SIEMENS

Data sheet

6ES7513-1FL02-0AB0



*** spare part *** SIMATIC S7-1500F, SIMATIC Memory Card required

General information	0011 45405 4 011
Product type designation	CPU 1513F-1 PN
HW functional status	FS03
Firmware version	V2.9
Product function	
• I&M data	Yes; I&M0 to I&M3
Isochronous mode	Yes; Distributed and central; with minimum OB 6x cycle of 500 µs (distributed) and 1 ms (central)
Engineering with	
STEP 7 TIA Portal configurable/integrated from version	V17 (FW V2.9) / V15 (FW V2.5) or higher; with older TIA Portal versions configurable as 6ES7513-1FL01-0AB0
Configuration control	
via dataset	Yes
Display	
Screen diagonal [cm]	3.45 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
nput current	
Current consumption (rated value)	0.7 A
Current consumption, max.	0.95 A
Inrush current, max.	1.9 A; Rated value
l²t	0.02 A²·s
Power	
Infeed power to the backplane bus	10 W
Power consumption from the backplane bus (balanced)	5.5 W
Power loss	
Power loss, typ.	5.7 W
Memory	
Number of slots for SIMATIC memory card	1
SIMATIC memory card required	Yes
Work memory	

a integrated (for program)	AFO khuta
• integrated (for program)	450 kbyte
• integrated (for data)	1.5 Mbyte
Load memory	00.01.4
Plug-in (SIMATIC Memory Card), max.	32 Gbyte
Backup	V
maintenance-free	Yes
CPU processing times	
for bit operations, typ.	40 ns
for word operations, typ.	48 ns
for fixed point arithmetic, typ.	64 ns
for floating point arithmetic, typ.	256 ns
CPU-blocks	
Number of elements (total)	4 000; 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
0:	59 999, and number range of DBs created via SFC 86: 60 000 60 999
• Size, max.	1.5 Mbyte; For DBs with absolute addressing, the max. size is 64 KB
FB Niveles assessed	0. 05 505
Number range	0 65 535
• Size, max.	450 kbyte
FC	
Number range	0 65 535
• Size, max.	450 kbyte
OB	
• Size, max.	450 kbyte
 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 500 μs
 Number of process alarm OBs 	50
 Number of DPV1 alarm OBs 	3
 Number of isochronous mode OBs 	2
 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)
	Any tonly inniced by the main memory)
Retentivity	Voc
— adjustable	Yes
S7 times	2.040
Number Petertinity	2 048
Retentivity	V
— adjustable	Yes
IEC timer	
• Number	Any (only limited by the main memory)
Retentivity	
— adjustable	Yes
Data areas and their retentivity	
Retentive data area (incl. timers, counters, flags), max.	128 kbyte; In total; available retentive memory for bit memories, timers, counters, DBs, and technology data (axes): 88 KB
	counters, DDs, and technology data (axes). So ND
Extended retentive data area (incl. timers, counters, flags), max.	1.5 Mbyte; When using PS 6 0W 24/48/60 V DC HF

• Size, max.	16 kbyte
Number of clock memories	8; 8 clock memory bit, grouped into one clock memory byte
Data blocks	
 Retentivity adjustable 	Yes
 Retentivity preset 	No
Local data	
 per priority class, max. 	64 kbyte; max. 16 KB per block
Address area	
Number of IO modules	2 048; max. number of modules / submodules
I/O address area	2 0-10, max. humber of modules / submodules
	22 khyte: All inputs are in the process image
• Inputs	32 kbyte; All inputs are in the process image
Outputs	32 kbyte; All outputs are in the process image
per integrated IO subsystem	
— Inputs (volume)	8 kbyte
— Outputs (volume)	8 kbyte
per CM/CP	
— Inputs (volume)	8 kbyte
— Outputs (volume)	8 kbyte
Subprocess images	
 Number of subprocess images, max. 	32
Hardware configuration	
Number of distributed IO systems	32; 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	
• Via CM	6; A maximum of 6 CMs (PROFINET + PROFIBUS) can be inserted in total
Number of IO Controllers	
• integrated	1
• Via CM	6; A maximum of 6 CMs (PROFINET + PROFIBUS) can be inserted in total
Rack	
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
	10 3, Typ 2 3
Operating hours counter	16
Number Clark a make a size tion	16
Clock synchronization	V.
