## **SIEMENS**

## Data sheet

## 6ES7518-4FP00-3AB0



SIMATIC S7-1500F, CPU 1518F-4 PN/DP ODK, Central processing unit with ODK Runtime Interface, work memory 6 MB for program and 20 MB for data, 1st interface: PROFINET IRT with 2-port switch, 2nd interface: PROFINET RT, 3rd interface: Ethernet, 4th interface: PROFIBUS, 1 ns bit-performance, SIMATIC Memory Card required

General information	
Product type designation	CPU 1518F-4 PN/DP ODK
HW functional status	FS05
Firmware version	V2.6
Product function	
● I&M data	Yes; I&M0 to I&M3
Engineering with	
<ul> <li>STEP 7 TIA Portal configurable/integrated as of version</li> </ul>	V15.1 (FW V2.6)/V14 (FW V2.0) or higher
Configuration control	
via dataset	Yes
Display	
Screen diagonal [cm]	6.1 cm
Control elements	
Number of keys	6
Mode selector switch	1

Type of supply voltage 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 • Alans/voltage failure stored energy time • Repeat rate, min. 1/s    Name   Repeat rate, min.   1/s		
permissible range, upper limit (DC) Reverse polarity protection  Mains buffering  Mains buffering  Mains buffering  Mains buffering  Mains buffering  Repeat rate, min.  Input current  Current consumption (rated value)  Inush current, max.  It  Unit (Unit (Inush current)  Current to (Unit (Inush current)  Dever  Infeet power to the backplane bus Power consumption from the backplane bus (Inush current)  Power consumption from the backplane bus (Inush current)  Power loss  Power loss Power loss, typ.  Memory  Number of slots for SIMATIC memory card  SIMATIC memory card required  Yes  Work memory  Integrated (for program) Integrated (for CPU function library of CPU (Inustine)  Power loss (Inush Card), max.  Backup  Maintenance-free  Pup processing times  for bit operations, typ.  Ins  Ins  Ins  Ins  Ins  Ins  Ins  In	Type of supply voltage	24 V DC
Reverse polarity protection  Mains buffering  • Mains/voltage failure stored energy time • Repeat rate, min.  Input current  Current consumption (rated value)  Inrush current, max.  Power  Infeed power to the backplane bus (balanced)  Power consumption from the backplane bus (balanced)  Power loss  Power loss  Power loss  Power loss  Power loss  Power loss (typ.  Ammoory  Number of slots for SIMATIC memory card  SIMATIC memory card required  Yes  Work memory  • integrated (for program)  • integrated (for program)  • integrated (for CPU function library of CPU  Runtme)  Load memory  • Plug-in (SIMATIC Memory Card), max.  Backup  • maintenance-free  Pyes  CPU processing times  for bit operations, typ.  for fixed point arithmetic, typ.  for fosting point arithmetic, typ.  for floating point arithmetic in unmber range that can be used by the user: 1 59 599, and number range of DBs created via SFC	permissible range, lower limit (DC)	19.2 V
Mains buffering  • Mains/voltage failure stored energy time • Repeat rate, min.  Input current  Current consumption (rated value) Inrush current, max.  Pt  0.02 A*s  Power  Infeed power to the backplane bus Volatanced)  Power consumption from the backplane bus (balanced)  Power loss  Power loss  Power loss  Power loss  Power loss, typ.  Abundanced  Power of slots for SIMATIC memory card  SIMATIC memory card required  Yes  Work memory  • integrated (for program) • integrated (for CPU function library of CPU Runtime)  • integrated (for CPU function library of CPU Runtime)  • Plug-in (SIMATIC Memory Card), max.  Backup • maintenance-free  Yes  CPU processing times  for bit operations, typ.  for fixed point arithmetic, typ. for froating point arithmetic, typ. for froating point arithmetic, typ. for floating point arithmetic, typ.  • Number of elements (total)  D8  • Number range	permissible range, upper limit (DC)	28.8 V
Mains/voltage failure stored energy time     Repeat rate, min.  Input current  Current consumption (rated value)  Insush current, max.  Input current  2.4 A; Rated value  I*t  0.02 A*-s  Power  Infeed power to the backplane bus  Power consumption from the backplane bus  (balanced)  Power loss  Power loss  Power loss  Power loss, typ.  24 W  Memory  Number of slots for SIMATIC memory card  SIMATIC memory card required  Yes  Work memory  • integrated (for program)  • integrated (for CPU function library of CPU Runtime)  ODK 1500S or Target 1500S.  Load memory  • Plug-in (SIMATIC Memory Card), max.  Sackup  • maintenance-free  Yes  CPU processing times  for bit operations, typ.  for fixed point arithmetic, typ.  for foxed point arithmetic, typ.  for foxed point arithmetic, typ.  for foxed point arithmetic, typ.  for loading point arithmetic, typ.  for foxed point arithmetic, typ.  for loading point arithmetic, typ.  for loading point arithmetic, typ.  for loading point arithmetic, typ.  for sumber of elements (total)  Plumber 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	Reverse polarity protection	Yes
Repeat rate, min.  Input current  Current consumption (rated value)  Inush current, max.  Pt  0.02 A*s  Power  Infleed power to the backplane bus (balanced)  Power loss  Power loss, typ.  Very loss  Power loss, typ.  Very loss  Power of slots for SIMATIC memory card SIMATIC memory card required  Ves  Work memory  integrated (for program)  integrated (for CPU function library of CPU Runtime)  Power loss or Target 1500S.  Load memory  Plug-in (SIMATIC Memory Card), max.  Backup  maintenance-free  Pug-in (SIMATIC Memory Card), max.  Backup  maintenance-free  Pes  CPU processing times  for bit operations, typ.  for word operations, typ.  for word operations, typ.  for fixed point arithmetic, typ.  for fixed point arithmetic, typ.  for fixed point arithmetic, typ.  for floating point arithmetic, typ.  for floating point arithmetic, typ.  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	Mains buffering	
Input current Current consumption (rated value) Inrush current, max. 2.4 A; Rated value P 0.02 A*s  Power Infeed power to the backplane bus (balanced)  Power consumption from the backplane bus (balanced)  Power loss Power loss Power loss, typ. 24 W  Memory Number of slots for SIMATIC memory card SIMATIC memory card required Yes Work memory  integrated (for program) integrated (for program) integrated (for CPU function library of CPU Runtime)  Load memory  Plug-in (SIMATIC Memory Card), max.  Backup  maintenance-free Yes  CPU processing times for bit operations, typ. for fixed point arithmetic, typ. for floating point arithmetic, typ. for floating point arithmetic, typ.  CPU-blocks Number of elements (total)  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	Mains/voltage failure stored energy time	5 ms
Current consumption (rated value)  Inrush current, max.  2.4 A; Rated value  Power  Infeed power to the backplane bus Power loss Power loss, typ.  24 W  Memory  Number of slots for SIMATIC memory card SIMATIC memory  integrated (for program) integrated (for program) integrated (for CPU function library of CPU Runtime)  Plug-in (SIMATIC Memory Card), max.  Backp  maintenance-free  CPU processing times  for bit operations, typ.  1.55 A 2.4 A; Rated value  12 W  Memory  12 W  Memory  14 W  Memory  4 Mbyte 20 Mbyte 50 Mbyte; Note: The "CPU function library of the CPU" are C/C++ blocks for the user program that were created using the SIMATIC ODK 1500S or Target 1500S.  Load memory  Plug-in (SIMATIC Memory Card), max.  32 Gbyte  Backup  maintenance-free  Yes  CPU processing times  for bit operations, typ.  for fixed point arithmetic, typ.  2 ns  for floating point arithmetic, typ.  6 ns  CPU-blocks  Number of elements (total)  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	Repeat rate, min.	1/s
