Data sheet 6ES7517-3FP00-0AB0



SIMATIC S7-1500F, CPU 1517F-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: PROFINET RT, 3rd interface: PROFIBUS, 2 ns bit performance, SIMATIC Memory Card required

General information	
Product type designation	CPU 1517F-3PN/DP
HW functional status	FS10
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); V13 Update 3 (FW V1.6) 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
Inrush current, max.	1.9 A; Rated value
l²t	0.02 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 wibyte
Plug-in (SIMATIC Memory Card), max.	32 Gbyte
Backup	32 Obyte
maintenance-free	Yes
CPU processing times	165
	0.77
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 wibyte, For DBs with absolute addressing, the max. size is 64 KB
	0 65 535
Number rangeSize, max.	1 Mbyte
• Size, max.	i wibyto
	0 65 535
Number range Size, max	
• Size, max.	1 Mbyte
OB	1 Mbyto
Size, max. Number of free evels OPs	1 Mbyte
Number of free cycle OBs Number of time clarm 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	
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
• Size, max.	16 kbyte
♥ SIZE, IIIAX.	10 KDYLE

Number of clock memories	8; 8 clock memory bit, grouped into one clock memory byte
Data blocks	o, o clock memory bit, grouped into one clock memory byte
Retentivity adjustable	Yes
Retentivity adjustable Retentivity preset	No
Local data	
per priority class, max.	64 kbyte; max. 16 KB per block
Address area	of hote, max. To his per block
Number of IO modules	16 384; max. number of modules / submodules
I/O address area	10 004, 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	and the state of t
— Inputs (volume)	32 kbyte; Max. 32 KB via X1; max. 8 KB via X2 or X3
— Outputs (volume)	32 kbyte; Max. 32 KB via X1; max. 8 KB via X2 or X3
per CM/CP	
— Inputs (volume)	8 kbyte
— Outputs (volume)	8 kbyte
Subprocess images	
Number of subprocess images, max.	32
Hardware configuration	
Number of distributed IO systems	64; A distributed I/O system is characterized not only by the 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	
Modules per rack, max.	32; CPU + 31 modules
Number of lines, max. PIP ONE	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 Claste and alreading	16
Clock synchronization	V
• supported	Yes
• to DP, master	Yes
• in AS, master	Yes
• in AS, slave	Yes
on Ethernet via NTP Interfeces	Yes
Interfaces Number of PROFINET interfaces	2
Number of PROFINET interfaces	2
Number of PROFIBUS interfaces 1. Interface	1
Interface types	Voc. V4
RJ 45 (Ethernet) Number of parts	Yes; X1
Number of ports integrated switch	2 Vos
integrated switch Protocols	Yes
Protocols • IP protocol	Vec: IDv/
IP protocolPROFINET IO Controller	Yes; IPv4 Yes
PROFINET IO Controller PROFINET IO Device	Yes
▼ FINOLINE FIO DEVICE	169

• SIMATIC communication Yes • Open IE communication Yes; Optionally also encrypted Web server Yes Media redundancy Yes; MRP Automanager according to IEC 62439-2 Edition 2.0 PROFINET IO Controller Services - PG/OP communication Yes - Isochronous mode Yes - Direct data exchange Yes; Requirement: IRT and isochronous mode (MRPD optional) Yes - 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. 64 512 - Number of connectable IO Devices for RT, max. - 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 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 2 ms to 32 ms - for send cycle of 2 ms - for send cycle of 4 ms 4 ms to 64 ms - With IRT and parameterization of "odd" send cycles Update time = set "odd" send clock (any multiple of 125 μ s: 375 μ s, 625 μ s ... 3 875 µs) Update time for RT — for send cycle of 250 µs 250 µs to 128 ms 500 µs to 256 ms — for send cycle of 500 µs - 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 — PROFlenergy Yes; per user program - Shared device Yes - Number of IO Controllers with shared device, max. activation/deactivation of I-devices Yes; per user program - Asset management record Yes; per user program Interface types • RJ 45 (Ethernet) Yes: X2 Number of ports • 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 Nο **PROFINET IO Controller** Services

DC/OD as remunication	Vee
— PG/OP communication	Yes
— Isochronous mode	No 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, 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
— Updating times	The minimum value of the update time also depends on communication share set for PROFINET IO, on the number of IO devices, and on the quantity of configured user data
