Data sheet 6ES7518-3FT10-0AB0



SIMATIC S7-1500, CPU 1518F-3 PN, central processing unit with 18 MB work memory for program and 150 MB for data, 1st interface: PROFINET IRT with 2-port switch, 2nd interface: PROFINET IRT with 2-port switch, 3rd interface: Ethernet, 0.3 ns bit performance, SIMATIC Memory Card required

General information	
Product type designation	CPU 1518F-3 PN
HW functional status	FS01
Firmware version	V4.0
FW update possible	Yes
Product function	
• I&M data	Yes; I&M0 to I&M3
• Isochronous mode	Yes; Distributed and central; with minimum OB 6x cycle of 125 μs (distributed) and 1 ms (central)
SysLog	Yes
Engineering with	
 STEP 7 TIA Portal configurable/integrated from version 	V20 (FW V4.0)
Configuration control	
via dataset	Yes
Display	
Screen diagonal [cm]	6.1 cm
Control elements	
Number of keys	8
Mode buttons	2
Supply voltage	
Rated value (DC)	24 V
permissible range, lower limit (DC)	19.2 V
permissible range, upper limit (DC)	28.8 V
Reverse polarity protection	Yes
Mains buffering	
 Mains/voltage failure stored energy time 	5 ms
Repeat rate, min.	1/s
Input current	
Current consumption (rated value)	1.35 A; 1.45 A with performance boost
Current consumption, max.	2.1 A
Inrush current, max.	2.1 A; Rated value
l²t	0.5 A ² ·s
Power	
Infeed power to the backplane bus	12 W
Power consumption from the backplane bus (balanced)	30 W
Power loss	
Power loss, typ.	20.4 W; 22.8 W with performance boost
Memory	
Number of slots for SIMATIC memory card	1
SIMATIC memory card required	Yes

Work memory	
integrated (for program)	18 Mbyte
integrated (for data) integrated (for data)	150 Mbyte
Load memory	100 Mbyto
Plug-in (SIMATIC Memory Card), max.	32 Gbyte
Backup	32 Obyte
maintenance-free	Yes
CPU processing times	165
	0.0
for bit operations, typ.	0.3 ns
for word operations, typ.	0.8 ns
for fixed point arithmetic, typ.	0.8 ns
for floating point arithmetic, typ.	2.5 ns
CPU-blocks	
Number of elements (total)	40 000; 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
• Size, max.	59 999, and number range of DBs created via SFC 86: 60 000 60 999 16 Mbyte; For DBs with absolute addressing, the max. size is 64 KB
FB	TO MUDYIC, I OF DIDS WITH AUSOLUTE AUGIESSING, THE HIMX. SIZE IS 04 ND
Number range	0 65 535
9	
• Size, max.	1 Mbyte
	0 65 525
Number range Size may	0 65 535
• Size, max.	1 Mbyte
	4 Mb. 4a
Size, max. Number of free cycle OPs	1 Mbyte 100
Number of free cycle OBs Number of fires plants OBs	
Number of time alarm OBs	20
Number of delay alarm OBs	20
Number of cyclic interrupt OBs	20; with minimum OB 3x cycle of 100 μs
Number of process alarm OBs	50
Number of DPV1 alarm OBs	3
Number of isochronous mode OBs	3
Number of startup OBs	100
Number of asynchronous error OBs	4
 Number of synchronous error OBs 	2
Number of diagnostic alarm OBs	1
Nesting depth	
per priority class	24; Up to 8 possible for F-blocks
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	
— adjustable	Yes
IEC timer	
Number	Any (only limited by the main memory)
Retentivity	
— adjustable	Yes
Data areas and their retentivity	
	A F Mb. day in Antaly and the last and the same of the last and the last an
Retentive data area (incl. timers, counters, flags), max.	4.5 Mbyte; In total; available retentive memory for bit memories, timers, counters, DBs, and technology data (axes): 700 KB
Retentive data area (incl. timers, counters, flags), max. Extended retentive data area (incl. timers, counters, flags), max.	