Inrush current, max.  Ift 0.02 As s  Power  Infeed power to the backplane bus 12 W  Power consumption from the backplane bus (balanced)  Power loss  Power loss  Power loss, typ. 24 W  Memory  Integrated (for program) 4 Mbyte (for CPU function library of CPU Runtime) 50 Mbyte; Note: The "CPU function library of the CPU" are C/C++ blocks for the user program that were created using the SIMATIC ODK 1500S or Target 1500S.  Load memory  Integrated (for CPU function library of CPU So Mbyte; Note: The "CPU function library of the CPU" are C/C++ blocks for the user program that were created using the SIMATIC ODK 1500S or Target 1500S.  Load memory  Integrated (for CPU function library of CPU So Mbyte; Note: The "CPU function library of the CPU" are C/C++ blocks for the user program that were created using the SIMATIC ODK 1500S or Target 1500S.  Load memory  Plug-in (SIMATIC Memory Card), max. 32 Gbyte  Backup  maintenance-free Yes  CPU processing times  for bit operations, typ. 1 ns  for word operations, typ. 2 ns  for fixed point arithmetic, typ. 6 ns  for floating point arithmetic, typ. 6 ns  CPU-blocks  Number of elements (total) 12 000; Blocks (OB, FB, FC, DB) and UDTs  B  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	Input current	
Power Infeed power to the backplane bus 12 W Power consumption from the backplane bus 30 W (balanced)  Power loss Power loss. Power loss, typ. 24 W  Memory Number of slots for SIMATIC memory card 1 SIMATIC memory card required Yes Work memory  • integrated (for program) 4 Mbyte • integrated (for CPU function library of CPU Runtime) 50 Mbyte, Note: The "CPU function library of the CPU" are C/C++ blocks for the user program that were created using the SIMATIC ODK 1500S or Target 1500S.  Load memory  • Plug-in (SIMATIC Memory Card), max. 32 Gbyte Backup  • maintenance-free Yes  CPU processing times for bit operations, typ. 1 ns for bit operations, typ. 2 ns for fixed point arithmetic, typ. 6 ns  CPU-blocks  Number of elements (total) 12 000; Blocks (OB, FB, FC, DB) and UDTs  DB  • Number range 1 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	Current consumption (rated value)	1.55 A
Infeed power to the backplane bus Infeed power to the backplane bus Power consumption from the backplane bus (balanced)  Power loss Power loss Power loss, typ.  24 W  Memory  Number of slots for SIMATIC memory card ISIMATIC memory card required Yes Work memory  integrated (for program) integrated (for CPU function library of CPU Runtime)  Load memory  Plug-in (SIMATIC Memory Card), max.  Backup maintenance-free Yes  CPU processing times For bit operations, typ. Ins for word operations, typ. Ins for word operations, typ. Ins for floating point arithmetic, typ. Ins for floating point arithmetic, typ. Ins for leading point arithmetic, typ. Ins	Inrush current, max.	2.4 A; Rated value
Infeed power to the backplane bus Power consumption from the backplane bus (balanced)  Power loss Power loss Power loss, typ.  24 W  Memory  Number of slots for SIMATIC memory card SIMATIC memory card required Yes  Work memory  • integrated (for program) • integrated (for CPU function library of CPU Runtime)  • integrated (for CPU function library of CPU Runtime)  Load memory  • Plug-in (SIMATIC Memory Card), max.  Backup • maintenance-free  Yes  CPU processing times  for bit operations, typ.  for word operations, typ.  for word operations, typ.  for fixed point arithmetic, typ.  for fixed point arithmetic, typ.  for floating point arithmetic, typ.  for floating point arithmetic, typ.  for floating point arithmetic, typ.  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	l²t	0.02 A²·s
Power consumption from the backplane bus (balanced)  Power loss Power loss, typ. 24 W  Memory Number of slots for SIMATIC memory card 1 SIMATIC memory card required Yes Work memory  • integrated (for program) 4 Mbyte • integrated (for data) 20 Mbyte; Note: The "CPU function library of the CPU" are C/C++ blocks for the user program that were created using the SIMATIC ODK 1500S or Target 1500S.  Load memory  • Plug-in (SIMATIC Memory Card), max. 32 Gbyte  Backup • maintenance-free Yes  CPU processing times for bit operations, typ. 1 ns for word operations, typ. 2 ns for fixed point arithmetic, typ. 2 ns for floating point arithmetic, typ. 6 ns  CPU-blocks  Number of elements (total) 12 000; Blocks (OB, FB, FC, DB) and UDTs  DB • Number range 1 60 999; subdivided into: number range that can be used by the user: 1 59 999, and number range of DBs created via SFC	Power	
Power loss   Power loss, typ.   24 W	Infeed power to the backplane bus	12 W
Power loss Power loss, typ.  24 W  Memory  Number of slots for SIMATIC memory card  SIMATIC memory card required  • integrated (for program) • integrated (for data) • integrated (for CPU function library of CPU Runtime)  Load memory • Plug-in (SIMATIC Memory Card), max.  Backup • maintenance-free  Yes  CPU processing times for bit operations, typ. for word operations, typ. for fixed point arithmetic, typ.  for floating point arithmetic, typ.  DB  • 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	•	30 W
Power loss, typ.    Memory	(balanced)	
Number of slots for SIMATIC memory card  SIMATIC memory card required  Yes  Work memory  integrated (for program)  integrated (for data)  integrated (for CPU function library of CPU Runtime)  Plug-in (SIMATIC Memory Card), max.  Backup  maintenance-free  Yes  CPU processing times  for bit operations, typ.  for word operations, typ.  for fixed point arithmetic, typ.  for floating point arithmetic, typ.  DB  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		
Number of slots for SIMATIC memory card  SIMATIC memory card required  Yes  Work memory  integrated (for program)  integrated (for data)  integrated (for CPU function library of CPU Runtime)  Doubte street for CPU function library of CPU Runtime)  Load memory  Plug-in (SIMATIC Memory Card), max.  Backup  maintenance-free  Yes  CPU processing times for bit operations, typ. for word operations, typ. for fixed point arithmetic, typ. for floating point arithmetic, typ.  The street for the user program that were created using the SIMATIC ODK 1500S or Target 1500S.  Load memory  Yes  CPU processing times for bit operations, typ. for fixed point arithmetic, typ. for fixed point arithmetic, typ. for floating point arithmetic, typ. for floating point arithmetic, typ.  But the user of the company of the CPU" are C/C++ blocks for the user program that were created using the SIMATIC ODK 1500S or Target 1500S.  Load memory  1 ns for bit operations, typ. 1 ns for word operations, typ. 2 ns for floating point arithmetic, typ. 6 ns  CPU-blocks  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	Power loss, typ.	24 W
SIMATIC memory card required  Work memory  Integrated (for program) Integrated (for data) Integrated (for CPU function library of CPU Runtime)  Integrated (for CPU function library of the CPU" are C/C++ blocks for the user program that were created using the SIMATIC ODK 1500S or Target 1500S.  Integrated (for CPU function library of the CPU" are C/C++ blocks for the user program that were created using the SIMATIC ODK 1500S or Target 1500S.  Integrated (for CPU function library of the CPU" are C/C++ blocks for the user program that were created using the SIMATIC ODK 1500S or Target 1500S.  Integrated (for CPU function library of the CPU" are C/C++ blocks for the user program that were created using the SIMATIC ODK 1500S or Target 1500S.  Integrated (for CPU function library of the CPU" are C/C++ blocks for the user program that were created using the CPU" are C/C++ blocks for the user program that were created using the CPU" are C/C++ blocks for the user program that were created using the CPU" are C/C++ blocks for the user program that were created using the CPU" are C/C++ blocks for the user program that were created using the CPU" are C/C++ blocks for the user program that were created using the CPU" are C/C++ blocks for the user program that were created using the CPU" are C/C++ blocks for the user program that were created using the CPU" are C/C++ blocks for the user program that were created using the CPU" are C/C++ blocks for the user program that were created using the CPU" are C/C++ blocks for the user program that were created using the CPU" are C/C++ blocks for the user program that were created using the CPU" are C/C++ blocks for the user program that were created using the CPU" are C/C++ blocks for the user program that were created using the CPU" are C/CPU" are C	Memory	