Update time for RT	ooringalou door data
— for send cycle of 1 ms	1 ms to 512 ms
PROFINET IO Device	
Services	
— PG/OP communication	Yes
— Isochronous mode	No
— IRT	No
— PROFlenergy	Yes; per user program
Prioritized startup	No
— 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
3. Interface	
Interface types	V V2
• RS 485	Yes; X3
Number of ports	1
Protocols	V
PROFIBUS DP master	Yes
PRUFIBUS DP SIAVE	No
PROFIBUS DP slave	
SIMATIC communication	Yes
SIMATIC communication PROFIBUS DP master	Yes
SIMATIC communication PROFIBUS DP master Number of connections, max.	Yes 48; for the integrated PROFIBUS DP interface
SIMATIC communication PROFIBUS DP master	Yes
SIMATIC communication PROFIBUS DP master Number of connections, max.	Yes 48; for the integrated PROFIBUS DP interface 125; In total, up to 1 000 distributed I/O devices can be connected via
 SIMATIC communication PROFIBUS DP master Number of connections, max. Number of DP slaves, max. 	Yes 48; for the integrated PROFIBUS DP interface 125; In total, up to 1 000 distributed I/O devices can be connected via
SIMATIC communication PROFIBUS DP master Number of connections, max. Number of DP slaves, max. Services	Yes 48; for the integrated PROFIBUS DP interface 125; In total, up to 1 000 distributed I/O devices can be connected via PROFIBUS or PROFINET
SIMATIC communication PROFIBUS DP master Number of connections, max. Number of DP slaves, max. Services — PG/OP communication	Yes 48; for the integrated PROFIBUS DP interface 125; In total, up to 1 000 distributed I/O devices can be connected via PROFIBUS or PROFINET Yes
SIMATIC communication PROFIBUS DP master Number of connections, max. Number of DP slaves, max. Services — PG/OP communication — Equidistance	Yes 48; for the integrated PROFIBUS DP interface 125; In total, up to 1 000 distributed I/O devices can be connected via PROFIBUS or PROFINET Yes Yes
SIMATIC communication PROFIBUS DP master Number of connections, max. Number of DP slaves, max. Services — PG/OP communication — Equidistance — Isochronous mode — Activation/deactivation of DP slaves	Yes 48; for the integrated PROFIBUS DP interface 125; In total, up to 1 000 distributed I/O devices can be connected via PROFIBUS or PROFINET Yes Yes Yes
SIMATIC communication PROFIBUS DP master Number of connections, max. Number of DP slaves, max. Services — PG/OP communication — Equidistance — Isochronous mode — Activation/deactivation of DP slaves Interface types	Yes 48; for the integrated PROFIBUS DP interface 125; In total, up to 1 000 distributed I/O devices can be connected via PROFIBUS or PROFINET Yes Yes Yes
SIMATIC communication PROFIBUS DP master Number of connections, max. Number of DP slaves, max. Services — PG/OP communication — Equidistance — Isochronous mode — Activation/deactivation of DP slaves Interface types RJ 45 (Ethernet)	Yes 48; for the integrated PROFIBUS DP interface 125; In total, up to 1 000 distributed I/O devices can be connected via PROFIBUS or PROFINET Yes Yes Yes Yes
SIMATIC communication PROFIBUS DP master Number of connections, max. Number of DP slaves, max. Services — PG/OP communication — Equidistance — Isochronous mode — Activation/deactivation of DP slaves Interface types RJ 45 (Ethernet) 100 Mbps	Yes 48; for the integrated PROFIBUS DP interface 125; In total, up to 1 000 distributed I/O devices can be connected via PROFIBUS or PROFINET Yes Yes Yes Yes
SIMATIC communication PROFIBUS DP master Number of connections, max. Number of DP slaves, max. Services — PG/OP communication — Equidistance — Isochronous mode — Activation/deactivation of DP slaves Interface types RJ 45 (Ethernet) 100 Mbps Autonegotiation	Yes 48; for the integrated PROFIBUS DP interface 125; In total, up to 1 000 distributed I/O devices can be connected via PROFIBUS or PROFINET Yes Yes Yes Yes Yes
SIMATIC communication PROFIBUS DP master Number of connections, max. Number of DP slaves, max. Services — PG/OP communication — Equidistance — Isochronous mode — Activation/deactivation of DP slaves Interface types RJ 45 (Ethernet) 100 Mbps Autonegotiation Autocrossing	Yes 48; for the integrated PROFIBUS DP interface 125; In total, up to 1 000 distributed I/O devices can be connected via PROFIBUS or PROFINET Yes Yes Yes Yes Yes Yes Yes
