SIEMENS

Data sheet

6ES7515-2AM01-0AB0



SIMATIC S7-1500, CPU 1515-2 PN, CENTRAL PROCESSING UNIT WITH WORKING MEMORY 500 KB FOR PROGRAM AND 3 MB FOR DATA, 1. INTERFACE: PROFINET IRT WITH 2 PORT SWITCH, 2. INTERFACE: ETHERNET, 30 NS BIT-PERFORMANCE, SIMATIC MEMORY CARD NECESSARY

General information	
Product type designation	CPU 1515-2 PN
HW functional status	FS01
Firmware version	V1.8
Engineering with	
 STEP 7 TIA Portal configurable/integrated as of version 	V13 SP1 Update 4
Configuration control	
via dataset	Yes
Display	
Screen diagonal (cm)	6.1 cm
Control elements	
Number of keys	6
Mode selector switch	1.
Supply voltage	
Type of supply voltage	24 V DC
permissible range, lower limit (DC)	19.2 V

Reverse polarity protection Mains buffering Mains/voltage failure stored energy time Durrent Current consumption (rated value) Na A Inrush current, max. Pa La A; Rated value Power consumption from the backplane bus (balanced) Infeed power to the backplane bus Memory Memory SIMATIC Memory Card required Work memory integrated (for program) integrated (for program) integrated (for data) Maybe Load memory Plug-in (SIMATIC Memory Card), max. Backup maintenance-free Yes CPU processing times for bit operations, typ. for fixed point arithmetic, typ. Mansum January Mensum January Men	permissible range, upper limit (DC)	28.8 V
Mains buffering • Mains/voltage failure stored energy time Tournet consumption (rated value) Diameter consumption from the backplane bus Power Consumption from the backplane bus (balanced) Infeed power to the backplane bus 12 W Power loss Power loss, typ. 6.3 W Memory SIMATIC Memory Card required • integrated (for program) • integrated (for data) • integrated (for data) 12 W Salve Backup • maintenance-free • Yes CPU processing times for bit operations, typ. 13 on s 15 on s 16 on s 17 on s 18 on s 18 on s 19 on s 19 on s 19 on s 19 on s 10 o		
Mains/voltage failure stored energy time **Input current** **Current consumption (rated value)** **Inrush current, max.** **Prower** **Power consumption from the backplane bus (balanced)** **Infeed power to the backplane bus (balanced)*	· · · · · · · · · · · · · · · · · · ·	165
Current consumption (rated value) Current consumption (rated value) Inrush current, max. 2.4 A; Rated value 0.02 A**s Power Power or Sever to the backplane bus (balanced) Infeed power to the backplane bus 12 W Power loss Power loss, typ. 6.3 W Memory SIMATIC Memory Card required Work memory Integrated (for program) Integrated (for data) September of the data) September of the data (Simanus of the data) September of the data) Backup Plug-in (SIMATIC Memory Card), max. Backup Processing times For bit operations, typ. For word operations, typ. For fixed point arithmetic, typ. For fixed point arithmetic, typ. For fixed point arithmetic, typ. Publicks Pumber of elements (total) September of september of the data on be used by the user: 1 59 999, and number range of DBs created via SFC 86: 6000 60 999 Number range Size, max. Size, max. South the value of the data of the data of the DB is 64 KB FB Number range Size, max. South the value of the construction of the data of the DB is 64 KB Number range Size, max. South the value of the DB is 64 KB South the value of the DB is 64 KB South the value of the DB is 64 KB Size, max. South the value of the DB is 64 KB South the value of the DB is 64 KB South the value of the DB is 64 KB Size, max. South the value of the DB is 64 KB South the value of the DB is 64 KB Size, max. South the value of the DB is 64 KB Size, max. South the value of the DB is 64 KB Size, max. South the value of the DB is 64 KB Size, max. South the value of the DB is 64 KB Size, max. South the value of the DB is 64 KB Size, max. South the value of the DB is 64 KB Size, max. South the value of the DB is 64 KB Size, max. South the value of the DB is 64 KB Size, max. South the value of the DB is 64 KB Size, max. South the value of the DB is 64 KB		5 ms
