## 6ES7516-3AN02-0AB0

**Data sheet** 



SIMATIC S7-1500, CPU 1516-3 PN/DP, central processing unit with 1 MB work memory for program and 5 MB for data, 1st interface: PROFINET IRT with 2-port switch, 2nd interface: PROFINET RT, 3rd interface: PROFIBUS, 10 ns bit performance, SIMATIC Memory Card required

Via dataset         Yes           Display           Screen diagonal [cm]         6.1 cm           Control elements           Number of keys           8         6.1 cm           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         5 ms           • Repeat rate, min.         1/s           Input current         Use           Current consumption (rated value)         0.85 A           Current consumption, max.         1.1 A           Inrush current, max.         2.4 A; Rated value           Pt         0.02 A²·s           Power           Infeed power to the backplane bus         12 W           Power loss, typ.         7 W           Memory         A           Number of slots for SIMATIC memory card         1           SIMATIC memory card required         Yes	General information	
Firmware version	Product type designation	CPU 1516-3 PN/DP
Product function  • I&M data	HW functional status	FS01
• 18M data   Yes; 18M0 to 18M3   Yes; Distributed and central; with minimum OB 6x cycle of 375 µs (distributed) and 1 ms (central)   Yes; Distributed and central; with minimum OB 6x cycle of 375 µs (distributed) and 1 ms (central)   Yes	Firmware version	V2.9
Fingineering with  Fingineering with loder fingineering with older fIA Portal versions configurable as 6ES7516-3AN01-0AB0  Fingineering with older fIA Portal versions configurable as 6ES7516-3AN01-0AB0  Fingineering  Fin	Product function	
Engineering with  STEP 7 TIA Portal configurable/integrated from version onfigurable as 6ES7516-3AN01-0AB0  Configuration control  via dataset Yes  Display  Screen diagonal [cm] 6.1 cm  Control elements  Wumber 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/voltage failure stored energy time Repeat rate, min. 1/1s  Injust current  Current consumption (rated value) 0.85 A  Current consumption, max. 1.1 A  Inrush current, max. 2.4 A; Rated value  Power consumption from the backplane bus (balanced) 6.7 W  Power loss; tp.  Memory  Number of slots for SIMATIC memory card 1.5 MATIC memory card required 1.5 marked parts as 6ES7516-3AN01-0AB0  V17 (FW V2.9) V18 (FW V2.9) or higher; with older TIA Portal versions configuration of pigning w	● I&M data	Yes; I&M0 to I&M3
• STEP 7 TIA Portal configurable/integrated from version configurable as 6ES7516-3AN01-0AB0  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) 49.2 V permissible range, lower limit (DC) 49.2 V permissible range, upper limit (DC) 49.8 8 V  Reverse polarity protection Yes  • Mains buffering  • Mains/voltage failure stored energy time 6 Repeat rate, min. 1/s  Input current  Current consumption (rated value) 0.85 A  Current consumption (rated value) 0.02 A²-'s  Power  Infeed power to the backplane bus (balanced) 6.7 W  Power consumption from the backplane bus (balanced) 6.7 W  Power loss, typ. 7 W  Memory  Number of slots for SIMATIC memory card required  Ves	• Isochronous mode	
Configuration control	Engineering with	
Via dataset         Yes           Display           Screen diagonal [cm]         6.1 cm           Control elements           Number of keys           8         6.1 cm           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         5 ms           • Repeat rate, min.         1/s           Input current         Use           Current consumption (rated value)         0.85 A           Current consumption, max.         1.1 A           Inrush current, max.         2.4 A; Rated value           Pt         0.02 A²·s           Power           Infeed power to the backplane bus         12 W           Power loss, typ.         7 W           Memory         A           Number of slots for SIMATIC memory card         1           SIMATIC memory card required         Yes	STEP 7 TIA Portal configurable/integrated from version	
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 7 ks epeat rate, min. 1/s  Input current  Current consumption (rated value) 0.85 A Current consumption (rated value) 0.85 A Current consumption, max. 1.1 A Inrush current, max. 2.4 A; Rated value  Pt 0.02 A <sup>2</sup> -s  Power  Infeed power to the backplane bus 12 W Power consumption from the backplane bus (balanced) 6.7 W  Power loss, typ. 7 W  Memory  Number of slots for SIMATIC memory card 1 SIMATIC memory card required	Configuration control	
Screen diagonal [cm]   6.1 cm	via dataset	Yes
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 7 S ms 8 Repeat rate, min. 1/s Input current Current consumption (rated value) 0.85 A Current consumption (rated value) 1.1 A Inrush current, max. 1.1 A Inrush current, max. 2.4 A; Rated value Pt 0.02 A²-s Power Consumption from the backplane bus (balanced) 6.7 W Power loss, typ. 7 W Memory Number of slots for SIMATIC memory card required 7 yes	Display	
Number of keys   8	Screen diagonal [cm]	6.1 cm
Mode buttons  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) 0.85 A  Current consumption, max. 1.1 A  Inrush current, max. 2.4 A; Rated value  I*t 0.02 A²-s  Power  Infeed power to the backplane bus (balanced) 6.7 W  Power loss, typ. 7 W  Memory  Number of slots for SIMATIC memory card 1  SIMATIC memory card required  Yes	Control elements	
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) 0.85 A Current consumption, max. 1.1 A Inrush current, max. 2.4 A; Rated value If 0.02 A²-s Power  Infeed power to the backplane bus 12 W Power consumption from the backplane bus (balanced) 6.7 W Power loss, typ. 7 W Memory  Number of slots for SIMATIC memory card 1 SIMATIC memory card required Yes	Number of keys	8
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 • Repeat rate, min. 1/s  Input current  Current consumption (rated value) 0.85 A  Current consumption, max. 1.1 A  Inrush current, max. 2.4 A; Rated value  Pt 0.02 A²-s  Power  Infeed power to the backplane bus (balanced) 6.7 W  Power consumption from the backplane bus (balanced) 6.7 W  Power loss  Power loss, typ. 7 W  Memory  Number of slots for SIMATIC memory card 1  SIMATIC memory card required Yes	Mode buttons	2
