## **SIEMENS**

## **Data sheet**

## 6ES7516-3FP03-0AB0

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 109817466 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 $\mu s$ (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
l²t	0.6 A²·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	
maintenance-free	Yes
CPU processing times	

for bit operations, typ.	6 ns
for word operations, typ.	7 ns
for fixed point arithmetic, typ.	9 ns
for floating point arithmetic, typ.	37 ns
CPU-blocks	
Number of elements (total)	8 000; 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
• Sizo may	-
• Size, max.	7.5 Mbyte; For DBs with absolute addressing, the max. size is 64 KB
FB . Number range	0 05 505
Number range     Size may	0 65 535
• Size, max.	1 Mbyte
FC Number and a	0 05 505
Number range	0 65 535
• Size, max.	1 Mbyte
OB O:	4.00
Size, max.  Number of free state OR:	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
<ul> <li>Number of process alarm OBs</li> </ul>	50
<ul> <li>Number of DPV1 alarm OBs</li> </ul>	3
<ul> <li>Number of isochronous mode OBs</li> </ul>	3
<ul> <li>Number of technology synchronous alarm OBs</li> </ul>	2
<ul> <li>Number of startup OBs</li> </ul>	100
<ul> <li>Number of asynchronous error OBs</li> </ul>	4
<ul> <li>Number of synchronous error OBs</li> </ul>	2
Number of diagnostic alarm OBs	1
Nesting depth	
per priority class	24; Up to 8 possible for F-blocks
	24; Up to 8 possible for F-blocks
per priority class	24; Up to 8 possible for F-blocks
per priority class Counters, timers and their retentivity	24; Up to 8 possible for F-blocks 2 048
per priority class  Counters, timers and their retentivity  S7 counter	
per priority class  Counters, timers and their retentivity  S7 counter  Number	
<ul> <li>per priority class</li> <li>Counters, timers and their retentivity</li> <li>S7 counter</li> <li>Number</li> <li>Retentivity</li> </ul>	2 048
per priority class  Counters, timers and their retentivity  S7 counter      Number  Retentivity  — adjustable	2 048
per priority class  Counters, timers and their retentivity  S7 counter      Number  Retentivity  — adjustable  IEC counter	2 048 Yes
per priority class  Counters, timers and their retentivity  S7 counter      Number  Retentivity      adjustable  IEC counter      Number	2 048 Yes
per priority class  Counters, timers and their retentivity  S7 counter      Number  Retentivity      adjustable  IEC counter      Number  Retentivity  Retentivity	2 048  Yes  Any (only limited by the main memory)
per priority class  Counters, timers and their retentivity  S7 counter  Number  Retentivity  — adjustable  IEC counter  Number  Retentivity  — adjustable  Retentivity  — adjustable	2 048  Yes  Any (only limited by the main memory)
per priority class  Counters, timers and their retentivity  S7 counter      Number     Retentivity      — adjustable  IEC counter      Number     Retentivity  — adjustable  S7 times	2 048  Yes  Any (only limited by the main memory)  Yes
per priority class  Counters, timers and their retentivity  S7 counter      Number  Retentivity      — adjustable  IEC counter      Number  Retentivity  — adjustable  S7 times  Number	2 048  Yes  Any (only limited by the main memory)  Yes
per priority class  Counters, timers and their retentivity  S7 counter      Number  Retentivity      — adjustable  IEC counter      Number  Retentivity  — adjustable  S7 times  Number  Retentivity  Retentivity  Retentivity	2 048  Yes  Any (only limited by the main memory)  Yes  2 048
per priority class  Counters, timers and their retentivity      S7 counter     Number     Retentivity     — adjustable  IEC counter     Number     Retentivity     — adjustable  S7 times     Number Retentivity — adjustable  S7 times     Number Retentivity — adjustable	2 048  Yes  Any (only limited by the main memory)  Yes  2 048
per priority class  Counters, timers and their retentivity  S7 counter      Number Retentivity — adjustable  IEC counter      Number Retentivity — adjustable  S7 times      Number Retentivity — adjustable  IEC timer      Number	2 048  Yes  Any (only limited by the main memory)  Yes  2 048  Yes
per priority class  Counters, timers and their retentivity  S7 counter      Number Retentivity — adjustable  IEC counter      Number Retentivity — adjustable  S7 times      Number Retentivity — adjustable  IEC timer      Number Retentivity  Retentivity — Retentivity — Retentivity — Retentivity — Retentivity — Retentivity  Retentivity  Retentivity	2 048  Yes  Any (only limited by the main memory)  Yes  2 048  Yes
per priority class  Counters, timers and their retentivity  S7 counter      Number  Retentivity      — adjustable  IEC counter      Number  Retentivity      — adjustable  S7 times      Number  Retentivity  — adjustable  IEC timer      Number  Retentivity  — adjustable	2 048  Yes  Any (only limited by the main memory)  Yes  2 048  Yes  Any (only limited by the main memory)
per priority class  Counters, timers and their retentivity  S7 counter      Number Retentivity — adjustable  IEC counter      Number Retentivity — adjustable  S7 times      Number Retentivity — adjustable  IEC timer      Number Retentivity — adjustable  IEC timer      Number Retentivity — adjustable  IEC timer      Number Retentivity — adjustable  Data areas and their retentivity	2 048  Yes  Any (only limited by the main memory)  Yes  2 048  Yes  Any (only limited by the main memory)  Yes
per priority class  Counters, timers and their retentivity  S7 counter      Number  Retentivity      — adjustable  IEC counter      Number  Retentivity      — adjustable  S7 times      Number  Retentivity  — adjustable  IEC timer      Number  Retentivity  — adjustable	2 048  Yes  Any (only limited by the main memory)  Yes  2 048  Yes  Any (only limited by the main memory)
per priority class  Counters, timers and their retentivity  S7 counter      Number Retentivity — adjustable  IEC counter      Number Retentivity — adjustable  S7 times      Number Retentivity — adjustable  IEC timer      Number Retentivity — adjustable  IEC timer      Number Retentivity — adjustable  IEC timer      Number Retentivity — adjustable  Data areas and their retentivity	2 048  Yes  Any (only limited by the main memory)  Yes  2 048  Yes  Any (only limited by the main memory)  Yes  512 kbyte; In total; available retentive memory for bit memories, timers,
per priority class  Counters, timers and their retentivity      S7 counter	2 048  Yes  Any (only limited by the main memory)  Yes  2 048  Yes  Any (only limited by the main memory)  Yes  512 kbyte; In total; available retentive memory for bit memories, timers, counters, DBs, and technology data (axes): 472 KB
per priority class  Counters, timers and their retentivity  S7 counter      Number Retentivity — adjustable  IEC counter      Number Retentivity — adjustable  S7 times     Number Retentivity — adjustable  IEC timer      Number Retentivity — adjustable  IEC timer      Number Retentivity — adjustable  IEC timer      Number Retentivity — adjustable  Data areas and their retentivity  Retentive data area (incl. timers, counters, flags), max.  Extended retentive data area (incl. timers, counters, flags), max.	2 048  Yes  Any (only limited by the main memory)  Yes  2 048  Yes  Any (only limited by the main memory)  Yes  512 kbyte; In total; available retentive memory for bit memories, timers, counters, DBs, and technology data (axes): 472 KB