Subject for the control of color memories Subjects Subje		
That blocks	• Size, max.	16 kbyte
Peterbirty adjustable Potentify preset No Local data Potentify preset No No Local data Potentify preset No	Number of clock memories	8; 8 clock memory bit, grouped into one clock memory byte
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December of Ion Controllers 164 kbyte; max. 16 KB per block	 Retentivity adjustable 	Yes
Per printify class, max. Address stras Number of IO modules IO address area - Inputs - Uniques - Uniq	 Retentivity preset 	No
Address area Number of IO modules In Jours Outputs Outputs Outputs Outputs In Jours In Jours Outputs	Local data	
Number of IO modules 16 384; max. number of modules / submodules 10 dictioss area 10 dictioss area 10 dictioss area 2 biputs 2 biputs 2 biputs 3 2 khyte; All inputs are in the process image — Inputs (volume) — Inputs (volume) — Outputs (volume) — Skbyte Subprocess images 4 Number of supposes images 4 Number of supposes images, max. 1 Brackers configuration Number of Ior Controllers • Integrated • Via CM Number of Ior Controllers • Integrated • Via CM Number of Ior Controllers • Integrated • Via CM Number of Ior Controllers • Integrated • Via CM Number of Ior Controllers • Integrated • Via CM Number of Ior Controllers • Integrated • Via CM Number of Ior Controllers • Integrated • Via CM Number of Ior Controllers • Integrated • Via CM Number of Ior Controllers • Integrated • Via CM Number of Ior Controllers • Integrated • Via CM Number of Ior Controllers • Integrated • Via CM • Number of Ior Controllers • Integrated • Via CM Number of Ior Controllers • Integrated • Via CM • Number of Ior Controllers • Integrated • Via CM Number of Ior Controllers • Integrated • Via CM • Number of Ior Controllers • Integrated • Via CM • Number of Ior Controllers • Ior Cycle (Ior Cycle) • Number of Ior Controllers • Ior Cycle (Ior Cycle) • Number of Ior Controllers • Ior Cycle (Ior Cycle) • Number of Ior Controllers • Ior Cycle (Ior Cycle) • Number of Ior Controllers • Ior Cycle (Ior Cycle) • Number of Ior Controllers • Ior Cycle (Ior Cycle) • Number of Ior Controllers • Ior Cycle (Ior Cycle) • Number of Ior Controllers • Ior Cycle (Ior Cycle) • Number of Ior Controllers • Ior Cycle (Ior Cycle) • Number of Ior Controllers • Ior Cycle (Ior Cycle) • Number of Ior Controllers • Ior Cycle (Ior Cycle) • Ior Cyc	per priority class, max.	64 kbyte; max. 16 KB per block
Figure F	Address area	
Figure F	Number of IO modules	16 384' max_number of modules / submodules
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per integrated (J. subsystem — Inputs (volume) — Outputs (volume) — Depth (volume) — Depth (volume) — Depth (volume) — Depth (volume) — Sk byte Subprocess images — Number of subprocess images, max. **Number of distributed I/O systems **Number of distributed I/O systems **Substance of distributed I/O systems **A distributed I/O system is characterized not only by the integration of distributed I/O system is characterized not only by the integration of distributed I/O system is characterized not only by the integration of distributed I/O system is characterized not only by the integration of distributed I/O system is characterized not only by the integration of distributed I/O system is characterized not only by the integration of distributed I/O system is characterized not only by the integration of distributed I/O system is characterized not only by the integration of distributed I/O system is characterized not only by the integration of distributed I/O system is characterized not only by the integration of distributed I/O system is characterized not only by the integration of distributed I/O system is characterized not only by the integration of a system is characterized not only by the integration of distributed I/O system is characterized not only by the integration of a system is characterized