Current consumption (rated value) Inrush current, max. 2.4 A; Rated value 0.02 A*s Power Power Power consumption from the backplane bus (balanced) Infeed power to the backplane bus (balanced) Infeed power to the backplane bus 12 W Power loss Power loss Power loss, typ. 6.3 W Memory SIMATIC Memory Card required • Integrated (for program) • Integrated (for data) • Integrated (for data) • Plug-in (SIMATIC Memory Card), max. Backup • maintenance-free Pyes CPU processing times for bit operations, typ. 50 of so so for word operations, typ. 30 ns for word operations, typ. 36 ns for floating point arithmetic, typ. 48 ns for floating point arithmetic, typ. 192 ns CPU-blocks Number of elements (total) © Number range • Number range • Size, max. 3 Mbyte; For non-optimized block accesses, the max. size of the EBB • Number range • Size, max. 500 kbyte	- Mains/voltage failule stored energy time	C IIIC
Inrush current, max. 2.4 A; Rated value 0.02 A*s Power consumption from the backplane bus (balanced) Infeed power to the backplane bus 12 W Power loss Power loss. Power loss, typ. 6.3 W Memory SIMATIC Memory Card required Yes Work memory • integrated (for program) 500 kbyte • integrated (for program) 32 Gbyte Backup • Plug-in (SIMATIC Memory Card), max. Backup • maintenance-free Yes CPU processing times for bit operations, typ. 30 ns for word operations, typ. 36 ns for word operations, typ. 48 ns for fotating point arithmetic, typ. 48 ns for foating point arithmetic, typ. 48 ns for foating point arithmetic, typ. 50 (00), In addition to blocks such as DBs, FBs and FCs, UDTs, global constants, etc. are also regarded as elements DB • Number range • Size, max. 1 60 999, subdivided into: number range of DBs created via SFC 86: 60 000 60 999 • Size, max. 500 kbyte	Input current	
Power consumption from the backplane bus (balanced) Infeed power to the backplane bus 12 W Power loss Power loss Power loss Power loss, typ. 6.3 W Memory SIMATIC Memory Card required Work memory Integrated (for program) Integrated (for data) Integrated (for da	<u> </u>	0.8 A
Power consumption from the backplane bus (balanced) Infeed power to the backplane bus 12 W Power loss Power loss, typ. 6.3 W Memory SIMATIC Memory Card required Yes Work memory • integrated (for program) 500 kbyte • integrated (for program) 500 kbyte • integrated (for data) 3 Mbyte Load memory • Plug-in (SIMATIC Memory Card), max. 32 Gbyte Backup • maintenance-free Yes CPU processing times for bit operations, typ. 30 ns for fixed point arithmetic, typ. 48 ns for floating point arithmetic, typ. 192 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 range 1 60 999; subdivided into: number range that can be used by the user: 1 59 999, and number range of DBs created via SFC 86 60 000 60 999 • Size, max. 3 Mbyte; For non-optimized block accesses, the max. size of the DB is 64 KB FB • Number range 0 65 535 • Size, max. 500 kbyte		
Power consumption from the backplane bus (balanced) Infeed power to the backplane bus Power loss Power loss, typ. 6.3 W Memory SIMATIC Memory Card required Integrated (for program) Integrated (for program) Integrated (for data) Integrat	I²t	0.02 A ² ·s
Power consumption from the backplane bus (balanced) Infeed power to the backplane bus Power loss Power loss, typ. 6.3 W Memory SIMATIC Memory Card required Integrated (for program) Integrated (for program) Integrated (for data) Integrat	Power	
Infeed power to the backplane bus 22 W Power loss Power loss, typ. 6.3 W Memory SIMATIC Memory Card required Work memory • integrated (for program) • integrated (for data) Load memory • Plug-in (SIMATIC Memory Card), max. Backup • maintenance-free Yes CPU processing times for bit operations, typ. 30 ns for word operations, typ. 36 ns for fixed point arithmetic, typ. 48 ns for floating point arithmetic, typ. 192 ns CPU-blocks Number of elements (total) • Number range • Size, max. 3 Mbyte 12 W 6.3 W As Moyte 500 kbyte 6.3 W As Moyte FB • Number range 0 65 535 500 kbyte	Power consumption from the backplane bus	6.2 W
Power loss Power loss, typ. 6.3 W Memory SIMATIC Memory Card required Yes Work memory • integrated (for program) • integrated (for data) Load memory • Plug-in (SIMATIC Memory Card), max. Backup • maintenance-free Yes CPU processing times for bit operations, typ. 30 ns for word operations, typ. 36 ns for floating point arithmetic, typ. 48 ns for floating point arithmetic, typ. 192 ns CPU-blocks Number of elements (total) • Number range • Size, max. 6 Size, max. 5 Size, max. 5 Size, max. 6 Size, max.	(balanced)	
Power loss, typ. Memory	Infeed power to the backplane bus	12 W
