## **SIEMENS**

## Data sheet

## 6ES7518-4AX00-1AC0

SIMATIC S7-1500, CPU bundle Consisting of: CPU 1518-4 PN/DP MFP (6ES7518-4AX00-1AB0), including C/C++ Runtime and OPC UA Runtime license, work memory 4 MB for program and 20 MB for data, 1st interface: PROFINET IRT with 2-port switch, 2nd interface: PROFINET RT, 3rd interface: PROFINET basic services, 4th interface: PROFIBUS, 1 ns bit performance, SIMATIC memory card (min. 2 GB) required



General information	
Product type designation	CPU 1518-4 PN/DP MFP
HW functional status	FS01
Firmware version	V2.8
Product function	
● I&M data	Yes; I&M0 to I&M3
Isochronous mode	Yes; Distributed and central; with minimum OB 6x cycle of 125 $\mu s$ (distributed) and 1 ms (central)
Engineering with	
<ul> <li>STEP 7 TIA Portal configurable/integrated from version</li> </ul>	V16 (FW V2.8) / V15 (FW V2.5) or higher
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
permissible range, upper limit (DC)	28.8 V
Reverse polarity protection	Yes
Mains buffering	
<ul> <li>Mains/voltage failure stored energy time</li> </ul>	5 ms
• Repeat rate, min.	1/s
·	
Input current	
Current consumption (rated value)	1.7 A
Current consumption, max.	2 A
Inrush current, max.	2.7 A; Rated value
l <sup>2</sup> t	0.02 A²·s
Power	
Infeed power to the backplane bus	12 W
Power consumption from the backplane bus	35 W
(balanced)	
Power loss	
Power loss, typ.	29 W
Memory Number of slots for SIMATIC memory card	1
SIMATIC memory card required	Yes
Work memory	Tes
	4 Mbyte
<ul> <li>integrated (for program)</li> <li>integrated (for deta)</li> </ul>	20 Mbyte
• integrated (for data)	
<ul> <li>integrated (for CPU function library of CPU Runtime)</li> </ul>	50 Mbyte; Note: The "CPU function library of the CPU" are C/C++ blocks for the user program that were created using the SIMATIC
(Valuane)	ODK 1500S or Target 1500S.
Working memory for additional functions	
<ul> <li>Integrated (for C/C++ Runtime application)</li> </ul>	512 Mbyte
Load memory	
<ul> <li>Plug-in (SIMATIC Memory Card), max.</li> </ul>	32 Gbyte; The memory card must have at least 2 GB of space on
	it
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	

DB           • Number range         160 999; subdivided into: number range of DBs created via SFC 96: 60 00060 999           • Size, max.         18 Mbyte; For DBs with absolute addressing, the max: size is 64 KB           FB         065 535           • Size, max.         169 993, subdivided into: number range of DBs created via SFC 96: 60 00060 999           FB         065 535           • Size, max.         165 535           • Size, max.         065 535           • Size, max.         1	Number of elements (total)	12 000; Blocks (OB, FB, FC, DB) and UDTs
the user: 1 59 990, and number range of DBs created via SFC 86: 60 0099           this Mbyte; For DBs with absolute addressing, the max. size is 4 K8           FB           • Number range         0 65 535           • Size, max.         1 Mbyte;           • Number range         0 65 535           • Size, max.         1 Mbyte           FO         0 65 535           • Size, max.         1 Mbyte           • Number range         0 65 535           • Size, max.         1 Mbyte           • Number of recycle OBs         0 65 535           • Number of free cycle OBs         100           • Number of free cycle OBs         20           • Number of odelay alarn OBs         20           • Number of odelay alarn OBs         20           • Number of process alarn OBs         3           • Number of sochronous mode OBs         3           • Number of sochronous mode OBs         3           • Number of sochronous enror OBs         4           • Number of algonotic alarn OBs         100           • Number of algonotic alarn OBs         100           • Number of algonotic alarn OBs         2           • Number of algonotic alarn OBs         2           • Number of algonotic alarn OBs	DB	
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• Number of diagnostic alarm OBs       1         • Nesting depth       24         • per priority class       24         Counters, timers and their retentivity         S7 counter       2 048         • Number       2 048         Retentivity       Yes         IEC counter       Any (only limited by the main memory)         Retentivity       - adjustable         • Number       Any (only limited by the main memory)         Retentivity       Yes         - adjustable       Yes         S7 times       2 048         S7 times       Yes         S7 times       Yes         S7 times       2 048	<ul> <li>Number of asynchronous error OBs</li> </ul>	4