Work memory  • integrated (for program) • integrated (for data) • integrated (for CPU function library of CPU Runtime)  • integrated (for CPU function library of CPU Entition)  • integrated (for CPU function library of CPU Entition)  • integrated (for CPU function library of CPU Entition)  • integrated (for CPU function library of the CPU" are C/C++ blocks for the user program that were created using the SIMATIC ODK 1500S or Target 1500S.  Load memory  • Plug-in (SIMATIC Memory Card), max.  32 Gbyte  Backup  • maintenance-free  Yes  CPU processing times  for bit operations, typ.  1 ns  for word operations, typ.  2 ns  for fixed point arithmetic, typ.  6 ns  CPU-blocks  Number of elements (total)  12 000; Blocks (OB, FB, FC, DB) and UDTs  DB  • Number range  1 60 999; subdivided into: number range that can be used by the user: 1 59 999, and number range of DBs created via SFC	Number of slots for SIMATIC memory card	1
integrated (for program) integrated (for data) integrated (for CPU function library of CPU function library of CPU function library of the CPU" are C/C++ blocks for the user program that were created using the SIMATIC ODK 1500S or Target 1500S.  Load memory Plug-in (SIMATIC Memory Card), max.  32 Gbyte  Backup maintenance-free Yes  CPU processing times for bit operations, typ. for word operations, typ. for fixed point arithmetic, typ. for floating point arithmetic, typ.  The second of the CPU" are C/C++ blocks for the user program that were created using the SIMATIC ODK 1500S or Target 1500S.  Load memory Yes  CPU processing times for bit operations, typ. for floating point arithmetic, typ.  The second of the CPU" are C/C++ blocks of the user program that were created using the CPU" are C/C++ blocks of the user 1 ns.  The second of the CPU" are C/C++ blocks of the user program that were created using the CPU" are C/C++ blocks of the user 1 ns.  The second of the CPU" are C/C++ blocks of the user program that were created using the CPU" are C/C++ blocks of the user 1 ns.  The second of the CPU" are C/C++ blocks of the user program that were created using the CPU" are C/C++ blocks of the user 1 ns.  The second of the CPU" are C/C++ blocks of the user 1 ns.  The second of the CPU" are C/C++ blocks of the user 1 ns.  The second of the CPU" are C/C++ blocks of the user 1 ns.  The second of the CPU" are C/C++ blocks of the user 1 ns.  The second of the CPU" are C/C++ blocks of the user 1 ns.  The second of the CPU" are C/C++ blocks of the user 1 ns.  The second of the CPU" are C/C++ blocks of the user 1 ns.  The second of the CPU" are C/C++ blocks of the user 1 ns.  The second of the CPU" are C/C++ blocks of the user 1 ns.  The second of the CPU" are C/C++ blocks of the user 1 ns.  The second of the CPU" are C/C++ blocks of the user 1 ns.  The second of the CPU" are C/C++ blocks of the user 1 ns.  The second of the CPU" are C/C++ blocks of the user 1 ns.  The second of the CPU" are C/C++ blocks of the user 1 ns.  Th	SIMATIC memory card required	Yes
integrated (for data)  integrated (for CPU function library of CPU Runtime)  50 Mbyte; Note: The "CPU function library of the CPU" are C/C++ Blocks for the user program that were created using the SIMATIC ODK 1500S or Target 1500S.  Load memory  Plug-in (SIMATIC Memory Card), max.  32 Gbyte  Backup  maintenance-free  Yes  CPU processing times for bit operations, typ. for word operations, typ. for fixed point arithmetic, typ. for floating point arithmetic, typ. for floating point arithmetic, typ.  12 000; Blocks (OB, FB, FC, DB) and UDTs  DB  Number range  1 60 999; subdivided into: number range that can be used by the user: 1 59 999, and number range of DBs created via SFC	Work memory	
integrated (for CPU function library of CPU Runtime)      integrated (for CPU function library of CPU Buntime)      integrated (for CPU function library of the CPU" are C/C++ blocks for the user program that were created using the SIMATIC ODK 1500S or Target 1500S.  Load memory      Plug-in (SIMATIC Memory Card), max.      32 Gbyte  Backup      maintenance-free      Yes  CPU processing times for bit operations, typ.     1 ns for word operations, typ.     2 ns for fixed point arithmetic, typ.     6 ns  CPU-blocks  Number of elements (total)  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	<ul><li>integrated (for program)</li></ul>	
Runtime)  blocks for the user program that were created using the SIMATIC ODK 1500S or Target 1500S.  Load memory  Plug-in (SIMATIC Memory Card), max.  Backup  maintenance-free  Yes  CPU processing times for bit operations, typ.  1 ns for word operations, typ.  2 ns for fixed point arithmetic, typ.  for floating point arithmetic, typ.  6 ns  CPU-blocks  Number of elements (total)  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	• integrated (for data)	20 Mbyte
● Plug-in (SIMATIC Memory Card), max.  Backup  ● maintenance-free  Yes  CPU processing times  for bit operations, typ.  for word operations, typ.  2 ns  for fixed point arithmetic, typ.  for floating point arithmetic, typ.  6 ns  CPU-blocks  Number of elements (total)  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		blocks for the user program that were created using the SIMATIC
Backup	Load memory	
<ul> <li>● maintenance-free</li> <li>Yes</li> <li>CPU processing times</li> <li>for bit operations, typ.</li> <li>1 ns</li> <li>for word operations, typ.</li> <li>2 ns</li> <li>for fixed point arithmetic, typ.</li> <li>2 ns</li> <li>for floating point arithmetic, typ.</li> <li>6 ns</li> <li>CPU-blocks</li> <li>Number of elements (total)</li> <li>DB</li> <li>● Number range</li> <li>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</li> </ul>	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.  CPU-blocks  Number of elements (total)  Number range  Number range  1 ns  2 ns  6 ns  CPU-blocks  12 000; Blocks (OB, FB, FC, DB) and UDTs  DB  • Number range  1 60 999; subdivided into: number range that can be used by the user: 1 59 999, and number range of DBs created via SFC	Backup	
for bit operations, typ.  for word operations, typ.  for fixed point arithmetic, typ.  for floating point arithmetic, typ.  for solutions point arithmetic, typ.  6 ns  CPU-blocks  Number of elements (total)  12 000; Blocks (OB, FB, FC, DB) and UDTs  DB  Number range  1 60 999; subdivided into: number range that can be used by the user: 1 59 999, and number range of DBs created via SFC	maintenance-free	Yes
for word operations, typ.  for fixed point arithmetic, typ.  for floating point arithmetic, typ.  6 ns  CPU-blocks  Number of elements (total)  12 000; Blocks (OB, FB, FC, DB) and UDTs  DB  • Number range  1 60 999; subdivided into: number range that can be used by the user: 1 59 999, and number range of DBs created via SFC	CPU processing times	
for fixed point arithmetic, typ.  2 ns  for floating point arithmetic, typ.  6 ns  CPU-blocks  Number of elements (total)  12 000; Blocks (OB, FB, FC, DB) and UDTs  DB  • Number range  1 60 999; subdivided into: number range that can be used by the user: 1 59 999, and number range of DBs created via SFC	for bit operations, typ.	1 ns
for floating point arithmetic, typ.  CPU-blocks  Number of elements (total)  12 000; Blocks (OB, FB, FC, DB) and UDTs  DB  • Number range  1 60 999; subdivided into: number range that can be used by the user: 1 59 999, and number range of DBs created via SFC	for word operations, typ.	2 ns
CPU-blocks  Number of elements (total)  12 000; Blocks (OB, FB, FC, DB) and UDTs  DB  • Number range  1 60 999; subdivided into: number range that can be used by the user: 1 59 999, and number range of DBs created via SFC	for fixed point arithmetic, typ.	2 ns
Number of elements (total)  12 000; Blocks (OB, FB, FC, DB) and UDTs  • 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	for floating point arithmetic, typ.	6 ns
● 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	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	Number of elements (total)	12 000; Blocks (OB, FB, FC, DB) and UDTs
the user: 1 59 999, and number range of DBs created via SFC	DB	
	Number range	the user: 1 59 999, and number range of DBs created via SFC