SIMATIC communication PROFIBUS DP master Number of connections, max. Number of DP slaves, max. Services — PG/OP communication — Equidistance — Isochronous mode — Activation/deactivation of DP slaves Interface types RJ 45 (Ethernet) 100 Mbps Autonegotiation Autocrossing Industrial Ethernet status LED	Yes 48; for the integrated PROFIBUS DP interface 125; In total, up to 1 000 distributed I/O devices can be connected via PROFIBUS or PROFINET Yes Yes Yes Yes Yes
SIMATIC communication PROFIBUS DP master Number of connections, max. Number of DP slaves, max. Services — PG/OP communication — Equidistance — Isochronous mode — Activation/deactivation of DP slaves Interface types RJ 45 (Ethernet) 100 Mbps Autonegotiation Autocrossing	Yes 48; for the integrated PROFIBUS DP interface 125; In total, up to 1 000 distributed I/O devices can be connected via PROFIBUS or PROFINET Yes Yes Yes Yes Yes Yes Yes
SIMATIC communication PROFIBUS DP master Number of connections, max. Number of DP slaves, max. Services — PG/OP communication — Equidistance — Isochronous mode — Activation/deactivation of DP slaves Interface types RJ 45 (Ethernet) 100 Mbps Autonegotiation Autocrossing Industrial Ethernet status LED RS 485 Transmission rate, max.	Yes 48; for the integrated PROFIBUS DP interface 125; In total, up to 1 000 distributed I/O devices can be connected via PROFIBUS or PROFINET Yes Yes Yes Yes Yes Yes Yes Yes Yes Ye
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SIMATIC communication PROFIBUS DP master Number of connections, max. Number of DP slaves, max. Services — PG/OP communication — Equidistance — Isochronous mode — Activation/deactivation of DP slaves Interface types RJ 45 (Ethernet) 100 Mbps Autonegotiation Autocrossing Industrial Ethernet status LED RS 485 Transmission rate, max. Protocols PROFIsafe Number of connections	Yes 48; for the integrated PROFIBUS DP interface 125; In total, up to 1 000 distributed I/O devices can be connected via PROFIBUS or PROFINET Yes Yes Yes Yes Yes Yes Yes Yes Yes Ye
SIMATIC communication PROFIBUS DP master Number of connections, max. Number of DP slaves, max. Services — PG/OP communication — Equidistance — Isochronous mode — Activation/deactivation of DP slaves 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 48; for the integrated PROFIBUS DP interface 125; In total, up to 1 000 distributed I/O devices can be connected via PROFIBUS or PROFINET Yes Yes Yes Yes Yes Yes Yes Yes Yes Ye
SIMATIC communication PROFIBUS DP master Number of connections, max. Number of DP slaves, max. Services — PG/OP communication — Equidistance — Isochronous mode — Activation/deactivation of DP slaves Interface types RJ 45 (Ethernet) 100 Mbps Autonegotiation Autocrossing Industrial Ethernet status LED RS 485 Transmission rate, max. Protocols PROFIsafe Number of connections, max. Number of connections reserved for ES/HMI/web	Yes 48; for the integrated PROFIBUS DP interface 125; In total, up to 1 000 distributed I/O devices can be connected via PROFIBUS or PROFINET Yes Yes Yes Yes Yes Yes Yes Yes Yes Ye
SIMATIC communication PROFIBUS DP master Number of connections, max. Number of DP slaves, max. Services — PG/OP communication — Equidistance — Isochronous mode — Activation/deactivation of DP slaves 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 reserved for ES/HMI/web Number of connections via integrated interfaces	Yes 48; for the integrated PROFIBUS DP interface 125; In total, up to 1 000 distributed I/O devices can be connected via PROFIBUS or PROFINET Yes Yes Yes Yes Yes Yes Yes Yes Yes Ye
SIMATIC communication PROFIBUS DP master Number of connections, max. Number of DP slaves, max. Services — PG/OP communication — Equidistance — Isochronous mode — Activation/deactivation of DP slaves Interface types RJ 45 (Ethernet) 100 Mbps Autonegotiation Autocrossing Industrial Ethernet status LED RS 485 Transmission rate, max. Protocols PROFIsafe Number of connections, max. Number of connections reserved for ES/HMI/web	Yes 48; for the integrated PROFIBUS DP interface 125; In total, up to 1 000 distributed I/O devices can be connected via PROFIBUS or PROFINET Yes Yes Yes Yes Yes Yes Yes Yes Yes Ye

	Yes
H-Sync forwarding Media redundancy	
— Media redundancy	only via 1st interface (X1)
— MRP	Yes; as MRP redundancy manager and/or MRP client
MRP interconnection, supported	Yes; as ring node according to IEC 62439-2 Edition 2.0
— 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	
• 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
·	64 kbyte
— Data length, max.	