Nesting depth       24         • per priority class       24         Counters, timers and their retentivity       2048         S7 counter       2 048         • Number       2 048         Retentivity       4         - adjustable       Yes         IEC counter       4ny (only limited by the main memory)         Retentivity       -         - adjustable       Yes         S7 times       Yes         S7 times       2 048         etentivity       -         - Number       Any (only limited by the main memory)         Retentivity       -         - adjustable       Yes         S7 times       2 048         Retentivity       -	<ul> <li>Number of synchronous error OBs</li> </ul>	2
• per priority class       24         • counters, timers and their retentivity       2048         • Number       2 048         • Retentivity       - adjustable         adjustable       Yes         IEC counter       Any (only limited by the main memory)         Retentivity       - adjustable         adjustable       Yes         S7 times       Yes         S7 times       2 048         eNumber       Yes         Any (only limited by the main memory)       Yes	<ul> <li>Number of diagnostic alarm OBs</li> </ul>	1
Counters, timers and their retentivity       S7 counter       • Number     2 048       Retentivity       adjustable     Yes       IEC counter       • Number     Any (only limited by the main memory)       Retentivity       adjustable     Yes       S7 times       • Number     2 048       Retentivity     2 048	Nesting depth	
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S7 times • Number 2 048 Retentivity	Retentivity	
Number 2 048 Retentivity	— adjustable	Yes
Retentivity	S7 times	
	• Number	2 048
- adjustable Yes	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),	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
Number of clock memories	8; 8 clock memory bit, grouped into one clock memory byte
Data blocks	
Retentivity adjustable	Yes
Retentivity preset	No
Local data	
<ul> <li>per priority class, max.</li> </ul>	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
Outputs	32 kbyte; All outputs are in the process image
per integrated IO subsystem	
— Inputs (volume)	32 kbyte; Max. 32 KB via X1; max. 8 KB via X2 or X3
— Outputs (volume)	32 kbyte; Max. 32 KB via X1; max. 8 KB via X2 or X3
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	64; A distributed I/O system is characterized not only by the
Number of distributed to systems	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

	8: A maximum of 8 CMa/CDa (DDAEIDUS, DDAEINET, Ethernot)
● Via CM	<li>8; A maximum of 8 CMs/CPs (PROFIBUS, PROFINET, Ethernet) can be inserted in total</li>
Rack	
<ul> <li>Modules per rack, max.</li> </ul>	32; CPU + 31 modules
• Number of lines, max.	1
PtP CM	
Number of PtP CMs	the number of connectable PtP CMs is only limited by the number
	of available slots
Time of dou	
Time of day Clock	
•Туре	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 3, 1yp., 2 3
Number	16
Clock synchronization	
• supported	Yes
	Yes
• to DP, master	Yes
• in AS, master	Yes
• in AS, slave	
<ul> <li>on Ethernet via NTP</li> </ul>	Yes
Interfaces	
Number of PROFINET interfaces	3
Number of PROFINET interfaces Number of PROFIBUS interfaces	3 1
Number of PROFIBUS interfaces	
Number of PROFIBUS interfaces 1. Interface	
Number of PROFIBUS interfaces 1. Interface Interface types	1
Number of PROFIBUS interfaces           1. Interface           Interface types           • Number of ports	2
Number of PROFIBUS interfaces           1. Interface           Interface types           • Number of ports           • integrated switch	1 2 Yes
Number of PROFIBUS interfaces  1. Interface Interface types  • Number of ports • integrated switch • RJ 45 (Ethernet)	1 2 Yes
Number of PROFIBUS interfaces  1. Interface Interface types  • Number of ports • integrated switch • RJ 45 (Ethernet) Protocols	1 2 Yes Yes; X1
Number of PROFIBUS interfaces         1. Interface         Interface types         • Number of ports         • integrated switch         • RJ 45 (Ethernet)         Protocols         • IP protocol	1 2 Yes Yes; X1 Yes; IPv4
Number of PROFIBUS interfaces         1. Interface         Interface types         • Number of ports         • integrated switch         • RJ 45 (Ethernet)         Protocols         • IP protocol         • PROFINET IO Controller	1 2 Yes Yes; X1 Yes; IPv4 Yes