per priority class  Counters, timers and their retentivity  S7 counter  Number Retentivity — adjustable  IEC counter  Number Retentivity — adjustable  S7 times Number Retentivity — adjustable  IEC timer Number Retentivity — adjustable  IEC timer  Retentivity — adjustable  IEC timer  Retentivity — adjustable  IEC timer  Number Retentivity — adjustable  Retentivity — adjustable  Data areas and their retentivity  Retentive data area (incl. timers, counters, flags), max.  Extended retentive data area (incl. timers, counters, flags), max.	Yes  Any (only limited by the main memory)  Yes  2 048  Yes  Any (only limited by the main memory)  Yes  512 kbyte; In total; available retentive memory for bit memories, timers, counters, DBs, and technology data (axes): 472 KB  7.5 Mbyte; When using PS 6 0W 24/48/60 V DC HF  16 kbyte
per priority class  Counters, timers and their retentivity  S7 counter  Number Retentivity — adjustable  IEC counter Number Retentivity — adjustable  S7 times Number Retentivity — adjustable  IEC timer Number Retentivity — adjustable  IEC timer  Number Retentivity — adjustable  IEC timer  Number Retentivity — adjustable  IEC timer  Number Retentivity — adjustable  Data areas and their retentivity  Retentive data area (incl. timers, counters, flags), max.  Extended retentive data area (incl. timers, counters, flags), max.  Flag  Size, max. Number of clock memories	2 048  Yes  Any (only limited by the main memory)  Yes  2 048  Yes  Any (only limited by the main memory)  Yes  512 kbyte; In total; available retentive memory for bit memories, timers, counters, DBs, and technology data (axes): 472 KB  7.5 Mbyte; When using PS 6 0W 24/48/60 V DC HF
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per priority class  Counters, timers and their retentivity  S7 counter      Number  Retentivity      — adjustable  IEC counter      Number  Retentivity      — adjustable  S7 times      Number  Retentivity      — adjustable  IEC timer      Number  Retentivity      — adjustable  IEC timer      Number  Retentivity      — adjustable  IEC timer      Number  Retentivity      — adjustable  Data areas and their retentivity  Retentive data area (incl. timers, counters, flags), max.  Extended retentive data area (incl. timers, counters, flags), max.  Flag      Size, max.      Number of clock memories  Data blocks      Retentivity adjustable	Yes  Any (only limited by the main memory)  Yes  2 048  Yes  Any (only limited by the main memory)  Yes  Any (only limited by the main memory)  Yes  512 kbyte; In total; available retentive memory for bit memories, timers, counters, DBs, and technology data (axes): 472 KB  7.5 Mbyte; When using PS 6 0W 24/48/60 V DC HF  16 kbyte  8; 8 clock memory bit, grouped into one clock memory byte
per priority class  Counters, timers and their retentivity  S7 counter  Number  Retentivity  — adjustable  IEC counter  Number  Retentivity — adjustable  S7 times  Number  Retentivity — adjustable  IEC timer  Number  Retentivity — adjustable  IEC timer  Number  Retentivity  — adjustable  IEC timer  Number  Retentivity  — adjustable  IEC timer  Number  Retentivity  — adjustable  Data areas and their retentivity  Retentive data area (incl. timers, counters, flags), max.  Extended retentive data area (incl. timers, counters, flags), max.  Flag  Size, max.  Number of clock memories  Data blocks  Retentivity adjustable  Retentivity preset	Yes  Any (only limited by the main memory)  Yes  2 048  Yes  Any (only limited by the main memory)  Yes  512 kbyte; In total; available retentive memory for bit memories, timers, counters, DBs, and technology data (axes): 472 KB  7.5 Mbyte; When using PS 6 0W 24/48/60 V DC HF  16 kbyte  8; 8 clock memory bit, grouped into one clock memory byte
per priority class  Counters, timers and their retentivity  S7 counter      Number  Retentivity      — adjustable  IEC counter      Number  Retentivity      — adjustable  S7 times      Number  Retentivity      — adjustable  IEC timer      Number  Retentivity      — adjustable  IEC timer      Number  Retentivity      — adjustable  IEC timer      Number  Retentivity      — adjustable  Data areas and their retentivity  Retentive data area (incl. timers, counters, flags), max.  Extended retentive data area (incl. timers, counters, flags), max.  Flag      Size, max.      Number of clock memories  Data blocks      Retentivity adjustable	Yes  Any (only limited by the main memory)  Yes  2 048  Yes  Any (only limited by the main memory)  Yes  Any (only limited by the main memory)  Yes  512 kbyte; In total; available retentive memory for bit memories, timers, counters, DBs, and technology data (axes): 472 KB  7.5 Mbyte; When using PS 6 0W 24/48/60 V DC HF  16 kbyte 8; 8 clock memory bit, grouped into one clock memory byte

Address area	
Number of IO modules	8 192; max. number of modules / submodules
I/O address area	
• Inputs	32 kbyte; All inputs are in the process image
Outputs	32 kbyte; All outputs are in the process image
per integrated IO subsystem	
— Inputs (volume)	8 kbyte
— Outputs (volume)	8 kbyte
per CM/CP	0 kByte
— Inputs (volume)	8 kbyte
— Outputs (volume)	8 kbyte
Subprocess images	00
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	
<ul> <li>Modules per rack, max.</li> </ul>	32; CPU + 31 modules
<ul> <li>Number of lines, max.</li> </ul>	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
<ul> <li>Deviation per day, max.</li> </ul>	10 s; Typ.: 2 s
Operating hours counter	
• Number	16
Clock synchronization	
• supported	Yes
• to DP, master	Yes
• in AS, master	Yes
• in AS, slave	Yes
on Ethernet via NTP	Yes
	160
Interfaces	
	2
Number of PROFINET interfaces	
Number of PROFIBUS interfaces	1
Number of PROFIBUS interfaces  1. Interface	1
Number of PROFIBUS interfaces  1. Interface Interface types	
Number of PROFIBUS interfaces  1. Interface	Yes; X1
Number of PROFIBUS interfaces  1. Interface Interface types	
Number of PROFIBUS interfaces  1. Interface Interface types  RJ 45 (Ethernet)	Yes; X1
Number of PROFIBUS interfaces  1. Interface Interface types  RJ 45 (Ethernet)  Number of ports	Yes; X1 2
Number of PROFIBUS interfaces  1. Interface Interface types  • RJ 45 (Ethernet)  • Number of ports  • integrated switch	Yes; X1 2
Number of PROFIBUS interfaces  1. Interface Interface types  • RJ 45 (Ethernet)  • Number of ports  • integrated switch  Protocols	Yes; X1 2 Yes
Number of PROFIBUS interfaces  1. Interface Interface types  • RJ 45 (Ethernet)  • Number of ports  • integrated switch  Protocols  • IP protocol	Yes; X1 2 Yes Yes
Number of PROFIBUS interfaces  1. Interface Interface types  • RJ 45 (Ethernet)  • Number of ports  • integrated switch  Protocols  • IP protocol  • PROFINET IO Controller	Yes; X1 2 Yes Yes; IPv4 Yes
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; X1 2 Yes Yes; IPv4 Yes Yes Yes
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; X1 2 Yes Yes Yes; IPv4 Yes
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; X1 2 Yes  Yes; IPv4 Yes
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; X1 2 Yes Yes; IPv4 Yes
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; X1 2 Yes  Yes; IPv4 Yes

<ul><li>— PG/OP communication</li></ul>	Yes
<ul><li>— Isochronous mode</li></ul>	Yes
Direct data exchange	Yes; Requirement: IRT and isochronous mode (MRPD optional)
— IRT	Yes
— PROFlenergy	Yes; per user program
<ul> <li>Prioritized startup</li> </ul>	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
<ul><li>Of which IO devices with IRT, max.</li></ul>	64
<ul> <li>Number of connectable IO Devices for RT, max.</li> </ul>	256
— of which in line, max.	256
<ul> <li>Number of IO Devices that can be simultaneously activated/deactivated, max.</li> </ul>	8; in total across all interfaces
<ul> <li>Number of IO Devices per tool, max.</li> </ul>	8
— Updating times	The minimum value of the update time also depends on communication share set for PROFINET IO, on the number of IO devices, and on the quantity of configured user data
Update time for IRT	
— for send cycle of 250 μs	$250~\mu s$ to 4 ms; Note: In the case of IRT with isochronous mode, the minimum update time of 375 $\mu s$ of the isochronous OB is decisive
