
Transmission rate, max.	12 Mbit/s
Protocols	
PROFIsafe	Yes; V2.4 / V2.6
Number of connections	
 Number of connections, max. 	128; via integrated interfaces of the CPU and connected CPs / CMs
 Number of connections reserved for ES/HMI/web 	10
 Number of connections via integrated interfaces 	88
 Number of connections per CP/CM 	32
Number of S7 routing paths	16
Redundancy mode	
H-Sync forwarding	Yes
Media redundancy	
— 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. 	200 ms; For MRP, bumpless for MRPD
 Number of stations in the ring, max. 	50
SIMATIC communication	
PG/OP communication	Yes; encryption with TLS V1.3 pre-selected
S7 routing	Yes
Data record routing	Yes
S7 communication, as server	Yes
S7 communication, as client	Yes
User data per job, max.	See online help (S7 communication, user data size)
Open IE communication	coo onimic neip (er communication, accir cata size)
• TCP/IP	Yes
— Data length, max.	64 kbyte
several passive connections per port, supported	Yes
Several passive confrictions per port, supported ISO-on-TCP (RFC1006)	Yes
— Data length, max.	64 kbyte
• UDP	Yes
— Data length, max.	2 kbyte; 1 472 bytes for UDP broadcast
— UDP multicast	Yes; max. 78 multicast circuits
• DHCP	Yes
• DNS	Yes
• SNMP	Yes
• DCP	Yes
• LLDP	Yes
Encryption	Yes; Optional
Web server	
• HTTP	Yes; Standard and user pages
• HTTPS	Yes; Standard and user pages
OPC UA	
Runtime license required	Yes; "Small" license required



Application authoritisation	Vac
Application authentication Security policies	Yes Available security policies: None Resict28Res15, Resic256Res15
— Security policies	Available security policies: None, Basic128Rsa15, Basic256Rsa15, Basic256Sha256
— User authentication	"anonymous" or by user name & password
 Number of connections, max. 	4
 Number of nodes of the client interfaces, recommended max. 	1 000
— Number of elements for one call of OPC_UA_NodeGetHandleList/OPC_UA_ReadList/OPC_I max.	300
Number of elements for one call of OPC_UA_NameSpaceGetIndexList, max.	20
Number of elements for one call of OPC_UA_MethodGetHandleList, max.	100
Number of simultaneous calls of the client instructions for session management, per connection, max.	1
 Number of simultaneous calls of the client instructions for data access, per connection, max. 	5
 Number of registerable nodes, max. 	5 000
 Number of registerable method calls of OPC_UA_MethodCall, max. 	100
 Number of inputs/outputs when calling OPC_UA_MethodCall, max. 	20
OPC UA Server	Yes; Data Access (Read, Write, Subscribe), Method Call, Alarms & Condition
Application authoritisation	(A&C), Custom Address Space Yes
Application authentication	available security policies: None, Basic128Rsa15, Basic256Rsa15,
— Security policies	Basic256Sha256, Aes128Sha256RsaOaep, Aes256Sha256RsaPss
— User authentication	"anonymous" or by user name & password
GDS support (certificate management)	Yes
— Number of sessions, max.	32
 Number of accessible variables, max. 	50 000
 Number of registerable nodes, max. 	10 000
 Number of subscriptions per session, max. 	50
— Sampling interval, min.	100 ms
— Publishing interval, min.	200 ms
 Number of server methods, max. 	20
 Number of inputs/outputs per server method, max. 	20
 Number of monitored items, recommended max. 	4 000; for 1 s sampling interval and 1 s send interval
 Number of server interfaces, max. 	10 of each "Server interfaces" / "Companion specification" type and 20 of the type "Reference namespace"
 Number of nodes for user-defined server interfaces, max. 	15 000
 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	
 Status/control variable 	Yes; without fail-safe
• Variables	inputs/outputs, bit memories, DBs, peripheral I/Os (without fail-safe), times, counters
 Number of variables, max. — of which status variables, max. 	200: per job
— OF WORCH STATUS VARIABLES THAX	200; per job



— of which control variables, max.	200; per job
— of which control variables, max.	200, per jou
• Forcing	Yes; without fail-safe
Forcing, variables	peripheral inputs/outputs (without fail-safe)
Number of variables, max.	200
Diagnostic buffer	
• present	Yes
Number of entries, max.	1 000
— of which powerfail-proof	500
Traces	
Number of configurable Traces	4; Up to 512 KB of data per trace are possible
Interrupts/diagnostics/status information	
Diagnostics indication LED	
RUN/STOP LED	Yes
• ERROR LED	Yes
MAINT LED	Yes
 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
	program; selection guide via the TIA Selection Tool
 Number of available Motion Control resources for technology objects 	1 120
 Required Motion Control resources 	
— 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
 Positioning axis 	
 Number of positioning axes at motion control cycle of 4 ms (typical value) 	11
 Number of positioning axes at motion control cycle of 8 ms (typical value) 	14
Controller	
PID_Compact	Yes; Universal PID controller with integrated optimization
PID_3Step	Yes; PID controller with integrated optimization for valves
PID-Temp	Yes; PID controller with integrated optimization for temperature
Counting and measuring	
High-speed counter	Yes
Standards, approvals, certificates	
Highest safety class achievable in safety mode	
 Performance level according to ISO 13849-1 	PLe
SIL acc. to IEC 61508	SIL 3
Probability of failure (for service life of 20 years and repair time	e of 100 hours)
 Low demand mode: PFDavg in accordance with SIL3 	< 2.00E-05
 High demand/continuous mode: PFH in accordance with SIL3 	< 1.00E-09
Ambient conditions	
Ambient temperature during operation	
 horizontal installation, min. 	-30 °C; No condensation
 horizontal installation, max. 	60 °C
 vertical installation, min. 	-30 °C; No condensation
• vertical installation, max.	50 °C
Altitude during operation relating to sea level	
Installation altitude above sea level, max.	5 000 m; Restrictions for installation altitudes > 2 000 m, see manual
configuration / header	
configuration / programming / header	
Programming language	



— LAD	Yes; incl. failsafe
— FBD	Yes; incl. failsafe
— STL	Yes
— SCL	Yes
— GRAPH	Yes
Know-how protection	
 User program protection/password protection 	Yes
 Copy protection 	Yes
Block protection	Yes
Access protection	
 protection of confidential configuration data 	Yes
 Protection level: Write protection 	Yes
 Protection level: Read/write protection 	Yes
 Protection level: Write protection for Failsafe 	Yes
Protection level: Complete protection	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.	265 g

last modified:

3/12/2024