not only by the integrated **Number of I/O controllers **Integrated** **Number of I/O controllers **Integrated** **Number of I/O system is characterized not only by the integration of a system is characterized not only by the number of system is characterized not only by the number of system is characterized not only by the number of system is characterized not only by the number of system is characterized not only by the number of system is characterized not only by the number of system is characterized not only by the number of system is characterized not only by the number of system is characterized not only by the number of system is characterized not only by the number of system is characterized not on		
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• integrated switch Yes Protocols		
Protocols		
		Yes
• IP protocol Yes; IPv4		
	IP protocol	Yes; IPv4

Yes PROFINET IO Controller • PROFINET IO Device Yes • SIMATIC communication Yes • Open IE communication Yes; Optionally also encrypted Yes • Web server Media redundancy Yes **PROFINET IO Controller** Services - Isochronous mode Yes Yes; Requirement: IRT and isochronous mode (MRPD optional) - Direct data exchange - IRT - PROFlenergy Yes; per user program - Prioritized startup Yes; Max. 32 PROFINET devices - Number of connectable IO Devices, max. 512; in total, up to 1661 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFINET - Of which IO devices with IRT, max. 64; with DFP: 256 IO devices in 8 DFP groups - Number of connectable IO Devices for RT, max. 512 - of which in line max 512 - Number of IO Devices that can be simultaneously 8; in total across all interfaces 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 - PROFINET Security Class Update time for IRT — for send cycle of 125 µs 125 µs - for send cycle of 187.5 μs 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" send cycles Update time = set "odd" send clock (any multiple of 125 μ s: 375 μ s, 625 μ s ... 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 us to 256 ms - for send cycle of 1 ms 1 ms to 512 ms - for send cycle of 2 ms 2 ms to 512 ms - for send cycle of 4 ms 4 ms to 512 ms **PROFINET IO Device** Services - Isochronous mode - IRT Yes; Minimum send cycle of 250 µs - PROFlenergy Yes; per user program Shared device 4 Number of IO Controllers with shared device, max. - activation/deactivation of I-devices Yes; per user program - Asset management record Yes; per user program SNMP Configuration and DCP Read Only - PROFINET Security Class 2. Interface Interface types • RJ 45 (Ethernet) Yes; X2 Number of ports 2 • integrated switch Yes Protocols • IP protocol Yes; IPv4 • PROFINET IO Controller Yes PROFINET IO Device Yes • SIMATIC communication • Open IE communication Yes; Optionally also encrypted

PROFINET IO Controller Services — Isochronous mode	Yes Yes
PROFINET IO Controller Services — Isochronous mode	
— Isochronous mode	
— Direct data exchange	Yes
	Yes; Requirement: IRT and isochronous mode (MRPD optional)
— IRT	Yes
— PROFlenergy	Yes; per user program
— Prioritized startup	No
Number of connectable IO Devices, max.	512; in total, up to 1661 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFINET
— Of which IO devices with IRT, max.	64; with DFP: 256 IO devices in 8 DFP groups
 Number of connectable IO Devices for RT, max. 	512
	512
Number of IO Devices that can be simultaneously activated/deactivated, max.	8; in total across all interfaces
 Number of IO Devices per tool, max. 	8
	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
— PROFINET Security Class	1
Update time for IRT	
— 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
	Update time = set "odd" send clock (any multiple of 125 μs : 375 μs , 625 μs 3 875 μs)
Update time for RT	
	250 μs to 128 ms
	500 μs to 256 ms
	1 ms to 512 ms
	2 ms to 512 ms
ion contact, one or mine	4 ms to 512 ms
PROFINET IO Device	
Services	N.
