SIEMENS

Data sheet

SIMATIC S7-1500F, CPU 1516F-3 PN/DP, central processing unit with work memory 3 MB for program and 7.5 MB for data 1st interface: PROFINET IRT with 2-port switch, 2nd interface: PROFINET RT, 3rd interface: PROFIBUS, 6 ns bit performance, SIMATIC Memory Card required ****approvals and certificates according to entry 109816732 at support.industry.siemens.com to be considered! ****

General information	
Product type designation	CPU 1516F-3 PN/DP
HW functional status	FS01
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 375 µs (distributed) and 1 ms (central)
Engineering with	
 STEP 7 TIA Portal configurable/integrated from version 	V18 (FW V3.0); with older TIA Portal versions configurable as 6ES7516-3FN02-0AB0
Configuration control	
via dataset	Yes
Display	
Screen diagonal [cm]	6.1 cm
Control elements	
Number of keys	8
Mode buttons	2
Supply voltage	
Rated value (DC)	24 V
permissible range, lower limit (DC)	19.2 V
permissible range, upper limit (DC)	28.8 V
Reverse polarity protection	Yes
Mains buffering	
 Mains/voltage failure stored energy time 	5 ms
Repeat rate, min.	1/s
Input current	
Current consumption (rated value)	0.87 A
Current consumption, max.	1.08 A
Inrush current, max.	1.15 A; Rated value
I ² t	0.6 A ² ·s
Power	
Infeed power to the backplane bus	12 W
Power consumption from the backplane bus (balanced)	6.7 W
Power loss	
Power loss, typ.	8.4 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)	7.5 Mbyte
Load memory ● Plug-in (SIMATIC Memory Card), max.	32 Gbyte
Backup	02 Obyto
maintenance-free	Yes
CPU processing times	

for hit approximations, two	6 ns
for bit operations, typ.	7 ns
for word operations, typ. for fixed point arithmetic, typ.	9 ns
for floating point arithmetic, typ.	37 ns
CPU-blocks	01 113
	9 000: Blocks (OR ER EC DR) and LIDTs
Number of elements (total) DB	8 000; Blocks (OB, FB, FC, DB) and UDTs
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.	7.5 Mbyte; For DBs with absolute addressing, the max. size is 64 KB
FB ● Number range	0 65 535
• Size, max.	1 Mbyte
FC	1 Mbyte
Number range	0 65 535
• Size, max.	1 Mbyte
OB	
• Size, max.	1 Mbyte
Number of free cycle OBs	100
Number of time alarm OBs	20
 Number of delay alarm OBs 	20
Number of cyclic interrupt OBs	20; With minimum OB 3x cycle of 250 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 asynchronous error OBs	2
Number of synchronous error OBs Number of diagnostic alarm OBs	1
Nesting depth	
per priority class	24; Up to 8 possible for F-blocks
Counters, timers and their retentivity	24, Op to a possible for 1 -blocks
S7 counter	0.040
• Number	2 048
Retentivity	N/
— adjustable	Yes
IEC counter	A / 1 P % 11 W
• 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.	512 kbyte; In total; available retentive memory for bit memories, timers, counters, DBs, and technology data (axes): 472 KB
Extended retentive data area (incl. timers, counters, flags), max.	7.5 Mbyte; When using PS 6 0W 24/48/60 V DC HF
Flag	
Flag ● Size, max.	16 kbyte
	•
• Size, max.	16 kbyte 8; 8 clock memory bit, grouped into one clock memory byte
Size, max.Number of clock memoriesData blocks	8; 8 clock memory bit, grouped into one clock memory byte
 Size, max. Number of clock memories Data blocks Retentivity adjustable 	•
 Size, max. Number of clock memories Data blocks Retentivity adjustable Retentivity preset 	8; 8 clock memory bit, grouped into one clock memory byte Yes
 Size, max. Number of clock memories Data blocks Retentivity adjustable Retentivity preset Local data 	8; 8 clock memory bit, grouped into one clock memory byte Yes No
 Size, max. Number of clock memories Data blocks Retentivity adjustable Retentivity preset 	8; 8 clock memory bit, grouped into one clock memory byte Yes



Number of IO modules	8 192; max. number of modules / submodules
I/O address area	o 102, 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	oz najto, i iii odipato dio ili tilo processi ilitage
— 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	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	DE INSCILEU III IOIAI
Modules per rack, max.	32; CPU + 31 modules
Number of lines, max.	1
PtP CM	
Number of PtP CMs	the number of connectable PtP CMs is only limited by the number of available slots
Time of day	
Clock	
• Type	Hardware clock
Backup time	6 wk; At 40 °C ambient temperature, typically
Deviation per day, max.	10 s; Typ.: 2 s
Operating hours counter	
Number	16
Clock synchronization	
• supported	Yes
	1 65
• to DP, master	Yes
• to DP, master	Yes
to DP, masterin AS, master	Yes Yes
to DP, masterin AS, masterin AS, slave	Yes Yes Yes
to DP, masterin AS, masterin AS, slaveon Ethernet via NTP	Yes Yes Yes
 to DP, master in AS, master in AS, slave on Ethernet via NTP Interfaces	Yes Yes Yes Yes Yes
 to DP, master in AS, master in AS, slave on Ethernet via NTP Interfaces Number of PROFINET interfaces	Yes Yes Yes Yes Yes Yes
 to DP, master in AS, master in AS, slave on Ethernet via NTP Interfaces Number of PROFINET interfaces Number of PROFIBUS interfaces 1. Interface	Yes Yes Yes Yes Yes Yes
 to DP, master in AS, master in AS, slave on Ethernet via NTP Interfaces Number of PROFINET interfaces Number of PROFIBUS interfaces 1. Interface Interface types	Yes Yes Yes Yes Yes 1
 to DP, master in AS, master in AS, slave on Ethernet via NTP Interfaces Number of PROFINET interfaces Number of PROFIBUS interfaces 1. Interface Interface types RJ 45 (Ethernet) 	Yes Yes Yes Yes Yes Yes
 to DP, master in AS, master in AS, slave on Ethernet via NTP Interfaces Number of PROFINET interfaces Number of PROFIBUS interfaces 1. Interface Interface types	Yes Yes Yes Yes Yes Yes Yes Yes
 to DP, master in AS, master in AS, slave on Ethernet via NTP Interfaces Number of PROFINET interfaces Number of PROFIBUS interfaces 1. Interface Interface types RJ 45 (Ethernet) Number of ports 	Yes Yes Yes Yes Yes Yes Yes 2 1 Yes; X1 2
 to DP, master in AS, master in AS, slave on Ethernet via NTP Interfaces Number of PROFINET interfaces Number of PROFIBUS interfaces 1. Interface Interface types RJ 45 (Ethernet) Number of ports integrated switch 	Yes Yes Yes Yes Yes Yes Yes 2 1 Yes; X1 2
 to DP, master in AS, master in AS, slave on Ethernet via NTP Interfaces Number of PROFINET interfaces Number of PROFIBUS interfaces 1. Interface Interface types RJ 45 (Ethernet) Number of ports integrated switch Protocols	Yes Yes Yes Yes Yes Yes Yes 2 1 Yes; X1 2 Yes