permissible range, lower limit (DC) permissible range, upper limit (DC) Reverse polarity protection Yes  Mains buffering  • Mains/voltage failure stored energy time • Repeat rate, min. 1/s  Input current  Current consumption (rated value) O.85 A  Current consumption, max. 1.1 A  Inrush current, max. 1.1 A  Inrush current, max. 2.4 A; Rated value  Power  Infeed power to the backplane bus Power consumption from the backplane bus (balanced) Power loss  Power loss, typ.  7 W  Memory  Number of slots for SIMATIC memory card 1 SIMATIC memory card required Yes	Supply voltage	
permissible range, upper limit (DC)  Reverse polarity protection  Mains buffering  Mains/voltage failure stored energy time Repeat rate, min.  Input current  Current consumption (rated value)  Current consumption, max.  Inrush current, max.  Iret  1/2  1/2  1/2  1/2  1/2  1/2  1/2  1/	Rated value (DC)	24 V
Reverse polarity protection  Mains buffering  Mains/voltage failure stored energy time Repeat rate, min.  Ngt  Input current  Current consumption (rated value)  Current consumption, max.  Inrush current, max.  1.1 A  Inrush current, max.  2.4 A; Rated value  1²t  0.02 A²-s  Power  Infeed power to the backplane bus Power consumption from the backplane bus (balanced)  Power loss  Power loss, typ.  7 W  Memory  Number of slots for SIMATIC memory card  1 SIMATIC memory card required  Yes	permissible range, lower limit (DC)	19.2 V
Mains buffering  • Mains/voltage failure stored energy time • Repeat rate, min.  1/s  Input current  Current consumption (rated value)  Current consumption, max.  1.1 A  Inrush current, max.  1.24 A; Rated value  1²t  0.02 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.  7 W  Memory  Number of slots for SIMATIC memory card  1 SIMATIC memory card required  5 ms  5 ms  5 ms  1/s  1/s  1/s  1/s  1/s  1/s  1/s  1	permissible range, upper limit (DC)	28.8 V
Mains/voltage failure stored energy time Repeat rate, min.  1/s  Input current  Current consumption (rated value) 0.85 A Current consumption, max. 1.1 A Inrush current, max. 2.4 A; Rated value   ²t 0.02 A²-s  Power  Infeed power to the backplane bus Power consumption from the backplane bus (balanced) 6.7 W  Power loss  Power loss, typ.  Number of slots for SIMATIC memory card SIMATIC memory card required  5 ms 1/s  Mains/voltage failure stored energy time 5 ms 1/s  M. Simas and si	Reverse polarity protection	Yes
Repeat rate, min.  Input current  Current consumption (rated value)  Current consumption, max.  Inrush current, max.  Irrush current, max.  Infeed power to the backplane bus  Power consumption from the backplane bus (balanced)  Power loss  Power loss, typ.  Number of slots for SIMATIC memory card  SIMATIC memory card required  1/8  0.85 A  0.87 A  0.98 A	Mains buffering	
Current consumption (rated value)  Current consumption, max.  Inrush current, max.  Irush current, max.  Infeed power to the backplane bus  Power consumption from the backplane bus (balanced)  Power loss  Power loss, typ.  Number of slots for SIMATIC memory card  SIMATIC memory card required  0.85 A  0.85 A  1.1 A  1.1 A  1.1 A  1.1 A  1.1 A  1.2 4 A; Rated value  1.2 W  0.02 A²·s  1.2 W  6.7 W  7 W  Memory  1.2 W  1.3 W  1.4 W  1.5	<ul> <li>Mains/voltage failure stored energy time</li> </ul>	5 ms
Current consumption (rated value)  Current consumption, max.  Inrush current, max.  Irush current, max.  Infeed power to the backplane bus  Power consumption from the backplane bus (balanced)  Power loss  Power loss, typ.  Number of slots for SIMATIC memory card  SIMATIC memory card required  1.1 A  1.1 A  1.1 A  1.1 A  1.2 W  6.7 W  7 W  1.2 W  7 W  1.3 W  1.4 W  1.5 W	<ul> <li>Repeat rate, min.</li> </ul>	1/s
Current consumption, max.  Inrush current, max.  2.4 A; Rated value  I²t  0.02 A²-s  Power  Infeed power to the backplane bus  Power consumption from the backplane bus (balanced)  Power loss  Power loss, typ.  7 W  Memory  Number of slots for SIMATIC memory card  SIMATIC memory card required  1.1 A  1.1 A  1.1 A  2.4 A; Rated value  6.7 V  7 W  Memory  7 W  Yes	Input current	
Inrush current, max.    2.4 A; Rated value    **  0.02 A**-s	Current consumption (rated value)	0.85 A
Power  Infeed power to the backplane bus Power consumption from the backplane bus (balanced) Power loss Power loss, typ.  Power loss, typ.  The word of slots for SIMATIC memory card SIMATIC memory card required  O.02 A²-s  12 W  6.7 W  7 W  Memory  Yes	Current consumption, max.	1.1 A
Infeed power to the backplane bus Power consumption from the backplane bus (balanced) Fower loss Power loss, typ.  7 W  Memory  Number of slots for SIMATIC memory card SIMATIC memory card required  12 W  6.7 W  7 W  7 W  Yes	Inrush current, max.	2.4 A; Rated value
Infeed power to the backplane bus Power consumption from the backplane bus (balanced) 6.7 W  Power loss Power loss, typ. 7 W  Memory  Number of slots for SIMATIC memory card SIMATIC memory card required  12 W 6.7 W  7 W  Yes	l²t	0.02 A <sup>2</sup> ·s
Power consumption from the backplane bus (balanced)  Power loss  Power loss, typ.  7 W  Memory  Number of slots for SIMATIC memory card  SIMATIC memory card required  Yes	Power	
Power loss Power loss, typ. 7 W  Memory  Number of slots for SIMATIC memory card 1  SIMATIC memory card required Yes	Infeed power to the backplane bus	12 W
Power loss, typ. 7 W  Memory  Number of slots for SIMATIC memory card 1  SIMATIC memory card required Yes	Power consumption from the backplane bus (balanced)	6.7 W
Number of slots for SIMATIC memory card 1 SIMATIC memory card required Yes	Power loss	
Number of slots for SIMATIC memory card 1 SIMATIC memory card required Yes	Power loss, typ.	7 W
SIMATIC memory card required Yes	Memory	
	Number of slots for SIMATIC memory card	1
	SIMATIC memory card required	Yes
Work memory	Work memory	

• integrated (for program)	1 Mhyta
integrated (for data)     integrated (for data)	1 Mbyte
• integrated (for data)	5 Mbyte
Load memory	22 Chuta
Plug-in (SIMATIC Memory Card), max.  Paging	32 Gbyte
Backup	V
maintenance-free	Yes
CPU processing times	
for bit operations, typ.	10 ns
for word operations, typ.	12 ns
for fixed point arithmetic, typ.	16 ns
for floating point arithmetic, typ.	64 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
a Siza may	5 Mbyte; For DBs with absolute addressing, the max. size is 64 KB
• Size, max.	5 Mbyte, For DBs with absolute addressing, the max. Size is 64 KB
FB A Number range	0 65 525
Number range     Size may	0 65 535
• Size, max.	1 Mbyte
FC Number rooms	0. 05 505
Number range	0 65 535
• Size, max.	1 Mbyte
OB	
• Size, max.	1 Mbyte
Number of free cycle OBs	100
<ul> <li>Number of time alarm OBs</li> </ul>	20
<ul> <li>Number of delay alarm OBs</li> </ul>	20