• 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
OPC UA	
Runtime license required	Yes
Runtime license required OPC UA Client	
OPC UA Client	Yes
•	
OPC UA Client — Application authentication	Yes Yes Available security policies: None, Basic128Rsa15, Basic256Rsa15, Basic256Sha256
 OPC UA Client Application authentication Security policies User authentication 	Yes Yes Available security policies: None, Basic128Rsa15, Basic256Rsa15,
 OPC UA Client — Application authentication — Security policies 	Yes Yes Available security policies: None, Basic128Rsa15, Basic256Rsa15, Basic256Sha256 "anonymous" or by user name & password
 OPC UA Client Application authentication Security policies User authentication Number of connections, max. Number of nodes of the client interfaces, recommended max. Number of elements for one call of OPC_UA_NodeGetHandleList/OPC_UA_ReadList/OPC_I 	Yes Yes Available security policies: None, Basic128Rsa15, Basic256Rsa15, Basic256Sha256 "anonymous" or by user name & password 40 5 000
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 OPC UA Client Application authentication Security policies User authentication Number of connections, max. Number of nodes of the client interfaces, recommended max. Number of elements for one call of OPC_UA_NodeGetHandleList/OPC_UA_ReadList/OPC_I 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. 	Yes Yes Available security policies: None, Basic128Rsa15, Basic256Rsa15, Basic256Sha256 "anonymous" or by user name & password 40 5 000 300 20 100 1
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Number of sessions, max.	64
Number of sessions, max. Number of accessible variables, max.	200 000
Number of accessible variables, max. Number of registerable nodes, max.	50 000
Number of registerable flodes, max. Number of subscriptions per session, max.	20
— Number of subscriptions per session, max. — Sampling interval, min.	10 ms
— Publishing interval, min.	10 ms
Number of server methods, max.	100
Number of inputs/outputs per server method, max.	20
Number of monitored items, recommended max.	10 000; for 1 s sampling interval and 1 s send interval
 Number of server interfaces, max. 	10 of each "Server interfaces" / "Companion specification" type and 20 of the type "Reference namespace"
 Number of nodes for user-defined server interfaces, 	30 000
max.	33 333
Further protocols	
• MODBUS	Yes; MODBUS TCP
Isochronous mode	
Equidistance	Yes
S7 message functions	
Number of login stations for message functions, max.	64
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 loadable program messages in RUN, max.	5 000
Number of simultaneously active program alarms	
Number of program alarms	2 000
Number of alarms for system diagnostics	1 000
 Number of alarms for motion technology objects 	480
Test commissioning functions	
Joint commission (Team Engineering)	Yes; Parallel online access possible for up to 10 engineering systems
Status block	Yes; Up to 16 simultaneously (in total across all ES clients)
Single step	No
Number of breakpoints	20
Status/control	20
Status/control variable	Yes; without fail-safe
Variables	inputs/outputs, bit memories, DBs, peripheral I/Os (without fail-safe), times,
• variables	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
•	3 200
Number of entries, max. of which powerful proof.	
— of which powerfail-proof	1 000
Traces	Or line to E40 I/D of clote may transmissible
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	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
Required Motion Control resources	
⇒ is connect promonal California (ESCHILES	
— per speed-controlled axis	40

— per potentinong asis — per external encloder — per color cam — per controlor — per controlor — per com track — per probe • Positioning axis — Number of positioning axes at motion control cycle of 4 m3 cytical value) — Number of positioning axes at motion control cycle of 6 ms (tytical value) — Number of positioning axes at motion control cycle of 6 ms (tytical value) — Number of positioning axes at motion control cycle of 6 ms (tytical value) — Number of positioning axes at motion control cycle of 6 ms (tytical value) — Number of positioning axes at motion control cycle of 6 ms (tytical value) — Number of positioning axes at motion control cycle of 6 ms (tytical value) — Number of 10 ms (tytical value) — Number of	and the second s	00
— per cutornal encoder — per output cann — per prube - per output cann — per prube - Positioning axis — Number of positioning axis at motion control cyclo of en as (Special value) — Number of positioning axis at motion control cyclo of en as (Special value) — Number of positioning axis at motion control cyclo of en as (Special value) — Number of positioning axis at motion control cyclo of en as (Special value) — Number of positioning axis at motion control cyclo of en as (Special value) — Number of positioning axis — Number of positioning axis — PID_Compact — PID_Comp	— per positioning axis	80