— for send cycle of 500 μs	500 μs to 8 ms
— for send cycle of 1 ms	1 ms to 16 ms
— for send cycle of 2 ms	2 ms to 32 ms
— for send cycle of 4 ms	4 ms to 64 ms
— With IRT and parameterization of "odd" send cycles	Update time = set "odd" send clock (any multiple of 125 $\mu s:375~\mu s,625~\mu s3~875~\mu s)$
Update time for RT	
— for send cycle of 250 μs	250 μs to 128 ms
— for send cycle of 500 μs	500 μs to 256 ms
— for send cycle of 1 ms	1 ms to 512 ms
— for send cycle of 2 ms	2 ms to 512 ms
— for send cycle of 4 ms	4 ms to 512 ms
PROFINET IO Device	
Services	
— PG/OP communication	Yes
— Isochronous mode	No
1000111011040 111040	INO
— IRT	Yes
— IRT — PROFlenergy	Yes; per user program
<ul><li>— IRT</li><li>— PROFlenergy</li><li>— Shared device</li></ul>	Yes Yes; per user program Yes
<ul> <li>— IRT</li> <li>— PROFlenergy</li> <li>— Shared device</li> <li>— Number of IO Controllers with shared device, max.</li> </ul>	Yes; per user program Yes 4
<ul> <li>— IRT</li> <li>— PROFlenergy</li> <li>— Shared device</li> <li>— Number of IO Controllers with shared device, max.</li> <li>— activation/deactivation of I-devices</li> </ul>	Yes; per user program Yes 4 Yes; per user program
— IRT  — PROFlenergy  — Shared device  — Number of IO Controllers with shared device, max.  — activation/deactivation of I-devices  — Asset management record	Yes; per user program Yes 4
— IRT  — PROFlenergy  — Shared device  — Number of IO Controllers with shared device, max.  — activation/deactivation of I-devices  — Asset management record  2. Interface	Yes; per user program Yes 4 Yes; per user program
— IRT  — PROFlenergy  — Shared device  — Number of IO Controllers with shared device, max.  — activation/deactivation of I-devices  — Asset management record  2. Interface  Interface types	Yes; per user program Yes 4 Yes; per user program Yes; per user program Yes; per user program
— IRT — PROFlenergy — Shared device — Number of IO Controllers with shared device, max. — activation/deactivation of I-devices — Asset management record  2. Interface Interface types ■ RJ 45 (Ethernet)	Yes; per user program Yes 4 Yes; per user program Yes; per user program Yes; per user program
— IRT — PROFlenergy — Shared device — Number of IO Controllers with shared device, max. — activation/deactivation of I-devices — Asset management record  2. Interface Interface types  • RJ 45 (Ethernet) • Number of ports	Yes; per user program Yes 4 Yes; per user program Yes; per user program Yes; per user program
— IRT — PROFlenergy — Shared device — Number of IO Controllers with shared device, max. — activation/deactivation of I-devices — Asset management record  2. Interface Interface types  • RJ 45 (Ethernet) • Number of ports • integrated switch	Yes; per user program Yes 4 Yes; per user program Yes; per user program Yes; per user program
— IRT  — PROFlenergy  — Shared device  — Number of IO Controllers with shared device, max.  — activation/deactivation of I-devices  — Asset management record  2. Interface  Interface types  • RJ 45 (Ethernet)  • Number of ports  • integrated switch  Protocols	Yes; per user program Yes 4 Yes; per user program Yes; per user program Yes; per user program Yes; X2 1 No
— IRT  — PROFlenergy — Shared device — Number of IO Controllers with shared device, max. — activation/deactivation of I-devices — Asset management record  2. Interface Interface types  • RJ 45 (Ethernet) • Number of ports • integrated switch  Protocols • IP protocol	Yes; per user program Yes 4 Yes; per user program Yes; per user program Yes; X2 1 No Yes; IPv4
— IRT — PROFlenergy — Shared device — Number of IO Controllers with shared device, max. — activation/deactivation of I-devices — Asset management record  2. Interface Interface types  • RJ 45 (Ethernet) • Number of ports • integrated switch  Protocols • IP protocol • PROFINET IO Controller	Yes; per user program Yes 4 Yes; per user program Yes; per user program Yes; X2 1 No Yes; IPv4 Yes
— IRT — PROFlenergy — Shared device — Number of IO Controllers with shared device, max. — activation/deactivation of I-devices — Asset management record  2. Interface Interface types  • RJ 45 (Ethernet) • Number of ports • integrated switch  Protocols  • IP protocol • PROFINET IO Controller • PROFINET IO Device	Yes; per user program Yes 4 Yes; per user program Yes; per user program Yes; per user program  Yes; X2 1 No  Yes; IPv4 Yes Yes
— IRT — PROFlenergy — Shared device — Number of IO Controllers with shared device, max. — activation/deactivation of I-devices — Asset management record  2. Interface Interface types  • RJ 45 (Ethernet) • Number of ports • integrated switch  Protocols  • IP protocol • PROFINET IO Controller • PROFINET IO Device • SIMATIC communication	Yes; per user program Yes 4 Yes; per user program Yes; per user program  Yes; X2 1 No  Yes; IPv4 Yes Yes Yes
IRT PROFlenergy Shared device Number of IO Controllers with shared device, max activation/deactivation of I-devices Asset management record  2. 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; per user program Yes 4 Yes; per user program Yes; per user program Yes; per user program  Yes; X2 1 No  Yes; IPv4 Yes Yes Yes Yes Yes Yes; Optionally also encrypted
IRT PROFlenergy Shared device Number of IO Controllers with shared device, max activation/deactivation of I-devices Asset management record  2. 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; per user program Yes 4 Yes; per user program Yes; per user program Yes; per user program  Yes; X2 1 No  Yes; IPv4 Yes
IRT PROFlenergy Shared device Number of IO Controllers with shared device, max activation/deactivation of I-devices Asset management record  2. Interface 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; per user program Yes 4 Yes; per user program Yes; per user program Yes; per user program  Yes; X2 1 No  Yes; IPv4 Yes Yes Yes Yes Yes Yes; Optionally also encrypted
IRT PROFlenergy Shared device Number of IO Controllers with shared device, max activation/deactivation of I-devices Asset management record  2. 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; per user program Yes 4 Yes; per user program Yes; per user program Yes; per user program  Yes; X2 1 No  Yes; IPv4 Yes
IRT PROFlenergy Shared device Number of IO Controllers with shared device, max activation/deactivation of I-devices Asset management record  2. Interface 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; per user program Yes 4 Yes; per user program Yes; per user program Yes; per user program  Yes; X2 1 No  Yes; IPv4 Yes
IRT PROFlenergy Shared device Number of IO Controllers with shared device, max activation/deactivation of I-devices Asset management record  2. Interface 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; per user program Yes 4 Yes; per user program Yes; per user program Yes; per user program  Yes; X2 1 No  Yes; IPv4 Yes
IRT PROFlenergy Shared device Number of IO Controllers with shared device, max activation/deactivation of I-devices Asset management record  2. Interface 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; per user program Yes 4 Yes; per user program Yes; per user program  Yes; X2 1 No  Yes; IPv4 Yes Yes Yes Yes Yes Yes Yes Yes Yes No
- IRT - PROFlenergy - Shared device - Number of IO Controllers with shared device, max activation/deactivation of I-devices - Asset management record  2. 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 - PG/OP communication	Yes; per user program Yes 4 Yes; per user program Yes; per user program  Yes; X2 1 No  Yes; IPv4 Yes Yes Yes Yes Yes Yes Yes You so the same of the sa
