SIEMENS

Data sheet

6ES7517-3TP00-0AB0



SIMATIC S7-1500T, CPU 1517T-3 PN/DP, Central processing unit with work memory 3 MB for program and 8 MB for data, 1st interface: PROFINET IRT with 2-port switch, 2nd interface, Ethernet, 3rd interface, PROFIBUS, 2 ns bit performance, SIMATIC Memory Card required

General information	
Product type designation	CPU 1517T-3 PN/DP
HW functional status	FS11
Firmware version	V3.1
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 250 μs (distributed) and 1 ms (central)
SysLog	Yes
Engineering with	
STEP 7 TIA Portal configurable/integrated from version	V19 (FW V3.1) / 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
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)	1.55 A
Current consumption, max.	1.9 A
Inrush current, max.	1.9 A; Rated value
l²t	0.4 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.	24 W
Memory	
Number of slots for SIMATIC memory card	1
SIMATIC memory card required	Yes

Work memory	
Work memory • integrated (for program)	3 Mbyte
integrated (for program)integrated (for data)	8 Mbyte
	6 MDyte
Load memory	20 Ob. 4-
Plug-in (SIMATIC Memory Card), max.	32 Gbyte
Backup	
maintenance-free	Yes
CPU processing times	
for bit operations, typ.	2 ns
for word operations, typ.	3 ns
for fixed point arithmetic, typ.	3 ns
for floating point arithmetic, typ.	12 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 86: 60 000 60 999
Size, max.	8 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
• Size, max.	1 MDy to
	4 Mbyto
Size, max. Number of free cycle ORs.	1 Mbyte
Number of free cycle OBs Number of free clare OBs	100
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 technology synchronous alarm OBs 	2
 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
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	2 010
•	Yes
— adjustable	165
IEC timer	Any (only limited by the projectory)
Number	Any (only limited by the main memory)
Detection.	
Retentivity	
— adjustable	Yes
— adjustable Data areas and their retentivity	
— adjustable	768 kbyte; In total; available retentive memory for bit memories, timers, counters, DBs, and technology data (axes): 700 KB 8 Mbyte; When using PS 6 0W 24/48/60 V DC HF

Flag	
• Size, max.	16 kbyte
Number of clock memories	8; 8 clock memory bit, grouped into one clock memory byte
Data blocks	o, o alone money on, grouped into one distribution ofto
Retentivity adjustable	Yes
Retentivity adjustable Retentivity preset	No
Local data	
• per priority class, max.	64 kbyte; max. 16 KB per block
Address area	of hoye, max. To he per brook
Number of IO modules	16 384; max. number of modules / submodules
I/O address area	10 304, max. number of modules / submodules
• Inputs	32 kbyte; All inputs are in the process image
Outputs	32 kbyte; All outputs are in the process image
per integrated IO subsystem	52 kbyte, All outputs are in the process image
— Inputs (volume)	32 khyte: May 32 KR via Y1: may 8 KR via Y2 or Y3
— Inputs (volume) — Outputs (volume)	32 kbyte; Max. 32 KB via X1; max. 8 KB via X2 or X3 32 kbyte; Max. 32 KB via X1; max. 8 KB via X2 or X3
per CM/CP	OZ KUYLG, IVIAN. OZ KID VIA NI, IIIAN. O KID VIA NZ UI NO
•	8 kbyte
— Inputs (volume)	
— Outputs (volume)	8 kbyte
Subprocess images • Number of subprocess images may	32
Number of subprocess images, max. Hardware configuration.	32
Hardware configuration	C4. A distributed I/O system is about stained and solve the internal in
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	mocreta in total
Modules per rack, max.	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 day	
Clock	
• Type	Hardware clock
Backup time	6 wk; At 40 °C ambient temperature, typically
Deviation per day, max.	10 s; Typ.: 2 s
Operating hours counter	
• Number	16
Clock synchronization	
• supported	Yes
• to DP, master	Yes
• on DP, device	Yes
• in AS, master	Yes
• in AS, device	Yes
• on Ethernet via NTP	Yes
Interfaces	
Number of PROFINET interfaces	2
Number of PROFIBUS interfaces	1
Interface	
Interface types	Voc. V1
RJ 45 (Ethernet) Number of ports	Yes; X1
Number of ports integrated quiteb	2 Voa
• integrated switch	Yes
Protocols	