SIMATIC Memory Card required Yes Work memory integrated (for program) integrated (for data) Subyte Subyte Plug-in (SIMATIC Memory Card), max. Subyte Plug-in (SIMATIC Memory Card), max. Subyte Plug-in (SIMATIC Memory Card), max. Subyte Subyte Processing times For bit operations, typ. Subyte Sub	Power loss	
SIMATIC Memory Card required Work memory integrated (for program) integrated (for data) Day by the substituting and substituting the substituting and substitution and substituting and substitution and substituting and substituting and substituting and substi	Power loss, typ.	6.3 W
SIMATIC Memory Card required Work memory integrated (for program) integrated (for data) Day by the substituting and substituting the substituting and substitution and substituting and substitution and substituting and substituting and substituting and substi	Memory	
 integrated (for program) integrated (for data) 3 Mbyte Load memory Plug-in (SIMATIC Memory Card), max. 32 Gbyte Backup maintenance-free Yes CPU processing times for bit operations, typ. 30 ns for word operations, typ. 48 ns for floating point arithmetic, typ. 192 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 range 1 60 999; subdivided into: number range that can be used by the user: 1 59 999, and number range of DBs created via SFC 86: 60 000 60 999 Size, max. Size, max. 500 kbyte FB Number range 0 65 535 Size, max. 500 kbyte 		Yes
 integrated (for data) 3 Mbyte Load memory Plug-in (SIMATIC Memory Card), max. 32 Gbyte Backup maintenance-free Yes CPU processing times for bit operations, typ. 30 ns for word operations, typ. 48 ns for floating point arithmetic, typ. 192 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 range Size, max. 3 Mbyte; For non-optimized block accesses, the max. size of the DB is 64 KB FB Number range Size, max. 500 kbyte 	Work memory	
Load memory Plug-in (SIMATIC Memory Card), max. 32 Gbyte Backup maintenance-free Yes CPU processing times for bit operations, typ. 30 ns for word operations, typ. 36 ns for fixed point arithmetic, typ. 48 ns for floating point arithmetic, typ. 192 ns CPU-blocks Number of elements (total) Number of elements (total) Number range Number range 1 60 999; subdivided into: number range that can be used by the user: 1 59 999, and number range of DBs created via SFC 86: 60 000 60 999 Size, max. 3 Mbyte; For non-optimized block accesses, the max. size of the DB is 64 KB FB Number range Number range O 65 535 Size, max. 500 kbyte	• integrated (for program)	500 kbyte
Plug-in (SIMATIC Memory Card), max. 32 Gbyte Backup maintenance-free Yes CPU processing times for bit operations, typ. 30 ns for word operations, typ. 36 ns for fixed point arithmetic, typ. 48 ns for floating point arithmetic, typ. 192 ns CPU-blocks Number of elements (total) Number range Number range Number range Size, max. Number range Number range Number range Size, max. Number range Size, max. Number range Number range Number range Number range Size, max. Number range	• integrated (for data)	3 Mbyte
● maintenance-free Yes CPU processing times for bit operations, typ. 30 ns for word operations, typ. 36 ns for fixed point arithmetic, typ. 48 ns for floating point arithmetic, typ. 192 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 range 1 60 999; subdivided into: number range that can be used by the user: 1 59 999, and number range of DBs created via SFC 86: 60 000 60 999 ● Size, max. 3 Mbyte; For non-optimized block accesses, the max. size of the DB is 64 KB FB ● Number range 0 65 535 ● Size, max. 500 kbyte	Load memory	
 ◆ maintenance-free Yes CPU processing times for bit operations, typ. for word operations, typ. 36 ns for fixed point arithmetic, typ. 48 ns for floating point arithmetic, typ. 192 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 range 1 60 999; subdivided into: number range that can be used by the user: 1 59 999, and number range of DBs created via SFC 86: 60 000 60 999 Size, max. 3 Mbyte; For non-optimized block accesses, the max. size of the DB is 64 KB FB Number range 0 65 535 Size, max. 500 kbyte 	Plug-in (SIMATIC Memory Card), max.	32 Gbyte
for bit operations, typ. for word operations, typ. for fixed point arithmetic, typ. for floating point arithmetic, typ. 192 ns CPU-blocks Number of elements (total) Number range Number range Number range Size, max. Number range Number range Number range Number range Size, max. Number range Size, max. Number range	Backup	