IRT PROFlenergy Shared device Number of IO Controllers with shared device, max activation/deactivation of I-devices Asset management record  2. Interface Interface types RJ 45 (Ethernet) Number of ports integrated switch  Protocols IP protocol PROFINET IO Controller PROFINET IO Device SIMATIC communication Web server Media redundancy  PROFINET IO Controller  Services PG/OP communication Isochronous mode	Yes; per user program Yes 4 Yes; per user program Yes; per user program  Yes; X2 1 No  Yes; IPv4 Yes Yes Yes Yes Yes Yes Yos; Optionally also encrypted Yes No
IRT PROFlenergy Shared device Number of IO Controllers with shared device, max activation/deactivation of I-devices Asset management record  2. Interface Interface types RJ 45 (Ethernet) Number of ports integrated switch  Protocols IP protocol PROFINET IO Controller PROFINET IO Device SIMATIC communication Web server Media redundancy  PROFINET IO Controller  Services PG/OP communication Isochronous mode Direct data exchange	Yes Yes; per user program Yes  4 Yes; per user program Yes; per user program  Yes; X2 1 No  Yes; IPv4 Yes Yes Yes Yes Yes Yes Yes No  No  Yes

- Piriotized startup - Number of connectable IO Devices, max Number of connectable IO Devices for RT, max Of which in line, max Number of IO Devices bart can be simultaneously advised-deach/setd, max Number of IO Devices bart can be simultaneously advised-deach/setd, max Updating times - Number of IO Devices per loci, max Updating times - PROPER IN IT I I I I I I I I I I I I I I I I I		
PROFIBUS or PROFINET  - Number of connectable IO Devices for R1, max.  - of which is line, max.  - Number of IO Devices that can be simultaneously activated/deactivated, max.  - Number of IO Devices per tool, max.  - Updating fines  Update time for R1  - For sond cycle of 1 ms  - FOROPECT IO Device.  Services  - POZOP communication - Isochronous mode - Isochronous mode - Isochronous mode - Number of IO Certificial with shared device, max.  - Number of IO Certificial with shared device, max.  - Number of IO Certificial with shared device, max.  - R3	·	
- Number of connectable I/O Devices for RT, max of which in line, max Number of I/O Devices brit can be simultaneously at the provided of I/O Devices per tool, max Number of I/O Devices per tool, max Updating times - Updating times	<ul> <li>Number of connectable IO Devices, max.</li> </ul>	
of which in line, max Number of ID Devices that can be simultaneously activated discard-indext max Number of ID Devices per loot, max Updating times Updating times (or send cycle of 1 ms (or send cycle	Number of connectable IO Devices for DT, may	
- Number of ID Devices that can be simultaneously advantable discalariation. Min. Services all interfaces all interfaces and interfaces are to PROFINET ID, on the number of ID devices, and on the quantity of configuration user data.  Update time for RT  - Updating times  Update time for RT  - Insert on drycle of 1 ms  PROFINET ID Device  Services  - PG/OP communication - IBT - No - PROFINET ID Device  Services  - PG/OP communication - IBT - No - PROFINET ID Service  - Number of ID Controllers with shared device, max Activation/deactivation of I-devices - Asset management record  - Yes; per user program - Y		
activatoridocarbivator, max.  - Number of 10 Devices per tool, max.  - Updating times  - Updating times  - For send cycle of 1 ms  - For send cycle  - For send cycle of 1 ms  - For send cycle  - For send cy		
Updating times  The minimum value of the update time also depends on communication share set for PROFINEET (I), on the number of (I) devices, and on the quantity of configured user data  I mis to 512 ms  PROFINET IO Device  Services  PROFINET IO Device  Services  PROFIDE Communication  I mis to 512 ms  PROFIDE Communication  Yes  I mis to 512 ms  PROFIDE Communication  Yes  PROFIDE Communication  No  PROFIDE Communication  No  Shared device  Number of IO Controllers with shared device, max.  - activation/deactivation of I-devices  PROFIDE Services  I mis to 512 ms  PROFIDE Communication  Yes  PROFIDE Communication  Yes  PROFIDE Services  PROFIDE Services  I mis to 512 ms  No  No  I mis to 512 ms  No  PROFIDE Communication  Yes  Provide Communication  Yes  PROFIDE Services  PROFIDE		o, in total across an interfaces
Update time for RT  -for send cycle of 1 ms  1 ms to 512 ms  PROFINET IO Device  Services  - PCOP communication  - IRT  - If the send cycle of 1 ms  - PROFINET IO Device  Services  - PCOP communication  - IRT  - PROFIlenerry  - Prioritized startup  - Shared device  - Number of IO Controllers with shared device, max.  - activation/deactivation of I-devices  - Asset management record  - Asset management record  - RS 485  - Number of ports  - PROFIBUS DP master  - PROFIBUS DP master  - Number of connections, max.  - Number of DP slaves, max.  - Number of DP slaves, max.  - PROFIDUS DP flaves  - PROFIDUS DP master  - PROFO communication  - PROFO promition of DP slaves	Number of IO Devices per tool, max.	8
Update time for RT  -for send cycle of 1 ms  1 ms to 512 ms  PROFINET IO Device  Services  - PCOP communication  - IRT  - If the send cycle of 1 ms  - PROFINET IO Device  Services  - PCOP communication  - IRT  - PROFIlenerry  - Prioritized startup  - Shared device  - Number of IO Controllers with shared device, max.  - activation/deactivation of I-devices  - Asset management record  - Asset management record  - RS 485  - Number of ports  - PROFIBUS DP master  - PROFIBUS DP master  - Number of connections, max.  - Number of DP slaves, max.  - Number of DP slaves, max.  - PROFIDUS DP flaves  - PROFIDUS DP master  - PROFO communication  - PROFO promition of DP slaves	— Updating times	The minimum value of the update time also depends on communication share
Update time for RT - for send cycle of 1 ms - for send cycle - for send	•	
	Lindate time for DT	configured user data
PROFINET I/O Device  Services  - PG/OP communication Yes - Isochtronous mode No No - Isochtronous mode No No - IRT No - PROFilenergy Yes, per user program - Prioritized startup No - Shared device Yes - Aumber of I/O Controllers with shared device, max activation/deactivation of I-devices Yes, per user program - Asset management record Yes, per user program - PROFIBUS DP slave No - PROFIBUS DP slave No - SIMATIC communication Yes - PROFIBUS DP matter - Number of Opratives, max Number of DP slaves, max Number of DP slaves, max Number of DP slaves, max PROFIBUS DP matter - Number of DP slaves, max PROFIBUS DP matter - Number of DP slaves, max PROFIBUS DP interface - PROFIBUS	•	1 me to 512 me
Services  - PG/OP communication - Isochronous mode - IRT - No - IRT - PROFilenergy - Prioritized startup - No - Shared device - Number of I/O Controllers with shared device, max advation/deactivation of I-devices - Asset management record - Asset management record - Asset management record - RT S S S S S S S S S S S S S S S S S S	· · · · · · · · · · · · · · · · · · ·	1 1115 to 312 1115
- PG/OP communication - Isochronous mode - Isochronous mode - Isochronous mode - RTT - No - PROFilenergy - Prointined startup - No - Shared device - Number of Ixochroniters with shared device, max activation/deactivation of I-devices - Asset management record - Asset management record - Asset management record - Startined Startung - PROFIBUS DP master - PROFIBUS DP master - PROFIBUS DP slave - SIMATIC communication - Yes - PROFIBUS DP master - Number of connections, max Number of DP slaves, max Startined Startung - PROFIBUS DP master - PROP communication - PSOP commun		
		Yes
- IRT - PROFlenergy - Prioritized startup - Promitized startup - Shared device - Number of ID Controllers with shared device, max activation/deactivation of I-devices - Asset management record - Shared device - Asset management record - Yes; per user program - Asset management record - Yes; per user program - Profice of the controllers of th		