— Isochronous mode	No V
	Yes
	Yes; per user program
	Yes
Number of IO Controllers with shared device, max.	4
activation/deactivation of I-devices Asset management record	Yes; per user program
-	Yes; per user program
— PROFINET Security Class 3. Interface	SNMP Configuration and DCP Read Only
Interface types • RJ 45 (Ethernet)	Yes; X3
Number of ports	1
integrated switch	No
Protocols	
	Yes; IPv4
· ·	No
PROFINET IO Device	No
	Yes
	Yes; Optionally also encrypted
	Yes
Interface types	
RJ 45 (Ethernet)	
	Yes
	Yes; only possible at the X3 interface of the CPU
· · · · · · · · · · · · · · · · · · ·	Yes

 Autocrossing 	Yes
Industrial Ethernet status LED	Yes
Protocols	
PROFIsafe	Yes; V2.4 / V2.6
Number of connections	165, VZ.47 VZ.0
Number of connections, max.	384; via integrated interfaces of the CPU and connected CPs / CMs
Number of connections, max. Number of connections reserved for ES/HMI/web	10
Number of connections via integrated interfaces	320
Number of S7 routing paths	64
Redundancy mode	04
H-Sync forwarding	Yes
Media redundancy	166
Media redundancy	via the X1 or X2 interface
— MRP	Yes; MRP Automanager according to IEC 62439-2 Edition 2.0, MRP Manager; MRP Client
 MRP interconnection, supported 	Yes; as MRP ring node according to IEC 62439-2 Edition 3.0
— MRPD	Yes; Requirement: IRT
 Switchover time on line break, typ. 	200 ms; For MRP, bumpless for MRPD
 Number of stations in the ring, max. 	50
SIMATIC communication	
PG/OP communication	Yes; encryption with TLS V1.3 pre-selected
S7 routing	Yes
Data record routing	Yes
S7 communication, as server	Yes
 S7 communication, as client 	Yes
User data per job, max.	See online help (S7 communication, user data size)
Open IE communication	
• 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.	2 kbyte; 1 472 bytes for UDP broadcast
— UDP multicast	Yes; max. 128 multicast circuits
• DHCP	Yes
• DNS	Yes
• SNMP	Yes
• DCP	Yes
• LLDP	Yes
Encryption	Yes; Optional
Web server	
• HTTP	Yes; Standard and user pages
• HTTPS	Yes; Standard and user pages
• web API	
Number of sessions, max.	200
— number of simultaneous HTTP calls, max.	4
— HTTP request body, max.	131 072 byte
OPC UA	
 Runtime license required 	Yes; "Large" license required
OPC UA Client	Yes; Data Access (registered Read/Write), Method Call
 Application authentication 	Yes
— Security policies	Available security policies: None, Basic128Rsa15, Basic256Rsa15, Basic256Sha256
User authentication	"anonymous" or by user name & password
 Number of connections, max. 	40
 Number of nodes of the client interfaces, recommended max. 	5 000
 Number of elements for one call of OPC_UA_NodeGetHandleList/OPC_UA_ReadList/OPC_I max. 	300
Number of elements for one call of	20

OPC_UA_NameSpaceGetIndexList, max.	
 Number of elements for one call of OPC_UA_MethodGetHandleList, max. 	100
 Number of simultaneous calls of the client instructions for session management, per connection, max. 	1
 Number of simultaneous calls of the client instructions for data access, per connection, max. 	5
 Number of registerable nodes, max. 	5 000
 Number of registerable method calls of OPC_UA_MethodCall, max. 	100
 Number of inputs/outputs when calling OPC_UA_MethodCall, max. 	20
OPC UA Server	Yes; data access (read, write, subscribe), method call, alarms & condition (A&C), custom address space, role-based access control
 Application authentication 	Yes
— Security policies	available security policies: None, Basic128Rsa15, Basic256Rsa15, Basic256Sha256, Aes128Sha256RsaOaep, Aes256Sha256RsaPss
User authentication	"anonymous" or by user name & password
 — GDS support (certificate management) 	Yes
— Number of sessions, max.	64
 Number of accessible variables, max. 	200 000
 Number of registerable nodes, max. 	50 000
 Number of subscriptions per session, max. 	50
— Sampling interval, min.	10 ms
— Publishing interval, min.	10 ms
— Number of server methods, max.	8 000; max. 200 concurrently running jobs each for asynchronous instructions OPC_UA_ServerMethodPre (V1.1) and OPC_UA_ServerMethodPost (V1.1)
 Number of inputs/outputs per server method, max. 	20
 Number of monitored items, recommended max. 	60 000; for 1 s sampling interval and 1 s send interval
 Number of server interfaces, max. 	10 of each "Server interfaces" / "Companion specification" type and 20 of the type "Reference namespace"
 Number of nodes for user-defined server interfaces, max. 	200 000
max.	