for bit operations, typ. for word operations, typ. for fixed point arithmetic, typ. for floating point arithmetic, typ. 192 ns CPU-blocks Number of elements (total) Number range Number range Number range Size, max. 30 ns 36 ns 48 ns 192 ns 6 000; In addition to blocks such as DBs, FBs and FCs, UDTs, global constants, etc. are also regarded as elements 1 60 999; subdivided into: number range that can be used by the user: 1 59 999, and number range of DBs created via SFC 86: 60 000 60 999 3 Mbyte; For non-optimized block accesses, the max. size of the DB is 64 KB FB Number range 0 65 535 Size, max. 500 kbyte	maintenance-free	Yes
for bit operations, typ. for word operations, typ. for fixed point arithmetic, typ. for floating point arithmetic, typ. 192 ns CPU-blocks Number of elements (total) Number range Number range Number range Size, max. 30 ns 36 ns 48 ns 192 ns 6 000; In addition to blocks such as DBs, FBs and FCs, UDTs, global constants, etc. are also regarded as elements 1 60 999; subdivided into: number range that can be used by the user: 1 59 999, and number range of DBs created via SFC 86: 60 000 60 999 3 Mbyte; For non-optimized block accesses, the max. size of the DB is 64 KB FB Number range 0 65 535 Size, max. 500 kbyte	CDII processing times	
for word operations, typ. for fixed point arithmetic, typ. for floating point arithmetic, typ. 192 ns CPU-blocks Number of elements (total) Number range Number range Size, max. Number range Number range Number range Number range Size, max. Number range		30 ns
for fixed point arithmetic, typ. for floating point arithmetic, typ. 192 ns CPU-blocks Number of elements (total) Number range Number range Number range Size, max. Number range Number range Number range Number range Size, max. Number range		
for floating point arithmetic, typ. 192 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 range 1 60 999; subdivided into: number range that can be used by the user: 1 59 999, and number range of DBs created via SFC 86: 60 000 60 999 • Size, max. 3 Mbyte; For non-optimized block accesses, the max. size of the DB is 64 KB FB • Number range 0 65 535 500 kbyte		
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 range 1 60 999; subdivided into: number range that can be used by the user: 1 59 999, and number range of DBs created via SFC 86: 60 000 60 999 • Size, max. 3 Mbyte; For non-optimized block accesses, the max. size of the DB is 64 KB FB • Number range 0 65 535 • Size, max. 500 kbyte	· · · · · · · · · · · · · · · · · · ·	
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 range 1 60 999; subdivided into: number range that can be used by the user: 1 59 999, and number range of DBs created via SFC 86: 60 000 60 999 • Size, max. 3 Mbyte; For non-optimized block accesses, the max. size of the DB is 64 KB FB • Number range • Number range • Size, max. 500 kbyte		
global constants, etc. are also regarded as elements Number range Number range 1 60 999; subdivided into: number range that can be used by the user: 1 59 999, and number range of DBs created via SFC 86: 60 000 60 999 Size, max. 3 Mbyte; For non-optimized block accesses, the max. size of the DB is 64 KB FB Number range Number range Size, max. 500 kbyte	CPU-blocks	
Number range 1 60 999; subdivided into: number range that can be used by the user: 1 59 999, and number range of DBs created via SFC 86: 60 000 60 999 Size, max. 3 Mbyte; For non-optimized block accesses, the max. size of the DB is 64 KB FB Number range Number range Size, max. 500 kbyte	Number of elements (total)	
 Number range 1 60 999; subdivided into: number range that can be used by the user: 1 59 999, and number range of DBs created via SFC 86: 60 000 60 999 Size, max. 3 Mbyte; For non-optimized block accesses, the max. size of the DB is 64 KB FB Number range 0 65 535 Size, max. 500 kbyte 	DR	giobal constants, etc. are also regarded as elements
the user: 1 59 999, and number range of DBs created via SFC 86: 60 000 60 999 Size, max. 3 Mbyte; For non-optimized block accesses, the max. size of the DB is 64 KB FB Number range 0 65 535 Size, max. 500 kbyte		1 60 000: subdivided into: number range that can be used by
DB is 64 KB FB	▼ inumber range	the user: 1 59 999, and number range of DBs created via SFC
 Number range 0 65 535 Size, max. 500 kbyte 	• Size, max.	