per culput cam per cutout per probe Positioning axes at motion control cycle of Arms (tyystal violub) Number of positioning axes at motion control cycle of Arms (tyystal violub) Number of positioning axes at motion control cycle of Arms (tyystal violub) Number of positioning axes at motion control cycle of Arms (tyystal violub) Number of positioning axes at motion control cycle of Arms (tyystal violub) Number of positioning axes at motion control cycle of Arms (tyystal violub) Number of positioning axes at motion control cycle of Arms (tyystal violub) Number of positioning axes at motion control cycle of Arms (tyystal violub) Number of positioning axes at motion control cycle of Arms (tyystal violub) PID, Compact PID, Compact PID, Compact PID, Compact PID, Temp Yes, PID controller with integrated optimization for violves PID, Sibilap PID, Temp Yes, PID controller with integrated optimization for violves PID, Temp PID, Temp Yes, PID, Compact PID, Temp Yes, PID, Compact PID, Temp Yes, PID, Compact PID, Temp PID, Temp Yes, PID, Compact PID, Temp PID, Temp Yes, PID, Compact PID, Temp PID, Temp PID, Temp PID, Temp Yes, PID, Compact PID, Temp P		
per probe Postioning ass Number of positioning asses at motion control cycle Number of graph of the cycle Number of positioning asses at motion control cycle of 8 ms (typical value) Number of 8 ms	·	
- Per probe - Northwher of positioning axes at motion control cycle of 4 me (yicyclet value) - Number of positioning axes at motion control cycle of 4 me (yicyclet value) - Number of positioning axes at motion control cycle of 8 me (yicyclet value) - PID_Compact - PID_Compact - PID_Compact - PID_Compact - PID_Step - Yes, PID controller with integrated optimization for valves - PID_Compact - PID_Step - Yes, PID controller with integrated optimization for valves - PID_Counting and measuring - Yes, PID controller with integrated optimization for temperature - PID_Counting and measuring - Yes, PID_Compact - Yes, PID_Compact - Yes, PID_Compact - Yes, PID_Compact - PID_Co		
Positioning axis Numbers of positioning axes at motion control cycle of 4 ms (typical value) Number of positioning axes at motion control cycle of 8 ms (typical value) Phumber of positioning axes at motion control cycle of 8 ms (typical value) Ves. Universal PHD controller with integrated optimization PHD_Omnsat Yes, PHD controller with integrated optimization or values PHD—Tem Ves. PHD controller with integrated optimization for temperature PHD_Ostrollar and measuring High-spead counter Yes Standards, approvats, contributes Standards, approvats, contributes PLB Standards, approvats, contributes Standards, approvats, contributes PLB Standards, approvats, contributes Standards, approvats, contributes Non-contributes Non-contributes Non-contributes Non-contributes PLB Standards, approvats, contributes Non-contributes Non-cont	— per cam track	
Number of postioning axes at motion control cycle of a few flypcial value) Number of postioning axes at motion control cycle of 8 ms (typical value) Number of postioning axes at motion control cycle of 8 ms (typical value) PID_Compact PID_	— per probe	40
of 4 ms (typical value) - Number of positioning axes at motion control cycle of 8 ms (typical value) Controler • PID_Compact • PID_Temp • Yes; PID controller with integrated optimization for valves • PID-Temp • Yes; PID controller with integrated optimization for valves • PID-Temp • High-speed counter Standards, approvals, conflictes Highest safety class achievable in safety mode • Performance level according to ISO 1348-01 • SI, a.c. to IEC 81508 • Pideability of failure (for service life of 20 years and repair time of 100 hours) - Low demand mode: PPDarg in accordance with SI, 3 - High demand/continuous mode: PPH in accordance with 5I, 3 - High demandcontinuous mode: PP	 Positioning axis 	
of 8 ms (typical value) Of 8 ms (typical value) PID, Compact PID, Compact PID, Silsp Yes, PID controller with integrated optimization for valves PID, Silsp 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 temperature Conting and measuring High speed counter Pede Counter Pede Standards, approvals, certificates Highest safety class achievable in safety mode Performance level according to ISO 13849-1 Sils, 3 Probability of failure for service life of 20 years and repair time of 100 hours) —Low demand mode: PFDavg in accordance with Sils, 3 —High demandicontinuous mode: PFH in accordance with Sils, 3 Ambient conditions Ambient and a continuous mode: PFH in accordance with Sils, 3 Ambient conditions Ambient semperature during operation • horizontal installation, min. • or "C. • vertical installation, min. • vertical installation, max. display is switched off • vertical installation, max. display is switched off Ambient temperature during storagetransportation • min. • vertical installation, max. display is switched off • max. 70 "C Altitude during operation relating to sea level • installation altitude above sea level, max. 70 "C Altitude during operation relating to sea level • installation altitude above sea level, max. 5000 m; Restrictions for installation altitudes > 2 000 m, see manual configuration / programming / header Programming Ingruage —LAD —FBD —SCL —SCL —SCL —GRAPH Yes Access protection • Ves Copy protection • Ves Protection level: Write protection Pess Protection level: Write protection Pess Protection level: Write protection Pess Order time adjustable minimum cycle time adjustable minimum cycle time oliver limit • upper limit • upper limit The minimum of the minimum cycle time adjustable minimum cycle time adjustable minimum cycle time		70