• supported	Yes
• in AS, master	Yes
• in AS, device	Yes
on Ethernet via NTP	Yes
Interfaces	
Number of PROFINET interfaces	1
1. Interface	
Interface types	
• RJ 45 (Ethernet)	Yes; X1
Number of ports	2
integrated switch	Yes
■ IIIICUIAICU SWIICII	100
Protocols	Very ID-4
Protocols • IP protocol	Yes; IPv4
Protocols • IP protocol • PROFINET IO Controller	Yes
Protocols • IP protocol	
Protocols • IP protocol • PROFINET IO Controller	Yes
Protocols • IP protocol • PROFINET IO Controller • PROFINET IO Device	Yes Yes

Media redundancy	Yes; MRP Automanager according to IEC 62439-2 Edition 2.0
PROFINET IO Controller	700, With 7 tato manager according to 120 of 100 f Edition 2.0
Services	
— PG/OP communication	Yes
— Isochronous mode	Yes
Direct data exchange	Yes; Requirement: IRT and isochronous mode (MRPD optional)
— IRT	Yes
— PROFlenergy	Yes; per user program
— Prioritized startup	Yes; Max. 32 PROFINET devices
Number of connectable IO Devices, max.	128; In total, up to 512 distributed I/O devices can be connected via AS-i,
— Number of conficulable to bevices, max.	PROFIBUS or PROFINET
— Of which IO devices with IRT, max.	64
Number of connectable IO Devices for RT, max.	128
— of which in line, max.	128
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	$250~\mu s$ to 4 ms; Note: In the case of IRT with isochronous mode, the minimum update time of 500 μs of the isochronous OB is decisive
— 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 μ s)
Update time for RT	
— for send cycle of 250 μs	250 µs to 128 ms
— for send cycle of 500 μs	500 µs to 256 ms
— for send cycle of 1 ms	1 ms to 512 ms
— for send cycle of 2 ms	2 ms to 512 ms
— for send cycle of 4 ms	4 ms to 512 ms
PROFINET IO Device	
Services	
— PG/OP communication	Yes
— 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
Interface types	
RJ 45 (Ethernet)	
• 100 Mbps	Yes
Autonegotiation	Yes
Autocrossing	Yes
Industrial Ethernet status LED	Yes
Protocols	
PROFIsafe	Yes; V2.4 / V2.6
Number of connections	
Number of connections, max.	128; via integrated interfaces of the CPU and connected CPs / CMs
	10
Number of connections reserved for ES/HMI/web	
Number of connections reserved for ES/HMI/webNumber of connections via integrated interfaces	88
	88 16
Number of connections via integrated interfaces	
Number of connections via integrated interfacesNumber of S7 routing paths	
 Number of connections via integrated interfaces Number of S7 routing paths Redundancy mode 	16

— 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
 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. 5 multicast circuits
• DHCP	Yes
• DNS	Yes
• SNMP	Yes
• DCP	Yes
• LLDP	Yes
• Encryption	Yes; Optional
Web server	res, Optional
HTTP	Yes; Standard and user pages
• HTTPS	Yes; Standard and user pages
OPC UA	res, standard and user pages
Runtime license required	Yes
OPC UA Client	Yes
Application authentication	Yes
Security policies	Available security policies: None, Basic128Rsa15, Basic256Rsa15, Basic256Sha256
— User authentication	"anonymous" or by user name & password
Number of connections, max.	4
 Number of nodes of the client interfaces, recommended max. 	1 000
— Number of elements for one call of	300
OPC_UA_NodeGetHandleList/OPC_UA_ReadList/OPC_	
max. — Number of elements for one call of	20
max. — Number of elements for one call of OPC_UA_NameSpaceGetIndexList, max. — Number of elements for one call of	
max. — Number of elements for one call of OPC_UA_NameSpaceGetIndexList, max. — Number of elements for one call of OPC_UA_MethodGetHandleList, max. — Number of simultaneous calls of the client instructions for session management, per connection,	20
max. — Number of elements for one call of OPC_UA_NameSpaceGetIndexList, max. — Number of elements for one call of OPC_UA_MethodGetHandleList, max. — Number of simultaneous calls of the client instructions for session management, per connection, max. — Number of simultaneous calls of the client	20 100
max. — Number of elements for one call of OPC_UA_NameSpaceGetIndexList, max. — Number of elements for one call of OPC_UA_MethodGetHandleList, max. — Number of simultaneous calls of the client instructions for session management, per connection, max. — Number of simultaneous calls of the client instructions for data access, per connection, max.	2010015
max. — Number of elements for one call of OPC_UA_NameSpaceGetIndexList, max. — Number of elements for one call of OPC_UA_MethodGetHandleList, max. — Number of simultaneous calls of the client instructions for session management, per connection, max. — Number of simultaneous calls of the client instructions for data access, per connection, max. — Number of registerable nodes, max.	20 100 1 5 5 000