• Size, max. 500 kbyte	FB	
	Number range	0 65 535
FC	• Size, max.	500 kbyte
	FC	

Size, max. Size, max. 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 process alarm OBs Number of scohronous mode OBs Number of scohronous mode OBs Number of startup OBs Number of sartup OBs Number of sartup OBs Number of saynchronous error OBs Number of saynchronous error OBs Number of diagnostic alarm OBs Number of diagnos	Number range	0 65 535
Size, max. 500 kbyte 100 10	-	500 kbyte
Number of free cycle OBs Number of time alarm OBs Number of delay alarm OBs Number of cyclic interrupt OBs Number of cyclic interrupt OBs Number of process alarm OBs Number of process alarm OBs Number of process 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 synchronous error OBs Number of alagnostic alarm OBs Number of diagnostic alarm OBs Number of diagnostic alarm OBs Nesting depth per priority class Counters, timers and their retentivity For counter Number Num		
Number of time alarm OBs Number of delay alarm OBs Number of ocyclic interrupt OBs Number of process alarm OBs Number of process alarm OBs Number of Interrupt OBs Number Nu	• Size, max.	500 kbyte
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 isochronous mode OBs Number of sechnology synchronous alarm OBs Number of startup OBs Number of startup OBs Number of synchronous error OBs Number of synchronous 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 77 counter Number Number Any (only limited by the main memory) Retentivity — adjustable Yes Flettimer Number Any (only limited by the main memory) Retentivity — adjustable Yes Retentivity — adjustable Yes Flettimer Number Any (only limited by the main memory) Retentivity — adjustable Yes Flettimer Number Any (only limited by the main memory) Retentivity — adjustable Yes Flettimer Number Number Any (only limited by the main memory) Retentivity — adjustable Yes Flettimer Number Numb	Number of free cycle OBs	100
Number of cyclic interrupt OBs Number of process alarm OBs Number of process 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 alarm OBs Number of synchronous error OBs Number of diagnostic alarm OBs Number of diagnostic alarm OBs Number of diagnostic alarm OBs Nesting depth per priority class Values Per priority class Values Values Values Values Values Values Values Values Values Retentivity And (only limited by the main memory) Retentivity Adjustable Values Va	Number of time alarm OBs	20
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 saynchronous error OBs Number of synchronous 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 S7 counter Number Number Number Any (only limited by the main memory) Retentivity adjustable Yes S7 times Number Number 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 Nu	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 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 7 counter Number Number Number Number Number Any (only limited by the main memory) Retentivity adjustable Yes Fetentivity adjustable Yes Fetentivity Any (only limited by the main memory) Retentivity Any (only limited by the main memory) Retentivity 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 asynchronous error OBs Number of diagnostic alarm OBs Nesting depth per priority class Counters, timers and their retentivity 7 counter Number Numb	Number of process alarm OBs	50
Number of technology synchronous alarm OBs Number of startup 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 rounter Number Number Any (only limited by the main memory) Retentivity adjustable Number Number Number Retentivity adjustable Yes Strimes Number Number Any (only limited by the main memory) Retentivity Retentivity Any (only limited by the main memory) Retentivity Retentivity Retentivity Retentivity Retentivity Retentivity Retentivity Retentivity Any (only limited by the main memory) Retentive data area in total (incl. times, counters, flags), max. It is kbyte in total; available retentive memory for bit memories, timers, counters, DBs, and technology data (axes): 472 KB	Number of DPV1 alarm OBs	3
Number of startup 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 24 Counters, timers and their retentivity S7 counter Number Number Number Number Any (only limited by the main memory) Retentivity adjustable Yes S7 times Number Number Any (only limited by the main memory) Retentivity adjustable Yes S7 times Number Any (only limited by the main memory) Retentivity And your of the main memory Retentivity And your only limited by the main memory) Retentivity And your only limited by the main memory) Retentivity And your only limited by the main memory) Retentivity And your 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 and their retentivity retentive data area and their retentivity retentive data area and total (incl. times, counters, flags), max. 512 kbyte; In total; available retentive memory for bit memories, timers, counters, DBs, and technology data (axes): 472 KB Flag Number, max.	 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 Tounter Number Number Number Number Number Any (only limited by the main memory) Retentivity adjustable Yes Times Number Number Any (only limited by the main memory) Retentivity adjustable Yes Number Number Number Any (only limited by the main memory) Retentivity adjustable Yes Number Number Any (only limited by the main memory) Retentivity adjustable Yes Number Number Number Number Solution Number Solution Number Solution Number Solution Number Number Number Number Solution Number Solution Number Number Number Solution Number Solution Number Number Number Number Number Solution Number Number Number Number Number Number Solution Number	Number of technology synchronous alarm OBs	2