Yes; IPv4 • IP protocol • PROFINET IO Controller Yes PROFINET IO Device Yes • SIMATIC communication Yes • Open IE communication Yes; Optionally also encrypted Web server Media redundancy Yes **PROFINET IO Controller** Services - Isochronous mode Yes Yes; Requirement: IRT and isochronous mode (MRPD optional) Direct data exchange — IRT Yes - PROFlenergy Yes; per user program - Prioritized startup Yes; Max. 32 PROFINET devices 512; In total, up to 1 000 distributed I/O devices can be connected via AS-i, - Number of connectable IO Devices, max. PROFIBUS or PROFINET - Of which IO devices with IRT, max. - Number of connectable IO Devices for RT, max. 512 - of which in line, max. - 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 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 $\mu s:375~\mu s,\,625~\mu s \dots 3$ 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 - Isochronous mode No -- IRT Yes - PROFlenergy Yes; per user program Shared device Yes - Number of IO Controllers with shared device, max. 4 - activation/deactivation of I-devices Yes; per user program - Asset management record Yes; per user program - PROFINET Security Class SNMP Configuration and DCP Read Only 2. Interface Interface types • RJ 45 (Ethernet) Yes; X2 Number of ports 1 • integrated switch No Protocols Yes; IPv4 • IP protocol • PROFINET IO Controller Yes PROFINET IO Device Yes • SIMATIC communication Yes • Open IE communication Yes; Optionally also encrypted Web server Yes

Media redundancy	No
PROFINET IO Controller	
Services	
— Isochronous mode	No
Direct data exchange	No
— IRT	No
— PROFlenergy	Yes; per user program
Prioritized startup	No
Number of connectable IO Devices, max.	128; In total, up to 1 000 distributed I/O devices can be connected via AS-i,
Number of connectable IO Devices for RT, max.	PROFIBUS or PROFINET
•	
— of which in line, max.	128
 Number of IO Devices that can be simultaneously activated/deactivated, max. 	8; in total across all interfaces
 Number of IO Devices per tool, max. 	8
— Updating times	The minimum value of the update time also depends on communication share set for PROFINET IO, on the number of IO devices, and on the quantity of configured user data
— PROFINET Security Class	1
Update time for RT	
— for send cycle of 1 ms	1 ms to 512 ms
PROFINET IO Device	
Services	
— Isochronous mode	No
— IRT	No
— PROFlenergy	Yes; per user program
Prioritized startup	No
— Fhortized startup — Shared device	Yes
— Shared device — Number of IO Controllers with shared device, max.	4
,	
— activation/deactivation of I-devices	Yes; per user program
Asset management record PROFINET Or switch Oleran	Yes; per user program
— PROFINET Security Class	SNMP Configuration and DCP Read Only
3. Interface	
Interface types	
Interface types • RS 485	Yes; X3
Interface types RS 485 Number of ports	Yes; X3 1
Interface types • RS 485	
Interface types RS 485 Number of ports	
Interface types • RS 485 • Number of ports Protocols	1
Interface types RS 485 Number of ports Protocols PROFIBUS DP master	1 Yes
Interface types RS 485 Number of ports Protocols PROFIBUS DP master PROFIBUS DP device	1 Yes No
Interface types • RS 485 • Number of ports Protocols • PROFIBUS DP master • PROFIBUS DP device • SIMATIC communication	1 Yes No
Interface types RS 485 Number of ports Protocols PROFIBUS DP master PROFIBUS DP device SIMATIC communication PROFIBUS DP master	1 Yes No Yes
Interface types RS 485 Number of ports Protocols PROFIBUS DP master PROFIBUS DP device SIMATIC communication PROFIBUS DP master Number of connections, max.	Yes No Yes 48; for the integrated PROFIBUS DP interface 125; In total, up to 1 000 distributed I/O devices can be connected via AS-i,
Interface types RS 485 Number of ports Protocols PROFIBUS DP master PROFIBUS DP device SIMATIC communication PROFIBUS DP master Number of connections, max. max. number of DP devices	Yes No Yes 48; for the integrated PROFIBUS DP interface 125; In total, up to 1 000 distributed I/O devices can be connected via AS-i,
Interface types RS 485 Number of ports Protocols PROFIBUS DP master PROFIBUS DP device SIMATIC communication PROFIBUS DP master Number of connections, max. max. number of DP devices Services	Yes No Yes 48; for the integrated PROFIBUS DP interface 125; In total, up to 1 000 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFINET
Interface types RS 485 Number of ports Protocols PROFIBUS DP master PROFIBUS DP device SIMATIC communication PROFIBUS DP master Number of connections, max. max. number of DP devices Services — Equidistance	Yes No Yes 48; for the integrated PROFIBUS DP interface 125; In total, up to 1 000 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFINET Yes