 to DP, master in AS, master in AS, slave on Ethernet via NTP Interfaces Number of PROFINET interfaces Number of PROFIBUS interfaces 1. Interface Interface types RJ 45 (Ethernet) Number of ports integrated switch Protocols IP protocol 	Yes Yes Yes Yes Yes Yes Yes Yes: Yes; X1 2 Yes; IPv4
 to DP, master in AS, master in AS, slave on Ethernet via NTP Interfaces Number of PROFINET interfaces Number of PROFIBUS interfaces 1. Interface Interface types RJ 45 (Ethernet) Number of ports integrated switch Protocols IP protocol PROFINET IO Controller 	Yes Yes Yes Yes Yes Yes Yes Yes; X1 2 Yes; IPv4 Yes
 to DP, master in AS, master in AS, slave on Ethernet via NTP Interfaces Number of PROFINET interfaces Number of PROFIBUS interfaces 1. Interface Interface types RJ 45 (Ethernet) Number of ports integrated switch Protocols IP protocol PROFINET IO Controller PROFINET IO Device 	Yes Yes Yes Yes Yes Yes Yes; X1 2 Yes; IPv4 Yes Yes Yes
 to DP, master in AS, master in AS, slave on Ethernet via NTP Interfaces Number of PROFINET interfaces Number of PROFIBUS interfaces 1. Interface Interface types RJ 45 (Ethernet) Number of ports integrated switch Protocols IP protocol PROFINET IO Controller PROFINET IO Device SIMATIC communication 	Yes Yes Yes Yes Yes Yes Yes Yes; X1 2 Yes; IPv4 Yes Yes Yes Yes Yes
 to DP, master in AS, master in AS, slave on Ethernet via NTP Interfaces Number of PROFINET interfaces Number of PROFIBUS interfaces 1. Interface Interface types RJ 45 (Ethernet) Number of ports integrated switch Protocols IP protocol PROFINET IO Controller PROFINET IO Device SIMATIC communication Open IE communication 	Yes Yes Yes Yes Yes Yes Yes Yes; X1 2 Yes Yes Yes; IPv4 Yes
 to DP, master in AS, master in AS, slave on Ethernet via NTP Interfaces Number of PROFINET interfaces Number of PROFIBUS interfaces 1. Interface Interface types RJ 45 (Ethernet) Number of ports integrated switch Protocols IP protocol PROFINET IO Controller PROFINET IO Device SIMATIC communication Open IE communication Web server 	Yes Yes Yes Yes Yes Yes Yes Yes; X1 2 Yes; IPv4 Yes
 to DP, master in AS, master in AS, slave on Ethernet via NTP Interfaces Number of PROFINET interfaces Number of PROFIBUS interfaces 1. Interface Interface types RJ 45 (Ethernet) Number of ports integrated switch Protocols IP protocol PROFINET IO Controller PROFINET IO Device SIMATIC communication Open IE communication Web server Media redundancy 	Yes Yes Yes Yes Yes Yes Yes Yes; X1 2 Yes; IPv4 Yes
 to DP, master in AS, master in AS, slave on Ethernet via NTP Interfaces Number of PROFINET interfaces Number of PROFIBUS interfaces 1. Interface Interface types RJ 45 (Ethernet) Number of ports integrated switch Protocols IP protocol PROFINET IO Controller PROFINET IO Device SIMATIC communication Open IE communication Web server Media redundancy PROFINET IO Controller	Yes Yes Yes Yes Yes Yes Yes Yes; X1 2 Yes; IPv4 Yes
 to DP, master in AS, master in AS, slave on Ethernet via NTP Interfaces Number of PROFINET interfaces Number of PROFIBUS interfaces 1. Interface Interface types RJ 45 (Ethernet) Number of ports integrated switch Protocols IP protocol PROFINET IO Controller PROFINET IO Device SIMATIC communication Open IE communication Web server Media redundancy PROFINET IO Controller Services 	Yes Yes Yes Yes Yes Yes Yes; X1 2 Yes; IPv4 Yes



- Direct data exchange Yes; Requirement: IRT and isochronous mode (MRPD optional) — IRT - PROFlenergy Yes; per user program - Prioritized startup Yes; Max. 32 PROFINET devices - Number of connectable IO Devices, max. 256: In total, up to 1 000 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFINET - Of which IO devices with IRT, max. 64 - Number of connectable IO Devices for RT, 256 max. - of which in line, max. 256 - Number of IO Devices that can be 8; in total across all interfaces simultaneously 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 250 µs to 4 ms; Note: In the case of IRT with isochronous mode, the — for send cycle of 250 µs minimum update time of 375 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 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 Update time = set "odd" send clock (any multiple of 125 μs: 375 μs, 625 cycles μs ... 3 875 μs) Update time for RT — for send cycle of 250 µs 250 µs to 128 ms — for send cycle of 500 µs 500 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 No - Isochronous mode - IRT Yes - PROFlenergy Yes; per user program - Shared device Yes - Number of IO Controllers with shared device, 4 activation/deactivation of I-devices Yes; per user program - Asset management record Yes; per user program 2. Interface Interface types • RJ 45 (Ethernet) Yes; X2 • Number of ports 1 • integrated switch No Protocols • IP protocol Yes; IPv4 • PROFINET IO Controller Yes PROFINET IO Device Yes SIMATIC communication Yes • Open IE communication Yes; Optionally also encrypted Web server Yes Media redundancy No **PROFINET IO Controller** Services — PG/OP communication Yes - Isochronous mode No - Direct data exchange No - IRT No - PROFlenergy Yes; per user program - Prioritized startup 32; In total, up to 1 000 distributed I/O devices can be connected via - Number of connectable IO Devices, max. AS-i, PROFIBUS or PROFINET



- Number of connectable IO Devices for RT, max. - of which in line, max Number of IO Devices that can be simultaneously activated/deactivated, max Number of IO Devices that can be simultaneously activated/deactivated, max Updating times - Updating times - Update fine for RT - for send cycle of 1 ms - PROFINET IO Device Services - PG/OP communication - Isochronous mode - IRT - PROFienergy - Prioritized startup - PROFienergy - Prioritized startup - Shared device - Number of IO Controllers with shared device, max activation/deactivation of I-devices - Asset management record - Startace - PROFIBUS DP master - PROFIBUS DP master - PROFIBUS DP master - PROFIBUS DP master - PROFIBUS DP max Services - PG/OP communication - PROFIBUS DP max SiMATIC communication - PROFIBUS DP max Activation/deactivation of DP slaves - ROFIBUS DP slave - PROFIBUS DP slave - PROFIBUS DP slave - PROFIBUS DP max Activation/deactivation of DP slaves - PROFIBUS DP slave - Number of ports - PROFIBUS DP slave - PROFIBUS DP max Authore of DP slaves, max Authore of DP slaves, max Authore of DP slaves, max Authore of DP slaves - Activation/deactivation of DP slaves - Activation/deactivation of DP slaves - Activation/deactivation of DP slaves - PROFIBUS or PROFIBUS DP interface - Isochronous mode - Activation/deactivation of DP slaves - Transmission rate, max Profotocols - PROFIBES DP Communication