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 Number Any (only limited by the main memory) Retentivity adjustable Yes Fitmes Number Number Any (only limited by the main memory) Retentivity adjustable Yes S7 times Number Number Any (only limited by the main memory) Retentivity adjustable Yes Yes Fitmer Number Any (only limited by the main memory) Retentivity adjustable Yes Fither Yes Padjustable Number, nax.	Number of startup OBs	100
Nesting depth • per priority class Counters, timers and their retentivity S7 counter • Number • Number Any (only limited by the main memory) Retentivity — adjustable Yes S7 times • Number Retentivity — adjustable Yes S8 timer • Number	 Number of asynchronous error OBs 	4
Nesting depth • per priority class Counters, timers and their retentivity S7 counter • Number Retentivity — adjustable Pes IEC counter • Number Retentivity — adjustable Yes S7 times • Number • Number Any (only limited by the main memory) Retentivity — adjustable Yes S7 times • Number • 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 in total (incl. times, counters, flags), max. Flag • Number, max. 16 kbyte	Number of synchronous error OBs	2
per priority class Counters, timers and their retentivity S7 counter Number Retentivity — adjustable Pes Fetentivity — adjustable Yes S7 times Number Any (only limited by the main memory) Retentivity — adjustable Yes S7 times Number 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 Any (only limited by the main memory) Retentivity — adjustable Yes Data areas and their retentivity retentive data area in total (incl. times, counters, flags), max. Flag Number, max. 16 kbyte	Number of diagnostic alarm OBs	1
Counters, timers and their retentivity S7 counter Number Number Activity Adjustable Petentivity Any (only limited by the main memory) Retentivity Any (only limited by the main memory) Retentivity Adjustable Yes S7 times Number Number Any (only limited by the main memory) Yes IEC timer Number Any (only limited by the main memory) Yes IEC timer 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 Yes Data areas and their retentivity retentive data area in total (incl. times, counters, flags), max. Flag Number, max. 16 kbyte	Nesting depth	
S7 counter Number Number Retentivity adjustable Yes IEC counter Number Any (only limited by the main memory) Retentivity adjustable Yes S7 times Number Number Retentivity Any (only limited by the main memory) Fetentivity Any (only limited by the main memory) Yes IEC timer Number Any (only limited by the main memory) Retentivity adjustable Yes Data areas and their retentivity retentive data area in total (incl. times, counters, flags), max. Flag Number, max. 16 kbyte	• per priority class	24
S7 counter Number Number Retentivity adjustable Yes IEC counter Number Any (only limited by the main memory) Retentivity adjustable Yes S7 times Number Number Retentivity Any (only limited by the main memory) Fetentivity Any (only limited by the main memory) Yes IEC timer Number Any (only limited by the main memory) Retentivity adjustable Yes Data areas and their retentivity retentive data area in total (incl. times, counters, flags), max. Flag Number, max. 16 kbyte	Countary timore and their retentivity	
Number Retentivity		
— adjustable Yes IEC counter ● Number Any (only limited by the main memory) Retentivity — adjustable Yes S7 times ● Number 2 048 Retentivity — adjustable Yes IEC timer ● Number Any (only limited by the main memory) Retentivity — adjustable Yes Data areas and their retentivity retentive data area in total (incl. times, counters, flags), max. Flag ● Number, max. 16 kbyte		2 048
— adjustable Yes IEC counter ● Number Any (only limited by the main memory) Retentivity — adjustable Yes S7 times ● Number 2 048 Retentivity — adjustable Yes IEC timer ● Number Any (only limited by the main memory) Retentivity — adjustable Yes Data areas and their retentivity retentive data area in total (incl. times, counters, flags), max. Flag ● Number, max. 16 kbyte	Retentivity	
IEC counter ● Number Any (only limited by the main memory) Retentivity — adjustable 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 in total (incl. times, counters, flags), max. Flag ● Number, max. 16 kbyte		Yes
Retentivity — adjustable 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 in total (incl. times, counters, flags), max. Flag Number, max. 16 kbyte		
- adjustable S7 times Number Number 2 048 Retentivity - adjustable IEC timer Number Any (only limited by the main memory) Retentivity - adjustable Yes Data areas and their retentivity retentive data area in total (incl. times, counters, flags), max. Flag Number, max. 16 kbyte	• Number	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 in total (incl. times, counters, flags), max. Flag • Number, max. 16 kbyte	Retentivity	
 Number Retentivity — adjustable Yes IEC timer Number Any (only limited by the main memory) Retentivity — adjustable Yes Data areas and their retentivity retentive data area in total (incl. times, counters, flags), max. Flag Number, max. 16 kbyte 	— adjustable	Yes
Retentivity — adjustable IEC timer • Number Any (only limited by the main memory) Retentivity — adjustable Yes Data areas and their retentivity retentive data area in total (incl. times, counters, flags), max. Flag • Number, max. 16 kbyte	S7 times	