Number of PROFIBUS interfaces         1. Interface         Interface types         • Number of ports         • integrated switch         • RJ 45 (Ethernet)         Protocols         • IP protocol         • PROFINET IO Controller         • PROFINET IO Device	1 2 Yes Yes; X1 Yes; IPv4 Yes Yes
Number of PROFIBUS interfaces         1. Interface         Interface types         • Number of ports         • integrated switch         • RJ 45 (Ethernet)         Protocols         • IP protocol         • PROFINET IO Controller         • PROFINET IO Device         • SIMATIC communication	1 2 Yes Yes; X1 Yes; IPv4 Yes Yes Yes Yes
Number of PROFIBUS interfaces         1. Interface         Interface types         • Number of ports         • integrated switch         • RJ 45 (Ethernet)         Protocols         • IP protocol         • PROFINET IO Controller         • PROFINET IO Device         • SIMATIC communication         • Open IE communication	1         2         Yes         Yes; X1         Yes; IPv4         Yes         Yes         Yes         Yes         Yes         Yes         Yes         Yes         Yes         Yes; Optionally also encrypted
Number of PROFIBUS interfaces         1. Interface         Interface types         • Number of ports         • integrated switch         • RJ 45 (Ethernet)         Protocols         • IP protocol         • PROFINET IO Controller         • PROFINET IO Device         • SIMATIC communication         • Open IE communication         • Web server	1 2 Yes Yes; X1 Yes; IPv4 Yes Yes Yes Yes Yes Yes Yes; Optionally also encrypted Yes
Number of PROFIBUS interfaces         1. Interface         Interface types         • Number of ports         • integrated switch         • RJ 45 (Ethernet)         Protocols         • IP protocol         • PROFINET IO Controller         • PROFINET IO Device         • SIMATIC communication         • Open IE communication         • Web server         • Media redundancy	1 2 Yes Yes; X1 Yes; IPv4 Yes Yes Yes Yes Yes Yes Yes; Optionally also encrypted Yes
Number of PROFIBUS interfaces         1. Interface         Interface types         • Number of ports         • integrated switch         • RJ 45 (Ethernet)         Protocols         • IP protocol         • PROFINET IO Controller         • PROFINET IO Device         • SIMATIC communication         • Web server         • Media redundancy         PROFINET IO Controller	1 2 Yes Yes; X1 Yes; IPv4 Yes Yes Yes Yes Yes Yes Yes; Optionally also encrypted Yes
Number of PROFIBUS interfaces         1. Interface         Interface types         • Number of ports         • integrated switch         • RJ 45 (Ethernet)         Protocols         • IP protocol         • PROFINET IO Controller         • SIMATIC communication         • Open IE communication         • Web server         • Media redundancy         PROFINET IO Controller	1         2         Yes         Yes; X1         Yes; IPv4         Yes         Yes

	Vec
— Isochronous mode	Yes
— Direct data exchange	Yes; Requirement: IRT and isochronous mode (MRPD optional)
— IRT	
— MRP	Yes; MRP Automanager acc. to IEC 62439-2 Edition 2.0; MRP Manager; MRP Client; max. number of devices in the ring: 50
— MRPD	Yes; Requirement: IRT
— PROFlenergy	Yes; per user program
— Prioritized startup	Yes; Max. 32 PROFINET devices
<ul> <li>Number of connectable IO Devices, max.</li> </ul>	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
<ul> <li>— Number of connectable IO Devices for RT,</li> </ul>	512
max.	
— of which in line, max.	512
<ul> <li>— Number of IO Devices that can be simultaneously activated/deactivated, max.</li> </ul>	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 125 µs	125 µs
— for send cycle of 187.5 $\mu$ s	187.5 µs
— for send cycle of 250 µs	250 µs to 4 ms
— 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"	Update time = set "odd" send clock (any multiple of 125 $\mu$ s: 375
send cycles	μs, 625 μs 3 875 μs)
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
— S7 routing	Yes
— Isochronous mode	No
— IRT	Yes; Minimum send cycle of 250 µs

— MRP	Yes; MRP Automanager acc. to IEC 62439-2 Edition 2.0; MRP Manager; MRP Client; max. number of devices in the ring: 50
— MRPD	Yes; Requirement: IRT
— PROFlenergy	Yes; per user program
— Shared device	Yes
— Number of IO Controllers with shared	4
device, max.	