- of which in line, max Number of IO Devices that can be simultaneously activated/deactivated, max Number of IO Devices per tool, max Updating times - Updating times - Updating times - Update time for RT - for send cycle of 1 ms - FROFINET IO Device Services - PG/OP communication - Isochronous mode - IRT - PROFlenery - Proritized startup - Proritized startup - Shared device - Number of IO Controllers with shared device, max Austerface Interface types - RS 485 - PROFIBUS DP master - PROFIBUS DP master - PROFIBUS DP master - PROFIBUS DP slave - SIMATIC communication - Equidistance - PROFIBUS DP slave - Number of DP slaves, max Services - PG/OP communication - Equidistance - PROFIBUS DP master - PROFIBUS DP master - PROFIBUS DP master - PROFIBUS DP slave - SIMATIC communication - Equidistance - Leguidistance - Legui
- Number of IO Devices per tool, max Number of IO Devices per tool, max Number of IO Devices per tool, max Updating times - Updating times - The minimum value of the update time also depends on communication that the update time also depends on communication that update time also depends on communication the update time also depends on communication that update time also depends on communication the update time also depends on communication that update time also depends on the update time also depends on
simultaneously activated/deactivated, max. - Number of IO Devices per tool, max. - Updating times Savices - PROFINET IO Device ser tool, max. - The minimum value of the update time also depends on communicate share set for PROFINET IO, on the number of IO devices, and on the quantity of configured user data Update time for RT - for send cycle of 1 ms PROFINET IO Device Services - PG/OP communication - Isochronous mode - IRT - PROFInergy - Prioritized startup - Shared device - Number of IO Controllers with shared device, max a citvation/deactivation of I-devices - Asset management record 3. Interface Interface Interface types - PROFIBUS DP master - PROFIBUS DP master - PROFIBUS DP master - PROFIBUS DP master - Number of connections, max Number of Open shaves, max Number of Open shaves, max Number of Open munication PROFIBUS DP master - PROFIBUS DP master - PROFIBUS DP master - Number of DP slaves, max Number of DP slaves, max Number of DP slaves, max Services - PG/OP communication - Lequidistance - Isochronous mode - Activation/deactivation of DP slaves - Activ
- Number of IO Devices per tool, max Updating times - Updating times - Updating times - Updating times - The minimum value of the update time also depends on communicat share set for PROFINET IO, on the number of IO devices, and on the quantity of configured user data - For send cycle of 1 ms - For send cycle of 1 ms - For send cycle of 1 ms - PGOP communication - Ischronous mode - IRT - PROFilenergy - Prioritized startup - No - Prioritized startup - No - Prioritized startup - No - Shared device - Number of IO Controllers with shared device, max activation/ideactivation of I-devices - Asset management record - Asset management record - Asset management record - REA 485 - Number of ports - PROFIBUS DP master - PROFIBUS DP master - PROFIBUS DP slave - SIMATIC communication - Yes - PROFIBUS DP max Services - PGOP communication - Equidistance - Ischronous mode - Activation/deactivation of DP slaves - Authoragolation - Activation/deactivation of DP slaves - Authoragolation - Activation/deactivation of DP slaves - Authoragolation - Activation/deactivation of DP slaves - Interface types - Authoragolation - Activation/deactivation of DP slaves - Authoragolation - Autocrossing - Interface types - Interface types - Authoragolation - Autocrossing - Interface types - Interface types - Authoragolation - Autocrossing - PROFiles PROFiles -
The minimum value of the update time also depends on communicat share set for PROFINET 10, on the number of IO devices, and on the quantity of configured user data Update time for RT — for send cycle of 1 ms PROFINET IO Device Services — PC/OP communication — Isochronous mode — IRT — PROFIenery — Prioritized startup — Prioritized startup — Prioritized startup — Shared device — Number of IO Controllers with shared device, max. — activation/deactivation of I-devices — Asset management record 3. Interface Interface types — ISS 485 — Number of ports PROFIBUS DP master — Number of ports PROFIBUS DP master — Number of Denactions, max. — Number of Denactions, max. — PROFIBUS DP slaves, max. — Services — PG/OP communication — Equidistance — Isochronous mode — Activation/deactivation of DP slaves Interface types — RS 485 — Number of DP slaves, max. — PROFIBUS DP master — Number of DP slaves, max. — Number of DP slaves, max. — Services — PG/OP communication — Equidistance — Isochronous mode — Activation/deactivation of DP slaves Interface types RJ 45 (Ethernet) — No Yes — Autoregistation — Yes — Autoregistation — Yes — Autoregistation — Yes — Interface types RJ 45 (Ethernet) — No — Transmission rate, max. — 12 Mbit/s PROFIsiafe — Yes, V2.4 / V2.6 PROFIsiafe — Yes, V2.4 / V2.6