max. — Number of elements for one call of OPC_UA_NameSpaceGetIndexList, max. — Number of elements for one call of OPC_UA_MethodGetHandleList, max. — Number of simultaneous calls of the client instructions for session management, per connection, max. — Number of simultaneous calls of the client instructions for data access, per connection, max. — Number of registerable nodes, max. — Number of registerable method calls of OPC_UA_MethodCall, max.	2010015
max. — Number of elements for one call of OPC_UA_NameSpaceGetIndexList, max. — Number of elements for one call of OPC_UA_MethodGetHandleList, max. — Number of simultaneous calls of the client instructions for session management, per connection, max. — Number of simultaneous calls of the client instructions for data access, per connection, max. — Number of registerable nodes, max. — Number of registerable method calls of	20 100 1 5 5 000 100
max. — Number of elements for one call of OPC_UA_NameSpaceGetIndexList, max. — Number of elements for one call of OPC_UA_MethodGetHandleList, max. — Number of simultaneous calls of the client instructions for session management, per connection, max. — Number of simultaneous calls of the client instructions for data access, per connection, max. — Number of registerable nodes, max. — Number of registerable method calls of OPC_UA_MethodCall, max. — Number of inputs/outputs when calling	20 100 1 5 5 000 100
max. — Number of elements for one call of OPC_UA_NameSpaceGetIndexList, max. — Number of elements for one call of OPC_UA_MethodGetHandleList, max. — Number of simultaneous calls of the client instructions for session management, per connection, max. — Number of simultaneous calls of the client instructions for data access, per connection, max. — Number of registerable nodes, max. — Number of registerable method calls of OPC_UA_MethodCall, max. — Number of inputs/outputs when calling OPC_UA_MethodCall, max.	20 100 1 5 5 000 100 20
max. — Number of elements for one call of OPC_UA_NameSpaceGetIndexList, max. — Number of elements for one call of OPC_UA_MethodGetHandleList, max. — Number of simultaneous calls of the client instructions for session management, per connection, max. — Number of simultaneous calls of the client instructions for data access, per connection, max. — Number of registerable nodes, max. — Number of registerable method calls of OPC_UA_MethodCall, max. — Number of inputs/outputs when calling OPC_UA_MethodCall, max. • OPC UA Server	20 100 1 5 5 000 100 20 Yes; Data access (read, write, subscribe), method call, custom address space
max. — Number of elements for one call of OPC_UA_NameSpaceGetIndexList, max. — Number of elements for one call of OPC_UA_MethodGetHandleList, max. — Number of simultaneous calls of the client instructions for session management, per connection, max. — Number of simultaneous calls of the client instructions for data access, per connection, max. — Number of registerable nodes, max. — Number of registerable method calls of OPC_UA_MethodCall, max. — Number of inputs/outputs when calling OPC_UA_MethodCall, max. • OPC UA Server — Application authentication	20 100 1 5 5 000 100 20 Yes; Data access (read, write, subscribe), method call, custom address space Yes Available security policies: None, Basic128Rsa15, Basic256Rsa15,
max. — Number of elements for one call of OPC_UA_NameSpaceGetIndexList, max. — Number of elements for one call of OPC_UA_MethodGetHandleList, max. — Number of simultaneous calls of the client instructions for session management, per connection, max. — Number of simultaneous calls of the client instructions for data access, per connection, max. — Number of registerable nodes, max. — Number of registerable method calls of OPC_UA_MethodCall, max. — Number of inputs/outputs when calling OPC_UA_MethodCall, max. • OPC UA Server — Application authentication — Security policies	20 100 1 5 5 000 100 20 Yes; Data access (read, write, subscribe), method call, custom address space Yes Available security policies: None, Basic128Rsa15, Basic256Rsa15, Basic256Sha256
max. — Number of elements for one call of OPC_UA_NameSpaceGetIndexList, max. — Number of elements for one call of OPC_UA_MethodGetHandleList, max. — Number of simultaneous calls of the client instructions for session management, per connection, max. — Number of simultaneous calls of the client instructions for data access, per connection, max. — Number of registerable nodes, max. — Number of registerable method calls of OPC_UA_MethodCall, max. — Number of inputs/outputs when calling OPC_UA_MethodCall, max. • OPC UA Server — Application authentication — Security policies — User authentication	20 100 1 5 5 000 100 20 Yes; Data access (read, write, subscribe), method call, custom address space Yes Available security policies: None, Basic128Rsa15, Basic256Rsa15, Basic256Sha256 "anonymous" or by user name & password

Number of registerable nodes, may	10 000
— Number of registerable nodes, max.— Number of subscriptions per session, max.	20
— Number of subscriptions per session, max. — Sampling interval, min.	100 ms