<ul> <li>Number of cyclic interrupt OBs</li> </ul>	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
<ul> <li>Number of diagnostic alarm OBs</li> </ul>	1
Nesting depth	
per priority class	24
Counters, timers and their retentivity	
S7 counter	
• Number	2 048
Retentivity	
— adjustable	Yes
IEC counter	
Number	Any (only limited by the main memory)
	Any (only limited by the main memory)
Retentivity	Yes
— adjustable	1 00
S7 times  • Number	2.049
	2 048
Retentivity	Voc
— adjustable	Yes
IEC timer	
• Number	
Retentivity	Any (only limited by the main memory)
— adjustable	Any (only limited by the main memory)  Yes
— adjustable  Data areas and their retentivity	
Data areas and their retentivity	Yes 512 kbyte; In total; available retentive memory for bit memories, timers,

• Size, max.	16 kbyte
Number of clock memories	8; 8 clock memory bit, grouped into one clock memory byte
Data blocks	
Retentivity adjustable	Yes
Retentivity preset	No
Local data	
<ul> <li>per priority class, max.</li> </ul>	64 kbyte; max. 16 KB per block
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	oz kayte, 7 iii outpute are iii tile process iiilage
— Inputs (volume)	8 kbyte
— Outputs (volume)	8 kbyte
	o kbyte
per CM/CP	0 khuta
— Inputs (volume)	8 kbyte
— Outputs (volume)	8 kbyte
Subprocess images	20
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
Dools	inserted in total
Rack	22. CDLL 24 modulos
Modules per rack, max.	32; CPU + 31 modules
Number of lines, max.  PIP 014	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
• to DP, master	Yes
• in AS, master	Yes
• in AS, slave	Yes
on Ethernet via NTP	100
→ OH EUROHIGUVIA NTF	Yes
Interfaces	Yes
Interfaces Number of PROFINET interfaces	
Number of PROFINET interfaces	2
Number of PROFINET interfaces Number of PROFIBUS interfaces	
Number of PROFINET interfaces  Number of PROFIBUS interfaces  1. Interface	2
Number of PROFINET interfaces Number of PROFIBUS interfaces  1. Interface Interface types	2 1
Number of PROFINET interfaces Number of PROFIBUS interfaces  1. Interface Interface types • RJ 45 (Ethernet)	2 1 Yes; X1
Number of PROFINET interfaces Number of PROFIBUS interfaces  1. Interface Interface types  • RJ 45 (Ethernet)  • Number of ports	2 1 Yes; X1 2
Number of PROFINET interfaces Number of PROFIBUS interfaces  1. Interface Interface types  • RJ 45 (Ethernet)  • Number of ports  • integrated switch	2 1 Yes; X1
Number of PROFINET interfaces Number of PROFIBUS interfaces  1. Interface Interface types  • RJ 45 (Ethernet)  • Number of ports  • integrated switch Protocols	2 1 Yes; X1 2 Yes
Number of PROFINET interfaces Number of PROFIBUS interfaces  1. Interface Interface types  • RJ 45 (Ethernet)  • Number of ports  • integrated switch	2 1 Yes; X1 2

Yes PROFINET IO Device • SIMATIC communication Yes • Open IE communication Yes; Optionally also encrypted Web server Yes Media redundancy Yes **PROFINET IO Controller** Services - PG/OP communication Yes - Isochronous mode Yes - 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, max. 256 - of which in line max 256 - Number of IO Devices that can be simultaneously 8; in total across all interfaces activated/deactivated, max. - Number of IO Devices per tool, max. 8 - Updating times The minimum value of the update time also depends on communication share set for PROFINET IO, on the number of IO devices, and on the quantity of configured user data Update time for IRT — for send cycle of 250 µs  $250\;\mu\text{s}$  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  $\mu$ s ... 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 1 ms to 512 ms — for send cycle of 1 ms - for send cycle of 2 ms 2 ms to 512 ms - for send cycle of 4 ms 4 ms to 512 ms **PROFINET IO Device** Services — PG/OP communication Yes - Isochronous mode No - IRT Yes - PROFlenergy Yes; per user program - Shared device Yes - Number of IO Controllers with shared device, max. 4 - activation/deactivation of I-devices Yes; per user program - Asset management record Yes; per user program 2. Interface Interface types • RJ 45 (Ethernet) Yes; X2 Number of ports 1 • integrated switch No Protocols Yes; IPv4 IP protocol • PROFINET IO Controller Yes PROFINET IO Device Yes • SIMATIC communication Yes • Open IE communication Yes; Optionally also encrypted Web server Yes Media redundancy No

Services  - Isochronous mode No - Isochronous mode No - Isochronous mode No - Direct date exchange No - IRT No - PROFlenergy Yes, per user program - No - Number of connectable IO Devices, max 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 per tool, max Number of IO Devices per tool, max Updating times - Updating times - PROFINET IO Device Services - PC/OP communication - Isochronous mode - IRT - Or send cycle of 1 ms - PROFINET IO Device Services - PC/OP communication - Isochronous mode - IRT - PROFlenergy Yes, per user program No - Sharred device - Number of IO Controllers with shared device, max Austral device - Number of IO Controllers with shared device, max Asset management record - RS 485 - ROFIBUS DP master - PROFIBUS DP master - Number of ports - ROFIBUS DP master - Number of connections, max Number of ports that integrated PROFIBUS DP interface - Number of ports - Number of ports Number of ports - Number of ports Number Of PROFIBUS DP interface - Number of ports Number Of PROFIBUS DP interface - Number of ports Number Of PROFIBUS DP interface - Number of ports Number Of PROFIBUS DP interface - Number of ports Number Of PROFIBUS DP interface - Number of ports Num	
- PG/OP communication Yes - Isochronous mode No - Direct data exchange No - Direct data exchange No - RRC Flenergy Yes; per user program - Prioritized startup No - Number of connectable IO Devices, max Number of connectable IO Devices for RT, max Of which in line, max Number of Colorects that can be simultaneously activated/ideactivated, max Number of IO Devices per tool, max Updating times - Updating times - FROFINET IO, on the number of IO devices, and on the quantity. configured user data  Update time for RT - For send cycle of 1 ms - PGOFINET IO, on the number of IO devices, and on the quantity. configured user data  PROFINET IO Device - PGIOP communication - IRT - PROFIenergy Yes; per user program No - Shared device - Number of IO Controllers with shared device, max activation/deactivation of I-devices - Asset management record - Interface - RS 485 - Number of ports - PROFIBUS DP master - PROFIBUS DP master - Number of Connections, max Number of DP slaves, max.	