Alarms and Conditions	Yes
	Yes 400
Alarms and Conditions	
Alarms and Conditions— Number of program alarms	400
 Alarms and Conditions — Number of program alarms — Number of alarms for system diagnostics 	400
 Alarms and Conditions — Number of program alarms — Number of alarms for system diagnostics Further protocols 	400 200
 Alarms and Conditions — Number of program alarms — Number of alarms for system diagnostics Further protocols MODBUS 	400 200
 Alarms and Conditions — Number of program alarms — Number of alarms for system diagnostics Further protocols MODBUS S7 message functions 	400 200 Yes; MODBUS TCP
Alarms and Conditions — Number of program alarms — Number of alarms for system diagnostics Further protocols MODBUS S7 message functions Number of login stations for message functions, max.	400 200 Yes; MODBUS TCP
Alarms and Conditions — Number of program alarms — Number of alarms for system diagnostics Further protocols	400 200 Yes; MODBUS TCP 64 750
Alarms and Conditions — Number of program alarms — Number of alarms for system diagnostics Further protocols • MODBUS S7 message functions Number of login stations for message functions, max. number of subscriptions, max. number of tags/attributes for subscriptions, max.	400 200 Yes; MODBUS TCP 64 750 120 000
Alarms and Conditions — Number of program alarms — Number of alarms for system diagnostics Further protocols	400 200 Yes; MODBUS TCP 64 750 120 000 Yes 20 000; Program messages are generated by the "Program_Alarm" block,
Alarms and Conditions — Number of program alarms — Number of alarms for system diagnostics Further protocols • MODBUS S7 message functions Number of login stations for message functions, max. number of subscriptions, max. number of tags/attributes for subscriptions, max. Program alarms Number of configurable program messages, max.	400 200 Yes; MODBUS TCP 64 750 120 000 Yes 20 000; Program messages are generated by the "Program_Alarm" block, ProDiag or GRAPH
Alarms and Conditions — Number of program alarms — Number of alarms for system diagnostics Further protocols • MODBUS S7 message functions Number of login stations for message functions, max. number of subscriptions, max. number of tags/attributes for subscriptions, max. Program alarms Number of configurable program messages, max. Number of loadable program messages in RUN, max.	400 200 Yes; MODBUS TCP 64 750 120 000 Yes 20 000; Program messages are generated by the "Program_Alarm" block, ProDiag or GRAPH
Alarms and Conditions — Number of program alarms — Number of alarms for system diagnostics Further protocols • MODBUS S7 message functions Number of login stations for message functions, max. number of subscriptions, max. number of tags/attributes for subscriptions, max. Program alarms Number of configurable program messages, max. Number of loadable program messages in RUN, max. Number of simultaneously active program alarms	400 200 Yes; MODBUS TCP 64 750 120 000 Yes 20 000; Program messages are generated by the "Program_Alarm" block, ProDiag or GRAPH 20 000
Alarms and Conditions — Number of program alarms — Number of alarms for system diagnostics Further protocols • MODBUS S7 message functions Number of login stations for message functions, max. number of subscriptions, max. number of tags/attributes for subscriptions, 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	400 200 Yes; MODBUS TCP 64 750 120 000 Yes 20 000; Program messages are generated by the "Program_Alarm" block, ProDiag or GRAPH 20 000 4 000
Alarms and Conditions — Number of program alarms — Number of alarms for system diagnostics Further protocols • MODBUS S7 message functions Number of login stations for message functions, max. number of subscriptions, max. number of tags/attributes for subscriptions, 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	400 200 Yes; MODBUS TCP 64 750 120 000 Yes 20 000; Program messages are generated by the "Program_Alarm" block, ProDiag or GRAPH 20 000 4 000 1 000