— Samping interval, min. — Publishing interval, min.	500 ms
— Number of server methods, max.	20
Number of server methods, max. Number of inputs/outputs per server method, max.	20
Number of ministered items, recommended max.	1 000; for 1 s sampling interval and 1 s send interval
Number of monitored terns, recommended max. 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. 	1 000
Alarms and Conditions	Yes
Further protocols	
• MODBUS	Yes; MODBUS TCP
Isochronous mode	
Equidistance	Yes
S7 message functions	
Number of login stations for message functions, max.	32
Program alarms	Yes
Number of configurable program messages, max.	5 000; Program messages are generated by the "Program_Alarm" block, ProDiag or GRAPH
Number of loadable program messages in RUN, max.	2 500
Number of simultaneously active program alarms	
 Number of program alarms 	600
 Number of alarms for system diagnostics 	100
Number of alarms for motion technology objects	80
Test commissioning functions	
Joint commission (Team Engineering)	Yes; Parallel online access possible for up to 5 engineering systems
Status block	Yes; Up to 8 simultaneously (in total across all ES clients)
Single step	No
Number of breakpoints	8
Status/control	V 10 16 10 16
Status/control variable	Yes; without fail-safe
Variables	inputs/outputs, bit memories, DBs, peripheral I/Os (without fail-safe), times, counters
 Number of variables, max. 	
— of which status variables, max.	200; per job
— of which control variables, max.	200; per job
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. 	1 000
— of which powerfail-proof	500
Traces	
Number of configurable Traces	4; Up to 512 KB of data per trace are possible
Interrupts/diagnostics/status information	
Diagnostics indication LED	
• RUN/STOP LED	Yes
• ERROR LED	Yes
MAINT LED	Yes
STOP ACTIVE LED	Yes
Connection display LINK TX/RX	Yes
Supported technology objects	V N = 1
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	800
technology objects	
Required Motion Control resources	
— per speed-controlled axis	40

— per positioning asts — per external encloder — per color team — per coternal encloder — per color team — Number of positioning axes at motion control cycle of 4 ms (typical value) — Number of positioning axes at motion control cycle of 6 ms (typical value) — Number of positioning axes at motion control cycle of 6 ms (typical value) — Number of positioning axes at motion control cycle of 6 ms (typical value) — Number of positioning axes at motion control cycle of 6 ms (typical value) — Number of positioning axes at motion control cycle of 6 ms (typical value) — Number of positioning axes at motion control cycle of 6 ms (typical value) — Number of team of the team of team of the team of team of the team of tea		
— per central according — per count tack — per probe **Postcoming axis — Number of positioning axis at motion control cycle of en as (Spokan visual) — Number of positioning axis at motion control cycle of en as (Spokan visual) — Number of positioning axis at motion control cycle of en as (Spokan visual) — Number of positioning axis at motion control cycle of en as (Spokan visual) — Number of positioning axis at motion control cycle **PiD. Compact **PiD. C	per positioning axis	80
per culput cam per probe Positioning axis at motion control cycle Positioning axis at motion control cycle Positioning axis at motion control cycle Number of positioning axes at motion control cycle Positioning axes at motion control cycle PID, Compact PID, Com	— per synchronous axis	160
per probe Postioning axis Number of positioning axes at motion control cycle Read (typical value) Number of 8 ms (typical value) PID_ Compact Yes; PID_ controller with integrated optimization for valves PID_ Compact Yes; PID_ controller with integrated optimization for valves PID_ Compact Yes; PID_ controller with integrated optimization for temperature Version and motion PID_ PID_ SID_ SID_ SID_ SID_ SID_ SID_ SID_ S	— per external encoder	80
- Per probe - Positioning axis - Humber of positioning axes at motion control cycle of 4 ms (kycled value) - Number of positioning axes at motion control cycle of 8 ms (kycled value) - Number of positioning axes at motion control cycle of 8 ms (kycled value) - PIC_Compact - PIC_Compact - PIC_Compact - PIC_Stopp - Yes, PID controller with integrated optimization for valves - PIC_Counting and measuring - PIC_Temp - Yes, PID controller with integrated optimization for valves - PIC_Temp - Yes, PID controller with integrated optimization for temperature - Ves, PID controller with integrated optimization for temperature - Ves, PID controller with integrated optimization for temperature - Ves, PID controller with integrated optimization for temperature - Ves, PID controller with integrated optimization for temperature - Ves, PID controller with integrated optimization for temperature - Ves, PID controller with integrated optimization for temperature - Ves, PID controller with integrated optimization for temperature - Ves, PID controller with integrated optimization for temperature - Ves, PID controller with integrated optimization for temperature - Ves, PID controller with integrated optimization for temperature - PID cont	— per output cam	20