share set for PROFINET IO, on the number of IO devices, and on the quantity of configured user data Update time for RT — for send cycle of 1 ms PROFINET IO Device Services — PC/OP communication — IRT — No — PROFIchenry — Prioritized startup — Prioritized startup — Prioritized startup — Number of IO Controllers with shared device, max. — activation/deactivation of I-devices — Asset management record 3. Interface Interface types — RS 485 — Number of pots PROFIBUS DP master — PROFIBUS DP master — Number of connections, max. — SIMATIC communication — PROFIBUS DP master — Number of DP slaves, max. 8. Number of DP slaves, max. — SIMATIC communication — Equidistance — PG/OP communication — Equidistance — Equidistance — Equidistance — PG/OP communication — Equidistance — PG/OP communication — Equidistance — Services 10. Mbps — Activation/deactivation of DP slaves PVes PLOFIBUS DP master — Yes — Isochronous mode — Activation/deactivation of DP slaves PVes PLOFIBUS DP master — Yes — Services — PG/OP communication — Equidistance — Services — PG/OP communication — Equidistance — Yes — No Pyes — Activation/deactivation of DP slaves PVes PLOFIBUS DP master 10. Mbps — Yes — Activation/deactivation of DP slaves PVes PLOFIBUS DP master 10. Mbps — Yes — Autocrossing — Interface types PLOFIBUS DP master — Vyes — Autocrossing — Interface types — Autocrossing — Interface types — Transmission rate, max. — Yes PROFIBUS DP master — Yes PYes PLOFIBUS DP master — Yes PROFIBUS DP master — Yes PROFIBUS DP master — Yes — Isochronous mode — Yes — Later public types PLOFIBUS DP master — Yes — Isochronous mode — Yes — Activation/deactivation of DP slaves — Yes — Autocrossing — Interface types — Autocrossing — Interface types — Transmission rate, max. — Yes PROFIBUS DP master — Yes PLOFIBUS DP master — Yes — Yes PLOFIBUS DP master — Yes — Yes — Yes PLOFIBUS DP master — Yes —
Update time for RT — for send cycle of 1 ms PROFINET IO Device Services — PC/OP communication — Isochronous mode — IRT — PROFlenergy — Prioritized startup — PRofitized startup — Shared device — Number of IO Controllers with shared device, max. — activation/deactivation of I-devices — Asset management record 3. Interface Interface types — 18 485 — 19 No — PROFIBUS DP master — PROFIBUS DP master — PROFIBUS DP slave — SIMATIC communication — Yes — PROFIBUS DP master — SIMATIC communication — PROFIBUS DP master — Number of connections, max. — Number of DP slaves, max. — Number of DP slaves, max. — Reviews — PROFIBUS or PROFIBUS or PROFIBUS or PROFINET Services — PG/OP communication — Equidistance — Isochronous mode — Activation/deactivation of DP slaves PROFIBUS DP RJ 45 (Ethernet) — Autocrossing — Interface types — Autocrossing — Interface types — Interface types — Autocrossing — Interface types — Interface types — Interface types — Interface types — Autocrossing — Interface types —
Update time for RT - for send cycle of 1 ms PROFINET IO Device Services - PG/OP communication - Isochronous mode - IRT - PROFlenery - Prioritized startup - Prioritized startup - Prioritized startup - Prioritized startup - No - Shared device - Number of IO Controllers with shared device, max activation/deactivation of I-devices - Asset management record 3. Interface Interface types - RS 485 - Number of ports - PROFIBUS DP master - PROFIBUS DP master - PROFIBUS DP master - Number of connections, max Number of DP slaves, max Number of DP slaves
for send cycle of 1 ms PROFINET IO Device Services PG/OP communication
PROFINET IO Device Services - PCi/OP communication - Isochronous mode - IRT - PROFlenergy - Prioritized startup - Prioritized startup - Prioritized startup - No - Shared device - Number of IO Controllers with shared device, max activation/deactivation of I-devices - Asset management record 3. Interface Interface types - RS 485 - Number of ports - PROFIBUS DP master - PROFIBUS DP slave - SIMATIC communication - PROFIBUS DP max Number of DP slaves, max PCI/OP communication - Equidistance - Isochronous mode - Activation/deactivation of DP slaves - Isochronous mode - Activation/deactivation of DP slaves - Isochronous mode - Activation/deactivation of DP slaves - Autonegotiation - Yes - Autonegotiation - Yes - Autonegotiation - Yes - Transmission rate, max Iza Mbit/s - PROFISafe - Yes; V2.4 / V2.6 - PROFISafe - Yes; V2.4 / V2.6 - PROFISafe - Yes; V2.4 / V2.6
Services - PG/OP communication - Isochronous mode - IRT - IRT - PROFlenergy - Prioritized startup - Shared device - Number of IO Controllers with shared device, max activation/deactivation of I-devices - Asset management record 3. Interface Interface types - RS 485 - Number of ports - PROFIBUS DP master - PROFIBUS DP master - PROFIBUS DP master - Number of connections, max Number of DP slaves, max PG/OP communication - PG/OP communication - PG-PG/DP communication - PG-PG-PG-PG-PG-PG-PG-PG-PG-PG-PG-PG-PG-P
- Isochronous mode - IRT - No - IRT - PROFlenergy - Prioritized startup - Shared device - Number of IO Controllers with shared device, - Max activation/deactivation of I-devices - Asset management record Interface Interface types • RS 485 • Number of ports - PROFIBUS DP master - PROFIBUS DP master • PROFIBUS DP master • PROFIBUS DP slave • Number of DP slaves, max. • Number of DP slav
- IRT - PROFlenergy - Prioritized startup No - Shared device - Number of IO Controllers with shared device, max activation/deactivation of I-devices - Asset management record 3. Interface Interface types • RS 485 • Number of ports • PROFIBUS DP master • PROFIBUS DP slave • SIMATIC communication • PROFIBUS DP slave • Number of DP slaves, max. 125; In total, up to 1 000 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFINET Services - PG/OP communication - Equidistance - Isochronous mode - Activation/deactivation of DP slaves RJ 45 (Ethernet) • 100 Mbps • Autonegotiation - Yes RS 485 • Transmission rate, max. 12 Mbit/s PROFIsafe PROFIsafe PROFIsafe Yes; V24.1 V2.6
- PROFlenergy
Shared device Number of IO Controllers with shared device, max activation/deactivation of I-devices Asset management record Yes; per user program Yes; X3 Number of ports Yes; X3 Number of ports Yes PROFIBUS DP master Yes PROFIBUS DP master No Yes No Yes No Yes Number of connections, max Number of connections, max Number of connections, max Number of DP slaves, max 125; in total, up to 1 000 distributed I/O devices can be connected via Asi-i, PROFIBUS or PROFINET Yes Isochronous mode Activation/deactivation of DP slaves Yes Isochronous mode Activation/deactivation of DP slaves Yes Activation/deactivation of DP slaves Yes Activation/deactivation of DP slaves Yes Number of DP Slaves
Number of IO Controllers with shared device, max. activation/deactivation of I-devices Asset management record 3. Interface Interface types • RS 485 • Number of ports PROFIBUS DP master • PROFIBUS DP slave • SIMATIC communication PROFIBUS DP master • Number of connections, max. • Number of DP slaves, max. • Number of DP slaves, max. Services PG/OP communication Equidistance Isochronous mode Activation/deactivation of DP slaves PLOFIBUS DP slaves Activation/deactivation of DP slaves PLOFIBUS DP master • Number of DP slaves, max. 125; In total, up to 1 000 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFINET Services PG/OP communication Equidistance Isochronous mode Activation/deactivation of DP slaves PS 45 (Ethernet) • 100 Mbps • Autocrossing • Autocrossing • Industrial Ethernet status LED PROFIsafe PROFIsafe Yes; Y23. 12 Mbit/s Protocols PROFIsafe Yes; Y24 / V2.6