PID_Compact PID_Compact PID_Step PID_Step PYes_PID_controller with integrated optimization PYes_PID_controller with integrated optimization for valves PID_Step PYes_PID_controller with integrated optimization for temperature Performance level according to 150 13249-1 PID_Step Probability of failure for secretificates Highest safety class achievable in safety mode Performance level according to 150 13249-1 PID_St. acc. to 1EC 61058 Probability of failure for secretic life of 20 years and repart time of 100 hours) - Low demand mode: PFDang in accordance with SIL 3 - High demandicontinuous mode: PFH in accordance with SIL 3 - High demandicontinuous mode: PFH in accordance with SIL 3 Ambient conditions Ambient conditions Ambient conditions - Noticontal installation, min Noticontal i		128
PID_Silep PID_Temp Yes; PID controller with integrated optimization for valves PID_Temp Ves; PID controller with integrated optimization for tables Piper Piper Pyes Standards, approvis, contributes High-speed counter Performance level according to ISO 13849-1 PILE Standards, approvis, contributes High-speed counter Performance level according to ISO 13849-1 PILE Standards, approvis, contributes Piper Piper Piper Piper In accordance with SiL3 Probability of failure (for service life of 20 years and repair time of 100 hours) —Low demand moder PEPBuy in accordance with SiL3 — High demand/continuous mode: PFH in accordance with SiL3 — High demand/continuous mode: PFH in accordance with SiL3 — High demand/continuous mode: PFH in accordance with SiL3 — High demand/continuous mode: PFH in accordance with SiL3 — Vertical installation, max. Po "C Porticular installation, max. Po "C Porticular installation, max. Po "C Porticular installation, max. Po "C Ambient conditions Ambient temperature during storage-transportation Pine wertical installation, max. Po "C Ambient temperature during storage-transportation Pine max. Po "C Po "C Ambient temperature of typically 40 "C, the display is switched off Pine during the maximum of t	Controller	
PID-Temp Counting and measuring	PID_Compact	Yes; Universal PID controller with integrated optimization
Counting and measuring • High-speed counter Standards, approvals, certificates Highest safety class achievable in safety mode • Performance level according to ISO 3349-1 • St.L. acc. to IEC 61508 Probability of failure (for service life of 20 years and repair time of 100 hours) — Low demand mode: PFDavg in accordance with SIL3 — High demand/confinuous mode: PFH in accordance with SIL3 — High demand/confinuous mode: PFH in accordance with SIL3 Ambient conditions Ambient temperature during operation • horizontal installation, max. • horizontal installation, max. • vertical installation of timulation of timulation of typically 40 °C, the display is switched off • min. • min. • min. • 40 °C, Display- 40 °C, at an operating temperature of typically 40 °C, the display is switched off • min. • min. • min. • 40 °C • Display- 40 °C, at an operating temperature of typically 40 °C, the display is switched off • min. • min. • min. • min. • 40 °C • Display- 40 °C, at an operating temperature of typically 40 °C, the display is switched off • min. • min	PID_3Step	Yes; PID controller with integrated optimization for valves
High-speed counter Yes	PID-Temp	Yes; PID controller with integrated optimization for temperature
Standards, approvals, certificates Highest safety dass achievable in safety mode Performance level according to ISO 13849-1 PLE SIL acc. to IEC 6 1508 SIL 3 Probability of failure (for service life of 20 years and repair time of 100 hours) — Low demand mode: PFDarg in accordance with SIL3 — High demand/continuous mode: PFH in accordance with SIL3 — High demand/continuous mode: PFH in accordance with SIL3 — High demand/continuous mode: PFH in accordance with SIL3 — High demand/continuous mode: PFH in accordance with SIL3 — High demand/continuous mode: PFH in accordance with SIL3 — Ambient conditions — Ambient temperature during operation — O °C — Ambient temperature during storage/transportation — Winc. — Ambient temperature during storage/transportation — Ambient temperature of typically 50 °C, the display — Ambient temperature during storage/transportation — Ambient temperature of typically 50 °C, the display — Ambient temperature of typically 50 °C, the display — Ambient temperature of typically 50 °C, the display — Ambient temperature of typically 50 °C, the display — Ambient temperature of typically 50 °C, the display — Ambient temperatur	Counting and measuring	
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Performance level according to ISO 13849-1 Sit. acc. to IEC 61508 S	Standards, approvals, certificates	
Performance level according to ISO 13849-1 Sit. acc. to IEC 61508 S	Highest safety class achievable in safety mode	
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Probability of failure (for service life of 20 years and repair time of 100 hours) - Low demand mode. PFDavg in accordance with SIL3 - High demand/continuous mode: PFH in accordance with SIL3 Ambient conditions Ambient conditions Ambient conditions Ambient conditions Ambient lemperature during operation • horizontal installation, min. • horizontal installation, max. • horizontal installation, max. • vertical installation and perature of typically 40 °C, the display of C, blaisafe • ves; incl. failsafe • ses • SCL • yes • CLAD • Yes; incl. failsafe • yes • SCL • Yes • Copy protection • Ves • Copy protection • Ves • Protection level: Virtle protection • Yes • lower limit • upper limit • upper limit • upper limit • vertical	-	