Positioning axis Number of positioning axis at motion control cycle of 4 mis (typical value) Number of positioning axis at motion control cycle of 8 mis (typical value) Phumber of positioning axis at motion control cycle of 8 mis (typical value) Controller PhD_Commact PhD_Commact PhD_Commact PhD_Commact PhD_Stiles Photophysis Phot	— per cam track	160
Number of positioning axes at motion control cycle of a few flypcian value) Number of positioning axes at motion control cycle of 8 ms (typical value) Number of positioning axes at motion control cycle of 8 ms (typical value) PID_Compact PID_Compact PID_Compact PID_Compact PID_Compact PID_Compact PID_Step Yes; PID controller with integrated optimization for valves PID_Temp Yes; PID controller with integrated optimization for valves PID_Temp Yes; PID controller with integrated optimization for valves PID_Temp Yes; PID controller with integrated optimization for valves PID_Temp Yes; PID controller with integrated optimization for valves PID_Temp Yes; PID controller with integrated optimization for valves PID_Temp Yes; PID controller with integrated optimization for valves PID_Temp Yes; PID controller with integrated optimization for valves PID_Temp Yes; PID controller with integrated optimization for valves PID_Temp Yes; PID controller with integrated optimization for valves PID_Temp Yes; PID controller with integrated optimization for valves PID_Temp Yes; PID controller with integrated optimization for valves PID_Temp Yes; PID controller with integrated optimization for valves PID_Temp Yes; PID controller with integrated optimization for valves PID_Temp	— per probe	40
of 4 ms (typical value) - Number of positioning axes at motion control cycle of 8 ms (typical value) Controller - PID_Compact - PID_Compact - PID_Compact - PID_Compact - PID_Compact - PID_Step - Yes; PID controller with integrated optimization for valves - PID_Temp - Yes; PID controller with integrated optimization for valves - PID-Temp - Yes; PID controller with integrated optimization for valves - PID-Temp - Yes; PID controller with integrated optimization for valves - PID-Temp - Yes; PID controller with integrated optimization for valves - Yes; PID controller with integrated optimization for valves - Yes; PID controller with integrated optimization for valves - Yes; PID controller with integrated optimization for valves - Yes; PID controller with integrated optimization for valves - Yes; PID controller with integrated optimization for valves - Yes; PID controller with integrated optimization for valves - Yes; PID controller with integrated optimization for valves - Yes; PID controller with integrated optimization for valves - Yes; PID controller with integrated optimization for valves - Yes; PID controller with integrated optimization for valves - Yes; PID controller with integrated optimization for valves - Yes; PID controller with integrated optimization for valves - Yes; PID controller with integrated optimization for valves - Yes	 Positioning axis 	
of 4 ms (typical value) - Number of positioning axes at motion control cycle of 8 ms (typical value) Controller - PID_Compact - PID_Compact - PID_Compact - PID_Compact - PID_Compact - PID_Step - Yes; PID controller with integrated optimization for valves - PID_Temp - Yes; PID controller with integrated optimization for valves - PID-Temp - Yes; PID controller with integrated optimization for valves - PID-Temp - Yes; PID controller with integrated optimization for valves - PID-Temp - Yes; PID controller with integrated optimization for valves - Yes; PID controller with integrated optimization for valves - Yes; PID controller with integrated optimization for valves - Yes; PID controller with integrated optimization for valves - Yes; PID controller with integrated optimization for valves - Yes; PID controller with integrated optimization for valves - Yes; PID controller with integrated optimization for valves - Yes; PID controller with integrated optimization for valves - Yes; PID controller with integrated optimization for valves - Yes; PID controller with integrated optimization for valves - Yes; PID controller with integrated optimization for valves - Yes; PID controller with integrated optimization for valves - Yes; PID controller with integrated optimization for valves - Yes; PID controller with integrated optimization for valves - Yes	Number of positioning axes at motion control cycle	5