- PROFlenergy Yes; per user program - Prioritized startup - Shared device - Number of IO Controllers with shared device, max activation/deactivation of I-devices - Asset management record Yes; per user program - Interface types - RS 485 - RS 485 - RS 485 - RS 485 - PROFIBUS DP master - PROFIBUS DP asset Yes - PROFIBUS DP alwaye - No - SIMMATIC communication - Yes - PROFIBUS DP master - Number of connections, max Number of connections, max Number of DP slaves, max PROFIBUS DP slaves - PROFIBUS DP slaves - PROFIBUS DP slaves - PROFIBUS DP master - Number of DP slaves, max PROFIBUS DP record to the integrated PROFIBUS DP interface - Number of DP slaves, max PROFIBUS OF PROFINET - PROFIBUS OF PROFINET - PROFIDES - PROFI		
Prioritized startup Sharted device Number of IO Controllers with shared device, max activation/deactivation of I-devices Asset management record Asset management record Sharted Revices RS 485 RS 485 RS 485 Number of ports		
- Shared device - Number of IO Controllers with shared device, max activation/deactivation of I devices - Asset management record - Asset management record - Asset management record - S. Interface  Interface types - RS 485 - Number of ports - Number of ports - PROFIBUS DP master - PROFIBUS DP master - PROFIBUS DP shave - SIMATIC communication - PROFIBUS DP shave - SIMATIC communication - PROFIBUS DP shave - Number of connections, max Number of DP slaves, max Number of DP slaves, max Number of DP slaves, max PROFIBUS DP shave - Isochronous mode - Equidistance - Equidistance - Activation/deactivation of DP slaves - Activation/deactivation of DP slaves - Activation/deactivation of DP slaves - Autocrossing - Industrial Ethernet status LED - RS 485 - Transmission rate, max Ves - Number of connections, max Number of connections, max L2 Mbit/s - Protocols - PROFISafe - Number of connections rate, max Yes - Number of connections rate, max Yes - Interface types - RS 485 - Transmission rate, max Yes - Number of connections rate interfaces - Number		
- 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 - Number of connections, max Number of DP slaves, max Number of DP slaves, max PROFIBUS DP master - PG/OP communication - PG/OP co	·	
- activation/deactivation of I-devices		
- Asset management record    Interface		
S. Interface types  RS 485 RS 485 RS 485 RS 485 RN without ports  Protocols  PROFIBUS DP master PROFIBUS DP slave SIMATIC communication PROFIBUS DP slave Number of connections, max. Number of DP slaves, max. Region of the slaves of the Status LED RACK Status LED RACK Status LED ROFIBUS DP interface Redundancy Res RVes RVes RVes RVes RVes RVes RVes		
Interface types  RS 485  Number of ports  Protocols  PROFIBUS DP master PROFIBUS DP save PROFIBUS DP save PROFIBUS DP master PROFIBUS DP master PROFIBUS DP master PROFIBUS DP master Number of connections, max. Number of connections, max. Number of connections are according to IEC 62439-2 Edition 2.0, MRP Manager, PROFIBUS DP master  Number of connections are according to IEC 62439-2 Edition 2.0, MRP Manager, PROFIBUS DP master  Yes PROFIBUS DP master PROFIBUS DP master PROFIBUS DP interface PROFIBUS DP interface 125; In total, up to 1 000 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFINET  PROFIBUS OR PROFIBUS OR PROFIBUS OR PROFINET  PROFIBUS OR PROF	,	res, per user program
RS 485 Number of ports Number of ports PROFIBUS DP master PROFIBUS DP slave SIMATIC communication PROFIBUS DP master Number of connections, max. Number of DP slaves, max. PROFIBUS or PROFIBUS or PROFIBUS DP interface Number of DP slaves, max. PROFIBUS or PROFIBUS or PROFINET  PROFIBUS or PROFINET  Services PROFIBUS or PROFIBUS DP interface Yes Prostrict PROFIBUS Or PROFIBUS DP interface Yes Profice types  RJ 45 (Ethemet) Services Profice types RJ 45 (Ethemet) Services Profice types Profice types PROFIBES  Transmission rate, max. Profice types PROFIBES Number of connections, max. Number of connections, max. Number of connections wis integrated interfaces Number of connections wis integrated interfaces PROFIBES Number of connections via integrated interfaces Number of connections via integrated interfaces PROFIBES PROFIBES PROFIBES Number of connections via integrated interfaces PROFIBES PROFI		
Protocols  PROFIBUS DP master  PROFIBUS DP slave  PROFIBUS DP master  PROFIBUS DP master  PROFIBUS DP master  PROFIBUS DP master  No  SIMATIC communication  PROFIBUS DP master  Number of connections, max.  Number of DP slaves, max.  PROFIBUS DP interface  Number of DP slaves, max.  48; for the integrated PROFIBUS DP interface  Number of DP slaves, max.  48; for the integrated PROFIBUS DP interface  PROFIBUS or PROFINET  PROFIBUS or PROFIBUS DP interface  PROFIBUS DP interface  PROFIBUS OP PROFIBUS DP interface  PROFIBUS DP interface  PROFIBUS OF PROFIBUS DP interface  PROFIBUS DP interf	•	V 10
Protocols  PROFIBUS DP master PROFIBUS DP slave No SIMATIC communication PROFIBUS DP master Number of connections, max. Number of DP slaves, max. PROFIBUS DP slaves, max.  125; In total, up to 1 000 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFINET  Services PROFIBUS or PROFINET  Yes  Interface types RJ 45 (Ethernet) Services PROFIBUS or PROFINET  Yes Services PROFIBUS Or PROFIBUS OF PROFIB		
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PROFIBUS DP slave SIMATIC communication PROFIBUS DP master  Number of connections, max. Number of connections, max. Services  PROFIBUS or PROFIBUS DP interface PROFIBUS or PROFIBUS DP interface PROFIBUS or PROFIBUS or PROFINET  Services  PG/OP communication Pes Equidistance Pschronous mode Pes Activation/deactivation of DP slaves Profibus Pro		
SIMATIC communication PROFIBUS DP master  Number of connections, max. Number of DP slaves, max.  PROFIBUS or PROFIBUS DP interface  PROFIBUS or PROFINET  Services  Profice or Profine  Yes  Services  Services  Services  Profice or Profine  Yes  Services  Serv		
PROFIBUS DP master  Number of connections, max. Number of DP slaves, max.  PROFIBUS or PROFINET  Services  PG/OP communication Services Services  PG/OP communication Services Services  PG/OP communication Services Servi		
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 PROFIBUS or PROFINET  Services  PG/OP communication Equidistance Isochronous mode Activation/deactivation of DP slaves  Interface types  RJ 45 (Ethernet)  100 Mbps Yes Autororssing Autororssing Industrial Ethernet status LED Yes  RS 485 Transmission rate, max. 12 Mbit/s  Protocols  PROFisafe Number of connections, max. Number of connections, max. Number of connections reserved for ES/HMI/web Number of connections reserved for ES/HMI/web Number of S7 routing paths Redundancy mode  H-Sync forwarding Media redundancy - Media redundancy - Media redundancy - MRP  Yes, MRP Automanager according to IEC 62439-2 Edition 2.0, MRP Manager;		Yes
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		
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 • Autoreossing Yes • Industrial Ethernet status LED Yes  RS 485 • Transmission rate, max. 12 Mbit/s  Protocols  PROFISafe Yes; V2.4 / V2.6  Number of connections, max. 256; via integrated interfaces of the CPU and connected CPs / CMs • Number of connections via integrated interfaces 128 • Number of S7 routing paths 16  Redundancy mode • H-Sync forwarding Yes  Media redundancy - Media redundancy - Media redundancy - Media redundancy - MRP  Yes; MRP Automanager according to IEC 62439-2 Edition 2.0, MRP Manager;	•	
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, max. • Number of connections reserved for ES/HMI/web • Number of connections via integrated interfaces • Number of S7 routing paths  Redundancy mode • H-Sync forwarding  - Media redundancy - MRP  - MRP - Wes MRP Automanager according to IEC 62439-2 Edition 2.0, MRP Manager;	Number of DP slaves, max.	