Interface types RS 485 Number of ports Protocols PROFIBUS DP master PROFIBUS DP device SIMATIC communication PROFIBUS DP master Number of connections, max. max. number of DP devices Services — Equidistance — Isochronous mode — activation/deactivation of DP devices	Yes No Yes 48; for the integrated PROFIBUS DP interface 125; In total, up to 1 000 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFINET Yes Yes
Interface types RS 485 Number of ports Protocols PROFIBUS DP master PROFIBUS DP device SIMATIC communication PROFIBUS DP master Number of connections, max. max. number of DP devices Services Equidistance Isochronous mode activation/deactivation of DP devices Interface types	Yes No Yes 48; for the integrated PROFIBUS DP interface 125; In total, up to 1 000 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFINET Yes Yes
Interface types RS 485 Number of ports Protocols PROFIBUS DP master PROFIBUS DP device SIMATIC communication PROFIBUS DP master Number of connections, max. max. number of DP devices Services Equidistance Isochronous mode activation/deactivation of DP devices Interface types RJ 45 (Ethernet)	Yes No Yes 48; for the integrated PROFIBUS DP interface 125; In total, up to 1 000 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFINET Yes Yes Yes
Interface types RS 485 Number of ports Protocols PROFIBUS DP master PROFIBUS DP device SIMATIC communication PROFIBUS DP master Number of connections, max. max. number of DP devices Services — Equidistance — Isochronous mode — activation/deactivation of DP devices Interface types RJ 45 (Ethernet) 100 Mbps	Yes No Yes 48; for the integrated PROFIBUS DP interface 125; In total, up to 1 000 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFINET Yes Yes Yes
Interface types RS 485 Number of ports Protocols PROFIBUS DP master PROFIBUS DP device SIMATIC communication PROFIBUS DP master Number of connections, max. max. number of DP devices Services — Equidistance — Isochronous mode — activation/deactivation of DP devices Interface types RJ 45 (Ethernet) 100 Mbps Autonegotiation	Yes No Yes 48; for the integrated PROFIBUS DP interface 125; In total, up to 1 000 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFINET Yes Yes Yes Yes
Interface types RS 485 Number of ports Protocols PROFIBUS DP master PROFIBUS DP device SIMATIC communication PROFIBUS DP master Number of connections, max. max. number of DP devices Services — Equidistance — Isochronous mode — activation/deactivation of DP devices Interface types RJ 45 (Ethernet) 100 Mbps Autonegotiation Autocrossing	Yes No Yes 48; for the integrated PROFIBUS DP interface 125; In total, up to 1 000 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFINET Yes Yes Yes Yes Yes Yes
Interface types RS 485 Number of ports Protocols PROFIBUS DP master PROFIBUS DP device SIMATIC communication PROFIBUS DP master Number of connections, max. max. number of DP devices Services Equidistance Isochronous mode activation/deactivation of DP devices Interface types RJ 45 (Ethernet) Autocrossing Industrial Ethernet status LED	Yes No Yes 48; for the integrated PROFIBUS DP interface 125; In total, up to 1 000 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFINET Yes Yes Yes Yes
Interface types RS 485 Number of ports Protocols PROFIBUS DP master PROFIBUS DP device SIMATIC communication PROFIBUS DP master Number of connections, max. max. number of DP devices Services Equidistance Isochronous mode activation/deactivation of DP devices Interface types RJ 45 (Ethernet) 100 Mbps Autonegotiation Autocrossing Industrial Ethernet status LED RS 485	Yes No Yes 48; for the integrated PROFIBUS DP interface 125; In total, up to 1 000 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFINET Yes Yes Yes Yes Yes Yes Yes Yes
Interface types RS 485 Number of ports Protocols PROFIBUS DP master PROFIBUS DP device SIMATIC communication PROFIBUS DP master Number of connections, max. max. number of DP devices Services Equidistance Isochronous mode activation/deactivation of DP devices Interface types RJ 45 (Ethernet) 100 Mbps Autonegotiation Autocrossing Industrial Ethernet status LED RS 485 Transmission rate, max.	Yes No Yes 48; for the integrated PROFIBUS DP interface 125; In total, up to 1 000 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFINET Yes Yes Yes Yes Yes Yes
Interface types RS 485 Number of ports Protocols PROFIBUS DP master PROFIBUS DP device SIMATIC communication PROFIBUS DP master Number of connections, max. max. number of DP devices Services Equidistance Isochronous mode activation/deactivation of DP devices Interface types RJ 45 (Ethernet) 100 Mbps Autonegotiation Autocrossing Industrial Ethernet status LED RS 485 Transmission rate, max.	Yes No Yes 48; for the integrated PROFIBUS DP interface 125; In total, up to 1 000 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFINET Yes Yes Yes Yes Yes Yes Yes Yes Yes Ye