- Low demand mode: PFDavg in accordance with SiL3 - High demand/continuous mode: PFH in accordance with SiL3 - High demand/continuous mode: PFH in accordance with SiL3 Ambient conditions Ambient temperature during operation • horizontal installation, min. • horizontal installation, min. • vertical installation, min. • vertical installation, max. • vertical installation, min. • vertical installation, min. • vertical installation altitudes vertically in switched off • ves, incl. fallsafe • ves, incl. fa		
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Ambient temperature during operation • horizontal installation, min. • horizontal installation, min. • horizontal installation, min. • 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 / programming / header Programming language — LAD — FBD — Yes; incl. failsafe — FBD — STL — SCL — GRAPH — Yes Know-how protection • User program protection/password protection • User program protection/password protection • Disor protection • Protection level: Write protection • Passavord for display • Protection level: Read/write protection • Protection level: Read/write protection • Protection level: Read/write protection • Protection level: Complete protection • Protect		< 1.00E-09
 Norizontal installation, min. Norizontal installation, max. 60 °C, Display: 50 °C, at an operating temperature of typically 50 °C, the display is switched off vertical installation, min. 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. 5000 m; Restrictions for installation altitudes > 2000 m, see manual configuration / programming / header Programming language — LAD — FBD — FSTL — SCL — GRAPH Yes Know-how protection • User program protection/password protection • User program protection/password protection • Block protection • Password for display • Protection level: Write protection • Protection level: Read/write protection • Protection level: Read/write protection • Protection level: Complete protection • Yes • Lower limit • Lower limit	Ambient conditions	
 horizontal installation, max. 60 °C; Display: 50 °C, at an operating temperature of typically 50 °C, the display is switched off vertical installation, min. 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 / header configuration / programming / header Programming language — LAD — FBD — FSTL — SCL — GRAPH Yes Know-how protection • User program protection/password protection • User program protection/password protection • Block protection • Protection level: Complete protection • Protection level: Complete protection • Protection level: Read/write protection • Protection level: Read/write protection • Programming / cycle time monitoring / header • lower limit • upper limit • Dimensions Width Urden limit in the protection of the protectio	Ambient temperature during operation	
evertical installation, min. • vertical installation, max. • vertical installation altitude during storage/transportation • min. • max. • vertical installation storage/transportation • min. • vertical installation altitude above seal evel. • Installation altitude above seal evel, max. • 5 000 m; Restrictions for installation altitudes > 2 000 m, see manual configuration / programming / header Programming language • LAD • responsible to the vertical installation altitudes > 2 000 m, see manual configuration / programming / header Programming language • LAD • Yes; incl. failsafe • FBD • Yes; incl. failsafe • STL • yes • SCL • Yes • Cap Yes Know-how protection • User program protection/password protection • User program protection/password protection • Ves • Copy protection • Password for display • Protection level: Virtle protection • Protection level: Writle protection • Protection level: Read/writle protection • Protection level: Read/writle protection • Protection level: Complete protection • Protection level: Demplete protection • P	horizontal installation, min.	0°C
evertical installation, min. • vertical installation, max. • vertical installation altitude during storage/transportation • min. • max. • vertical installation storage/transportation • min. • vertical installation altitude above seal evel. • Installation altitude above seal evel, max. • 5 000 m; Restrictions for installation altitudes > 2 000 m, see manual configuration / programming / header Programming language • LAD • responsible to the vertical installation altitudes > 2 000 m, see manual configuration / programming / header Programming language • LAD • Yes; incl. failsafe • FBD • Yes; incl. failsafe • STL • yes • SCL • Yes • Cap Yes Know-how protection • User program protection/password protection • User program protection/password protection • Ves • Copy protection • Password for display • Protection level: Virtle protection • Protection level: Writle protection • Protection level: Read/writle protection • Protection level: Read/writle protection • Protection level: Complete protection • Protection level: Demplete protection • P	 horizontal installation, max. 	60 °C; Display: 50 °C, at an operating temperature of typically 50 °C, the
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 Programming language - LAD 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: Write protection • Protection level: Read/write protection • Protection level: Complete protection • Protection level: Complete protection • Protection level: Complete protection • Programming / cycle time monitoring / header • lower limit • upper limit • upper limit • Dimensions Width 175 mm	vertical installation, min.	
display is switched off Ambient temperature during storage/transportation ● min.		