• Size, max.	16 Mbyte; For DBs with absolute addressing, the max. size is 64 KB
FB	
Number range	0 65 535
• Size, max.	1 Mbyte
FC	
Number range	0 65 535
• Size, max.	1 Mbyte
ОВ	
● Size, max.	1 Mbyte
<ul> <li>Number of free cycle OBs</li> </ul>	100
<ul><li>Number of time alarm OBs</li></ul>	20
<ul> <li>Number of delay alarm OBs</li> </ul>	20
<ul> <li>Number of cyclic interrupt OBs</li> </ul>	20; With minimum OB 3x cycle of 100 μs
<ul> <li>Number of process alarm OBs</li> </ul>	50
<ul><li>Number of DPV1 alarm OBs</li></ul>	3
<ul> <li>Number of isochronous mode OBs</li> </ul>	3
<ul> <li>Number of technology synchronous alarm OBs</li> </ul>	2
<ul> <li>Number of startup OBs</li> </ul>	100
<ul> <li>Number of asynchronous error OBs</li> </ul>	4
<ul> <li>Number of synchronous error OBs</li> </ul>	2
<ul> <li>Number of diagnostic alarm OBs</li> </ul>	1
Nesting depth	
• per priority class	24; Up to 8 possible for F-blocks
Counters, timers and their retentivity	
S7 counter	2.040
• Number	2 048
Retentivity	V
— adjustable	Yes
IEC counter	Any (only limited by the main memory)
• Number	Any (only limited by the main memory)
Retentivity	Yes
— adjustable  S7 times	Tes
	2 048
Number  Petentivity	2 040
Retentivity	Yes
— adjustable  IEC timer	100
Number	Any (only limited by the main memory)
	, any composition of the main momory)
Retentivity	Yes
— adjustable	165