— Asset management record	Yes; per user program
2. Interface	
Interface types	
Number of ports	1
<ul> <li>integrated switch</li> </ul>	No
<ul> <li>RJ 45 (Ethernet)</li> </ul>	Yes; X2
Protocols	
IP protocol	Yes; IPv4
PROFINET IO Controller	Yes
PROFINET IO Device	Yes
<ul> <li>SIMATIC communication</li> </ul>	Yes
<ul> <li>Open IE communication</li> </ul>	Yes; Optionally also encrypted
Web server	Yes
<ul> <li>Media redundancy</li> </ul>	No
PROFINET IO Controller	
Services	
— PG/OP communication	Yes
— S7 routing	Yes
— Isochronous mode	No
— Direct data exchange	No
— IRT	No
— MRP	No
— MRPD	No
— PROFlenergy	Yes; per user program
— Prioritized startup	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
— 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 RT	
— for send cycle of 1 ms	1 ms to 512 ms
PROFINET IO Device	
Services	
— PG/OP communication	Yes
— S7 routing	Yes
— Isochronous mode	No
— IRT	No
— MRP	No
— MRPD	No
— PROFlenergy	Yes; per user program
— Prioritized startup	No
— Shared device	Yes
— Number of IO Controllers with shared	4
device, max.	
<ul> <li>Asset management record</li> </ul>	Yes; per user program
3. Interface	
Interface types	
Number of ports	1; C/C++ Runtime can also be reached via this port
<ul> <li>integrated switch</li> </ul>	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
<ul> <li>Open IE communication</li> </ul>	Yes
Web server	Yes
4. Interface	
Interface types	
Number of ports	1
• RS 485	Yes; X4
Protocols	
<ul> <li>PROFIBUS DP master</li> </ul>	Yes
PROFIBUS DP slave	No
<ul> <li>SIMATIC communication</li> </ul>	Yes
Interface types	
RJ 45 (Ethernet)	

• 100 Mbps	Yes
• 1000 Mbps	Yes; Only possible at the X3 interface of the CPU 1518
Autonegotiation	Yes
Autocrossing	Yes
<ul> <li>Industrial Ethernet status LED</li> </ul>	Yes
RS 485	
<ul> <li>Transmission rate, max.</li> </ul>	12 Mbit/s
Protocols	
Number of connections	
<ul> <li>Number of connections, max.</li> </ul>	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>	320
<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
Media redundancy	
— Switchover time on line break, typ.	200 ms; For MRP, bumpless for MRPD
— Number of stations in the ring, max.	50
SIMATIC communication	
<ul> <li>S7 communication, as server</li> </ul>	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	
<ul> <li>Number of connections, max.</li> </ul>	48; for the integrated PROFIBUS DP interface
Services	
— PG/OP communication	Yes
— S7 routing	Yes
— Data record routing	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
— User authentication	"anonymous" or by user name & password
- Number of connections, max.	40
<ul> <li>Number of nodes of the client interfaces, max.</li> </ul>	5 000
<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</li> <li>OPC_UA_MethodCall, max.</li> </ul>	5
— Number of registerable nodes, max.	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
- Number of accessible variables, max.	200 000
— Number of registerable nodes, max.	50 000
<ul> <li>— Number of subscriptions per session, max.</li> </ul>	20
— Sampling interval, min.	10 ms
— Publishing interval, min.	10 ms
— Number of server methods, max.	100
<ul> <li>— Number of inputs/outputs per server method, max.</li> </ul>	20
- Number of monitored items, max.	10 000; for 1 s sampling interval and 1 s send interval
— Number of server interfaces, max.	10; or 20, depending on type of server interface
<ul> <li>Number of nodes for user-defined server interfaces, max.</li> </ul>	30 000
Further protocols	
• MODBUS	Yes; MODBUS TCP
Isochronous mode	
Equidistance	Yes
-	Yes
Equidistance S7 message functions Number of login stations for message functions, max.	Yes 64
S7 message functions	
S7 message functions Number of login stations for message functions, max.	64
S7 message functions Number of login stations for message functions, max. Program alarms Number of configurable program messages, max. Number of loadable program messages in RUN,	64 Yes 10 000; Program messages are generated by the
S7 message functions Number of login stations for message functions, max. Program alarms Number of configurable program messages, max. Number of loadable program messages in RUN, max.	64 Yes 10 000; Program messages are generated by the "Program_Alarm" block, ProDiag or GRAPH
S7 message functions         Number of login stations for message functions, max.         Program alarms         Number of configurable program messages, max.         Number of loadable program messages in RUN, max.         Number of simultaneously active program alarms	64 Yes 10 000; Program messages are generated by the "Program_Alarm" block, ProDiag or GRAPH 5 000