of 8 ms (typical value) Of 8 ms (typical value) PID_Compact PID_Compact PID_Compact PID_Sistop Yes; Universal PID controller with integrated optimization for valves PID_Sistop Yes; PID controller with integrated optimization for valves PID_Sistop Yes; PID controller with integrated optimization for valves PID_Compact Yes Standards, approvals, certificates Highest safety assa achievable in safety mode. Performance level according to ISO 13849-1 SIL 3 Probability of failure for service life of 20 years and repair time of 100 hours) —Low demand mode: PFD ang in accordance with SIL3 —High demand/continuous mode: PFH in accordance with SIL3 —Ambient conditions Ambient conditions Ambient conditions Ambient conditions Ambient conditions Anotice installation, min. Perfical installation, max. 60 °C; Display-50 °C, at an operating temperature of typically 50 °C, the display is switched off Perfical installation, max. 40 °C; Display-50 °C, at an operating temperature of typically 40 °C, the display is switched off Perfical installation, max. 40 °C; Display-50 °C, at an operating temperature of typically 40 °C, the display is switched off Perfical installation, max. 40 °C; Display-50 °C, at an operating temperature of typically 40 °C, the display is switched off Perfical installation, max. 40 °C; Display-40 °C, at an operating temperature of typically 40 °C, the display is switched off Performance installation and instal		
Controller PID_Compact PID_Com		10
PID. Compact PID. Solip PID. Solip PID. Solip PID. Solip PID. Solip PYes: PID. controller with integrated optimization PYes: PID. controller with integrated optimization for valves PYes: PID. controller with integrated optimization for temperature PYes: PID. controller with integrated optimization for temperature PYes: PID. controller with integrated optimization for temperature PYes Standards, approvals, certificates Pipelating of the provider of the pipelating operation Probability of fisher (for service life of 20 years and repair time of 100 hours) - Low demand mode: PFDavg in accordance with SL3 - High demandicontinuous mode: PFH in accordance with SL3 - High demandicontinuous mode: PFH in accordance with SL3 - High demandicontinuous mode: PFH in accordance with SL3 - Ambient conditions - Ambient conditions - Ambient conditions - Ambient conditions - Notizontal installation, min +orizontal installation, max 40 °C; Display: 50 °C, at an operating temperature of typically 50 °C, the display is switched off25 °C; No condensation - winh25 °C; No condensation - vertical installation, max 40 °C; Display: 45 °C, at an operating temperature of typically 40 °C, the display is switched off - Periodic installation and provide and		
PID_Step PID_Temp Pus; PID controller with integrated optimization for valves PID_Temp Pus; PID controller with integrated optimization for valves Pus; PID controller with integrated optimization for temperature PUs; PID controller with integrated optimization for integrated optimization for integrated optimization for installation altitudes PUs; PID controller PU		
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Counting and measuring • High-speed counter Standards, approvals, certificates Highest safety class achievable in safety mode • Performance level according to ISO 13849-1 • St. ac. to IEC 61508 Probability of failure (for service life of 20 years and repair time of 100 hours) — Low demand mode: PFDay in accordance with Sit.3 — High demand/continuous mode: PFH in accordance with Sit.3 — High demand/continuous mode: PFH in accordance with Sit.3 — High demand/continuous mode: PFH in accordance with Sit.3 — High demand/continuous mode: PFH in accordance with Sit.3 Ambient temperature during operation • horizontal Installation, min. • 25 °C; No condensation • horizontal Installation, max. 60 °C; Display; 50 °C, at an operating temperature of typically 50 °C, the display is switched off • vertical installation, max. 60 °C; Display; 40 °C, at an operating temperature of typically 40 °C, the display is switched off Ambient temperature during storage-fransportation • min. • vertical installation, max. display is switched off Ambient temperature during storage-fransportation • min. • nax. 70 °C Althouge during operation relating to see level • Installation althouge above sea level, max. 5 000 m; Restrictions for installation althouges > 2 000 m, see manual configuration? Incider configuration? Incider Programming language — LAD — FBD — Yes; incl. failsafe Programming language — LAD — FBD — Yes; incl. failsafe — SSTL — SCL — GRAPH Ves Know-how protection • Ves • Block protection • Ves • Block protection level: Write protection • Password for display • Protection level: Write protection • Protection level: Write protection • Protection level: Complete protection • Protection level: Complet	PID_3Step	Yes; PID controller with integrated optimization for valves