max. — activation/deactivation of I-devices Yes; per user program — Asset management record Yes; per user program 3. Interface Interface types • RS 485 • Number of ports • PROFIBUS DP master • PROFIBUS DP slave • SIMATIC communication • PROFIBUS DP master • Number of connections, max. • Number of connections, max. • Number of DP slaves, max. • Number of DP slaves, max. Services — PG/OP communication — Equidistance — Isochronous mode — Activation/deactivation of DP slaves RJ 45 (Ethernet) • Autocrossing • Autocrossing • Industrial Ethernet status LED PROFISAE Protocols PROFISAE Protocols PROFISAE Protocols PROFISAE Yes; yer user program Yes; per user program Yes Yes Interface types RJ 45 (Ethernet) • 100 Mbps • Autocrossing • Yes • Autocrossing • Yes • Industrial Ethernet status LED Yes RS 485 • Transmission rate, max. 12 Mbit/s
- activation/deactivation of I-devices - Asset management record 3. Interface Interface types - RS 485 - Number of ports PROFIBUS DP master PROFIBUS DP slave No SIMATIC communication PROFIBUS DP slave Number of connections, max. Number of DP slaves, max. PROFIBUS or PROFIDET Services PG/OP communication PEquidistance PG/OP communication PEquidistance PG/OP communication Pequidistance PG/OP communication PG/OP
Interface types RS 485 Number of ports PROFIBUS DP master PROFIBUS DP slave No SIMATIC communication PROFIBUS DP master Number of DP slaves, max. Number of DP slaves, max. Number of DP slaves, max. PG/OP communication Services PROFIBUS or PROFIBUS or PROFINET Services PROFIBUS or PROFINET Yes Protocols PROFISE Services PROFISE Servic
Interface types RS 485 Number of ports Protocols PROFIBUS DP master PROFIBUS DP slave No SIMATIC communication Polymer of DP slaves, max. Number of connections, max. Number of DP slaves, max. PROFIBUS DP master Number of connections, max. Number of DP slaves, max. PROFIBUS or PROFIBUS DP interface PROFIBUS or PROFIBUS or PROFINET Services PROFIBUS or PROFINET Yes Protocols PROFISATE Protocols PROFISATE Protocols PROFISATE Protocols PROFISATE Yes; V2.4 / V2.6
RS 485 Number of ports Number of ports Protocols PROFIBUS DP master PROFIBUS DP slave SIMATIC communication PROFIBUS DP master Number of connections, max. Number of DP slaves, max. Number of DP slaves, max. PGOP communication Yes PROFIBUS OP master Number of DP slaves, max. Services PG/OP communication Pesquidistance PG/OP communication Pesquidistance Psochronous mode Activation/deactivation of DP slaves RJ 45 (Ethernet) Number of DP slaves Passes RJ 45 (Ethernet) Transmission rate, max. Protocols PROFIsafe Yes; V2.4 / V2.6
Number of ports Protocols PROFIBUS DP master PROFIBUS DP slave SIMATIC communication PROFIBUS DP master Number of connections, max. Number of DP slaves, max. Number of DP slaves, max. Services PG/OP communication Pequidistance Isochronous mode Activation/deactivation of DP slaves RJ 45 (Ethernet) Autocrossing Autocrossing Autocrossing Protocols PROFISAfe Protocols PROFISAfe Yes Yes Yes Yes Yes Yes Albit/s Protocols PROFISAfe Yes Yes Yes Yes Yes Yes Yes Yes Yes Y
Protocols PROFIBUS DP master PROFIBUS DP slave SIMATIC communication PROFIBUS DP master Number of connections, max. Number of DP slaves, max. Number of DP slaves, max. PROFIBUS or PROFIBUS or PROFINET Services PROFIBUS or PROFINET Yes Protocols PROFIBUS or PROFINET Yes Protocols PROFIBUS or PROFINET Yes PROFIBUS or PROFINET Yes PROFIBUS or PROFINET Yes PROFIBUS or PROFINET Yes Protocols PROFIBUS DP interface Yes Protocols Profibus DP interface Yes
PROFIBUS DP master PROFIBUS DP slave SIMATIC communication PROFIBUS DP master Number of connections, max. Number of DP slaves, max. Number of DP slaves, max. Services PROFOP communication Equidistance Services Profop communication Yes Profop communication
PROFIBUS DP slave SIMATIC communication PROFIBUS DP master Number of connections, max. Number of DP slaves, max. Number of DP slaves, max. PG/OP communication Equidistance Services PG/OP communication Services PG/OP communication Yes Services PVes Services
SIMATIC communication PROFIBUS DP master Number of connections, max. Number of DP slaves, max. Number of DP slaves, max. PG/OP communication Equidistance Services - PG/OP communication Equidistance Services - Isochronous mode Activation/deactivation of DP slaves RJ 45 (Ethernet) Autoreossing Autoreossing Industrial Ethernet status LED RS 485 Transmission rate, max. PKS the integrated PROFIBUS DP interface 125; In total, up to 1 000 distributed I/O devices can be connected via AS-i, PROFIBUS or PRO
PROFIBUS DP master Number of connections, max. Number of DP slaves, max. PROFIBUS or PROFIBUS or PROFINET Services PG/OP communication Equidistance Secrivation/deactivation of DP slaves Interface types Autonegotiation Autocrossing Industrial Ethernet status LED PROFIBUS or PROFIBUS or PROFINET 48; for the integrated PROFIBUS DP interface 125; In total, up to 1 000 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFINET Yes Yes Yes Yes Yes Services Yes Yes Yes Interface types RJ 45 (Ethernet) Industrial Ethernet status LED Yes PROFIsafe Yes; V2.4 / V2.6
 Number of connections, max. Number of DP slaves, max. 125; In total, up to 1 000 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFINET Services — PG/OP communication — 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. PROFIsafe Yes; V2.4 / V2.6
Number of DP slaves, max. 125; In total, up to 1 000 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFINET Services — PG/OP communication Yes — Equidistance Yes — Isochronous mode Yes — Activation/deactivation of DP slaves Yes Interface types RJ 45 (Ethernet) • 100 Mbps • Autonegotiation Yes • Autocrossing • Industrial Ethernet status LED Yes RS 485 • Transmission rate, max. 12 Mbit/s Protocols PROFIBATE 100 devices can be connected via AS-i, PROFIBUS or PROFIBUS (Yes) Yes Yes Yes 125; In total, up to 1 000 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFIBUS (Yes) Yes Yes Yes 125; In total, up to 1 000 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFIBUS (Yes) Yes Yes 125; In total, up to 1 000 distributed I/O devices can be connected via AS-i, PROFIBUS (Yes) Yes 125; In total, up to 1 000 distributed I/O devices can be connected via AS-i, PROFIBUS (Yes) Yes 125; In total, up to 1 000 distributed I/O devices can be connected via AS-i, PROFIBUS (Yes) Yes 125; In total, up to 1 000 distributed I/O devices can be connected via AS-i, PROFIBUS (Yes) Yes 125; In total, up to 1 000 distributed I/O devices can be connected via AS-i, PROFIBUS (Yes) Yes 125; In total, up to 1 000 distributed I/O devices can be connected via AS-i, PROFIBUS (Yes) Yes 125; In total, up to 1 000 distributed I/O devices can be connected via AS-i, PROFIBUS (Yes) Yes