- Isochronous mode - Direct data exchange - IRT - PROFienergy - Prioritized startup - No - Number of connectable IO Devices, max Of which in line, max Of which in line, max Number of IO Devices that can be simultaneously activated/deactivated, max Number of IO Devices per tool, max Number of IO Devices per tool, max Number of IO Devices per tool, max Updating times - The minimum value of the update time also depends on communication set for PROFINET IO, on the number of IO devices, and on the quantity configured user data  PROFINET IO Device  Services - PG/OP communication - Isochronous mode - IRT - PROFienergy - Prioritized startup - Shared device - Number of IO Controllers with shared device, max activation/deactivation of I-devices - Asset management record - RS 485 - Number of ports - PROFIBUS DP master - PROFIBUS DP master - Number of IOP slaves, max Number of IOP slaves, max Number of IOP slaves, max Aumber of IOP slaves, max Aumber of IOP slaves, max Number of IOP slaves, max Aumber of IOP slaves, max Number of IOP slaves on the connected via AS - Rocket PROFIBUS DP interface - Interface - Interface Int	
- Direct data exchange - IRT - PROFlenergy - Prioritized startup - Number of connectable IO Devices, max Number of connectable IO Devices for RT, max 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 per tool, max Updating times - Updating times - FROFINET IO, on the number of IO devices, and on the quantity configured user data  Update time for RT - for send cycle of 1 ms - PROFINET IO Device - Services - PG/OP communication - Isochronous mode - IRT - PROFienergy - Prioritized startup - Shared device - Number of IO Controllers with shared device, max Aset management record - RS 485 - Number of profits - PROFIBUS DP master - PROFIBUS DP master - PROFIBUS DP master - Number of Connections, max Number of CPI slaves, max Number of OP slaves of OP sla	
IRT PROFlenergy Prioritized startup No Number of connectable IO Devices, max. Number of connectable IO Devices for RT, max. Number of connectable IO Devices for RT, max. Number of IO Devices that can be simultaneously activated/deactivated, max. Number of IO Devices per tool, max. No the minimum value of the update time also depends on communication set for PROFINET IO, on the number of IO devices, and on the quantity. No the number of IO Devices per user program No No PROFIENT IO Device No No No PROFIENT IO, on the number of IO devices, and on the quantity. No No PROFIENT IO Device Services No N	
PROFlenergy Prioritized startup No Number of IO Controlable IO Devices, max.  Number of Connectable IO Devices for RT, max.  Number of IO Devices that can be simultaneously activated/deactivated, max.  Number of IO Devices per tool, max.  Number of IO Controllers with shared device, max.  Number of IO Controllers	
Prioritized startup  No  Number of connectable IO Devices, max.  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 per tool, max.  Number of IO Devices per tool, max.  Updating times  PROFINET IO, on the number of IO devices, and on the quantity configured user data  Update time for RT  for send cycle of 1 ms  PROFINET IO Device  Services  PGIOP communication  Isochronous mode  IRT  PROFInergy  Prioritized startup  No  Shared device  Number of IO Controllers with shared device, max.  - activation/deactivation of I-devices  Asset management record  PROFIBUS DP master  PROFIBUS DP master  Number of connections, max.  48; for the integrated PROFIBUS DP interface  Number of OP slaves, max.  48; for the integrated PROFIBUS DP interface  100 devices can be connected via AS-PROFIBUS DP interface  No  String In total, up to 1 000 distributed I/O devices can be connected via AS-PROFIBUS DP interface  1 to 10 devices can be connected via AS-PROFIBUS DP interface  No  1 total across all interfaces  8; in total across all interfaces  8; in total across all interfaces  1 total across al	
- Number of connectable IO Devices, max.  - Number of connectable IO Devices for RT, max.  - Number of connectable IO Devices for RT, max.  - of which in line, max.  - Number of IO Devices that can be simultaneously activate/decativated, max.  - Number of IO Devices per tool, max.  - Number of IO Devices per tool, max.  - Updating times  - Number of IO Devices per tool, max.  - Update time for RT  - for send cycle of 1 ms  - for send cycle of 1 ms  - FOSINET IO Device  Services  - PG/OP communication - Isochronous mode - IRT - PROFINET IO Device  Services  - PROFINET IO Device  Services  - Proforitized startup - Shared device - Number of IO Controllers with shared device, max activation/deactivation of I-devices - Asset management record  - Interface - RS 485 - Number of ports - PROFIBUS DP master - Number of DP slaves, max.  - Number of DP slaves, max.  - Number of DP slaves, max.  - Simulation up to 1 000 distributed I/O devices can be connected via AS-PROFIBUS DP interface - PROFIBUS DP interface - Number of DP slaves, max.  - Simulation of Connections, max Number of DP slaves, max.  - Simulation of Connections, max Number of DP slaves, max Simulation of Connections, max Number of DP slaves, max Simulation of Connections, max Number of DP slaves, max.	
PROFIBUS or PROFINET  - Number of connectable IO Devices for RT, max.  - of which in line, max.  - Number of IO Devices that can be simultaneously activate/dieactivated, max.  - Number of IO Devices per tool, max.  - Updating times  - Updating times  - Update time for RT  - for send cycle of 1 ms  - for send cycle of 1 ms  - I ms to 512 ms  - PROFINET IO Devices  Services  - PG/OP communication - IRT  - PROFlenergy - Prioritized startup - 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 - Number of Connections, max Sumber of DP slaves, max Number of DP slaves, max Signature and services and services and services all interface signatures as all interfaces - RT interface types - RS 485 - Number of DP slaves, max Signature and services and se	
- 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 - The minimum value of the update time also depends on communication is set for PROFINET IO, on the number of IO devices, and on the quantity configured user data  Update time for RT - for send cycle of 1 ms - for send cycle of 1 ms - PROFINET IO Device - PG/OP communication - Isochronous mode - IRT - PROFinergy - Prioritized startup - Shared device - Number of IO Controllers with shared device, max activation/deactivation of I-devices - Asset management record - RS 485 - Number of ports - PROFIBUS DP master - PROFIBUS DP master - PROFIBUS DP master - PROFIBUS DP master - Number of connections, max Altior for Device Simple Connected via A8 - Number of DP slaves, max 48; for the integrated PROFIBUS DP interface - Number of DP slaves, max 48; for the integrated PROFIBUS DP interface - Number of DP slaves, max Number of DP slaves, 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  The minimum value of the update time also depends on communication set for PROFINET IO, on the number of IO devices, and on the quantity configured user data  Update time for RT  for send cycle of 1 ms  FROFINET IO Device  Services  PG/OP communication IRT Isochronous mode IRT PROFlenergy Prioritized startup Profioritized 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 Als, for the integrated PROFIBUS DP interface Number of DP slaves, max Als, for the integrated PROFIBUS DP interface Number of DP slaves, max Number of DP slaves, max.	