Alarms and Conditions — Number of program alarms — Number of alarms for system diagnostics Further protocols • MODBUS S7 message functions Number of login stations for message functions, max. number of subscriptions, max. number of tags/attributes for subscriptions, 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	400 200 Yes; MODBUS TCP 64 750 120 000 Yes 20 000; Program messages are generated by the "Program_Alarm" block, ProDiag or GRAPH 20 000 4 000 1 000
Alarms and Conditions — Number of program alarms — Number of alarms for system diagnostics Further protocols • MODBUS S7 message functions Number of login stations for message functions, max. number of subscriptions, max. number of tags/attributes for subscriptions, 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 Test commissioning functions	400 200 Yes; MODBUS TCP 64 750 120 000 Yes 20 000; Program messages are generated by the "Program_Alarm" block, ProDiag or GRAPH 20 000 4 000 1 000 960
Alarms and Conditions — Number of program alarms — Number of alarms for system diagnostics Further protocols • MODBUS S7 message functions Number of login stations for message functions, max. number of subscriptions, max. number of tags/attributes for subscriptions, 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 Test commissioning functions Joint commission (Team Engineering)	Yes; MODBUS TCP 64 750 120 000 Yes 20 000; Program messages are generated by the "Program_Alarm" block, ProDiag or GRAPH 20 000 4 000 1 000 960 Yes; Parallel online access possible for up to 10 engineering systems
Alarms and Conditions — Number of program alarms — Number of alarms for system diagnostics Further protocols • MODBUS S7 message functions Number of login stations for message functions, max. number of subscriptions, max. number of tags/attributes for subscriptions, 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 Test commissioning functions Joint commission (Team Engineering) Status block	Yes; MODBUS TCP 64 750 120 000 Yes 20 000; Program messages are generated by the "Program_Alarm" block, ProDiag or GRAPH 20 000 4 000 1 000 960 Yes; Parallel online access possible for up to 10 engineering systems Yes; Up to 16 simultaneously (in total across all ES clients)
Alarms and Conditions — Number of program alarms — Number of alarms for system diagnostics Further protocols • MODBUS S7 message functions Number of login stations for message functions, max. number of subscriptions, max. number of tags/attributes for subscriptions, 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 Test commissioning functions Joint commission (Team Engineering) Status block Single step	Yes; MODBUS TCP 64 750 120 000 Yes 20 000; Program messages are generated by the "Program_Alarm" block, ProDiag or GRAPH 20 000 4 000 1 000 960 Yes; Parallel online access possible for up to 10 engineering systems Yes; Up to 16 simultaneously (in total across all ES clients) No
Alarms and Conditions — Number of program alarms — Number of alarms for system diagnostics Further protocols • MODBUS S7 message functions Number of login stations for message functions, max. number of subscriptions, max. number of tags/attributes for subscriptions, 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 Test commissioning functions Joint commission (Team Engineering) Status block Single step Number of breakpoints	400 200 Yes; MODBUS TCP 64 750 120 000 Yes 20 000; Program messages are generated by the "Program_Alarm" block, ProDiag or GRAPH 20 000 4 000 1 000 960 Yes; Parallel online access possible for up to 10 engineering systems Yes; Up to 16 simultaneously (in total across all ES clients) No 20
Alarms and Conditions — Number of program alarms — Number of alarms for system diagnostics Further protocols • MODBUS S7 message functions Number of login stations for message functions, max. number of subscriptions, max. number of tags/attributes for subscriptions, 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 Test commissioning functions Joint commission (Team Engineering) Status block Single step Number of breakpoints Profiling	400 200 Yes; MODBUS TCP 64 750 120 000 Yes 20 000; Program messages are generated by the "Program_Alarm" block, ProDiag or GRAPH 20 000 4 000 1 000 960 Yes; Parallel online access possible for up to 10 engineering systems Yes; Up to 16 simultaneously (in total across all ES clients) No 20