Data areas and their retentivity	
Retentive data area (incl. timers, counters, flags),	768 kbyte; In total; available retentive memory for bit memories,
max.	timers, counters, DBs, and technology data (axes): 700 KB
Extended retentive data area (incl. timers, counters,	20 Mbyte; When using PS 6 0W 24/48/60 V DC HF
flags), max.	
Flag	
<ul><li>Number, max.</li></ul>	16 kbyte
<ul> <li>Number of clock memories</li> </ul>	8; 8 clock memory bit, 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	16 384; max. number of modules / submodules
I/O address area	
• Inputs	32 kbyte; All inputs are in the process image
<ul><li>Outputs</li></ul>	32 kbyte; All outputs are in the process image
per integrated IO subsystem	
— Inputs (volume)	16 kbyte; 16 KB via the integrated PROFINET IO interface X1, 8 KB via the integrated PROFINET IO interface X2 and via the integrated PROFIBUS DP interface
— Outputs (volume)	16 kbyte; 16 KB via the integrated PROFINET IO interface X1, 8 KB via the integrated PROFINET IO interface X2 and via the integrated PROFIBUS DP interface
per CM/CP	
— Inputs (volume)	8 kbyte
— Outputs (volume)	8 kbyte
Subprocess images	
<ul> <li>Number of subprocess images, max.</li> </ul>	32
Hardware configuration	
Number of distributed IO systems	64; A distributed I/O system is characterized not only by the integration of distributed I/O via PROFINET or PROFIBUS communication modules, but also by the connection of I/O via AS-i master modules or links (e.g. IE/PB-Link)
Number of DP masters	
• integrated	1
● Via CM	8; A maximum of 8 CMs/CPs (PROFIBUS, PROFINET, Ethernet) can be inserted in total
Number of IO Controllers	
• integrated	2
● Via CM	8; A maximum of 8 CMs/CPs (PROFIBUS, PROFINET, Ethernet) can be inserted in total