S7 message functions         Number of login stations for message functions, max.         Program alarms         Number of configurable program messages, max.         Number of loadable program messages in RUN, max.         Number of simultaneously active program alarms         • Number of program alarms	64 Yes 10 000; Program messages are generated by the "Program_Alarm" block, ProDiag or GRAPH 5 000 4 000
S7 message functions         Number of login stations for message functions, max.         Program alarms         Number of configurable program messages, max.         Number of loadable program messages in RUN, max.         Number of simultaneously active program alarms         • Number of program alarms         • Number of alarms for system diagnostics	64 Yes 10 000; Program messages are generated by the "Program_Alarm" block, ProDiag or GRAPH 5 000 4 000 1 000
S7 message functions         Number of login stations for message functions, max.         Program alarms         Number of configurable program messages, max.         Number of loadable program messages in RUN, max.         Number of simultaneously active program alarms         • Number of program alarms	64 Yes 10 000; Program messages are generated by the "Program_Alarm" block, ProDiag or GRAPH 5 000 4 000
S7 message functions         Number of login stations for message functions, max.         Program alarms         Number of configurable program messages, max.         Number of loadable program messages in RUN, max.         Number of simultaneously active program alarms         • Number of program alarms         • Number of alarms for system diagnostics         • Number of alarms for motion technology	64 Yes 10 000; Program messages are generated by the "Program_Alarm" block, ProDiag or GRAPH 5 000 4 000 1 000
S7 message functions         Number of login stations for message functions, max.         Program alarms         Number of configurable program messages, max.         Number of loadable program messages in RUN, max.         Number of simultaneously active program alarms         • Number of program alarms         • Number of alarms for system diagnostics         • Number of alarms for motion technology objects	64 Yes 10 000; Program messages are generated by the "Program_Alarm" block, ProDiag or GRAPH 5 000 4 000 1 000
S7 message functions         Number of login stations for message functions, max.         Program alarms         Number of configurable program messages, max.         Number of loadable program messages in RUN, max.         Number of simultaneously active program alarms         • Number of program alarms         • Number of alarms for system diagnostics         • Number of alarms for motion technology objects	64 Yes 10 000; Program messages are generated by the "Program_Alarm" block, ProDiag or GRAPH 5 000 4 000 1 000 160 Yes; Parallel online access possible for up to 10 engineering
S7 message functions         Number of login stations for message functions, max.         Program alarms         Number of configurable program messages, max.         Number of loadable program messages in RUN, max.         Number of simultaneously active program alarms         • Number of program alarms         • Number of alarms for system diagnostics         • Number of alarms for motion technology objects <b>Test commissioning functions</b> Joint commission (Team Engineering)         Status block         Single step	64         Yes         10 000; Program messages are generated by the         "Program_Alarm" block, ProDiag or GRAPH         5 000         4 000         1 000         160         Yes; Parallel online access possible for up to 10 engineering systems
S7 message functions         Number of login stations for message functions, max.         Program alarms         Number of configurable program messages, max.         Number of loadable program messages in RUN, max.         Number of simultaneously active program alarms         • Number of program alarms         • Number of program alarms         • Number of alarms for system diagnostics         • Number of alarms for motion technology objects <b>Test commission (Team Engineering)</b> Status block	64         Yes         10 000; Program messages are generated by the "Program_Alarm" block, ProDiag or GRAPH         5 000         4 000         1 000         160         Yes; Parallel online access possible for up to 10 engineering systems         Yes; Up to 16 simultaneously (in total across all ES clients)