 min. 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: Read/write protection Protection level: Read/write protection Protection level: Complete protection Programming / eyele time Uower limit adjustable minimum cycle time Obmensions Width 175 mm 		
■ 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	Ambient temperature during storage/transportation	
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
Installation altitude above sea level, max. Installation altitude above sea manual Installation altitudes > 2 000 m, see manual Installation altitudes > 2 000 m,		70 °C
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 Yes • Block protection • Password for display Yes • Protection level: Write protection • Protection level: Read/write protection • Protection level: Complete protection • Protection level: Complete protection • Programming / cycle time monitoring / header • lower limit • upper limit • upper limit Dimensions Width 175 mm	Altitude during operation relating to sea level	
configuration / programming / header Programming language — LAD — FBD — STL — STL — SCL — GRAPH Know-how protection • User program protection/password protection • Block protection • Password for display • Protection level: Write protection • Protection level: Write protection • Protection level: Complete protection • Protection level: Complete protection • Power limit • upper limit • upper limit • User programming / beader • Joseph Standard and for Failsafe • Protection level: Complete protection • Joseph Standard and for Failsafe • Protection level: Complete protection • Joseph Standard and for Failsafe • Protection level: Complete protection • Joseph Standard and for Failsafe • Joseph Standard and	 Installation altitude above sea level, max. 	5 000 m; Restrictions for installation altitudes > 2 000 m, see manual
Programming language — LAD — FBD — Yes; incl. failsafe — STL — SCL — SCL — GRAPH — Yes Know-how protection • User program protection/password protection • User program protection • Block protection • Password for display • Protection level: Write protection • Protection level: Read/write protection • Protection level: Complete protection • Protection level: Complete protection • Protection level: Complete protection • Protection level:	configuration / header	
- 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 • Block protection • Password for display Yes • Protection level: Write protection • Protection level: Read/write protection • Protection level: Complete protection • Protection level: Madder • lower limit • upper limit • upper limit Dimensions Width 175 mm	configuration / programming / header	
- 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: Write protection Protection level: Complete protection Protection level: Complete protection Programming / cycle time monitoring / header I lower limit Dimensions Width Yes Yes Yes Yes Yes Yes Yes Ye	Programming language	
- 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: Write protection • Protection level: Complete protection • Protection level: Mrite protection • Protection level: Write prote	— LAD	Yes; incl. failsafe
- 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: Write protection • Protection level: Complete protection • Protection level: Complete protection • Protection level: Complete protection • Protection level: Mrite protection • Protection level: Mrite protection • Protection level: Mrite protection • Protection level: Complete protection • Protection level: Mrite protection • Protection level: Mri	— FBD	
	— STL	Yes
Know-how protection User program protection/password protection Copy protection Block protection Password for display Protection level: Write protection Protection level: Read/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 Width 175 mm	— SCL	Yes
Know-how protection User program protection/password protection Copy protection Block protection Password for display Protection level: Write protection Protection level: Read/write protection Protection level: Complete protection Protection level: Complete protection Programming / cycle time monitoring / header I lower limit Upper limit Protection Protection Protection level: Complete protection Programming / cycle time monitoring / header Adjustable minimum cycle time Dimensions Width Protection Pr	— GRAPH	Yes
User program protection/password protection Copy protection Block protection Password for display Protection level: Write protection Protection level: Read/write protection Protection level: Complete protection Programming / cycle time monitoring / header I lower limit Upper limit Dimensions Width Yes Yes Yes Yes Protection both for Standard and for Failsafe Yes Yes Yes Adjustable minimum cycle time Adjustable maximum cycle time Adjustable maximum cycle time Dimensions Width 175 mm	Know-how protection	
Copy protection Block protection Yes Access protection Password for display Protection level: Write protection Protection level: Read/write protection Protection level: Complete protection Programming / cycle time monitoring / header I lower limit Upper limit Dimensions Yes Yes Yes Yes Yes Yes Yes Y	·	Yes
Block protection Access protection Password for display Protection level: Write protection Protection level: Read/write protection Protection level: Complete protection Protection level: Complete protection Programming / cycle time monitoring / header I lower limit Dimensions Yes Yes Yes Yes Yes Yes Yes Y		
Access protection Password for display Protection level: Write protection Protection level: Read/write protection Protection level: Read/write protection Protection level: Complete protection Programming / cycle time monitoring / header I lower limit Protection level: Adjustable minimum cycle time Protection level: Complete protection Programming / cycle time monitoring / header Adjustable minimum cycle time Protection level: Complete protection Protection level: Read/write protection both for Standard and for Failsafe Protection level: Read/write protection Protection level: Complete protection Protection level: Read/write protection Protection level: Read/w		
Password for display Protection level: Write protection Protection level: Read/write protection Protection level: Read/write protection Protection level: Complete protection Programming / cycle time monitoring / header I lower limit Upper limit Upper limit Dimensions Width Yes Yes Yes Yes Adjustable minimum cycle time adjustable maximum cycle time 175 mm		
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Protection level: Read/write protection Protection level: Complete protection Yes programming / cycle time monitoring / header lower limit upper limit adjustable minimum cycle time promations Width 175 mm	· ·	
Protection level: Complete protection Programming / cycle time monitoring / header I lower limit Upper limit Upper limit Dimensions Width Yes Adjustable minimum cycle time adjustable maximum cycle time 175 mm	·	
programming / cycle time monitoring / header • lower limit adjustable minimum cycle time • upper limit adjustable maximum cycle time Dimensions Width 175 mm		
● lower limit adjustable minimum cycle time ● upper limit adjustable maximum cycle time Dimensions Width 175 mm		165
• upper limit adjustable maximum cycle time Dimensions Width 175 mm		
Dimensions Width 175 mm		
Width 175 mm		adjustable maximum cycle time
Height 147 mm		
	Height	14/ mm

Depth	129 mm
Weights	
Weight, approx.	1 978 g

last modified:

9/16/2022