AS-i, PROFIBUS or PROFINET Services - PG/OP communication Yes - Equidistance Yes - Isochronous mode Yes - Activation/deactivation of DP slaves Yes Interface types RJ 45 (Ethernet) • 100 Mbps Yes • Autoreosting Yes • Industrial Ethernet status LED Yes RS 485 • Transmission rate, max. 12 Mbit/s Protocols PROFIBUS or PROFINET Yes Yes Yes Yes Yes Yes 1 Mbit/s
Services - PG/OP communication Yes - Equidistance Yes - Isochronous mode Yes - Activation/deactivation of DP slaves Yes Interface types RJ 45 (Ethernet) • 100 Mbps Yes • Autonegotiation Yes • Autocrossing Yes • Industrial Ethernet status LED Yes RS 485 • Transmission rate, max. 12 Mbit/s Protocols PROFIsafe Yes Yes Yes Yes, V2.4 / V2.6
— PG/OP communication — Equidistance — Isochronous mode — Isochronous mode — Activation/deactivation of DP slaves Interface types RJ 45 (Ethernet) ● 100 Mbps — Autonegotiation — Yes ● Autonegotiation — Yes ● Industrial Ethernet status LED RS 485 ● Transmission rate, max. Protocols PROFIsafe Yes Yes Yes Yes Yes Yes Yes Y
 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 Yes
- 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 Yes Yes Yes Yes Yes Yes Yes Y
— 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 Yes Yes Yes Yes Yes Yes Yes Y
Interface types RJ 45 (Ethernet) • 100 Mbps • Autonegotiation • Autocrossing • Industrial Ethernet status LED RS 485 • Transmission rate, max. 12 Mbit/s Protocols PROFIsafe Yes Yes Yes Yes Yes Yes Yes Y
RJ 45 (Ethernet) • 100 Mbps • Autonegotiation • Autocrossing • Industrial Ethernet status LED RS 485 • Transmission rate, max. Protocols PROFIsafe Yes Yes Yes Yes Yes Yes Yes Y
 100 Mbps Autonegotiation Autocrossing Industrial Ethernet status LED RS 485 Transmission rate, max. Protocols PROFIsafe Yes
 100 Mbps Autonegotiation Autocrossing Industrial Ethernet status LED RS 485 Transmission rate, max. Protocols PROFIsafe Yes
 Autonegotiation Autocrossing Industrial Ethernet status LED RS 485 Transmission rate, max. Protocols PROFIsafe Yes
 Autocrossing Industrial Ethernet status LED RS 485 Transmission rate, max. Protocols PROFIsafe Yes Yes Yes Yes Yes; V2.4 / V2.6
 Industrial Ethernet status LED RS 485 Transmission rate, max. Protocols PROFIsafe Yes Yes Yes Yes Yes; V2.4 / V2.6
RS 485 ● Transmission rate, max. 12 Mbit/s Protocols PROFIsafe Yes; V2.4 / V2.6
● Transmission rate, max. 12 Mbit/s Protocols PROFIsafe Yes; V2.4 / V2.6
Protocols PROFIsafe Yes; V2.4 / V2.6
PROFIsafe Yes; V2.4 / V2.6
Number of connections
• Number of connections, max. 256; via integrated interfaces of the CPU and connected CPs / CMs
Number of connections reserved for ES/HMI/web
Number of connections via integrated interfaces 128
Number of S7 routing paths 16
Redundancy mode
H-Sync forwarding Yes
Media redundancy
 Media redundancy only via 1st interface (X1)
— MRP Yes; MRP Automanager according to IEC 62439-2 Edition 2.0, MRP
Manager; MRP Client
— MRP interconnection, supported Yes; as MRP ring node according to IEC 62439-2 Edition 3.0
 — MRPD — Switchover time on line break, typ. Yes; Requirement: IRT 200 ms; For MRP, bumpless for MRPD



— Number of stations in the ring, max.	50
SIMATIC communication	Vacuation with TLC V4.0
PG/OP communication S7 routing	Yes; encryption with TLS V1.3 pre-selected
S7 routing Data record routing	Yes Yes
Data record routingS7 communication, as server	Yes
S7 communication, as server S7 communication, as client	Yes
User data per job, max.	See online help (S7 communication, user data size)
Open IE communication	See offiline fielp (S7 confinitation, user data size)
TCP/IP	Yes
— Data length, max.	64 kbyte
several passive connections per port,	Yes
supported	.00
• 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. 118 multicast circuits
• DHCP	Yes
• DNS	Yes
• SNMP	Yes
• DCP	Yes
• LLDP	Yes
Encryption	Yes; Optional
Web server	
• HTTP	Yes; Standard and user pages
• HTTPS	Yes; Standard and user pages
OPC UA	
Runtime license required	Yes; "Medium" license required
OPC UA Client	Yes; Data Access (registered Read/Write), Method Call
 Application authentication 	Yes
— Security policies	Available security policies: None, Basic128Rsa15, Basic256Rsa15, Basic256Sha256
 User authentication 	"anonymous" or by user name & password
 Number of connections, max. 	10
 Number of nodes of the client interfaces, recommended max. 	2 000
 Number of elements for one call of OPC_UA_NodeGetHandleList/OPC_UA_ReadList/C max. 	300
 Number of elements for one call of OPC_UA_NameSpaceGetIndexList, max. 	20
Number of elements for one call of OPC_UA_MethodGetHandleList, max.	100
Number of simultaneous calls of the client	1
instructions for session management, per connection, max.	
 Number of simultaneous calls of the client instructions for data access, per connection, max. 	5
 Number of registerable nodes, max. 	5 000
Number of registerable method calls of OPC_UA_MethodCall, max.	100
 Number of inputs/outputs when calling 	20
OPC_UA_MethodCall, max. • OPC UA Server	Yes; Data Access (Read, Write, Subscribe), Method Call, Alarms &
	Condition (A&C), Custom Address Space
Application authentication Socurity policies	Yes
— Security policies	available security policies: None, Basic128Rsa15, Basic256Rsa15, Basic256Sha256, Aes128Sha256RsaOaep, Aes256Sha256RsaPss
User authentication	"anonymous" or by user name & password
 — GDS support (certificate management) 	Yes
Number of sessions, max.	48
 Number of accessible variables, max. 	100 000
Number of registerable nodes, max.	20 000
Number of subscriptions per session, max.	50
— Sampling interval, min.	100 ms
— Publishing interval, min.	100 ms



 Number of server methods, max. 	50
 Number of inputs/outputs per server method, 	20
max.	