Interface types RS 485 Number of ports Protocols PROFIBUS DP master PROFIBUS DP device SIMATIC communication PROFIBUS DP master Number of connections, max. max. number of DP devices Services — Equidistance — Isochronous mode — activation/deactivation of DP devices Interface types RJ 45 (Ethernet) 100 Mbps Autonegotiation Autocrossing Industrial Ethernet status LED RS 485 Transmission rate, max.	Yes No Yes 48; for the integrated PROFIBUS DP interface 125; In total, up to 1 000 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFINET Yes Yes Yes Yes Yes Yes Yes Yes
Interface types RS 485 Number of ports Protocols PROFIBUS DP master PROFIBUS DP device SIMATIC communication PROFIBUS DP master Number of connections, max. max. number of DP devices Services Equidistance Isochronous mode activation/deactivation of DP devices Interface types RJ 45 (Ethernet) 100 Mbps Autonegotiation Autocrossing Industrial Ethernet status LED RS 485 Transmission rate, max.	Yes No Yes 48; for the integrated PROFIBUS DP interface 125; In total, up to 1 000 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFINET Yes Yes Yes Yes Yes Yes Yes Yes Yes Ye
Interface types RS 485 Number of ports Protocols PROFIBUS DP master PROFIBUS DP device SIMATIC communication PROFIBUS DP master Number of connections, max. max. number of DP devices Services — Equidistance — Isochronous mode — activation/deactivation of DP devices Interface types RJ 45 (Ethernet) 100 Mbps Autonegotiation Autocrossing Industrial Ethernet status LED RS 485 Transmission rate, max. Protocols PROFIsafe	Yes No Yes 48; for the integrated PROFIBUS DP interface 125; In total, up to 1 000 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFINET Yes Yes Yes Yes Yes Yes Yes Yes Yes Ye
Interface types RS 485 Number of ports Protocols PROFIBUS DP master PROFIBUS DP device SIMATIC communication PROFIBUS DP master Number of connections, max. max. number of DP devices Services — Equidistance — Isochronous mode — activation/deactivation of DP devices Interface types RJ 45 (Ethernet) 100 Mbps Autonegotiation Autocrossing Industrial Ethernet status LED RS 485 Transmission rate, max. Protocols PROFIsafe Number of connections	Yes No Yes 48; for the integrated PROFIBUS DP interface 125; In total, up to 1 000 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFINET Yes Yes Yes Yes Yes Yes Yes Yes Yes Ye
Interface types RS 485 Number of ports Protocols PROFIBUS DP master PROFIBUS DP device SIMATIC communication PROFIBUS DP master Number of connections, max. max. number of DP devices Services — Equidistance — Isochronous mode — activation/deactivation of DP devices Interface types RJ 45 (Ethernet) 100 Mbps Autonegotiation Autocrossing Industrial Ethernet status LED RS 485 Transmission rate, max. Protocols PROFIsafe Number of connections Number of connections, max.	Yes No Yes 48; for the integrated PROFIBUS DP interface 125; In total, up to 1 000 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFINET Yes Yes Yes Yes Yes Yes Yes Your Amount of the CPU and connected CPs / CMs

 Number of S7 routing paths 	64; in total, only 16 S7-Routing connections are supported via PROFIBUS
Redundancy mode	and the state of t
H-Sync forwarding	Yes
Media redundancy	
— Media redundancy	only via 1st interface (X1)
— 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 Llear data parish, may	Yes
User data per job, max. Open IE communication	See online help (S7 communication, user data size)
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; 128 multicast circuits (of which max. 5 via X1)
• 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 L
 Number of elements for one call of OPC_UA_NameSpaceGetIndexList, max. 	20
— Number of elements for one call of OPC_UA_MethodGetHandleList, max.	100
 Number of simultaneous calls of the client 	1
instructions for session management, per connection, max.	
instructions for session management, per connection,	5
instructions for session management, per connection, max.— Number of simultaneous calls of the client	5 5 000

OPC_UA_Methodocal, max. Number of inputsiouplus when calling OPC_UA_Methodocal, max. OPC UA_Methodocal, max. OPC UA_Me	or o_o, _motiloadaii, max.	