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  - FOFINET IO Device  - PG/OP communication - Isochronous mode - IRT - PROFIenergy - Prioritized startup - Prioritized startup - Shared device - Number of IO Controllers with shared device, max activation/deactivation of I-devices - Asset management record - RS 485 - Number of ports - PROFIBUS DP master - PROFIBUS DP master - PROFIBUS DP master - Number of Connections, max Author of DP slaves, max Shared device - PROFIBUS DP islaves, max Asset management record - PROFIBUS DP interface - Number of DP slaves, max Asset management record - PROFIBUS DP interface - Number of DP slaves, max Asset management record - PROFIBUS DP interface - Number of DP slaves, max Author of DP slaves, max Asset management record - PROFIBUS DP interface - Number of DP slaves, max Author of DP slaves, max Author of DP slaves, max Author of DP slaves, max Als, for the integrated PROFIBUS DP interface - Number of DP slaves, max.	
The minimum value of the update time also depends on communication 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 — PROFIenergy — Prioritized startup — Prioritized startup — Shared device — Number of IO Controllers with shared device, max. — activation/deactivation of I-devices — Asset management record  Interface  Interface  Interface  PROFIBUS DP master • PROFIBUS DP master • Number of connections, max. • Number of DP slaves, max.  48; for the integrated 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 • Number of DP slaves, max.	
set for PROFINET IO, on the number of IO devices, and on the quantity. configured user data  Update time for RT  — for send cycle of 1 ms  PROFINET IO Device  Services  — PG/OP communication — Isochronous mode — 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 • Number of connections, max. • Number of connections, max. • Number of De slaves, max.  48; for the integrated 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	
- for send cycle of 1 ms	
PROFINET IO Device  Services  - PG/OP communication - Isochronous mode - 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 slave - SIMATIC communication - PROFIBUS DP master - Number of connections, max Number of DP slaves, max Asset management - Number of DP slaves, max Asset max - As	
Services  - PG/OP communication Yes - Isochronous mode No - IRT No - PROFlenergy Yes; per user program - Prioritized startup No - Shared device Yes - Number of IO Controllers with shared device, max activation/deactivation of I-devices Yes; per user program - Asset management record Yes; per user program  3. Interface Interface types • RS 485 Yes; X3 • Number of ports 1  Protocols  • PROFIBUS DP master • PROFIBUS DP master • SIMATIC communication Yes  PROFIBUS DP master • Number of connections, max. • Number of DP slaves, max. • Number of DP slaves, max.  • Number of DP slaves, max.	
- PG/OP communication Yes - Isochronous mode No - IRT No - PROFlenergy Yes; per user program - Prioritized startup No - Shared device Yes - Number of IO Controllers with shared device, max 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  Protocols  • PROFIBUS DP master • PROFIBUS DP master • Number of connections, max. • Number of DP slaves, max.  • Number of DP slaves, max.  • Number of DP slaves, max.  • Number of DP slaves, max.	
- Isochronous mode - 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 slave - SIMATIC communication  PROFIBUS DP master - Number of connections, max Number of DP slaves, max Sint of the integrated PROFIBUS DP interface - Number of DP slaves, max Sint of the integrated PROFIBUS DP interface - Number of DP slaves, max Sint of the integrated PROFIBUS DP interface - Number of DP slaves, max Sint of the integrated PROFIBUS DP interface - Sint of the integrated PROFIBUS DP interface	
- 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 slave - SIMATIC communication - Number of connections, max Number of DP slaves, max Number of 100 Controllers with shared device, max Yes - Yes - PROFIBUS DP master - Number of connections, max Number of DP slaves, max Summer of DP slaves, max.	
PROFlenergy Prioritized startup Shared device Number of IO Controllers with shared device, max activation/deactivation of I-devices Asset management record Asset	
- 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 slave - PROFIBUS DP master - PROFIBUS DP master - PROFIBUS DP master - PROFIBUS DP master - Number of connections, max Number of DP slaves, max Number of DP slaves, max Number of DP slaves, max Summer of DP slaves, max.	
- 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 slave - SIMATIC communication - Number of connections, max Number of DP slaves, max Ves - Yes - PROFIBUS DP master - 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	
- 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 master • Number of connections, max. • Number of DP slaves, max.  • Number of DP slaves, max.  Yes  Yes  Yes  Yes  Yes  Yes  Yes  Ye	
<ul> <li>Number of IO Controllers with shared device, max.</li> <li>— activation/deactivation of I-devices</li> <li>— Asset management record</li> <li>3. Interface</li> <li>Interface types</li> <li>• RS 485</li> <li>• Number of ports</li> <li>• PROFIBUS DP master</li> <li>• PROFIBUS DP slave</li> <li>• SIMATIC communication</li> <li>PROFIBUS DP master</li> <li>• Number of connections, max.</li> <li>• Number of DP slaves, max.</li> <li>48; for the integrated PROFIBUS DP interface</li> <li>125; In total, up to 1 000 distributed I/O devices can be connected via AS</li> </ul>	
<ul> <li>— activation/deactivation of I-devices     — Asset management record     Yes; per user program     Yes; per user program  3. Interface  Interface types  <ul> <li>RS 485</li> <li>Number of ports</li> <li>Protocols</li> <li>PROFIBUS DP master</li> <li>PROFIBUS DP slave</li> <li>SIMATIC communication</li> <li>PROFIBUS DP master</li> <li>No</li> <li>SIMATIC communication</li> <li>Yes</li> </ul> </li> <li>PROFIBUS DP master  <ul> <li>No</li> <li>SIMATIC communication</li> </ul> </li> <li>PROFIBUS DP master  <ul> <li>Number of connections, max.</li> <li>Number of DP slaves, max.</li> </ul> </li> <li>48; for the integrated PROFIBUS DP interface</li> <li>Number of DP slaves, max.</li> <li>125; In total, up to 1 000 distributed I/O devices can be connected via AS</li> </ul>	