PG/OP communication PG/OP communication Pequidistance Pequidistance Pess Puscince types  RJ 45 (Ethernet) Poss Puttorface types  RJ 45 (Ethernet) Poss Puttorface types  RJ 45 (Ethernet) Poss Puttorface types Puttorface types  RJ 45 (Ethernet) Poss Poss Puttorface types Puttorface types  RJ 45 (Ethernet) Poss Poss Puttorface types Protocols PROFIsafe Protocols PROFIsafe Protocols PROFIsafe Puttorface types Putto	Services	THOUBOUT HOUSE
- Equidistance - Isochronous mode - Activation/deactivation of DP slaves  Interface types  RJ 45 (Ethernet)  • 100 Mbps - Autonegotiation - Autocrossing - Autocrossing - Industrial Ethernet status LED - Yes  RS 485 • Transmission rate, max.  12 Mbit/s  Protocols  PPOFIsafe - Yes; V2.4 / V2.6  Number of connections - Number of connections, max Number of connections reserved for ES/HMI/web - Number of connections via integrated interfaces - Number of S7 routing paths - Redundancy mode - H-Sync forwarding - Media redundancy - Media redundancy - Media redundancy - Media redundancy - MRP - Yes; MRP Automanager according to IEC 62439-2 Edition 2.0, MRP Manager;		Yes
Isochronous mode Activation/deactivation of DP slaves  Interface types  RJ 45 (Ethernet)  100 Mbps Autonegotiation Autocrossing Autocrossing Industrial Ethernet status LED Yes Industrial Ethernet status LED Industrial Ethernet status LED Industrial Ethernet status LED Industrial Ethernet status LED Industrial Ethernet status		
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. • Number of connections reserved for ES/HMI/web • Number of connections via integrated interfaces • Number of S7 routing paths  Redundancy  H-Sync forwarding  Media redundancy  — Media redundancy — Media redundancy — Media redundancy — Media redundancy — MRP  Yes  Yes  Yes  Yes  Yes  Yes  Yes  Ye	·	
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.  • Number of connections reserved for ES/HMI/web  • Number of connections via integrated interfaces  • Number of S7 routing paths  Redundancy mode  • H-Sync forwarding  Media redundancy  — MRP  Yes; MRP Automanager according to IEC 62439-2 Edition 2.0, MRP Manager;		
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.  • Number of connections reserved for ES/HMI/web  • Number of connections via integrated interfaces  • Number of S7 routing paths  Redundancy mode  • H-Sync forwarding  Media redundancy  — Media redundancy  — Media redundancy  — Media redundancy  — MRP  Yes  Yes  Yes  Yes  Yes  Yes  Yes  Ye		165
• 100 Mbps     • Autonegotiation     • Autocrossing     • Industrial Ethernet status LED     RS 485     • Transmission rate, max.  Protocols  PROFIsafe Number of connections      • Number of connections, max.     • Number of connections reserved for ES/HMI/web     • Number of connections via integrated interfaces     • Number of S7 routing paths  Redundancy mode      • H-Sync forwarding Media redundancy      — Media redundancy      — Media redundancy      — MRP  Media redundancy      — MRP  Yes  Yes  Yes  Yes  Yes  Yes  Yes  Ye		
<ul> <li>Autocrossing</li> <li>Autocrossing</li> <li>Industrial Ethernet status LED</li> <li>RS 485</li> <li>Transmission rate, max.</li> <li>Protocols</li> <li>PROFIsafe</li> <li>Number of connections</li> <li>Number of connections, max.</li> <li>Number of connections reserved for ES/HMI/web</li> <li>Number of connections via integrated interfaces</li> <li>Number of S7 routing paths</li> <li>Redundancy mode</li> <li>H-Sync forwarding</li> <li>Media redundancy</li> <li>Media redundancy</li> <li>MRP</li> <li>Yes, WRP Automanager according to IEC 62439-2 Edition 2.0, MRP Manager;</li> </ul>	·	Voc
<ul> <li>Autocrossing</li> <li>Industrial Ethernet status LED</li> <li>Yes</li> <li>RS 485</li> <li>Transmission rate, max.</li> <li>Protocols</li> <li>PROFIsafe</li> <li>Number of connections</li> <li>Number of connections, max.</li> <li>Number of connections reserved for ES/HMI/web</li> <li>Number of connections reserved for ES/HMI/web</li> <li>Number of connections via integrated interfaces</li> <li>Number of S7 routing paths</li> <li>Redundancy mode</li> <li>H-Sync forwarding</li> <li>Media redundancy</li> <li>Media redundancy</li> <li>Media redundancy</li> <li>MRP</li> <li>Yes; V2.4 / V2.6</li> <li>Yes</li> <li>Number of CPU and connected CPs / CMs</li> <li>10</li> <li>10</li> <li>128</li> <li>16</li> <li>Redundancy mode</li> <li>H-Sync forwarding</li> <li>Yes</li> <li>Media redundancy</li> <li>Only via 1st interface (X1)</li> <li>Yes; MRP Automanager according to IEC 62439-2 Edition 2.0, MRP Manager;</li> </ul>	·	
Industrial Ethernet status LED  RS 485  Transmission rate, max.  Protocols  PROFIsafe  Number of connections  Number of connections, max.  Number of connections reserved for ES/HMI/web  Number of connections via integrated interfaces  Number of S7 routing paths  Redundancy mode  H-Sync forwarding  Media redundancy  Media redundancy  Media redundancy  MRP  Yes  MRP Automanager according to IEC 62439-2 Edition 2.0, MRP Manager;	-	
RS 485  • Transmission rate, max.  Protocols  PROFIsafe  Number of connections  • Number of connections, max.  • Number of connections reserved for ES/HMI/web  • Number of connections via integrated interfaces  • Number of s7 routing paths  Redundancy mode  • H-Sync forwarding  Media redundancy  — Media redundancy  — Media redundancy  — MRP  Yes; MRP Automanager according to IEC 62439-2 Edition 2.0, MRP Manager;	-	
<ul> <li>Transmission rate, max.</li> <li>Protocols</li> <li>PROFIsafe</li> <li>Number of connections</li> <li>Number of connections, max.</li> <li>Number of connections reserved for ES/HMI/web</li> <li>Number of connections via integrated interfaces</li> <li>Number of s7 routing paths</li> <li>Number of S7 routing paths</li> <li>H-Sync forwarding</li> <li>Media redundancy</li> <li>Media redundancy</li> <li>Media redundancy</li> <li>MRP</li> <li>MRP Automanager according to IEC 62439-2 Edition 2.0, MRP Manager;</li> </ul>		Yes
PROFIsafe  Yes; V2.4 / V2.6  Number of connections  Number of connections, max.  Number of connections reserved for ES/HMI/web  Number of connections via integrated interfaces  Number of s7 routing paths  Redundancy mode  H-Sync forwarding  Media redundancy  Media redundancy  Media redundancy  MRP  Yes; V2.4 / V2.6  Yes; via integrated interfaces of the CPU and connected CPs / CMs  10  10  128  16  Redundancy mode  Only via 1st interface (X1)  Yes; MRP Automanager according to IEC 62439-2 Edition 2.0, MRP Manager;		40 AN: 1/-
PROFIsafe  Number of connections  Number of connections, max.  Number of connections reserved for ES/HMI/web  Number of connections via integrated interfaces  Number of s7 routing paths  H-Sync forwarding  Media redundancy  Media redundancy  Media redundancy  Media redundancy  MRP  Yes; V2.4 / V2.6  Yes  Ves  Only via 1st interface (X1)  Yes; MRP Automanager according to IEC 62439-2 Edition 2.0, MRP Manager;	·	12 IVIDIT/S
Number of connections  Number of connections, max.  Number of connections reserved for ES/HMI/web  Number of connections via integrated interfaces  Number of connections via integrated interfaces  Number of S7 routing paths  Redundancy mode  H-Sync forwarding  Media redundancy  Media redundancy  Media redundancy  Media redundancy  MRP  Number of CPU and connected CPs / CMs  10  128  16  Redundancy mode  Only via 1st interface (X1)  Yes; MRP Automanager according to IEC 62439-2 Edition 2.0, MRP Manager;		V 10 1 1 10 2
<ul> <li>Number of connections, max.</li> <li>Number of connections reserved for ES/HMI/web</li> <li>Number of connections via integrated interfaces</li> <li>Number of S7 routing paths</li> <li>Redundancy mode</li> <li>H-Sync forwarding</li> <li>Media redundancy</li> <li>Media redundancy</li> <li>Media redundancy</li> <li>MRP</li> <li>256; via integrated interfaces of the CPU and connected CPs / CMs</li> <li>10</li> <li>128</li> <li>16</li> <li>Redundancy mode</li> <li>Only via 1st interface (X1)</li> <li>Yes; MRP Automanager according to IEC 62439-2 Edition 2.0, MRP Manager;</li> </ul>		Yes; V2.4 / V2.6
<ul> <li>Number of connections reserved for ES/HMI/web</li> <li>Number of connections via integrated interfaces</li> <li>Number of S7 routing paths</li> <li>Redundancy mode</li> <li>H-Sync forwarding</li> <li>Media redundancy</li> <li>Media redundancy</li> <li>Media redundancy</li> <li>MRP</li> <li>Only via 1st interface (X1)</li> <li>Yes; MRP Automanager according to IEC 62439-2 Edition 2.0, MRP Manager;</li> </ul>		
<ul> <li>Number of connections via integrated interfaces</li> <li>Number of S7 routing paths</li> <li>Redundancy mode</li> <li>H-Sync forwarding</li> <li>Media redundancy</li> <li>Media redundancy</li> <li>Media redundancy</li> <li>MRP</li> <li>Yes; MRP Automanager according to IEC 62439-2 Edition 2.0, MRP Manager;</li> </ul>		
<ul> <li>Number of S7 routing paths</li> <li>Redundancy mode</li> <li>H-Sync forwarding</li> <li>Media redundancy</li> <li>Media redundancy</li> <li>Media redundancy</li> <li>MRP</li> <li>Yes; MRP Automanager according to IEC 62439-2 Edition 2.0, MRP Manager;</li> </ul>		
Redundancy mode  • H-Sync forwarding  Media redundancy  — Media redundancy  — MRP  Only via 1st interface (X1)  Yes; MRP Automanager according to IEC 62439-2 Edition 2.0, MRP Manager;		
<ul> <li>◆ H-Sync forwarding</li> <li>Media redundancy</li> <li>— Media redundancy</li> <li>— MRP</li> <li>Yes</li> <li>Only via 1st interface (X1)</li> <li>Yes; MRP Automanager according to IEC 62439-2 Edition 2.0, MRP Manager;</li> </ul>		16
Media redundancy  — Media redundancy  only via 1st interface (X1)  — MRP  Yes; MRP Automanager according to IEC 62439-2 Edition 2.0, MRP Manager;	•	
<ul> <li>Media redundancy</li> <li>MRP</li> <li>MRP Automanager according to IEC 62439-2 Edition 2.0, MRP Manager;</li> </ul>		Yes
— MRP Yes; MRP Automanager according to IEC 62439-2 Edition 2.0, MRP Manager;	Media redundancy	
	— Media redundancy	only via 1st interface (X1)
MKP Client	— MRP	
		WIKE GIEIIL

<ul> <li>MRP interconnection, supported</li> </ul>	Yes; as MRP ring node according to IEC 62439-2 Edition 3.0
— MRPD	Yes; Requirement: IRT
<ul> <li>Switchover time on line break, typ.</li> </ul>	200 ms; For MRP, bumpless for MRPD
<ul> <li>Number of stations in the ring, max.</li> </ul>	50
SIMATIC communication	
PG/OP communication	Yes; encryption with TLS V1.3 pre-selected
S7 routing	Yes
Data record routing	Yes
S7 communication, as server	Yes
S7 communication, as client	Yes
User data per job, max.	