— adjustable Yes IEC timer ■ Number Any (only limited by the main memory) Retentivity — adjustable Yes Data areas and their retentivity retentive data area in total (incl. times, counters, flags), max. Flag ■ Number, max. Yes Any (only limited by the main memory) Yes Yes 1512 kbyte; In total; available retentive memory for bit memories, timers, counters, DBs, and technology data (axes): 472 KB	Number	2 048
IEC timer Number Any (only limited by the main memory) Retentivity — adjustable Yes Data areas and their retentivity retentive data area in total (incl. times, counters, flags), max. Flag Number, max. Number, max. Any (only limited by the main memory) Yes 1512 kbyte; In total; available retentive memory for bit memories, timers, counters, DBs, and technology data (axes): 472 KB	Retentivity	
 Number Retentivity — adjustable Yes Data areas and their retentivity retentive data area in total (incl. times, counters, flags), max. Flag Number, max. Any (only limited by the main memory) Yes 512 kbyte; In total; available retentive memory for bit memories, timers, counters, DBs, and technology data (axes): 472 KB Flag Number, max. 16 kbyte 	— adjustable	Yes
Retentivity — adjustable Yes Data areas and their retentivity retentive data area in total (incl. times, counters, flags), max. 512 kbyte; In total; available retentive memory for bit memories, timers, counters, DBs, and technology data (axes): 472 KB Flag • Number, max. 16 kbyte	IEC timer	
— adjustable Pes Data areas and their retentivity retentive data area in total (incl. times, counters, flags), max. Flag Number, max. Number, max. Yes 512 kbyte; In total; available retentive memory for bit memories, timers, counters, DBs, and technology data (axes): 472 KB	Number	Any (only limited by the main memory)
Data areas and their retentivity retentive data area in total (incl. times, counters, flags), max. Flag Number, max. Number, max. Number of their retentivity 512 kbyte; In total; available retentive memory for bit memories, timers, counters, DBs, and technology data (axes): 472 KB	Retentivity	
retentive data area in total (incl. times, counters, flags), max. 512 kbyte; In total; available retentive memory for bit memories, timers, counters, DBs, and technology data (axes): 472 KB Flag • Number, max. 16 kbyte	— adjustable	Yes
retentive data area in total (incl. times, counters, flags), max. 512 kbyte; In total; available retentive memory for bit memories, timers, counters, DBs, and technology data (axes): 472 KB Flag • Number, max. 16 kbyte	Data areas and their retentivity	
Flag ● Number, max. 16 kbyte		512 kbyte; In total; available retentive memory for bit memories,
Number, max. 16 kbyte	flags), max.	timers, counters, DBs, and technology data (axes): 472 KB
	Flag	
Number of clock memory byte	• Number, max.	
• Number of clock memories 6, 6 clock memory bits, grouped into one clock memory byte	 Number of clock memories 	8; 8 clock memory bits, grouped into one clock memory byte

Data blocks	
Retentivity adjustable	Yes
Retentivity preset	No
Local data	
• per priority class, max.	64 kbyte; max. 16 KB per block
Address area	
Number of IO modules	8 192; max. number of modules / submodules
I/O address area	
• Inputs	32 kbyte; All inputs are in the process image
Outputs	32 kbyte; All outputs are in the process image
per integrated IO subsystem	
— Inputs (volume)	8 kbyte
— Outputs (volume)	8 kbyte
per CM/CP	
— Inputs (volume)	8 kbyte
— Outputs (volume)	8 kbyte
Subprocess images	
Number of subprocess images, max.	32
Hardware configuration	
Number of distributed IO systems	20
Number of DP masters	6 A
● Via CM	8; A maximum of 8 CMs/CPs (PROFIBUS, PROFINET, Ethernet) can be inserted in total
Number of IO Controllers	
• integrated	1
• Via CM	8; A maximum of 8 CMs/CPs (PROFIBUS, PROFINET, Ethernet) can be inserted in total
Rack	
Modules per rack, max.	32; CPU + 31 modules
• Rack, number of rows, max.	1
PtP CM	
Number of PtP CMs	the number of connectable PtP CMs is only limited by the number of available slots
Time of day	
Clock	
• Type	Hardware clock
Backup time	6 wk; At 40 °C ambient temperature, typically
	10 s; Typ.: 2 s
Deviation per day, max.	
Deviation per day, max. Operating hours counter	
	16
Operating hours counter	16

• according to	Yes
• supported	Yes
• in AS, master	
• in AS, slave	Yes
on Ethernet via NTP	Yes
Interfaces	
Number of PROFINET interfaces	2
1. Interface	
Interface types	
Number of ports	2
integrated switch	Yes
• RJ 45 (Ethernet)	Yes; X1
Functionality	
PROFINET IO Controller	Yes
 PROFINET IO Device 	Yes
 SIMATIC communication 	Yes
Open IE communication	Yes
Web server	Yes
Media redundancy	Yes
2. Interface	
Interface types	
Number of ports	1
integrated switch	No
• RJ 45 (Ethernet)	Yes; X2
Functionality	
PROFINET IO Controller	No
 PROFINET IO Device 	No
 SIMATIC communication 	Yes
Open IE communication	Yes
• Web server	Yes
Interface types	
RJ 45 (Ethernet)	
• 100 Mbps	Yes
 Autonegotiation 	Yes
 Autocrossing 	Yes
• Industrial Ethernet status LED	Yes
Protocols	
Number of connections	
 Number of connections, max. 	192; 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 	108
 Number of S7 routing paths 	16
PROFINET IO Controller	
Services	
— PG/OP communication	Yes
— S7 routing	Yes
— Isochronous mode	Yes
— Open IE communication	Yes
— IRT	Yes
— MRP	Yes; As MRP redundancy manager and/or MRP client; max. number of devices in the ring: 50
— PROFlenergy	Yes
— Prioritized startup	Yes; Max. 32 PROFINET devices
— Number of connectable IO Devices, max.	256; In total, up to 512 distributed I/O devices can be connected via PROFIBUS or PROFINET
— Of which IO devices with IRT, max.	64
 Number of connectable IO Devices for RT, max. 	256
— of which in line, max.	256
 Number of IO Devices that can be 	8
simultaneously activated/deactivated, max.	
 Number of IO Devices per tool, max. 	8
— Updating times	The minimum value of the update time also depends on communication share set for PROFINET IO, on the number of IO devices, and on the quantity of configured user data
Update time for IRT	
— for send cycle of 250 μs	$250~\mu s$ 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 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 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
	0 t- 540

— 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
— S7 routing	Yes
— Isochronous mode	No
— Open IE communication	Yes
— IRT	Yes
— MRP	Yes
— PROFlenergy	Yes
— Shared device	Yes
 Number of IO Controllers with shared 	4
device, max.	
SIMATIC communication	
 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	
• TCP/IP	Yes
— Data length, max.	64 kbyte
 several passive connections per port, supported 	Yes
• ISO-on-TCP (RFC1006)	Yes
— Data length, max.	64 kbyte
• UDP	Yes
— Data length, max.	1 472 byte
• DHCP	No
• SNMP	Yes
• DCP	Yes
• LLDP	Yes
Web server	
• HTTP	Yes; Standard and user-defined pages
• HTTPS	Yes; Standard and user-defined pages
Further protocols	
• MODBUS	Yes; MODBUS TCP
Media redundancy	
Switchover time on line break, typ.	200 ms
Number of stations in the ring, max.	50
sochronous mode	
Isochronous operation (application synchronized up	Yes; With minimum OB 6x cycle of 500 µs
to terminal)	

S7 message functions	
Number of login stations for message functions, max.	32
Block related messages	Yes
Number of configurable alarms, max.	10 000
Number of simultaneously active alarms in alarm	
pool	
 Number of reserved user alarms 	600
 Number of reserved alarms for system diagnostics 	200
 Number of reserved alarms for Motion Control 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 (in total across all ES clients)
Single step	No
Status/control	
 Status/control variable 	Yes
Variables	Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters
 Number of variables, max. 	
— of which status variables, max.	200; per job
— of which control variables, max.	200; per job
Forcing	
Forcing, variables	Peripheral inputs/outputs
 Number of variables, max. 	200
Diagnostic buffer	
• present	Yes
Number of entries, max.	3 200
— 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
Connection display LINK TX/RX	Yes
Supported technology objects	
Motion Control	Yes
Speed-controlled axis	

 Number of speed-controlled axes, max. 	30; Requirement: There must be no other motion technology objects created; note: The number of axes affects the cycle time of the PLC program; selection guide via the TIA Selection Tool
Positioning axis	
 Number of positioning axes, max. 	30; Requirement: There must be no other motion technology objects created; note: The number of axes affects the cycle time of the PLC program; selection guide via the TIA Selection Tool
 Synchronized axes (relative gear synchronization) 	
— Number of axes, max.	15; Requirement: There must be no other motion technology objects created; note: The number of axes affects the cycle time of the PLC program; selection guide via the TIA Selection Tool
External encoders	
 Number of external encoders, max. 	30; Requirement: There must be no other motion technology objects created; note: The number of axes affects the cycle time of the PLC program; selection guide via the TIA Selection Tool
Controller	
PID_Compact	Yes; Universal PID controller with integrated optimization
PID_3Step	Yes; PID controller with integrated optimization for valves
PID-Temp	Yes; PID controller with integrated optimization for temperature
Counting and measuring	
High-speed counter	Yes

Ambient conditions	
Ambient temperature during operation	
horizontal installation, min.	0 °C
 horizontal installation, max. 	60 °C; Display: 50 °C, at an operating temperature of typically 50 °C, the display is switched off
 vertical installation, min. 	0°C
• vertical installation, max.	40 °C; Display: 40 °C, at an operating temperature of typically 40 °C, the display is switched off

Configuration	
Programming	
Programming language	
— LAD	Yes
— FBD	Yes
— STL	Yes
— SCL	Yes
— GRAPH	Yes
Know-how protection	
User program protection	Yes
Copy protection	Yes
Block protection	Yes
Access protection	

 Password for display 	Yes
 Protection level: Write protection 	Yes
 Protection level: Read/write protection 	Yes
 Protection level: Complete protection 	Yes
Cycle time monitoring	
• lower limit	adjustable minimum cycle time
• upper limit	adjustable maximum cycle time
Dimensions	
Dimensions Width	70 mm
	70 mm 147 mm
Width	
Width Height	147 mm
Width Height Depth	147 mm