- Asset management record  3. Interface Interface types  • RS 485  • 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.  Yes; yas  Yes; X3  • Yes; X3  • Yes  Yes  Yes  Yes  Yes  Ves  No  48; for the integrated PROFIBUS DP interface  125; In total, up to 1 000 distributed I/O devices can be connected via AS	
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.  • SIMATIC total, up to 1 000 distributed I/O devices can be connected via AS	
Interface types  • RS 485  • Number of ports  1  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.  1  Yes; X3  • Yes; X3  • Yes  Yes  Yes  No  • PROFIBUS DP master  • No  • SIMATIC communication  Yes  PROFIBUS DP interface  • Number of DP slaves, max.  • 125; In total, up to 1 000 distributed I/O devices can be connected via AS	
<ul> <li>RS 485 <ul> <li>Number of ports</li> <li>Protocols</li> </ul> </li> <li>PROFIBUS DP master <ul> <li>PROFIBUS DP slave</li> <li>No</li> <li>SIMATIC communication</li> <li>PROFIBUS DP master</li> <li>Number of connections, max.</li> <li>Number of DP slaves, max.</li> </ul> </li> <li>48; for the integrated PROFIBUS DP interface</li> <li>Number of DP slaves, max.</li> <li>125; In total, up to 1 000 distributed I/O devices can be connected via AS</li> </ul>	
<ul> <li>Number of ports</li> <li>Protocols</li> <li>PROFIBUS DP master</li> <li>PROFIBUS DP slave</li> <li>SIMATIC communication</li> <li>PROFIBUS DP master</li> <li>Number of connections, max.</li> <li>Number of DP slaves, max.</li> <li>1</li> <li>Yes</li> <li>No</li> <li>Yes</li> <li>PROFIBUS DP master</li> <li>Number of connections, max.</li> <li>125; In total, up to 1 000 distributed I/O devices can be connected via AS</li> </ul>	
Protocols  PROFIBUS DP master PROFIBUS DP slave SIMATIC communication PROFIBUS DP master Number of connections, max. Number of DP slaves, max.  Yes No 48; for the integrated PROFIBUS DP interface 125; In total, up to 1 000 distributed I/O devices can be connected via AS	
<ul> <li>PROFIBUS DP master</li> <li>PROFIBUS DP slave</li> <li>SIMATIC communication</li> <li>PROFIBUS DP master</li> <li>Number of connections, max.</li> <li>Number of DP slaves, max.</li> <li>Yes</li> <li>48; for the integrated PROFIBUS DP interface</li> <li>Number of DP slaves, max.</li> <li>125; In total, up to 1 000 distributed I/O devices can be connected via AS</li> </ul>	
<ul> <li>PROFIBUS DP slave</li> <li>SIMATIC communication</li> <li>PROFIBUS DP master</li> <li>Number of connections, max.</li> <li>Number of DP slaves, max.</li> <li>125; In total, up to 1 000 distributed I/O devices can be connected via AS</li> </ul>	
<ul> <li>SIMATIC communication</li> <li>PROFIBUS DP master</li> <li>Number of connections, max.</li> <li>Number of DP slaves, max.</li> <li>125; In total, up to 1 000 distributed I/O devices can be connected via AS</li> </ul>	
PROFIBUS DP master  ◆ Number of connections, max.  ◆ Number of DP slaves, max.  48; for the integrated PROFIBUS DP interface  125; In total, up to 1 000 distributed I/O devices can be connected via AS	
<ul> <li>Number of connections, max.</li> <li>Number of DP slaves, max.</li> <li>48; for the integrated PROFIBUS DP interface</li> <li>125; In total, up to 1 000 distributed I/O devices can be connected via AS</li> </ul>	
Number of DP slaves, max.  125; In total, up to 1 000 distributed I/O devices can be connected via AS	
	٠١,
Services	
— PG/OP communication Yes	
— Equidistance Yes	
— Isochronous mode Yes	
— Activation/deactivation of DP slaves  Yes	
Interface types	
RJ 45 (Ethernet)	
Autocrossing     Yes  Autocrossing  Yes  Yes	
Industrial Ethernet status LED  Yes  PS 495	
RS 485	
• Transmission rate, max. 12 Mbit/s	
Protocols	
PROFIsafe No	
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     10	
Number of connections via integrated interfaces     128	

<ul> <li>Number of S7 routing paths</li> </ul>	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
<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	
<ul> <li>PG/OP communication</li> </ul>	Yes; encryption with TLS V1.3 pre-selected
S7 routing	Yes
Data record routing	Yes
<ul> <li>S7 communication, as server</li> </ul>	Yes
<ul> <li>S7 communication, as client</li> </ul>	Yes
User data per job, max.	See online help (S7 communication, user data size)
Open IE communication	
• TCP/IP	Yes
— Data length, max.	64 kbyte
— several passive connections per port, supported	Yes
• ISO-on-TCP (RFC1006)	Yes
— Data length, max.	64 kbyte
• UDP	Yes
— Data length, max.	2 kbyte; 1 472 bytes for UDP broadcast
— UDP multicast	Yes; Max. 5 multicast circuits
• DHCP	Yes
• DNS	Yes Yes
SNMP     DCP	Yes
• LLDP	Yes
• Encryption	Yes; Optional
Web server	res, Optional
• HTTP	Yes; Standard and user pages
• HTTPS	Yes; Standard and user pages
OPC UA	
Runtime license required	Yes; "Medium" license required
OPC UA Client	Yes
<ul> <li>Application authentication</li> </ul>	Yes
— Security policies	Available security policies: None, Basic128Rsa15, Basic256Rsa15, Basic256Sha256
— User authentication	"anonymous" or by user name & password
— Number of connections, max.	10
<ul> <li>Number of nodes of the client interfaces, recommended max.</li> </ul>	2 000
<ul> <li>Number of elements for one call of OPC_UA_NodeGetHandleList/OPC_UA_ReadList/OPC_I max.</li> </ul>	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
<ul> <li>Number of simultaneous calls of the client instructions for session management, per connection, max.</li> </ul>	1
Number of simultaneous calls of the client instructions for data access, per connection, max.	5
Number of registerable nodes, max.	5 000
Number of registerable method calls of OPC_UA_MethodCall, max.	100
Number of inputs/outputs when calling OPC_UA_MethodCall, max.	20
OPC UA Server	Yes; Data access (read, write, subscribe), method call, custom address space

	· ·
Application authentication	Yes
<ul><li>— Security policies</li></ul>	Available security policies: None, Basic128Rsa15, Basic256Rsa15, Basic256Sha256
Liner authentication	
<ul><li>— User authentication</li><li>— GDS support (certificate management)</li></ul>	"anonymous" or by user name & password Yes
	48
Number of sessions, max.	100 000
Number of accessible variables, max.	20 000
Number of subscriptions per session may	20 000
<ul><li>— Number of subscriptions per session, max.</li><li>— Sampling interval, min.</li></ul>	100 ms
— Publishing interval, min.	200 ms
Number of server methods, max.	50
Number of server methods, max.      Number of inputs/outputs per server method, max.	20
Number of impuls/outputs per server metriou, max.      Number of monitored items, recommended max.	