S7 message functions         Number of login stations for message functions, max.         Program alarms         Number of configurable program messages, max.         Number of loadable program messages in RUN, max.         Number of simultaneously active program alarms         • Number of program alarms         • Number of alarms for system diagnostics         • Number of alarms for motion technology objects <b>Test commissioning functions</b> Joint commission (Team Engineering)         Status block         Single step	64 Yes 10 000; Program messages are generated by the "Program_Alarm" block, ProDiag or GRAPH 5 000 4 000 1 000 160 Yes; Parallel online access possible for up to 10 engineering systems Yes; Up to 16 simultaneously (in total across all ES clients) No

• 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	
<ul> <li>Forcing, variables</li> </ul>	Peripheral inputs/outputs
• Number of variables, max.	200
Diagnostic buffer	
• present	Yes
Number of entries, max.	3 200
— of which powerfail-proof	1 000
Traces	
<ul> <li>Number of configurable Traces</li> </ul>	8; 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
<ul> <li>Connection display LINK TX/RX</li> </ul>	Yes
Supported technology objects	
Motion Control	Yes; Note: The number of axes affects the cycle time of the PLC
Motion Control	program; selection guide via the TIA Selection Tool or SIZER
Motion Control <ul> <li>Number of available Motion Control resources</li> </ul>	program; selection guide via the TIA Selection Tool or SIZER
<ul> <li>Motion Control</li> <li>Number of available Motion Control resources for technology objects</li> </ul>	program; selection guide via the TIA Selection Tool or SIZER
Motion Control <ul> <li>Number of available Motion Control resources</li> <li>for technology objects</li> <li>Required Motion Control resources</li> </ul>	program; selection guide via the TIA Selection Tool or SIZER 10 240
<ul> <li>Motion Control</li> <li>Number of available Motion Control resources for technology objects</li> <li>Required Motion Control resources — per speed-controlled axis</li> </ul>	program; selection guide via the TIA Selection Tool or SIZER 10 240 40
<ul> <li>Motion Control</li> <li>Number of available Motion Control resources for technology objects</li> <li>Required Motion Control resources <ul> <li>per speed-controlled axis</li> <li>per positioning axis</li> </ul> </li> </ul>	program; selection guide via the TIA Selection Tool or SIZER 10 240 40 80
<ul> <li>Motion Control</li> <li>Number of available Motion Control resources for technology objects</li> <li>Required Motion Control resources <ul> <li>per speed-controlled axis</li> <li>per positioning axis</li> <li>per synchronous axis</li> </ul> </li> </ul>	program; selection guide via the TIA Selection Tool or SIZER 10 240 40 80 160
<ul> <li>Motion Control</li> <li>Number of available Motion Control resources for technology objects</li> <li>Required Motion Control resources <ul> <li>per speed-controlled axis</li> <li>per positioning axis</li> <li>per synchronous axis</li> <li>per external encoder</li> </ul> </li> </ul>	program; selection guide via the TIA Selection Tool or SIZER 10 240 40 80 160 80
<ul> <li>Motion Control</li> <li>Number of available Motion Control resources for technology objects</li> <li>Required Motion Control resources <ul> <li>per speed-controlled axis</li> <li>per positioning axis</li> <li>per synchronous axis</li> <li>per external encoder</li> <li>per output cam</li> </ul> </li> </ul>	program; selection guide via the TIA Selection Tool or SIZER 10 240 40 80 160 80 20
<ul> <li>Motion Control</li> <li>Number of available Motion Control resources for technology objects</li> <li>Required Motion Control resources <ul> <li>per speed-controlled axis</li> <li>per positioning axis</li> <li>per synchronous axis</li> <li>per external encoder</li> <li>per output cam</li> <li>per cam track</li> </ul> </li> </ul>	program; selection guide via the TIA Selection Tool or SIZER 10 240 40 80 160 80 20 160
<ul> <li>Motion Control</li> <li>Number of available Motion Control resources for technology objects</li> <li>Required Motion Control resources <ul> <li>per speed-controlled axis</li> <li>per positioning axis</li> <li>per oper synchronous axis</li> <li>per external encoder</li> <li>per output cam</li> <li>per cam track</li> <li>per probe</li> </ul> </li> </ul>	program; selection guide via the TIA Selection Tool or SIZER 10 240 40 80 160 80 20 160
<ul> <li>Motion Control</li> <li>Number of available Motion Control resources for technology objects</li> <li>Required Motion Control resources <ul> <li>per speed-controlled axis</li> <li>per positioning axis</li> <li>per positioning axis</li> <li>per synchronous axis</li> <li>per external encoder</li> <li>per output cam</li> <li>per cam track</li> <li>per probe</li> </ul> </li> <li>Positioning axis</li> </ul>	program; selection guide via the TIA Selection Tool or SIZER 10 240 40 80 160 80 20 160 40