Alarms and Conditions — Number of program alarms — Number of alarms for system diagnostics Further protocols MODBUS S7 message functions Number of login stations for message functions, max. number of subscriptions, max. number of tags/attributes for subscriptions, 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 Test commissioning functions Joint commission (Team Engineering) Status block Single step Number of breakpoints Profiling Status/control	Yes; MODBUS TCP 64 750 120 000 Yes 20 000; Program messages are generated by the "Program_Alarm" block, ProDiag or GRAPH 20 000 4 000 1 000 960 Yes; Parallel online access possible for up to 10 engineering systems Yes; Up to 16 simultaneously (in total across all ES clients) No 20 Yes
Alarms and Conditions — Number of program alarms — Number of alarms for system diagnostics Further protocols • MODBUS S7 message functions Number of login stations for message functions, max. number of subscriptions, max. number of tags/attributes for subscriptions, 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 Test commissioning functions Joint commission (Team Engineering) Status block Single step Number of breakpoints Profiling Status/control • Status/control variable	Yes; MODBUS TCP 64 750 120 000 Yes 20 000; Program messages are generated by the "Program_Alarm" block, ProDiag or GRAPH 20 000 4 000 1 000 960 Yes; Parallel online access possible for up to 10 engineering systems Yes; Up to 16 simultaneously (in total across all ES clients) No 20 Yes Yes; without fail-safe inputs/outputs, bit memories, DBs, peripheral I/Os (without fail-safe), times,
 Alarms and Conditions Number of program alarms Number of alarms for system diagnostics Further protocols MODBUS S7 message functions Number of login stations for message functions, max. number of subscriptions, max. number of tags/attributes for subscriptions, 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 alarms for system diagnostics Number of alarms for motion technology objects Test commissioning functions Joint commission (Team Engineering) Status block Single step Number of breakpoints Profiling Status/control Status/control variable Variables Number of variables, max.	Yes; MODBUS TCP 64 750 120 000 Yes 20 000; Program messages are generated by the "Program_Alarm" block, ProDiag or GRAPH 20 000 4 000 1 000 960 Yes; Parallel online access possible for up to 10 engineering systems Yes; Up to 16 simultaneously (in total across all ES clients) No 20 Yes Yes; without fail-safe inputs/outputs, bit memories, DBs, peripheral I/Os (without fail-safe), times, counters
 Alarms and Conditions Number of program alarms Number of alarms for system diagnostics Further protocols MODBUS S7 message functions Number of login stations for message functions, max. number of subscriptions, max. number of tags/attributes for subscriptions, 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 alarms for system diagnostics Number of alarms for motion technology objects Test commissioning functions Joint commission (Team Engineering) Status block Single step Number of breakpoints Profiling Status/control Status/control variable Variables	Yes; MODBUS TCP 64 750 120 000 Yes 20 000; Program messages are generated by the "Program_Alarm" block, ProDiag or GRAPH 20 000 4 000 1 000 960 Yes; Parallel online access possible for up to 10 engineering systems Yes; Up to 16 simultaneously (in total across all ES clients) No 20 Yes Yes; without fail-safe inputs/outputs, bit memories, DBs, peripheral I/Os (without fail-safe), times,

Forcing	
Forcing	Yes; without fail-safe
 Forcing, variables 	peripheral inputs/outputs (without fail-safe)
 Number of variables, max. 	200
Diagnostic buffer	
• present	Yes
Number of entries, max.	3 200
— of which powerfail-proof	1 000
Traces	
Number of configurable Traces	8
Memory size per trace, max.	512 kbyte