	See online help (S7 communication, user data size)
Open IE communication	Voc
• TCP/IP	Yes
— Data length, max.	64 kbyte
— several passive connections per port, supported	Yes
• ISO-on-TCP (RFC1006)	Yes
— Data length, max.	64 kbyte
• UDP	Yes
— Data length, max.	2 kbyte; 1 472 bytes for UDP broadcast
— UDP multicast	Yes; max. 118 multicast circuits
• DHCP	Yes
• DNS	Yes
• SNMP	Yes
• DCP	Yes
• LLDP	Yes
<ul> <li>Encryption</li> </ul>	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,
occurry policies	Basic256Sha256
<ul> <li>User authentication</li> </ul>	"anonymous" or by user name & password
<ul> <li>Number of connections, max.</li> </ul>	10
<ul> <li>Number of nodes of the client interfaces,</li> </ul>	2 000
recommended max.	
<ul> <li>Number of elements for one call of</li> </ul>	300
OPC_UA_NodeGetHandleList/OPC_UA_ReadList/OPC_I	
max.	20
<ul> <li>— Number of elements for one call of OPC_UA_NameSpaceGetIndexList, max.</li> </ul>	20
Number of elements for one call of	100
OPC_UA_MethodGetHandleList, max.	
<ul> <li>Number of simultaneous calls of the client</li> </ul>	1
instructions for session management, per connection,	
Max.	5
<ul> <li>Number of simultaneous calls of the client instructions for data access, per connection, max.</li> </ul>	5
Number of registerable nodes, max.	5 000
Number of registerable method calls of	100
OPC_UA_MethodCall, max.	
— Number of inputs/outputs when calling OPC LIA MethodCall may	20
OPC_UA_MethodCall, max.	Voc. Data Accord (Pond Write Cubariba) Mathed Call Alarma 9 Candillan
OPC UA Server	Yes; Data Access (Read, Write, Subscribe), Method Call, Alarms & Condition (A&C), Custom Address Space
<ul> <li>Application authentication</li> </ul>	Yes
Security policies	available security policies: None, Basic128Rsa15, Basic256Rsa15,
— Gecurity policies	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
— INUITIDEL OF ACCESSIDE VARIABLES, ITAX.	100 000

Number of registerable nodes	20,000
<ul><li>— Number of registerable nodes, max.</li><li>— Number of subscriptions per session, max.</li></ul>	20 000
·	100 ms
— Sampling interval, min.	
— Publishing interval, min.	100 ms
Number of server methods, max.	50
Number of inputs/outputs per server method, max.	20
Number of monitored items, recommended max.	4 000; 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"
<ul> <li>Number of nodes for user-defined server interfaces, max.</li> </ul>	30 000
<ul> <li>Alarms and Conditions</li> </ul>	Yes
<ul> <li>Number of program alarms</li> </ul>	200
Number of alarms for system diagnostics	100
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	1 000
Number of alarms for system diagnostics	200
Number of alarms for motion technology objects	160
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)
Status block	res, op to 6 simultaneously (in total across all E3 clients)
	No
Single step	No s
Single step Number of breakpoints	No 8
Single step Number of breakpoints Status/control	8
Single step Number of breakpoints Status/control  • Status/control variable	Yes; without fail-safe
Single step Number of breakpoints Status/control	Yes; without fail-safe inputs/outputs, bit memories, DBs, peripheral I/Os (without fail-safe), times,
Single step Number of breakpoints Status/control  • Status/control variable • Variables	Yes; without fail-safe
Single step Number of breakpoints Status/control  • Status/control variable  • Variables  • Number of variables, max.	Yes; without fail-safe inputs/outputs, bit memories, DBs, peripheral I/Os (without fail-safe), times, counters
Single step Number of breakpoints  Status/control  Status/control variable  Variables  Number of variables, max. — of which status variables, max.	Yes; without fail-safe inputs/outputs, bit memories, DBs, peripheral I/Os (without fail-safe), times, counters  200; per job
Single step Number of breakpoints  Status/control  Status/control variable  Variables  Number of variables, max.  of which status variables, max.  of which control variables, max.	Yes; without fail-safe inputs/outputs, bit memories, DBs, peripheral I/Os (without fail-safe), times, counters
Single step  Number of breakpoints  Status/control  Status/control variable  Variables  Number of variables, max.  of which status variables, max.  of which control variables, max.  Forcing	Yes; without fail-safe inputs/outputs, bit memories, DBs, peripheral I/Os (without fail-safe), times, counters  200; per job 200; per job
Single step Number of breakpoints  Status/control  Status/control variable  Variables  Number of variables, max.  of which status variables, max.  of which control variables, max.  Forcing  Forcing	Yes; without fail-safe inputs/outputs, bit memories, DBs, peripheral I/Os (without fail-safe), times, counters  200; per job 200; per job Yes; without fail-safe
Single step Number of breakpoints  Status/control  Status/control variable  Variables  Number of variables, max.  of which status variables, max.  of which control variables, max.  Forcing  Forcing  Forcing  Forcing, variables	Yes; without fail-safe inputs/outputs, bit memories, DBs, peripheral I/Os (without fail-safe), times, counters  200; per job 200; per job  Yes; without fail-safe peripheral inputs/outputs (without fail-safe)
Single step Number of breakpoints  Status/control  Status/control variable  Variables  Number of variables, max.  of which status variables, max.  of which control variables, max.  Forcing  Forcing  Forcing  Number of variables, max.	Yes; without fail-safe inputs/outputs, bit memories, DBs, peripheral I/Os (without fail-safe), times, counters  200; per job 200; per job Yes; without fail-safe
Single step  Number of breakpoints  Status/control  Status/control variable  Variables  Number of variables, max.  of which status variables, max.  of which control variables, max.  Forcing  Forcing  Forcing  Forcing, variables  Number of variables, max.  Diagnostic buffer	Yes; without fail-safe inputs/outputs, bit memories, DBs, peripheral I/Os (without fail-safe), times, counters  200; per job 200; per job  Yes; without fail-safe peripheral inputs/outputs (without fail-safe) 200
Single step  Number of breakpoints  Status/control  Status/control variable  Variables  Number of variables, max.  of which status variables, max.  of which control variables, max.  Forcing  Forcing  Forcing  Forcing, variables  Number of variables, max.  Diagnostic buffer  present	Yes; without fail-safe inputs/outputs, bit memories, DBs, peripheral I/Os (without fail-safe), times, counters  200; per job 200; per job  Yes; without fail-safe peripheral inputs/outputs (without fail-safe) 200  Yes
Single step Number of breakpoints  Status/control  Status/control variable  Variables  Number of variables, max.  of which status variables, max.  of which control variables, max.  Forcing  Forcing  Forcing  Forcing, variables  Number of variables, max.  Diagnostic buffer  present  Number of entries, max.	Yes; without fail-safe inputs/outputs, bit memories, DBs, peripheral I/Os (without fail-safe), times, counters  200; per job 200; per job  Yes; without fail-safe peripheral inputs/outputs (without fail-safe) 200  Yes 3 200
Single step Number of breakpoints  Status/control  Status/control variable  Variables  Number of variables, max.  of which status variables, max.  of which control variables, max.  Forcing  Forcing  Forcing  Forcing, variables  Number of variables, max.  Diagnostic buffer  present  Number of entries, max.  of which powerfail-proof	Yes; without fail-safe inputs/outputs, bit memories, DBs, peripheral I/Os (without fail-safe), times, counters  200; per job 200; per job  Yes; without fail-safe peripheral inputs/outputs (without fail-safe) 200  Yes