<ul> <li>Motion Control</li> <li>Number of available Motion Control resources for technology objects</li> <li>Required Motion Control resources <ul> <li>per speed-controlled axis</li> <li>per positioning axis</li> <li>per positioning axis</li> <li>per external encoder</li> <li>per output cam</li> <li>per cam track</li> <li>per probe</li> </ul> </li> <li>Positioning axis <ul> <li>Number of positioning axes at motion control cycle of 4 ms (typical value)</li> <li>Number of positioning axes at motion</li> </ul> </li> </ul>	program; selection guide via the TIA Selection Tool or SIZER 10 240 40 80 160 80 20 160 40
<ul> <li>Motion Control</li> <li>Number of available Motion Control resources for technology objects</li> <li>Required Motion Control resources <ul> <li>per speed-controlled axis</li> <li>per positioning axis</li> <li>per positioning axis</li> <li>per synchronous axis</li> <li>per external encoder</li> <li>per output cam</li> <li>per cam track</li> <li>per probe</li> </ul> </li> <li>Positioning axis <ul> <li>Number of positioning axes at motion control cycle of 4 ms (typical value)</li> </ul> </li> </ul>	program; selection guide via the TIA Selection Tool or SIZER 10 240 40 80 160 80 20 160 40
Motion Control         • Number of available Motion Control resources for technology objects         • Required Motion Control resources         — per speed-controlled axis         — per positioning axis         — per positioning axis         — per synchronous axis         — per output cam         — per probe         • Positioning axis         — per probe         • Number of positioning axes at motion control cycle of 4 ms (typical value)         — Number of positioning axes at motion control cycle of 8 ms (typical value)         Controller	program; selection guide via the TIA Selection Tool or SIZER 10 240 40 80 160 80 20 160 40
Motion Control         • Number of available Motion Control resources for technology objects         • Required Motion Control resources         — per speed-controlled axis         — per positioning axis         — per positioning axis         — per synchronous axis         — per output cam         — per probe         • Positioning axis         — per probe         • Number of positioning axes at motion control cycle of 4 ms (typical value)         — Number of positioning axes at motion control cycle of 8 ms (typical value)         Controller         • PID_Compact	program; selection guide via the TIA Selection Tool or SIZER 10 240 40 40 80 160 80 20 160 40 128 128 Yes; Universal PID controller with integrated optimization
Motion Control         • Number of available Motion Control resources for technology objects         • Required Motion Control resources         — per speed-controlled axis         — per positioning axis         — per positioning axis         — per synchronous axis         — per output cam         — per probe         • Positioning axis         — per probe         • Number of positioning axes at motion control cycle of 4 ms (typical value)         — Number of positioning axes at motion control cycle of 8 ms (typical value)         Controller	program; selection guide via the TIA Selection Tool or SIZER 10 240 40 80 160 80 20 160 40 128

Counting and measuring	
High-speed counter	Yes
Ambient conditions Ambient temperature during operation	
horizontal installation, min.	0 °C
	60 °C; Display: 50 °C, at an operating temperature of typically 50
<ul> <li>horizontal installation, max.</li> </ul>	°C, the display is switched off
<ul> <li>vertical installation, min.</li> </ul>	0°0
<ul> <li>vertical installation, max.</li> </ul>	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
Altitude during operation relating to sea level	
<ul> <li>Installation altitude above sea level, max.</li> </ul>	5 000 m; Restrictions for installation altitudes > 2 000 m, see manual
Configuration	
Programming	
Programming language	
— LAD	Yes
— FBD	Yes
— STL	Yes
— SCL	Yes
— GRAPH	Yes
Know-how protection	
<ul> <li>User program protection/password protection</li> </ul>	Yes
Copy protection	Yes
Block protection	Yes
Access protection	
<ul> <li>Password for display</li> </ul>	Yes
Protection level: Write protection	Yes
<ul> <li>Protection level: Read/write protection</li> </ul>	Yes
Protection level: Complete protection	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.	2 117 g
last modified:	06/11/2020