OPC_UA_Methodocal_max. OPC_UA_Methodocal_max. OPC_UA_Methodocal_max. Yes_ Data Access (Read_Write_Subsoribe_) Method_Call_Alarms & Condition (A&C)_Custom Address Space Ves_ available security policies: None, Basic128Rsa15, Basic258Rsa15, Basic258Rsa16, Basi	 Number of inputs/outputs when calling 	20
Application authentication Security policies Security policies Security policies Security policies Assez26878a266, Aest 288 haz 6688a15, Basic26878a266, Aest 288 haz 6688a168a16, Basic26878a268a16a16a16a16a16a16a16a16a16a16a16a16a16a		
Security policies - User authentication - User authentication - CDS support (certificale management) - Number of sessions, max. - Number of subscriptions per session, max. - Sampling interval, min. - Publishing interval, min. - Number of inputs(outputs per server method, max. - Number of rever methods, max. - Number of server inerfaces, max. - Number of server inerfaces, max. - Number of server inerfaces, max. - Number of program alarms - Number of program alarms - Number of program stations for message functions, max. - Number of lagratizatives for subscriptions, max. - Number of subscriptions, subscriptions, max. - Number of subscriptions, subscription	OPC UA Server	
User authentication "anonymous" or by user name & password - ODS support (certificate management) Yes - Number of seasions, max - Number of accessible variables, max Number of accessible variables, max Number of accessible variables, max Number of subscriptions per seasion, max Sampling interval, min Publishing interval, min Publishing interval, min Number of inpublicouptual per server method, max Number of of monitored items, recommended max Number of or monitored items, recommended max Number of or monitored items, recommended max Number of or monitored items, recommended max Number of monitored items, recommended max Number of or monitored items, recommended max Number of program alarms and the program disconstance and the program measure of program measurems and the	• •	Yes
- GDS support (certificate management) - Number of residence, max Number of registerable nodes, max Number of registerable nodes, max Number of registerable nodes, max Sampling interval, min Publishing interval, min Number of registerable nodes, max Number of reputs of server methods, max Number of reputs of server methods, max Number of server interfaces, max Number of inspita of teles, recommended max Number of monitored liters, recommended max Number of server interfaces, max Number of residence from the filers, recommended max Number of registerables for system diagnostics - Number of program alarms - Number of program alarms - Number of program alarms - Number of alarms for system diagnostics - Yes, MODBUS TCP - Statisticous for subscriptions, max Program alarms - Number of tagistatinbutes for subscriptions, max Program alarms - Number of configurable program messages, max Program alarms - Number of ladable program messages, max Program alarms - Number of residable program messages in RUN, max 10 000; Program messages are generated by the "Program_Alarm" block, Probleg or GRAPH - Number of residable program messages in RUN, max 10 000; Program messages are generated by the "Program_Alarm" block, Probleg or GRAPH - Number of residable program messages in RUN, max 10 000; Program messages are generated by the "Program_Alarm" block, Probleg or GRAPH - Number of residable program messages in RUN, max 10 000; Program messages are generated by the "Program_Alarm" block, Probleg or GRAPH - Number of residable program messages in RUN, max 10 000; Program message	— Security policies	
- Number of accessible variables, max Number of registerable nodes, max Number of subscriptions per session, max Sampling interval, min Publishing interval, min Publishing interval, min Number of service methods, max Number of inputsioutputs per server method, max Number of program alarms - Number of program alarms - Number of program alarms - Number of alarms for system diagnostics - Number of login stations for message functions, max Number of osubscriptions, max Yes - Number of configurable program messages in RUN, max Number of configurable program messages, max Program alarms - Number of larims for system diagnostics - Number of program alarms - Number of simultaneously active program alarms - Number of program alarms - Number of program alarms - Number of simultaneously active program alarms - Number of simultaneous		"anonymous" or by user name & password
- Number of accessible variables, max Number of subscriptions per session, max Sampling interval, min Publishing interval, min Number of subscriptions, max Number of inputs/but/but/s per server method, max Number of inputs/but/but/s per server method, max Number of inputs/but/but/s per server method, max Number of monitored times, recommended max Number of monitored times, recommended max Number of nondes for user-defined server interfaces, max Number of nondes for user-defined server interfaces, max Number of program alarms - Number of program alarms - Number of program alarms - Number of alarms for system diagnostics - MODBUS - MODBUS - MODBUS - MODBUS - Yes: MODBUS TCP - Ves - Symassyla functions - Number of login stations for message functions, max Program alarms - Ves - Number of oringurable program messages, max Program alarms - Yes - Number of oringurable program messages, max Program alarms - Yes - Number of alarms for system diagnostics - Yes - Number of oringurable program messages, max Program alarms - Yes - Number of login stations for message functions, max Yes - Number of login stations for messages, max Program alarms - Yes - Number of oringurable program messages, max Program alarms - Number of simultaneously active program alarms - Number of oringurable program messages in RUN, max 10 000 - Number of simultaneously active program alarms - Number of oringurable program messages in RUN, max Number of oringurable program messages in RUN, max Number of simultaneously active program alarms - Number of oringurable program messages in RUN, max Number of variables, max Of which status variables, max Of which cortrol variables, max Of which status variables, max Of which status variables, m	 — GDS support (certificate management) 	Yes
- Number of registerable nodes, max Number of subscriptions per session, max Sampling interval, min Publishing interval, min Number of sinputs rethods, max Number of inputs voluptus per server method, max Number of inputs voluptus per server method, max Number of inputs voluptus per server method, max Number of promitterabes, max Number of server interfaces, max Number of alarms for server interfaces, max Number of program alarms - Number of program server defined server interfaces, max Number of program alarms - Number of program alarms - Number of program server defined server interfaces, max Yes, MODBUS - Yes, MODBUS TCP - String interval and 1 s send interval - Number of program alarms - Number of program alarms - Number of program server defined server interfaces, max Yes, MODBUS TCP - String interval and 1 s send interval - Number of program alarms - Yes, MODBUS TCP - String interval and 1 s send interval - Number of subscriptions, max Yes, MODBUS TCP - String interval and 1 s send interval - Number of subscriptions, max Yes, MODBUS TCP - String interval and 1 s send interval - Number of subscriptions, max Yes, MODBUS TCP - String interval and 1 s send interval - Number of subscriptions, max Yes, MODBUS TCP - Yes, MODBUS TCP - String interval and 1 s send interval - Number of subscriptions, max Yes, MODBUS TCP - Yes, MODBU	Number of sessions, max.	64
Number of subscriptions per session, max Sampling interval, min Publishing interval, min Number of server methods, max Number of inputs but publishing interval, min Number of monitored items, recommended max Number of monitored items, recommended max Number of monitored items, recommended max Number of or one of monitored items, recommended max Number of or one of server interfaces, max Number of or outser-defined server interfaces, max Number of program alarms Number of program alarms Number of program alarms Number of program alarms Number of alarms for system diagnostics Number of alarms for system diagnostics Number of login stations for message functions, max Number of login stations for message functions, max Number of flogin stations for message functions, max Number of flogin stations for messages, max To diagnostic for subscriptions, max	 Number of accessible variables, max. 	200 000
- Sampling interval, min Publishing interval, min Number of inputs/outputs per server method, max Number of server interfaces, max Number of nodes for user-defined server interfaces, max Number of nodes for user-defined server interfaces, max Number of program alarms - Number of server interfaces, max Number of program alarms - Number of server interfaces, max Number of program alarms - Number of server interfaces, max Yes - Number of organizations for message functions, max 150 - Number of configurable program messages, max 10000 - Program alarms - Number of server interfaces, max 10000 - Program messages are generated by the "Program_Alarm" block, Profoliag or GRAPH - Number of server interfaces, max 10000 - Number of variables, max 10000 - Status-control variable, max 10000 - Status-control variable, max 10000 - Program inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters - Number of variables, max 10000 - Program inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters - Number of variables, max 10000 - Program inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters - Number of variables, max 10000 - 10000 - 100000000000000000000	 Number of registerable nodes, max. 	50 000
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- Number of server methods, max Number of inputs/outputs per server method, max Number of monitored tlems, recommended max Number of server interfaces, max Number of server interfaces, max Number of server interfaces, max Number of noices for user-defined server interfaces, max Number of noices for user-defined server interfaces, max Alarms and Conditions - Number of program alarms - Number of program alarms - Number of server interfaces, max Number of server interfaces, max Number of logical server interfaces, max Number of server interfaces, max Number of server interfaces, max Number of logical server interfaces, max Number of server interfaces, max Number of server interfaces, max Yes - MOBUS - Yes: MOBUS TCP - Section of the type of the server interfaces, max Yes - Yes Section of the server interfaces, max Yes - Number of selections, max 1000 - Program alarms - Yes - Number of or subscriptions, max 1000 - Program alarms - Number of loadable program messages, max 1000 - Program interval and 1 s send interval - 1000 - Program in	— Sampling interval, min.	10 ms
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- Number of monitored items, recommended max Number of server interfaces, max Number of nodes for user-defined server interfaces, max. - Alarms and Conditions - Number of program alarms - Number of login stations for message functions, max Number of login stations for message functions, max Number of togin stations for messages, max 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 logins alarms - Number of lagins for system diagnostics - Number of lagins for system diagnostics - Number of alarms for motion technology objects - Number of program program for motion technology objects - Number of breakpoints - No - Status block - Status block - Status stock - Versibles - Number of variables, max of which status variables, max of which control variables, max Of which	•	100
Number of server interfaces, max. Number of nodes for user-defined server interfaces, max. Alarms and Conditions Number of program alarms Number of program alarms Number of program alarms Number of alarms for system diagnostics Number of larms for system diagnostics Yes Sochronus mode		
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Number of variables, max. 200	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 Variables Number of variables, max. of which status variables, max. of which control variables, max.	ProDiag or GRAPH 10 000 2 000 1 000 480 Yes; Parallel online access possible for up to 10 engineering systems Yes; Up to 16 simultaneously (in total across all ES clients) No 20 No Yes Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters 200; per job
	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 Variables Number of variables, max. of which status variables, max. of which control variables, max.	ProDiag or GRAPH 10 000 2 000 1 000 480 Yes; Parallel online access possible for up to 10 engineering systems Yes; Up to 16 simultaneously (in total across all ES clients) No 20 No Yes Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters 200; per job 200; per job
Diagnostic buffer	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 Variables Number of variables, max. of which status variables, max. of which control variables, max. Forcing Forcing	ProDiag or GRAPH 10 000 2 000 1 000 480 Yes; Parallel online access possible for up to 10 engineering systems Yes; Up to 16 simultaneously (in total across all ES clients) No 20 No Yes Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters 200; per job 200; per job