 Number of monitored items, recommended 	4 000; for 1 s sampling interval and 1 s send interval
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 	30 000
interfaces, max.	
 Alarms and Conditions 	Yes
 Number of program alarms 	200
Number of alarms for system diagnostics	100
Further protocols	
MODBUS	Yes; MODBUS TCP
	Tes, MODDOS TOI
Isochronous mode	
Equidistance	Yes
S7 message functions	
	64
Number of login stations for message functions, max.	
Program alarms	Yes
Number of configurable program messages, max.	10 000; Program messages are generated by the "Program_Alarm"
	block, ProDiag or GRAPH
Number of loadable program messages in RUN, max.	5 000
Number of simultaneously active program alarms	
Number of program alarms	1 000
Number of alarms for system diagnostics	200
Number of alarms for motion technology objects	160
	100
Test commissioning functions	
Joint commission (Team Engineering)	Yes; Parallel online access possible for up to 8 engineering systems
Status block	Yes; Up to 8 simultaneously (in total across all ES clients)
Single step	No
Number of breakpoints	8
Status/control	
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. 	
Number of variables, max.— of which status variables, max.	200; per job
·	200; per job 200; per job
— of which status variables, max.	
of which status variables, max. of which control variables, max. Forcing	200; per job
 — of which status variables, max. — of which control variables, max. Forcing Forcing 	200; per job Yes; without fail-safe
 of which status variables, max. of which control variables, max. Forcing Forcing Forcing, variables 	200; per job Yes; without fail-safe peripheral inputs/outputs (without fail-safe)
 of which status variables, max. of which control variables, max. Forcing Forcing Forcing, variables Number of variables, max. 	200; per job Yes; without fail-safe
 — of which status variables, max. — of which control variables, max. Forcing • Forcing • Forcing, variables • Number of variables, max. Diagnostic buffer 	Yes; without fail-safe peripheral inputs/outputs (without fail-safe) 200
 — of which status variables, max. — of which control variables, max. Forcing • Forcing • Forcing, variables • Number of variables, max. Diagnostic buffer • present 	Yes; without fail-safe peripheral inputs/outputs (without fail-safe) 200 Yes
 — of which status variables, max. — of which control variables, max. Forcing • Forcing, variables • Number of variables, max. Diagnostic buffer • present • Number of entries, max. 	Yes; without fail-safe peripheral inputs/outputs (without fail-safe) 200
 — of which status variables, max. — of which control variables, max. Forcing • Forcing • Forcing, variables • Number of variables, max. Diagnostic buffer • present 	Yes; without fail-safe peripheral inputs/outputs (without fail-safe) 200 Yes
 — of which status variables, max. — of which control variables, max. Forcing • Forcing, variables • Number of variables, max. Diagnostic buffer • present • Number of entries, max. 	Yes; without fail-safe peripheral inputs/outputs (without fail-safe) 200 Yes 3 200
 — of which status variables, max. — of which control variables, max. Forcing Forcing Forcing, variables Number of variables, max. Diagnostic buffer present Number of entries, max. — of which powerfail-proof 	Yes; without fail-safe peripheral inputs/outputs (without fail-safe) 200 Yes 3 200
— of which status variables, max. — of which control variables, max. Forcing • Forcing • Forcing, variables • Number of variables, max. Diagnostic buffer • present • Number of entries, max. — of which powerfail-proof Traces • Number of configurable Traces	Yes; without fail-safe peripheral inputs/outputs (without fail-safe) 200 Yes 3 200 500
— of which status variables, max. — of which control variables, max. Forcing • Forcing • Forcing, variables • Number of variables, max. Diagnostic buffer • present • Number of entries, max. — of which powerfail-proof Traces • Number of configurable Traces Interrupts/diagnostics/status information	Yes; without fail-safe peripheral inputs/outputs (without fail-safe) 200 Yes 3 200 500
— of which status variables, max. — of which control variables, max. Forcing • Forcing • Forcing, variables • Number of variables, max. Diagnostic buffer • present • Number of entries, max. — of which powerfail-proof Traces • Number of configurable Traces Interrupts/diagnostics/status information Diagnostics indication LED	Yes; without fail-safe peripheral inputs/outputs (without fail-safe) 200 Yes 3 200 500 4; Up to 512 KB of data per trace are possible
— of which status variables, max. — of which control variables, max. Forcing • Forcing • Forcing, variables • Number of variables, max. Diagnostic buffer • present • Number of entries, max. — of which powerfail-proof Traces • Number of configurable Traces Interrupts/diagnostics/status information Diagnostics indication LED • RUN/STOP LED	Yes; without fail-safe peripheral inputs/outputs (without fail-safe) 200 Yes 3 200 500
— of which status variables, max. — of which control variables, max. Forcing • Forcing • Forcing, variables • Number of variables, max. Diagnostic buffer • present • Number of entries, max. — of which powerfail-proof Traces • Number of configurable Traces Interrupts/diagnostics/status information Diagnostics indication LED	Yes; without fail-safe peripheral inputs/outputs (without fail-safe) 200 Yes 3 200 500 4; Up to 512 KB of data per trace are possible
— of which status variables, max. — of which control variables, max. Forcing • Forcing • Forcing, variables • Number of variables, max. Diagnostic buffer • present • Number of entries, max. — of which powerfail-proof Traces • Number of configurable Traces Interrupts/diagnostics/status information Diagnostics indication LED • RUN/STOP LED	Yes; without fail-safe peripheral inputs/outputs (without fail-safe) 200 Yes 3 200 500 4; Up to 512 KB of data per trace are possible
— of which status variables, max. — of which control variables, max. Forcing • Forcing • Forcing, variables • Number of variables, max. Diagnostic buffer • present • Number of entries, max. — of which powerfail-proof Traces • Number of configurable Traces Interrupts/diagnostics/status information Diagnostics indication LED • RUN/STOP LED • ERROR LED	Yes; without fail-safe peripheral inputs/outputs (without fail-safe) 200 Yes 3 200 500 4; Up to 512 KB of data per trace are possible Yes Yes
— of which status variables, max. — of which control variables, max. Forcing • Forcing • Forcing, variables • Number of variables, max. Diagnostic buffer • present • Number of entries, max. — of which powerfail-proof Traces • Number of configurable Traces Interrupts/diagnostics/status information Diagnostics indication LED • RUN/STOP LED • ERROR LED • MAINT LED • STOP ACTIVE LED	Yes; without fail-safe peripheral inputs/outputs (without fail-safe) 200 Yes 3 200 500 4; Up to 512 KB of data per trace are possible Yes Yes Yes Yes Yes