Number of morniored items, recommended max.      Number of server interfaces, max.	2 000; for 1 s sampling interval and 1 s send interval  10 of each "Server interfaces" / "Companion specification" type and 20 of the
— Number of Server interfaces, max.	type "Reference namespace"
<ul> <li>Number of nodes for user-defined server interfaces,</li> </ul>	5 000
max.	
<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,
Number of leadable program messages in DLIM may	ProDiag or GRAPH 5 000
Number of loadable program messages in RUN, max.  Number of simultaneously active program alarms	0 000
Number of program alarms     Number of program alarms	1 000
• Nullipel of program alams	1 000
· ·	200
Number of alarms for system diagnostics	200
Number of alarms for system diagnostics     Number of alarms for motion technology objects	200 160
<ul> <li>Number of alarms for system diagnostics</li> <li>Number of alarms for motion technology objects</li> <li>Test commissioning functions</li> </ul>	160
Number of alarms for system diagnostics     Number of alarms for motion technology objects  Test commissioning functions  Joint commission (Team Engineering)	Yes; Parallel online access possible for up to 8 engineering systems
Number of alarms for system diagnostics     Number of alarms for motion technology objects  Test commissioning functions  Joint commission (Team Engineering)  Status block	Yes; Parallel online access possible for up to 8 engineering systems Yes; Up to 8 simultaneously (in total across all ES clients)
Number of alarms for system diagnostics     Number of alarms for motion technology objects      Test commissioning functions  Joint commission (Team Engineering)  Status block  Single step	Yes; Parallel online access possible for up to 8 engineering systems Yes; Up to 8 simultaneously (in total across all ES clients) No
Number of alarms for system diagnostics     Number of alarms for motion technology objects      Test commissioning functions  Joint commission (Team Engineering)  Status block  Single step  Number of breakpoints	Yes; Parallel online access possible for up to 8 engineering systems Yes; Up to 8 simultaneously (in total across all ES clients)
Number of alarms for system diagnostics     Number of alarms for motion technology objects      Test commissioning functions  Joint commission (Team Engineering)  Status block  Single step  Number of breakpoints  Status/control	Yes; Parallel online access possible for up to 8 engineering systems Yes; Up to 8 simultaneously (in total across all ES clients) No 8
Number of alarms for system diagnostics  Number of alarms for motion technology objects  Test commissioning functions  Joint commission (Team Engineering)  Status block  Single step  Number of breakpoints  Status/control  Status/control variable	Yes; Parallel online access possible for up to 8 engineering systems Yes; Up to 8 simultaneously (in total across all ES clients) No 8 Yes
Number of alarms for system diagnostics Number of alarms for motion technology objects  Test commissioning functions  Joint commission (Team Engineering)  Status block Single step  Number of breakpoints  Status/control  Status/control variable Variables	Yes; Parallel online access possible for up to 8 engineering systems Yes; Up to 8 simultaneously (in total across all ES clients) No 8
Number of alarms for system diagnostics Number of alarms for motion technology objects  Test commissioning functions  Joint commission (Team Engineering)  Status block  Single step  Number of breakpoints  Status/control  Status/control variable Variables Number of variables, max.	Yes; Parallel online access possible for up to 8 engineering systems Yes; Up to 8 simultaneously (in total across all ES clients) No 8  Yes Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters
Number of alarms for system diagnostics  Number of alarms for motion technology objects  Test commissioning functions  Joint commission (Team Engineering)  Status block  Single step  Number of breakpoints  Status/control  Status/control  Status/control variable  Variables  Number of variables, max.  — of which status variables, max.	Yes; Parallel online access possible for up to 8 engineering systems Yes; Up to 8 simultaneously (in total across all ES clients) No 8  Yes Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters 200; per job
Number of alarms for system diagnostics Number of alarms for motion technology objects  Test commissioning functions  Joint commission (Team Engineering)  Status block 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; Parallel online access possible for up to 8 engineering systems Yes; Up to 8 simultaneously (in total across all ES clients) No 8  Yes Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters
Number of alarms for system diagnostics Number of alarms for motion technology objects  Test commissioning functions  Joint commission (Team Engineering)  Status block 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; Parallel online access possible for up to 8 engineering systems Yes; Up to 8 simultaneously (in total across all ES clients) No 8  Yes Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters 200; per job 200; per job
Number of alarms for system diagnostics Number of alarms for motion technology objects  Test commissioning functions  Joint commission (Team Engineering)  Status block  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; Parallel online access possible for up to 8 engineering systems Yes; Up to 8 simultaneously (in total across all ES clients) No 8  Yes Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters 200; per job 200; per job
Number of alarms for system diagnostics Number of alarms for motion technology objects  Test commissioning functions  Joint commission (Team Engineering)  Status block  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	Yes; Parallel online access possible for up to 8 engineering systems Yes; Up to 8 simultaneously (in total across all ES clients) No 8  Yes Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters 200; per job 200; per job Yes Peripheral inputs/outputs
Number of alarms for system diagnostics Number of alarms for motion technology objects  Test commissioning functions  Joint commission (Team Engineering)  Status block  Single step  Number of breakpoints  Status/control  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.	Yes; Parallel online access possible for up to 8 engineering systems Yes; Up to 8 simultaneously (in total across all ES clients) No 8  Yes Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters 200; per job 200; per job
Number of alarms for system diagnostics Number of alarms for motion technology objects  Test commissioning functions  Joint commission (Team Engineering)  Status block 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, max.  Number of variables, max.  Number of variables, max.	Yes; Parallel online access possible for up to 8 engineering systems Yes; Up to 8 simultaneously (in total across all ES clients) No 8  Yes Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters  200; per job 200; per job  Yes Peripheral inputs/outputs 200