Single step Number of breakpoints  Status/control  Status/control variable  Variables  Number of variables, max.  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 inputs/outputs, bit memories, DBs, peripheral I/Os (without fail-safe), times, counters  200; per job 200; per job  Yes; without fail-safe peripheral inputs/outputs (without fail-safe) 200  Yes 3 200 500
Single step Number of breakpoints  Status/control  Status/control variable  Variables  Number of variables, max.  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 inputs/outputs, bit memories, DBs, peripheral I/Os (without fail-safe), times, counters  200; per job 200; per job  Yes; without fail-safe peripheral inputs/outputs (without fail-safe) 200  Yes 3 200
Single step Number of breakpoints Status/control  Status/control variable  Variables  Number of variables, max.  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 inputs/outputs, bit memories, DBs, peripheral I/Os (without fail-safe), times, counters  200; per job 200; per job  Yes; without fail-safe peripheral inputs/outputs (without fail-safe) 200  Yes 3 200 500
Single step Number of breakpoints  Status/control  Status/control variable  Variables  Number of variables, max.  of which status variables, max.  of which control variables, max.  Forcing  Forcing  Forcing  Forcing, variables  Number of variables, max.  Diagnostic buffer  present  Number of entries, max.  of which powerfail-proof  Traces  Number of configurable Traces	Yes; without fail-safe inputs/outputs, bit memories, DBs, peripheral I/Os (without fail-safe), times, counters  200; per job 200; per job  Yes; without fail-safe peripheral inputs/outputs (without fail-safe) 200  Yes 3 200 500
Single step Number of breakpoints Status/control  Status/control variable  Variables  Number of variables, max.  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 inputs/outputs, bit memories, DBs, peripheral I/Os (without fail-safe), times, counters  200; per job 200; per job  Yes; without fail-safe peripheral inputs/outputs (without fail-safe) 200  Yes 3 200 500
Single step  Number of breakpoints  Status/control  Status/control variable  Variables  Number of variables, max.  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 inputs/outputs, bit memories, DBs, peripheral I/Os (without fail-safe), times, counters  200; per job 200; per job  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
Single step  Number of breakpoints  Status/control  Status/control variable  Variables  Number of variables, max.  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 inputs/outputs, bit memories, DBs, peripheral I/Os (without fail-safe), times, counters  200; per job 200; per job  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
Single step  Number of breakpoints  Status/control  Status/control variable  Variables  Number of variables, max.  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 inputs/outputs, bit memories, DBs, peripheral I/Os (without fail-safe), times, counters  200; per job 200; per job  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
Single step  Number of breakpoints  Status/control  Status/control variable  Variables  Number of variables, max.  of which status variables, max.  of which control variables, max.  Forcing  Forcing  Forcing  Forcing, variables  Number of variables, max.  Diagnostic buffer  present  Number of entries, max.  of which powerfail-proof  Traces  Number of configurable Traces  Interrupts/diagnostics/status information  Diagnostics indication LED  RUN/STOP LED  ERROR LED  MAINT LED	Yes; without fail-safe inputs/outputs, bit memories, DBs, peripheral I/Os (without fail-safe), times, counters  200; per job 200; per job  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
Single step Number of breakpoints Status/control  Status/control variable Variables  Number of variables, max. — 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 inputs/outputs, bit memories, DBs, peripheral I/Os (without fail-safe), times, counters  200; per job 200; per job  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
Single step Number of breakpoints Status/control  Status/control variable Variables  Number of variables, max. — 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 inputs/outputs, bit memories, DBs, peripheral I/Os (without fail-safe), times, counters  200; per job 200; per job  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
Single step Number of breakpoints Status/control  Status/control variable  Variables  Number of variables, max.  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 inputs/outputs, bit memories, DBs, peripheral I/Os (without fail-safe), times, counters  200; per job 200; per job  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
Single step Number of breakpoints Status/control  Status/control variable Variables  Number of variables, max.  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 inputs/outputs, bit memories, DBs, peripheral I/Os (without fail-safe), times, counters  200; per job 200; per job  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

Required Motion Control resources	
— per speed-controlled axis	40
— per positioning axis	80
— per synchronous axis	160
— per external encoder	80
— per output cam	20
— per cam track	160
— per probe	40
Positioning axis	
<ul> <li>Number of positioning axes at motion control cycle of 4 ms (typical value)</li> </ul>	11
Number of positioning axes at motion control cycle	20
of 8 ms (typical value)	
Controller	
PID_Compact	Yes; Universal PID controller with integrated optimization
PID_3Step	Yes; PID controller with integrated optimization for valves
PID-Temp	Yes; PID controller with integrated optimization for temperature
Counting and measuring	
High-speed counter	Yes
Standards, approvals, certificates	
Highest safety class achievable in safety mode	
<ul> <li>Performance level according to ISO 13849-1</li> </ul>	PLe
SIL acc. to IEC 61508	SIL 3
Probability of failure (for service life of 20 years and repair time	e of 100 hours)
<ul> <li>Low demand mode: PFDavg in accordance with SIL3</li> </ul>	< 2.00E-05
<ul> <li>High demand/continuous mode: PFH in accordance with SIL3</li> </ul>	< 1.00E-09
Ambient conditions	
Ambient temperature during operation	
<ul> <li>horizontal installation, min.</li> </ul>	-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
<ul> <li>vertical installation, min.</li> </ul>	-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	
<ul> <li>Installation altitude above sea level, max.</li> </ul>	5 000 m; Restrictions for installation altitudes > 2 000 m, see manual
configuration / header	
configuration / programming / header	
Programming language	
— LAD	Yes; incl. failsafe
— FBD	Yes; incl. failsafe
— STL	Yes
— SCL	Yes
— GRAPH	Yes
Know-how protection	
<ul> <li>User program protection/password protection</li> </ul>	Yes
Copy protection	Yes
Block protection	Yes
Access protection	
<ul> <li>protection of confidential configuration data</li> </ul>	Yes
<ul> <li>Password for display</li> </ul>	Yes
<ul> <li>Protection level: Write protection</li> </ul>	Yes
<ul> <li>Protection level: Read/write protection</li> </ul>	Yes
<ul> <li>Protection level: Write protection for Failsafe</li> </ul>	Yes
Protection level: Complete protection	Yes
programming / cycle time monitoring / header	
• lower limit	adjustable minimum cycle time

• upper limit	adjustable maximum cycle time
Dimensions	
Width	70 mm
Height	147 mm
Depth	129 mm
Weights	
Weight, approx.	469 g

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