Rack	
<ul> <li>Modules per rack, max.</li> </ul>	32; CPU + 31 modules
Number of lines, max.	1
PtP CM	
<ul><li>Number of PtP CMs</li></ul>	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
<ul> <li>Deviation per day, max.</li> </ul>	10 s; Typ.: 2 s
Operating hours counter	
Number	16
Clock synchronization	
• supported	Yes
● to DP, master	Yes
• in AS, master	Yes
• in AS, slave	Yes
● on Ethernet via NTP	Yes
Interfaces	
Number of PROFINET interfaces	3
Number of PROFIBUS interfaces	1
1. Interface	
Interface types	
Number of ports	2
• integrated switch	Yes
• RJ 45 (Ethernet)	Yes; X1
Protocols	
IP protocol	Yes; IPv4
<ul> <li>PROFINET IO Controller</li> </ul>	Yes
<ul> <li>PROFINET IO Device</li> </ul>	Yes
SIMATIC communication	Yes
Open IE communication	Yes
Web server	Yes
Media redundancy	Yes; MRP Automanager according to IEC 62439-2 Edition 2.0
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

— MRPD Yes; Requirement: IRT

— PROFlenergy Yes

— Prioritized startup
Yes; Max. 32 PROFINET devices

— Number of connectable IO Devices, max. 512; In total, up to 1 000 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, 512

max.

— of which in line, max. 512

Number of IO Devices that can be8; in total across all interfaces

— Number of IO Devices per tool, max.

simultaneously activated/deactivated, max.

— 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 125  $\mu$ s 125  $\mu$ s

— for send cycle of 187.5  $\mu$ s 187.5  $\mu$ s

— for send cycle of 250 μs 250 μs to 4 ms

— for send cycle of 500  $\mu s$  500  $\mu s$  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" Update time = set "odd" send clock (any multiple of 125 μs: 375

send cycles  $\mu s, 625 \mu s \dots 3875 \mu s)$ 

Update time for RT

— for send cycle of 250  $\mu s$  250  $\mu s$  to 128 ms

for send cycle of 500 μs
 for send cycle of 1 ms
 1 ms to 512 ms

for send cycle of 1 msfor send cycle of 2 ms2 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; As MRP redundancy manager and/or MRP client; max.

number of devices in the ring: 50

— MRPD	Yes; Requirement: IRT
— PROFlenergy	Yes
— Shared device	Yes
<ul> <li>Number of IO Controllers with shared device, max.</li> </ul>	4
Asset management record	Yes; Per user program

<ul> <li>Asset management record</li> </ul>	Yes; Per user program
2. Interface	
Interface types	
Number of ports	1
• integrated switch	No
• RJ 45 (Ethernet)	Yes; X2
Protocols	
• IP protocol	Yes; IPv4
<ul> <li>PROFINET IO Controller</li> </ul>	Yes
PROFINET IO Device	Yes
<ul> <li>SIMATIC communication</li> </ul>	Yes
Open IE communication	Yes
Web server	Yes
Media redundancy	No
PROFINET IO Controller	
Services	
— PG/OP communication	Yes
— S7 routing	Yes
— Isochronous mode	No
<ul><li>Open IE communication</li></ul>	Yes
— IRT	No
— MRP	No
— MRPD	No
— PROFlenergy	Yes
<ul> <li>Prioritized startup</li> </ul>	No
<ul> <li>Number of connectable IO Devices, max.</li> </ul>	128; In total, up to 1 000 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFINET
<ul> <li>Number of connectable IO Devices for RT, max.</li> </ul>	128
— of which in line, max.	128
<ul> <li>Number of IO Devices that can be simultaneously activated/deactivated, max.</li> </ul>	8; in total across all interfaces
<ul> <li>Number of IO Devices per tool, max.</li> </ul>	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 RT	

— for send cycle of 1 ms	1 ms to 512 ms
PROFINET IO Device	
Services	
<ul><li>— PG/OP communication</li></ul>	Yes
— S7 routing	Yes
— Isochronous mode	No
<ul> <li>Open IE communication</li> </ul>	Yes
— IRT	No
— MRP	No
— MRPD	No
— PROFlenergy	Yes
<ul> <li>Prioritized startup</li> </ul>	No
— Shared device	Yes
<ul> <li>Number of IO Controllers with shared device, max.</li> </ul>	4
<ul> <li>Asset management record</li> </ul>	Yes; Per user program
3. Interface	
Interface types	
Number of ports	1
integrated switch	No
• RJ 45 (Ethernet)	Yes; X3
Protocols	
• IP protocol	Yes; IPv4
<ul> <li>PROFINET IO Controller</li> </ul>	No
<ul> <li>PROFINET IO Device</li> </ul>	No
<ul> <li>SIMATIC communication</li> </ul>	Yes
Open IE communication	Yes
Web server	Yes
4. Interface	
Interface types	
Number of ports	1
• RS 485	Yes; X4
Protocols	
PROFIBUS DP master	Yes
PROFIBUS DP slave	No
SIMATIC communication	Yes
Interface types	
RJ 45 (Ethernet)	Voo
• 100 Mbps	Yes
• 1000 Mbps	Yes; Only possible at the X3 interface of the CPU 1518

<ul> <li>Autonegotiation</li> </ul>	Yes
<ul> <li>Autocrossing</li> </ul>	Yes
<ul> <li>Industrial Ethernet status LED</li> </ul>	Yes
RS 485	
Transmission rate, max.	12 Mbit/s

<ul><li>Transmission rate, max.</li></ul>	12 Mbit/s
Protocols	
Number of connections	
Number of connections, max.	384; via integrated interfaces of the CPU and connected CPs / CMs
<ul> <li>Number of connections reserved for ES/HMI/web</li> </ul>	10
<ul> <li>Number of connections via integrated interfaces</li> </ul>	192
<ul> <li>Number of S7 routing paths</li> </ul>	64; in total, only 16 S7-Routing connections are supported via PROFIBUS
Redundancy mode	
H-Sync forwarding	Yes
SIMATIC communication	
S7 communication, as server	Yes
<ul> <li>S7 communication, as client</li> </ul>	Yes
<ul> <li>User data per job, max.</li> </ul>	See online help (S7 communication, user data size)
Open IE communication	
• TCP/IP	Yes
— Data length, max.	64 kbyte
<ul> <li>several passive connections per port, supported</li> </ul>	Yes
• 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. 5 multicast circuits
• DHCP	No
• SNMP	Yes
• DCP	Yes
• LLDP	Yes
Web server	
• HTTP	Yes; Standard and user pages
• HTTPS	Yes; Standard and user pages
PROFIBUS DP master	
Number of connections, max.	48; for the integrated PROFIBUS DP interface
Services	
— PG/OP communication	Yes

— S7 routing	Yes
<ul> <li>Data record routing</li> </ul>	Yes
— Isochronous mode	Yes
— Equidistance	Yes
— Number of DP slaves	125; In total, up to 1 000 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFINET
<ul> <li>Activation/deactivation of DP slaves</li> </ul>	Yes
OPC UA	
Runtime license required	Yes
OPC UA client	Yes
<ul> <li>Application authentication</li> </ul>	Yes
— Security policies	Available security policies: None, Basic128Rsa15, Basic256Rsa15, Basic256Sha256
<ul> <li>User authentication</li> </ul>	"anonymous" or by user name & password
<ul><li>Number of connections, max.</li></ul>	40
<ul> <li>Number of nodes of the client interfaces,</li> </ul>	5 000
max.	
<ul> <li>Number of elements for one call of OPC_UA_NodeGetHandleList/OPC_UA_Rea dList/OPC_UA_WriteList, max.</li> </ul>	300
<ul> <li>Number of elements for one call of OPC_UA_NameSpaceGetIndexList, max.</li> </ul>	20
<ul> <li>Number of elements for one call of OPC_UA_MethodGetHandleList, max.</li> </ul>	100
<ul> <li>Number of simultaneous calls of the client instructions per connection (except OPC_UA_ReadList,OPC_UA_WriteList,OPC_ UA_MethodCall), max.</li> </ul>	1
<ul> <li>Number of simultaneous calls of the client instructions</li> <li>OPC_UA_ReadList,OPC_UA_WriteList and OPC_UA_MethodCall, max.</li> </ul>	5
<ul> <li>Number of registerable nodes, max.</li> </ul>	5 000
<ul> <li>Number of registerable method calls of OPC_UA_MethodCall, max.</li> </ul>	100
<ul><li>— Number of inputs/outputs when calling OPC_UA_MethodCall, max.</li></ul>	20
OPC UA server	Yes; Data access (read, write, subscribe), method call, custom address space
<ul> <li>Application authentication</li> </ul>	Yes
— Security policies	Available security policies: None, Basic128Rsa15, Basic256Rsa15, Basic256Sha256
— User authentication	"anonymous" or by user name & password
— Number of sessions, max.	64
<ul> <li>Number of accessible variables, max.</li> </ul>	200 000