	312 kbyte
Interrupts/diagnostics/status information	
Diagnostics indication LED	V
RUN/STOP LED	Yes
• ERROR LED	Yes
MAINT LED	Yes
STOP ACTIVE LED	Yes
Connection display LINK TX/RX	Yes
Supported technology objects	
Motion Control	Yes; Note: The number of technology objects affects the cycle time of the PLC
	program; selection guide via the TIA Selection Tool
Number of available Motion Control resources for technology objects	30 720
technology objects	
Required Motion Control resources	40
— per speed-controlled axis	40
— per positioning axis	80
— per synchronous axis	160
— per external encoder	80
— per output cam	20
— per cam track	160
— per probe	40
 Positioning axis 	
 Number of positioning axes at motion control cycle 	205
of 4 ms (typical value)	
 Number of positioning axes at motion control cycle of 8 ms (typical value) 	310
Controller	
 PID_Compact 	Yes; Universal PID controller with integrated optimization
PID_3Step	Yes; PID controller with integrated optimization for valves
PID-Temp	Yes; PID controller with integrated optimization for temperature
Counting and measuring	
High-speed counter	Yes
Standards, approvals, certificates	
Highest safety class achievable in safety mode	
Performance level according to ISO 13849-1	PLe
• SIL acc. to IEC 61508	SIL 3
Probability of failure (for service life of 20 years and repair time	
Low demand mode: PFDavg in accordance with	< 2.00E-05
SIL3	
 High demand/continuous mode: PFH in accordance with SIL3 	< 1.00E-09
product functions / security / header	
PROFINET Security Class	1
signed firmware update	Yes
Secure Boot	Yes
safely removing data	Yes
Ambient conditions	
Ambient temperature during operation	0.00
• 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
- vertious motinations, mills.	

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 Altitude during operation relating to sea level Installation altitude above sea level, max. 5 000 m; Restrictions for installation altitudes > 2 000 m, see manual configuration / header configuration / programming / header Programming language
 min. -40 °C max. 70 °C Altitude during operation relating to sea level Installation altitude above sea level, max. 5 000 m; Restrictions for installation altitudes > 2 000 m, see manual configuration / header configuration / programming / header Programming language
■ max. Altitude during operation relating to sea level Installation altitude above sea level, max. 5 000 m; Restrictions for installation altitudes > 2 000 m, see manual configuration / header configuration / programming / header Programming language
Altitude during operation relating to sea level ● Installation altitude above sea level, max. 5 000 m; Restrictions for installation altitudes > 2 000 m, see manual configuration / header configuration / programming / header Programming language
Installation altitude above sea level, max. 5 000 m; Restrictions for installation altitudes > 2 000 m, see manual configuration / header configuration / programming / header Programming language
configuration / header configuration / programming / header Programming language
configuration / programming / header Programming language
Programming language
· · · · ·
1 A D
— LAD Yes; incl. failsafe
— FBD Yes; incl. failsafe
— STL Yes
— SCL Yes
— CFC Yes; either CFC or failsafe functionality
— GRAPH Yes
Know-how protection
User program protection/password protection Yes
Copy protection Yes
Block protection Yes
Access protection
• protection of confidential configuration data Yes
Password for display Yes
Protection level: Write protection Yes
Protection level: Read/write protection Yes
Protection level: Write protection for Failsafe Yes
Protection level: Complete protection Yes
• User administration Yes; device-wide and centralized
• Number of users 100
• Number of groups 100
• Number of roles 50
programming / cycle time monitoring / header
• lower limit adjustable minimum cycle time
• upper limit adjustable maximum cycle time
Dimensions
Width 175 mm
Height 147 mm
Depth 129 mm
Weights
Weight, approx. 1 637 g

last modified:

2/5/2025