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Standards, approvals, certificates Highest safety class achievable in safety mode Performance level according to ISO 13849-1 • SIL acc. to IEC 6 1508 Probability of failure (for service life of 20 years and repair time of 100 hours) — Low demand mode: PPDarg in accordance with SIL3 — High demand/continuous mode: PPH in accordance with SIL3 — High demand/continuous mode: PPH in accordance with SIL3 — High demand/continuous mode: PPH in accordance with SIL3 — Ambient conditions Ambient conditions Ambient semperature during operation • horizontal installation, max. • horizontal installation, min. • vertical installation, min. • vertical installation, min. • vertical installation, max. • vertical installation of typically 50 °C, the dispitally is switched off Ambient temperature during storage/transportation • min. • vertical installation of typically 50 °C, the dispitally is switched off Ambient temperature during storage/transportation • min. • vertical installation of typically 50 °C, the dispitally is switched off Ambient temperature during storage/transportation • min. • vertical installation of typically 50 °C, the dispitally is switched off Ambient temperature during storage/transportation of typically 50 °C, the dispitally is switched off **Copical typical temperature of typically 50 °C, the dispitally is switched off **Copical typical typical temperature of typically 5	Counting and measuring	
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SIL3 — High demand/continuous mode: PFH in accordance with SIL3 Antibient conditions Antibient conditions • horizontal installation, min. • horizontal installation, min. • horizontal installation, min. • horizontal installation, min. • vertical installation and vertical i		
Ambient conditions Ambient temperature during operation • horizontal installation, min. • horizontal installation, min. • horizontal installation, min. • horizontal installation, min. • vertical installation, max. 40 °C; Display: 50 °C, at an operating temperature of typically 50 °C, the display is switched off • 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. • vertical installation altitude above sea level • Installation altitude above sea level, max. 70 °C Altitude during operation relating to sea level • Installation altitude above sea level, max. configuration / Programming / header configuration / Programming / header Programming language — LAD — FBD — STL — SCL — GRAPH Yes — SCL — GRAPH Yes Know-how protection • User program protection/password protection • User program protection/password protection • User program protection/password protection • Protection • Protection level: Write protection • Protection leve		< 2.00E-05
with \$\frac{\text{SiL3}}{Ambient conditions}\$ Ambient conditions Ambient conditions Ambient temperature during operation • horizontal installation, min. • horizontal installation, max. • horizontal installation, max. • horizontal installation, max. • horizontal installation, max. • vertical installation altitude above sea level, max. • vertical installation altitude above sea level. • vertical installation, max. • vertical installation, max. • vertical installation, max. • vertical installation altitude above. • vertical installation altitude above. • vertical installation altitude above. • vertical installation, max. • vertical installation, max. • vertical installation, max. • vertical installation altitude above. • vertical installation altitude above. • vertical installation altitude above. • vertical installation altitude above.		< 1 NNF-NQ
Ambient temperature during operation • horizontal installation, min. • horizontal installation, min. • horizontal installation, max. • horizontal installation, max. • vertical installation, min. • vertical Installation, min. • vertical Installation, min. • vertical Installation, max. • vertical installation, max. • vertical installation, max. • 25 °C; No condensation • 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: • max. • 70 °C Allitude during operation relating to sea level • Installation allitude above sea level, max. configuration / programming / header Programming language — LAD — Yes; incl. failsafe — STL — SCL — GRAPH Yes Know-how protection • User program protection/password protection • User program protection/password protection • Desprotection • Protection level: Write protection • Passavord for display • Protection level: Write protection • Protection level: Write protection • Protection level: Read/write protection • Protection level: Read/write protection • Protection level: Complete protection • Protection level: Write protection • Protection level: Wr		1.000 00