<ul> <li>Number of registerable nodes, max.</li> </ul>	50 000
<ul> <li>Number of subscriptions per session, max.</li> </ul>	20
<ul><li>— Sampling time, min.</li></ul>	10 ms
— Send time, min.	10 ms
<ul> <li>Number of server methods, max.</li> </ul>	100
<ul> <li>Number of inputs/outputs per server</li> </ul>	20
method, max.	
<ul> <li>Number of monitored items, max.</li> </ul>	10 000; For 1 s sampling interval and 1 s send interval
<ul> <li>Number of server interfaces, max.</li> </ul>	10
<ul> <li>Number of nodes for user-defined server interfaces, max.</li> </ul>	30 000
Further protocols	
• MODBUS	Yes; MODBUS TCP
Media redundancy	
Switchover time on line break, typ.	200 ms; For MRP, bumpless for MRPD
<ul> <li>Number of stations in the ring, max.</li> </ul>	50
Isochronous mode	
Isochronous operation (application synchronized up	Yes; Distributed and central; with minimum OB 6x cycle of 125 µs
to terminal)	(distributed) and 1 ms (central)
Equidistance	Yes
S7 message functions	
Number of login stations for message functions, max.	32
Program alarms	Yes
Number of configurable program messages, max.	10 000; Program messages are generated by the
	"Program_Alarm" block, ProDiag or GRAPH
Number of loadable program messages in RUN, max.	5 000
Number of simultaneously active program alarms	
<ul> <li>Number of program alarms</li> </ul>	1 000
<ul> <li>Number of alarms for system diagnostics</li> </ul>	200
<ul> <li>Number of alarms for motion technology</li> </ul>	160
objects	
Test commissioning functions	
Joint commission (Team Engineering)	Yes; Parallel online access possible for up to 10 engineering systems
Status block	Yes; Up to 16 simultaneously (in total across all ES clients)
Single step	No
Number of breakpoints	20
Status/control	
Status/control variable	Yes
Variables	Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters
	Counters

<ul> <li>Number of variables, max.</li> </ul>	
<ul><li>of which status variables, max.</li></ul>	200; per job
<ul><li>of which control variables, max.</li></ul>	200; per job
Forcing	
Forcing, variables	Peripheral inputs/outputs
<ul> <li>Number of variables, max.</li> </ul>	200
Diagnostic buffer	
• present	Yes
<ul> <li>Number of entries, max.</li> </ul>	3 200
<ul><li>of which powerfail-proof</li></ul>	1 000
Traces	
Number of configurable Traces	8; Up to 512 KB of data per trace are possible
Interrupts/diagnostics/status information	
Diagnostics indication LED	
RUN/STOP LED	Yes

## Diagnostics indication LED RUN/STOP LED ERROR LED MAINT LED Connection display LINK TX/RX Yes

Supported technology objects	
Motion Control	Yes; Note: The number of axes affects the cycle time of the PLC program; selection guide via the TIA Selection Tool or SIZER
<ul> <li>Number of available Motion Control resources for technology objects (except cam disks)</li> </ul>	10 240
<ul> <li>Required Motion Control resources</li> </ul>	
— per speed-controlled axis	40
— per positioning axis	80
— per synchronous axis	160
— per external encoder	80
— per output cam	20
— per cam track	160
— per probe	40
<ul> <li>Positioning axis</li> </ul>	
<ul> <li>Number of positioning axes at motion control cycle of 4 ms (typical value)</li> </ul>	128
<ul> <li>Number of positioning axes at motion control cycle of 8 ms (typical value)</li> </ul>	128
Controller	
<ul><li>PID_Compact</li></ul>	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	
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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 of 100 hours)		
<ul><li>Low demand mode: PFDavg in accordance with SIL3</li></ul>	< 2.00E-05	
High demand/continuous mode: PFH in accordance with SIL3	< 1.00E-09	

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
<ul> <li>vertical installation, min.</li> </ul>	0 °C
• vertical installation, max.	40 °C; Display: 40 °C, at an operating temperature of typically 40 °C, the display is switched off
Ambient temperature during storage/transportation	
● min.	-40 °C
• max.	70 °C

Configuration	
Programming	
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
<ul> <li>Copy protection</li> </ul>	Yes
<ul> <li>Block protection</li> </ul>	Yes
Access protection	
Password for display	Yes
<ul> <li>Protection level: Write protection</li> </ul>	Yes
<ul> <li>Protection level: Read/write protection</li> </ul>	Yes
<ul> <li>Protection level: Complete protection</li> </ul>	Yes
Cycle time monitoring	
• lower limit	adjustable minimum cycle time
• upper limit	adjustable maximum cycle time

Open Development interfaces	
• Size of ODK SO file, max.	9.8 Mbyte
Dimensions	
Width	175 mm
Height	147 mm
Depth	129 mm
Weights	
Weight, approx.	1 988 g
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