— of which status variables, max. — of which control variables, max. Forcing • Forcing • Forcing, variables • Number of variables, max. Diagnostic buffer • present • Number of entries, max. — of which powerfail-proof Traces • Number of configurable Traces Interrupts/diagnostics/status information Diagnostics indication LED • RUN/STOP LED • ERROR LED • MAINT LED • STOP ACTIVE LED • Connection display LINK TX/RX	Yes; without fail-safe peripheral inputs/outputs (without fail-safe) 200 Yes 3 200 500 4; Up to 512 KB of data per trace are possible Yes Yes Yes Yes
- of which status variables, max of which control variables, max. Forcing Forcing Forcing, variables Number of variables, max. Diagnostic buffer present Number of entries, max. of which powerfail-proof Traces Number of configurable Traces Interrupts/diagnostics/status information Diagnostics indication LED RUN/STOP LED ERROR LED MAINT LED STOP ACTIVE LED Connection display LINK TX/RX Supported technology objects	Yes; without fail-safe peripheral inputs/outputs (without fail-safe) 200 Yes 3 200 500 4; Up to 512 KB of data per trace are possible Yes Yes Yes Yes Yes Yes Yes
— of which status variables, max. — of which control variables, max. Forcing • Forcing • Forcing, variables • Number of variables, max. Diagnostic buffer • present • Number of entries, max. — of which powerfail-proof Traces • Number of configurable Traces Interrupts/diagnostics/status information Diagnostics indication LED • RUN/STOP LED • ERROR LED • MAINT LED • STOP ACTIVE LED • Connection display LINK TX/RX	Yes; without fail-safe peripheral inputs/outputs (without fail-safe) 200 Yes 3 200 500 4; Up to 512 KB of data per trace are possible Yes Yes Yes Yes Yes Yes Yes Yes Yes Y
- of which status variables, max of which control variables, max. Forcing • Forcing • Forcing, variables • Number of variables, max. Diagnostic buffer • present • Number of entries, max. — of which powerfail-proof Traces • Number of configurable Traces Interrupts/diagnostics/status information Diagnostics indication LED • RUN/STOP LED • ERROR LED • MAINT LED • STOP ACTIVE LED • Connection display LINK TX/RX Supported technology objects Motion Control	Yes; without fail-safe peripheral inputs/outputs (without fail-safe) 200 Yes 3 200 500 4; Up to 512 KB of data per trace are possible Yes Yes Yes Yes Yes Yes Yes Yes Yes Y
	Yes; without fail-safe peripheral inputs/outputs (without fail-safe) 200 Yes 3 200 500 4; Up to 512 KB of data per trace are possible Yes Yes Yes Yes Yes Yes Yes Yes Yes Y
	Yes; without fail-safe peripheral inputs/outputs (without fail-safe) 200 Yes 3 200 500 4; Up to 512 KB of data per trace are possible Yes Yes Yes Yes Yes Yes Yes Yes Yes Y
	Yes; without fail-safe peripheral inputs/outputs (without fail-safe) 200 Yes 3 200 500 4; Up to 512 KB of data per trace are possible Yes Yes Yes Yes Yes Yes Yes Yes Yes Y
	Yes; without fail-safe peripheral inputs/outputs (without fail-safe) 200 Yes 3 200 500 4; Up to 512 KB of data per trace are possible Yes Yes Yes Yes Yes Yes Yes Yes Yes Y
 — of which status variables, max. — of which control variables, max. Forcing • Forcing, variables • Number of variables, max. Diagnostic buffer • present • Number of entries, max. — of which powerfail-proof Traces • Number of configurable Traces Interrupts/diagnostics/status information Diagnostics indication LED • RUN/STOP LED • ERROR LED • MAINT LED • STOP ACTIVE LED • Connection display LINK TX/RX Supported technology objects Motion Control • Number of available Motion Control resources for technology objects • Required Motion Control resources 	Yes; without fail-safe peripheral inputs/outputs (without fail-safe) 200 Yes 3 200 500 4; Up to 512 KB of data per trace are possible Yes Yes Yes Yes Yes Yes Yes Yes Yes Y
 — of which status variables, max. — of which control variables, max. Forcing • Forcing, variables • Number of variables, max. Diagnostic buffer • present • Number of entries, max. — of which powerfail-proof Traces • Number of configurable Traces Interrupts/diagnostics/status information Diagnostics indication LED • RUN/STOP LED • ERROR LED • MAINT LED • STOP ACTIVE LED • Connection display LINK TX/RX Supported technology objects Motion Control • Number of available Motion Control resources for technology objects • Required Motion Control resources — per speed-controlled axis 	Yes; without fail-safe peripheral inputs/outputs (without fail-safe) 200 Yes 3 200 500 4; Up to 512 KB of data per trace are possible Yes Yes Yes Yes Yes Yes Yes Yes Yes Y



— per external encoder	80
— per output cam	20
— per cam track	160
— per probe	40
Positioning axis	
 Number of positioning axes at motion control cycle of 4 ms (typical value) 	11
 Number of positioning axes at motion control cycle of 8 ms (typical value) 	20
Controller	
PID_Compact	Yes; Universal PID controller with integrated optimization
PID_3Step	Yes; PID controller with integrated optimization for valves
PID-Temp	Yes; PID controller with integrated optimization for temperature
Counting and measuring	
High-speed counter	Yes
Standards, approvals, certificates	
Highest safety class achievable in safety mode	
Performance level according to ISO 13849-1	PLe
SIL acc. to IEC 61508	SIL 3
Probability of failure (for service life of 20 years and repair	ir time of 100 hours)
Low demand mode: PFDavg in accordance	< 2.00E-05
with SIL3	
 High demand/continuous mode: PFH in accordance with SIL3 	< 1.00E-09
Ambient conditions	
Ambient temperature during operation	
horizontal installation, min.	-30 °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, min. 	-30 °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.	-40 °C
• max.	70 °C
Altitude during operation relating to sea level	F. 000 mg. Doobrickiene for installation altitudes > 2,000 mg. and manual
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	V 1 C T C
— LAD	Yes; incl. failsafe
— FBD	Yes; incl. failsafe
— STL	Yes
— SCL	Yes
— GRAPH	Yes
Know-how protection	Voc
User program protection/password protection Copy protection	Yes Yes
Copy protection	
Block protection Access protection	Yes
protection protection of confidential configuration data	Yes
Password for display	Yes
Protection level: Write protection	Yes
Protection level: Write protection Protection level: Read/write protection	Yes
Protection level: Kead/write protection Protection level: Write protection for Failsafe	Yes
Protection level: Write protection for raisale Protection level: Complete protection	Yes
programming / cycle time monitoring / header	
lower limit	adjustable minimum cycle time
• upper limit	adjustable maximum cycle time
Dimensions	
Width	70 mm
Height	147 mm
Depth	129 mm
	123 11111
Weights	



469 g Weight, approx.

9/22/2022 last modified:

