SIEMENS

Data sheet



SIMATIC S7-1500TF, CPU 1517TF-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 1517TF-3 PN/DP
HW functional status	FS11
Firmware version	V3.0
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 250 μs (distributed) and 1 ms (central)
Engineering with	
STEP 7 TIA Portal configurable/integrated from version	V18 (FW V3.0) / 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
I²t	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	

integrated (for program)	3 Mbyte
• integrated (for data)	8 Mbyte
Load memory	o ivibyte
Plug-in (SIMATIC Memory Card), max.	32 Gbyte
Backup	32 Guyte
maintenance-free	Yes
	Tes
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	o Muyte, For DBs with absolute addressing, the max. size is 64 KB
	0 65 535
Number range Size may	
• Size, max.	1 Mbyte
FC Allumber range	0 65 525
Number range Size may	0 65 535
• Size, max.	1 Mbyte
OB	1 Mbyte
• Size, max.	1 Mbyte
Number of free cycle 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; 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	
	768 khyte: In total: available retentive memory for hit memories, timere
Retentive data area (incl. timers, counters, flags), max.	768 kbyte; In total; available retentive memory for bit memories, timers, counters, DBs, and technology data (axes): 700 KB
Extended retentive data area (incl. timers, counters, flags), max.	8 Mbyte; When using PS 6 0W 24/48/60 V DC HF
Flag	



Number of lock memory byle Basil block Referrivity adjustable Referrivity adjustable Referrivity proset No Local date Referrivity adjustable Referrivity proset No Local date Referrivity proset Number of IO modules Number of IO modules Number of IO modules Popula Outputs Referrivity	01	1011
Data todos Recentifyly grisset Recentifyly private Recentifyly private Por priority class, max. Por priority class, m	• Size, max.	16 kbyte
Returnity adjustable Ves		8; 8 clock memory bit, grouped into one clock memory byte
Recembrily procest Poper priority class, max. Recembrily process max. Popular solution: Popular s		
Local data		
Per prority class, max. Address area Number of IO modules 10 address area **Inputs **Origuts		No
Number of IO modules Number of Modules pare in the process image Number of destroyed in the process image in the process image Number of destroyed in the process image in the proces		
Number of 10 modules No address area		64 kbyte; max. 16 KB per block
Figure Figure Stayler, All injusts are in the process image	Address area	
Injust Outputs Output		16 384; max. number of modules / submodules
per integrated IO subsystem Inputs (volume) Outputs (volume) 8 kbyte Number of subprocess images, max. 32 **A substituted 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 of distributed I/O system of distributed I/O system 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/P8-Link) Number of DP masters • integrated • Via CM **A maximum of 8 CMs/CPs (PROFIBUS, PROFINET, Ethernet) can be inserted in total **Number of I/O controllers • integrated • Via CM **A maximum of 8 CMs/CPs (PROFIBUS, PROFINET, Ethernet) can be inserted in total **Rack **Modules per rack, max. • Number of Iines, max. **PIP DMI • Number of PIP CMs **United I/O via AS-I master modules or links (e.g., IE/P8-Link) **United I/O via AS-I master modules or links (e.g., IE/P8-Link) **Number of I/O controllers • Integrated • Via CM **A maximum of 8 CMs/CPs (PROFIBUS, PROFINET, Ethernet) can be inserted in total **Rack **Modules per rack, max. • Number of Iines, max. 1 **PIP DMI • Number of PIP CMs **Integrated IIntegrated IIIntegrated IIInte		
per integrated (IO subsystem — Inputs (volume) 32 kbyle; Max. 32 KB via X1; max. 8 KB via X2 or X3 — Outputs (volume) 32 kbyle; Max. 32 KB via X1; max. 8 KB via X2 or X3 — Proputs (volume) 8 kbyle — Outputs (volume) 8 kbyle — Outputs (volume) 8 kbyle — Subprocess images — Number of subprocess images, max. 32 — Number of subprocess images, max. 32 — Number of distributed IO systems is characterized not only by the integration of distributed IV via PROFINET or PROFIBUS communication mobiles, but also by the connection of IO via PROFINET or PROFIBUS communication mobiles is but also by the connection of IO via PROFINET or PROFIBUS communication mobiles is but also by the connection of IO via PROFIBUS communication mobiles is but also by the connection of IO via PROFIBUS communication mobiles is but also by the connection of IO via PROFIBUS communication mobiles is but also by the connection of IO via PROFIBUS communication mobiles is but also by the connection of IO via PROFIBUS communication mobiles is but also by the connection of IO via PROFIBUS communication mobiles is but also by the connection of IO via PROFIBUS communication mobiles is but also by the connection of IO via PROFIBUS communication mobiles is also by the connection of IO via PROFIBUS pROFIBUS. PROFIBUS pROFIBUS pROFIBUS pROFIBUS pROFIBUS pROFIBUS pROFIBUS profibus to inserted in total via profibus pro		
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per CMICP Inputs (volume) Per CMICP Inputs (volume) Pouputs (volume) Poupu	· · · · · · · · · · · · · · · · · · ·	
per CM/CP - Inputs (volume)		
- Inputs (volume) 8 kbyte - Outputs (volume) 8 kbyte Subprocess images • Number of subprocess images, max. 12 Handware configuration Number of distributed IO systems 64, A distributed IV O system is characterized not only by the integration of distributed IV O system is characterized not only by the integration of distributed IV O system is characterized not only by the integration of distributed IV O system is characterized not only by the integration of distributed IV O system is characterized not only by the integration of distributed IV O system is characterized not only by the integration of distributed IV O system is characterized not only by the integration of distributed IV O system is characterized not only by the integration of distributed IV O system is characterized not only by the integration of distributed IV O system is characterized not only by the integration of distributed IV O system is characterized not only by the integration of distributed IV O system is characterized not only by the integration of distributed IV O system is characterized not only by the integration of distributed IV O system is characterized not only by the integration of the connection of IV O via AS i master most only by the connection of IV O via AS i master in the connection of IV O via AS i master in the connection of IV O via AS in master in the connection of IV O via AS in master in the connection of IV O via AS in master in the connection of IV O via AS in master in the connection of IV O via AS in master in the connection of IV O via AS in master in the connection of IV O via AS in master in the connection of IV O via AS in master in the connection of IV O via AS in master in the connection of IV O via AS in master in the connection of IV O via AS in master in the connection of IV O via AS in master in the connection of IV O via AS in master in the connection of IV O via AS in master in the connection of IV O via AS in master in the connection of IV O via AS in master in the connection of IV O via AS in mast		32 kbyte; Max. 32 KB via X1; max. 8 KB via X2 or X3
Subprocess images Number of subprocess images, max. 132 Hardware configuration Number of distributed I/O systems 64; A distributed I/O system is characterized not only by the integration of distributed I/O via 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 via CM Number of IO Controllers integrated via CM 8. A maximum of 8 CMs/CPs (PROFIBUS, PROFINET, Ethernet) can be inserted in total Number of IO Controllers integrated via CM 8. A maximum of 8 CMs/CPs (PROFIBUS, PROFINET, Ethernet) can be inserted in total Number of III of the controllers Number of III of th		
Subprocess images Number of subprocess images, max. Atardava configuration Number of distributed I/O systems Baka 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 distributed I/O system is characterized not only by the connectable School 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 the characterized not only only only only only only only only		
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Via CM 8; A maximum of 8 CMs/CPs (PROFIBUS, PROFINET, Ethernet) can be inserted in total inserted in	Number of DP masters	
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Stack **Rack **Modules per rack, max.** **Number of lines, max.** **Number of PtP CMs **Number of PtP CMs is only limited by the number of available slots **Number of PtP CMs **Number of PtP		
Inserted in total Rack • Modules per rack, max. • Number of lines, max. • Number of PtP CMs • Number of PtP CMs • Number of PtP CMs • Type • Backup time • Deviation per day, max. Operating hours counter • Number • Number • Number • Number • Deviation per day, max. Operating hours counter • Number • Number • Number • 16 Clock synchronization • supported • to DP, master • in AS, master • in AS, slave • on Ethernet via NTP Interfaces Number of PROFIBUS interfaces 1. Interface Interface types • RJ 45 (Ethernet) • RJ 45 (Ethernet) • integrated switch • Yes Protocols • IP protocol I protocol 1	-	
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Backup time Deviation per day, max. Operating hours counter Number Number 16 Clock synchronization supported Operating As, master On Ethernet via NTP Number of PROFIBUS interfaces Number of PROFIBUS interfaces R, J 45 (Ethernet) Number of prots Operating hours counter 6 wk; At 40 °C ambient temperature, typically 10 s; Typ.: 2 s Wk; At 40 °C ambient temperature, typically 10 s; Typ.: 2 s Ves Protocols Number of Stance (April 1 stance) Number of PROFIBUS interfaces Protocols Protocol Yes; IPv4	Clock	
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Operating hours counter 16 Clock synchronization Yes • supported Yes • to DP, master Yes • in AS, master Yes • in AS, slave Yes • on Ethernet via NTP Yes Interfaces Number of PROFINET interfaces 2 Number of PROFIBUS interfaces 1 1. Interface Interface types • RJ 45 (Ethernet) Yes; X1 • Number of ports 2 • integrated switch Yes Protocols Yes; IPv4	Backup time	6 wk; At 40 °C ambient temperature, typically
Number	 Deviation per day, max. 	10 s; Typ.: 2 s
Clock synchronization ● supported Yes ● to DP, master Yes ● in AS, master Yes ● in AS, slave Yes ● on Ethernet via NTP Yes Interfaces Number of PROFINET interfaces 2 Number of PROFIBUS interfaces 1 1. Interface Interface types ● RJ 45 (Ethernet) Yes; X1 ● Number of ports 2 ● integrated switch Yes Protocols Yes; IPv4	Operating hours counter	
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● on Ethernet via NTP Interfaces Number of PROFINET interfaces Number of PROFIBUS interfaces 1 1. Interface Interface types ● RJ 45 (Ethernet) ● Number of ports ● Number of ports ● integrated switch Protocols ● IP protocol Yes; IPv4	• in AS, master	Yes
Interfaces Number of PROFINET interfaces Number of PROFIBUS interfaces 1 1. Interface Interface types RJ 45 (Ethernet) Number of ports Number of ports integrated switch Protocols IP protocol Yes; IPv4	• in AS, slave	Yes
Number of PROFINET interfaces Number of PROFIBUS interfaces 1 1. Interface Interface types RJ 45 (Ethernet) Number of ports Number of ports integrated switch Protocols IP protocol Yes; IPv4	• on Ethernet via NTP	Yes
Number of PROFIBUS interfaces 1. Interface Interface types • RJ 45 (Ethernet) Yes; X1 • Number of ports 2 • integrated switch Yes Protocols • IP protocol Yes; IPv4	Interfaces	
1. Interface Interface types • RJ 45 (Ethernet) • Number of ports • integrated switch Protocols • IP protocol Yes; X1 Yes; X1 Yes Yes	Number of PROFINET interfaces	2
Interface types • RJ 45 (Ethernet) • Number of ports • integrated switch Protocols • IP protocol Yes; X1 Yes; X1 Yes Yes Yes	Number of PROFIBUS interfaces	1
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 RJ 45 (Ethernet) Number of ports integrated switch Protocols IP protocol Yes; X1 Yes 	Interface types	
 Number of ports integrated switch Protocols IP protocol Yes; IPv4 	• •	Yes; X1
 integrated switch Protocols IP protocol Yes; IPv4 	·	
Protocols ● IP protocol Yes; IPv4	•	Yes
• IP protocol Yes; IPv4		
		Yes; IPv4
	PROFINET IO Controller	Yes



Yes PROFINET IO Device • SIMATIC communication Yes • Open IE communication Yes; Optionally also encrypted Web server Yes Media redundancy Yes **PROFINET IO Controller** Services - PG/OP communication Yes - 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 1 000 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFINET - Of which IO devices with IRT, max. 64 - Number of connectable IO Devices for RT, 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 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 μ s: 375 μ s, 625 μ s ... 3 Update time for RT 250 µs to 128 ms — for send cycle of 250 µs — 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 - 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 2. Interface Interface types • RJ 45 (Ethernet) Yes; X2 Number of ports 1 · integrated switch No Protocols • IP protocol Yes; IPv4 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	M
	Yes
	No
3	No
— IRT	No
— PROFlenergy	Yes; per user program
— Prioritized startup	No
	128; In total, up to 1 000 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFINET
 Number of connectable IO Devices for RT, max. 	128
— 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
	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	
	1 ms to 512 ms
PROFINET IO Device	1 113 to 312 1113
Services	
	Yes
	No No
	No Year new year new years
	Yes; per user program
·	No
	Yes
	4
	Yes; per user program
— Asset management record	Yes; per user program
3. Interface	
Interface types	
• RS 485	Yes; X3
Number of ports	1
Protocols	
PROFIBUS DP master	Yes
PROFIBUS DP slave	No
SIMATIC communication	Yes
Web server	Yes
PROFIBUS DP master	
Number of connections, max.	48; for the integrated PROFIBUS DP interface
Number of DP slaves, max.	125; In total, up to 1 000 distributed I/O devices can be connected via AS-i,
	PROFIBUS or PROFINET
Services	
— PG/OP communication	Yes
— Equidistance	Yes
— Isochronous mode	Yes
 Activation/deactivation of DP slaves 	Yes
Interface types	
RJ 45 (Ethernet)	
·	Yes
	Yes Yes
S .	
Autocrossing	Yes
Autocrossing Industrial Ethernet status LED	Yes Yes
Autocrossing Industrial Ethernet status LED RS 485	Yes Yes Yes
Autocrossing Industrial Ethernet status LED RS 485 Transmission rate, max.	Yes Yes
Autocrossing Industrial Ethernet status LED RS 485 Transmission rate, max. Protocols	Yes Yes Yes 12 Mbit/s
Autocrossing Industrial Ethernet status LED RS 485 Transmission rate, max. Protocols PROFIsafe	Yes Yes Yes
Autocrossing Industrial Ethernet status LED RS 485 Transmission rate, max. Protocols PROFIsafe Number of connections	Yes Yes Yes 12 Mbit/s Yes; V2.4 / V2.6
Autocrossing Industrial Ethernet status LED RS 485 Transmission rate, max. Protocols PROFIsafe Number of connections Number of connections, max.	Yes Yes Yes Yes 12 Mbit/s Yes; V2.4 / V2.6 320; via integrated interfaces of the CPU and connected CPs / CMs
Autocrossing Industrial Ethernet status LED RS 485 Transmission rate, max. Protocols PROFIsafe Number of connections Number of connections, max. Number of connections reserved for ES/HMI/web	Yes Yes Yes 12 Mbit/s Yes; V2.4 / V2.6



 Number of S7 routing paths 	64; in total, only 16 S7-Routing connections are supported via PROFIBUS
Redundancy mode	54, in total, only 10 of frouting connections are supported via Front 1500
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— MRPD	Yes; as MRP ring node according to IEC 62439-2 Edition 3.0 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; 128 multicast circuits (of which max. 5 via X1)
• DHCP	Yes
• DNS	Yes
• SNMP	Yes
• DCP	Yes
• LLDP	Yes
• Encryption	Yes; Optional
Web server	100, optional
• HTTP	Yes; Standard and user pages
• HTTPS	Yes; Standard and user pages
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 OPC_UA_NameSpaceGetIndexList, max. 	20
 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



Application authoritication Security proficies Security proficies Security proficies User autheritication GIDS support (certificate management) Number of accessable variables, max Number of accessable variables, max Number of support (certificate management) Number		
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Variables inputs/outputs, bit memories, DBs, peripheral I/Os (without fail-safe), times, counters Number of variables, max. of which status variables, max. of which control variables, max. Forcing Forcing Forcing, variables Number of variables, max. 200; per job Yes; without fail-safe peripheral inputs/outputs (without fail-safe) Number of variables, max. 200 Diagnostic buffer present Number of entries, max. of which powerfail-proof 1 000 Traces Number of configurable Traces Number of configurable Traces Number of configurable Traces RUN/STOP LED RUN/STOP LED Pesson Yes Yes ERROR LED Yes		
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- of which control variables, max. Forcing Forcing Forcing, variables Forcing, variables Number of variables, max. Diagnostic buffer present Number of entries, max. Of which powerfail-proof Traces Number of configurable Traces Number of configurable Traces RUN/STOP LED RUN/STOP LED ERROR LED Yes, without fail-safe peripheral inputs/outputs (without fail-safe) yes 200 200 200 200 200 200 3 200 4 000 5 1 000 7 1 000 7 1 000 Yes 8; Up to 512 KB of data per trace are possible	,	200: per joh
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Diagnostic buffer • present • present • Number of entries, max. — of which powerfail-proof Traces • Number of configurable Traces • Number of configurable Traces Interrupts/diagnostics/status information Diagnostics indication LED • RUN/STOP LED • ERROR LED Yes	<u>.</u>	
 present Number of entries, max. — of which powerfail-proof Traces Number of configurable Traces Number of configurable Traces Interrupts/diagnostics/status information Diagnostics indication LED RUN/STOP LED ERROR LED Yes 	·	200
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— of which powerfail-proof 1 000 Traces ● Number of configurable Traces 8; Up to 512 KB of data per trace are possible Interrupts/diagnostics/status information Diagnostics indication LED ● RUN/STOP LED ● ERROR LED Yes	·	
Traces Number of configurable Traces Interrupts/diagnostics/status information Diagnostics indication LED RUN/STOP LED ERROR LED Yes Yes		
● Number of configurable Traces Interrupts/diagnostics/status information Diagnostics indication LED ● RUN/STOP LED ● ERROR LED Yes Yes		1 000
Interrupts/diagnostics/status information Diagnostics indication LED • RUN/STOP LED • ERROR LED Yes Yes		9: Up to 512 KB of data per trace are possible
Diagnostics indication LED • RUN/STOP LED • ERROR LED Yes Yes		o, op to 312 No oi data per trace are possible
RUN/STOP LED Yes ERROR LED Yes		
• ERROR LED Yes	-	Van
• MAINT LED Yes		
	● MAINT LED	res



 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
 Required Motion Control resources 	
 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 segments)	2
— per cam (10 000 points and 50 segments)	20
— for each set of kinematics	30
— Per leading axis proxy	3
kinematics functions	
 kinematics with up to 4 interpolating axes 	Yes; max. 3D + orientation
kinematics with 5 or more interpolating axes	No
user-defined kinematics	Yes
— SIMATIC Safe Kinematics	Yes; optional, SIMATIC Safe Kinematics V17 or higher
Positioning axis	, , , , , , , , , , , , , , , , , , , ,
Number of positioning axes at motion control cycle of 4 ms (typical value)	70
 Number of positioning axes at motion control cycle of 8 ms (typical value) 	128
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 SIL3	< 2.00E-05
High demand/continuous mode: PFH in accordance with SIL3	< 1.00E-09
WIGH OILO	
Ambient conditions	
Ambient temperature during operation	0.00
Ambient temperature during operation • horizontal installation, min.	0 °C 60 °C: Display: 50 °C, at an apparating temperature of typically 50 °C, the
Ambient temperature during operation • horizontal installation, min. • horizontal installation, max.	60 °C; Display: 50 °C, at an operating temperature of typically 50 °C, the display is switched off
Ambient temperature during operation • horizontal installation, min. • horizontal installation, max. • vertical installation, min.	60 °C; Display: 50 °C, at an operating temperature of typically 50 °C, the display is switched off 0 °C
Ambient temperature during operation • horizontal installation, min. • horizontal installation, max.	60 °C; Display: 50 °C, at an operating temperature of typically 50 °C, the display is switched off 0 °C 40 °C; Display: 40 °C, at an operating temperature of typically 40 °C, the
Ambient temperature during operation • horizontal installation, min. • horizontal installation, max. • vertical installation, min. • vertical installation, max.	60 °C; Display: 50 °C, at an operating temperature of typically 50 °C, the display is switched off 0 °C
Ambient temperature during operation • horizontal installation, min. • horizontal installation, max. • vertical installation, min. • vertical installation, max. Ambient temperature during storage/transportation	60 °C; Display: 50 °C, at an operating temperature of typically 50 °C, the display is switched off 0 °C 40 °C; Display: 40 °C, at an operating temperature of typically 40 °C, the
Ambient temperature during operation • horizontal installation, min. • horizontal installation, max. • vertical installation, min. • vertical installation, max.	60 °C; Display: 50 °C, at an operating temperature of typically 50 °C, the display is switched off 0 °C 40 °C; Display: 40 °C, at an operating temperature of typically 40 °C, the display is switched off
Ambient temperature during operation • horizontal installation, min. • horizontal installation, max. • vertical installation, min. • vertical installation, max. Ambient temperature during storage/transportation • min. • max.	60 °C; Display: 50 °C, at an operating temperature of typically 50 °C, the display is switched off 0 °C 40 °C; Display: 40 °C, at an operating temperature of typically 40 °C, the display is switched off
Ambient temperature during operation • horizontal installation, min. • horizontal installation, max. • vertical installation, min. • vertical installation, max. Ambient temperature during storage/transportation • min. • max. Altitude during operation relating to sea level	60 °C; Display: 50 °C, at an operating temperature of typically 50 °C, the display is switched off 0 °C 40 °C; Display: 40 °C, at an operating temperature of typically 40 °C, the display is switched off -40 °C 70 °C
 horizontal installation, min. horizontal installation, max. vertical installation, min. vertical installation, max. Ambient temperature during storage/transportation min. max. Altitude during operation relating to sea level Installation altitude above sea level, max. 	60 °C; Display: 50 °C, at an operating temperature of typically 50 °C, the display is switched off 0 °C 40 °C; Display: 40 °C, at an operating temperature of typically 40 °C, the display is switched off
Ambient temperature during operation • horizontal installation, min. • horizontal installation, max. • vertical installation, min. • vertical installation, max. Ambient temperature during storage/transportation • min. • max. Altitude during operation relating to sea level • Installation altitude above sea level, max. configuration / header	60 °C; Display: 50 °C, at an operating temperature of typically 50 °C, the display is switched off 0 °C 40 °C; Display: 40 °C, at an operating temperature of typically 40 °C, the display is switched off -40 °C 70 °C
Ambient temperature during operation • horizontal installation, min. • horizontal installation, max. • vertical installation, min. • vertical installation, max. Ambient temperature during storage/transportation • min. • max. Altitude during operation relating to sea level • Installation altitude above sea level, max. configuration / header configuration / programming / header	60 °C; Display: 50 °C, at an operating temperature of typically 50 °C, the display is switched off 0 °C 40 °C; Display: 40 °C, at an operating temperature of typically 40 °C, the display is switched off -40 °C 70 °C
Ambient temperature during operation • horizontal installation, min. • horizontal installation, max. • vertical installation, min. • vertical installation, max. Ambient temperature during storage/transportation • min. • max. Altitude during operation relating to sea level • Installation altitude above sea level, max. configuration / header	60 °C; Display: 50 °C, at an operating temperature of typically 50 °C, the display is switched off 0 °C 40 °C; Display: 40 °C, at an operating temperature of typically 40 °C, the display is switched off -40 °C 70 °C



EDD	V
— FBD	Yes; incl. failsafe
— STL	Yes
— SCL	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 	Yes
Protection level: Complete protection	Yes
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

last modified:

8/7/2023