	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 Variables Number of variables, max. of which status variables, max. of which control variables, max. Forcing Forcing Forcing Forcing, variables, max.	ProDiag or GRAPH 10 000 2 000 1 000 480 Yes; Parallel online access possible for up to 10 engineering systems Yes; Up to 16 simultaneously (in total across all ES clients) No 20 No Yes Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters 200; per job 200; per job Yes Peripheral inputs/outputs
• present Yes	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 Variables Number of variables, max. of which status variables, max. of which control variables, max. Forcing Forcing Forcing Forcing, variables, max. Diagnostic buffer	ProDiag or GRAPH 10 000 2 000 1 000 480 Yes; Parallel online access possible for up to 10 engineering systems Yes; Up to 16 simultaneously (in total across all ES clients) No 20 No Yes Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters 200; per job 200; per job Yes Peripheral inputs/outputs 200
• Number of entries, max. 3 200	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 Variables Number of variables, max. of which status variables, max. of which control variables, max. Forcing Forcing Forcing Forcing, variables Number of variables, max. Diagnostic buffer present	ProDiag or GRAPH 10 000 2 000 1 000 480 Yes; Parallel online access possible for up to 10 engineering systems Yes; Up to 16 simultaneously (in total across all ES clients) No 20 No Yes Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters 200; per job 200; per job Yes Peripheral inputs/outputs 200 Yes
— of which powerfail-proof 1 000	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 Variables Number of variables, max. of which status variables, max. of which control variables, max. Forcing Forcing Forcing Forcing, variables Number of variables, max. Diagnostic buffer present Number of entries, max.	ProDiag or GRAPH 10 000 2 000 1 000 480 Yes; Parallel online access possible for up to 10 engineering systems Yes; Up to 16 simultaneously (in total across all ES clients) No 20 No Yes Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters 200; per job 200; per job Yes Peripheral inputs/outputs 200 Yes 3 200

Traces	
 Number of configurable Traces 	8
 Memory size per trace, max. 	512 kbyte
Interrupts/diagnostics/status information	
Diagnostics indication LED	
RUN/STOP LED	Yes
• ERROR LED	Yes
MAINT LED	Yes
 Connection display LINK TX/RX 	Yes
Supported technology objects	
Motion Control	Yes; 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.	10 240
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
 Number of available Extended Motion Control resources for technology objects 	256
Required Extended Motion Control resources Per cam (1,000 points and 50 cogments)	2
— per cam (1 000 points and 50 segments)	
— per cam (10 000 points and 50 segments)	20
— for each set of kinematics	30
— per Interpreter	60
— Per leading axis proxy	3
Positioning axis	
 Number of positioning axes at motion control cycle of 4 ms (typical value) 	70
Number of positioning axes at motion control cycle	128
of 8 ms (typical value)	
Controller	
PID_Compact	Yes; Universal PID controller with integrated optimization
PID_3Step	Yes; PID controller with integrated optimization for valves
PID-Temp	Yes; PID controller with integrated optimization for temperature
Counting and measuring	
High-speed counter	Yes
Ambient conditions	
Ambient temperature during operation	
horizontal installation, min.	0 °C
horizontal installation, max.	60 °C; Display: 50 °C, at an operating temperature of typically 50 °C, the display is switched off
vertical installation, min.	0 °C
• vertical installation, max.	40 °C; Display: 40 °C, at an operating temperature of typically 40 °C, the display is switched off
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	
— LAD	Yes
— FBD	Yes
— STL	Yes
— SCL — CFC	Yes
	Yes
— GRAPH	Yes

Know-how protection	
User program protection/password protection	Yes
Copy protection	Yes
Block protection	Yes
Access protection	
 protection of confidential configuration data 	Yes
 Password for display 	Yes
 Protection level: Write protection 	Yes
 Protection level: Read/write protection 	Yes
 Protection level: Write protection for Failsafe 	No
 Protection level: Complete protection 	Yes
User administration	Yes; device-wide
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.	1 929 g

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