 Norizontal installation, min. 1-25 °C; No condensation Norizontal installation, max. 80 °C; Display: 50 °C, at an operating temperature of typically 50 °C, the display is switched off vertical installation, min. 2-25 °C; No condensation vertical installation, max. 40 °C; Display: 40 °C, at an operating temperature of typically 40 °C, the display is switched off min. 40 °C max. 70 °C Allitude 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 / programming / header Programming language — LAD — FBD — FSTL — SCL — GRAPH Yes — GRAPH Yes Know-how protection • User program protection/password protection • Password for display • Protection level: Write protection • Password for display • Protection level: Write protection • Protection level: Write protection • Protection level: Write protection • Protection level: Complete protection • Protectio	Ambient conditions	
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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. • max. 70 °C Altitude during operation relating to sea level • Installation altitude above sea level, max. configuration / header configuration / programming / header Programming language — LAD — FBD — Yes; incl. failsafe — FBD — Yes; incl. failsafe — STL — SCL — GRAPH — Yes Know-how protection • User program protection/password protection • Block protection • Block protection • Password for display • Protection level: Write protection • Protection level: Read/write protection • Protection level: Read/write protection • Protection level: Complete protection • Protection level: Complete protection • Iower limit • Lower limit	 vertical installation, min. 	-25 °C; No condensation
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 min. max. 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 FBD Yes; incl. failsafe STL Yes SCL GRAPH Yes Copy protection Password for display Protection level: Write protection Protection level: Write protection Protection level: Write protection Protection level: Write protection Prospramming / cycle time monitoring / header lower limit adjustable maximum cycle time pimenstons 	, <u> </u>	display is switched off
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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
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Installation altitude above sea level, max. Installation altitudes > 2 000 m, see manual Installation altitudes > 2 00	Altitude during operation relating to sea level	
configuration / header configuration / programming / header Programming language — LAD Yes; incl. failsafe — FBD Yes; incl. failsafe — STL Yes — SCL Yes — GRAPH Yes Know-how protection • User program protection/password protection Yes • Block protection • Password for display Yes • Protection level: Write protection • Protection level:		5 000 m; Restrictions for installation altitudes > 2 000 m, see manual
configuration / programming / header Programming language — LAD Yes; incl. failsafe — FBD Yes; incl. failsafe — STL Yes — SCL Yes — GRAPH Yes Know-how protection • User program protection/password protection Yes • Copy protection Yes • Block protection • Password for display Yes • Protection level: Write protection • Protection level: Complete protection • Passumming / cycle time monitoring / header • lower limit • upper limit • upper limit	configuration / header	
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- FBD - STL - SCL - GRAPH Yes Know-how protection User program protection/password protection Copy protection Block protection Password for display Protection level: Write protection Protection level: Complete protection Programming / cycle time monitoring / header I lower limit Adjustable minimum cycle time Dimensions	· · · · · · · · · · · · · · · · · · ·	Vestinal failsafe
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- SCL - GRAPH Yes Know-how protection User program protection/password protection Copy protection Block protection Password for display Protection level: Write protection Protection level: Write protection Protection level: Read/write protection Protection level: Write protection Protection level: Complete protection Protection level: Complete protection Programming / cycle time monitoring / header I lower limit Upper limit Adjustable maximum cycle time Dimensions		
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Block protection Access protection Password for display Protection level: Write protection Protection level: Read/write protection Protection level: Write protection Protection level: Write protection Protection level: Write protection Protection level: Write protection for Failsafe Protection level: Complete protection Programming / cycle time monitoring / header I lower limit Upper limit Adjustable maximum cycle time Dimensions	 User program protection/password protection 	Yes
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upper limit adjustable maximum cycle time Dimensions		adjustable minimum cycle time
Dimensions		
	· ·	аијиъталне тпахитити сусте ште
Width 35 mm		
	Width	35 mm

Height	147 mm
Depth	129 mm
Weights	
Weight, approx.	405 g

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