<ul> <li>Number of alarms for system diagnostics</li> <li>Number of alarms for motion technology objects</li> <li>Test commissioning functions</li> <li>Joint commission (Team Engineering)</li> <li>Status block</li> <li>Single step</li> <li>Number of breakpoints</li> <li>Status/control</li> <li>Status/control variable</li> <li>Variables</li> <li>Number of variables, max.         <ul> <li>of which status variables, max.</li> </ul> </li> <li>Forcing</li> <li>Forcing, variables</li> <li>Number of variables, max.</li> <li>Diagnostic buffer</li> <li>present</li> </ul>	Yes; Parallel online access possible for up to 8 engineering systems Yes; Up to 8 simultaneously (in total across all ES clients) No 8  Yes Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters  200; per job 200; per job Yes Peripheral inputs/outputs 200 Yes
<ul> <li>Number of alarms for system diagnostics</li> <li>Number of alarms for motion technology objects</li> <li>Test commissioning functions</li> <li>Joint commission (Team Engineering)</li> <li>Status block</li> <li>Single step</li> <li>Number of breakpoints</li> <li>Status/control</li> <li>Status/control variable</li> <li>Variables</li> <li>Number of variables, max.  — of which status variables, max.  — of which control variables, max.</li> <li>Forcing</li> <li>Forcing</li> <li>Forcing, variables</li> <li>Number of variables, max.</li> <li>Diagnostic buffer</li> <li>present</li> <li>Number of entries, max.</li> </ul>	Yes; Parallel online access possible for up to 8 engineering systems Yes; Up to 8 simultaneously (in total across all ES clients) No 8  Yes Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters  200; per job 200; per job Yes Peripheral inputs/outputs 200  Yes 3 200
<ul> <li>Number of alarms for system diagnostics</li> <li>Number of alarms for motion technology objects</li> <li>Test commission (Team Engineering)</li> <li>Status block</li> <li>Single step</li> <li>Number of breakpoints</li> <li>Status/control</li> <li>Status/control variable</li> <li>Variables</li> <li>Number of variables, max.  — of which status variables, max.</li> <li>— of which control variables, max.</li> <li>Forcing</li> <li>Forcing</li> <li>Forcing, variables</li> <li>Number of variables, max.</li> </ul> Diagnostic buffer <ul> <li>present</li> <li>Number of entries, max.</li> <li>— of which powerfail-proof</li> </ul>	Yes; Parallel online access possible for up to 8 engineering systems Yes; Up to 8 simultaneously (in total across all ES clients) No 8  Yes Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters  200; per job 200; per job Yes Peripheral inputs/outputs 200 Yes
<ul> <li>Number of alarms for system diagnostics</li> <li>Number of alarms for motion technology objects</li> <li>Test commission (Team Engineering)</li> <li>Status block</li> <li>Single step</li> <li>Number of breakpoints</li> <li>Status/control</li> <li>Status/control variable</li> <li>Variables</li> <li>Number of variables, max.  — of which status variables, max.</li> <li>— of which control variables, max.</li> <li>Forcing</li> <li>Forcing</li> <li>Forcing, variables</li> <li>Number of variables, max.</li> <li>Diagnostic buffer</li> <li>present</li> <li>Number of entries, max.  — of which powerfail-proof</li> <li>Traces</li> </ul>	Yes; Parallel online access possible for up to 8 engineering systems Yes; Up to 8 simultaneously (in total across all ES clients) No 8  Yes Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters  200; per job 200; per job  Yes Peripheral inputs/outputs 200  Yes 3 200 500
<ul> <li>Number of alarms for system diagnostics</li> <li>Number of alarms for motion technology objects</li> <li>Test commission (Team Engineering)</li> <li>Status block</li> <li>Single step</li> <li>Number of breakpoints</li> <li>Status/control</li> <li>Status/control variable</li> <li>Variables</li> <li>Number of variables, max.  — of which status variables, max.  — of which control variables, max.</li> <li>Forcing</li> <li>Forcing</li> <li>Forcing, variables</li> <li>Number of variables, max.</li> </ul> Diagnostic buffer <ul> <li>present</li> <li>Number of entries, max.</li> <li>— of which powerfail-proof</li> </ul> Traces <ul> <li>Number of configurable Traces</li> </ul>	Yes; Parallel online access possible for up to 8 engineering systems Yes; Up to 8 simultaneously (in total across all ES clients) No 8  Yes Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters  200; per job 200; per job Yes Peripheral inputs/outputs 200  Yes 3 200
<ul> <li>Number of alarms for system diagnostics</li> <li>Number of alarms for motion technology objects</li> <li>Test commission (Team Engineering)</li> <li>Status block</li> <li>Single step</li> <li>Number of breakpoints</li> <li>Status/control</li> <li>Status/control variable</li> <li>Variables</li> <li>Number of variables, max.  — of which status variables, max.  — of which control variables, max.</li> <li>Forcing</li> <li>Forcing</li> <li>Forcing, variables</li> <li>Number of variables, max.</li> <li>Diagnostic buffer</li> <li>present</li> <li>Number of entries, max.  — of which powerfail-proof</li> <li>Traces</li> <li>Number of configurable Traces</li> <li>Interrupts/diagnostics/status information</li> </ul>	Yes; Parallel online access possible for up to 8 engineering systems Yes; Up to 8 simultaneously (in total across all ES clients) No 8  Yes Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters  200; per job 200; per job  Yes Peripheral inputs/outputs 200  Yes 3 200 500
<ul> <li>Number of alarms for system diagnostics</li> <li>Number of alarms for motion technology objects</li> <li>Test commission (Team Engineering)</li> <li>Status block</li> <li>Single step</li> <li>Number of breakpoints</li> <li>Status/control</li> <li>Status/control variable</li> <li>Variables</li> <li>Number of variables, max.  — of which status variables, max.  — of which control variables, max.</li> <li>Forcing</li> <li>Forcing</li> <li>Forcing, variables</li> <li>Number of variables, max.</li> </ul> Diagnostic buffer <ul> <li>present</li> <li>Number of entries, max.</li> <li>— of which powerfail-proof</li> </ul> Traces <ul> <li>Number of configurable Traces</li> </ul> Interrupts/diagnostics/status information Diagnostics indication LED	Yes; Parallel online access possible for up to 8 engineering systems Yes; Up to 8 simultaneously (in total across all ES clients) No 8  Yes Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters  200; per job 200; per job  Yes Peripheral inputs/outputs 200  Yes 3 200 500  4; Up to 512 KB of data per trace are possible
Number of alarms for system diagnostics Number of alarms for motion technology objects  Test commissioning functions  Joint commission (Team Engineering)  Status block Single step Number of breakpoints  Status/control  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; Parallel online access possible for up to 8 engineering systems Yes; Up to 8 simultaneously (in total across all ES clients) No 8  Yes Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters  200; per job 200; per job  Yes Peripheral inputs/outputs 200  Yes 3 200 500  4; Up to 512 KB of data per trace are possible
Number of alarms for system diagnostics Number of alarms for motion technology objects  Test commissioning functions  Joint commission (Team Engineering)  Status block 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; Parallel online access possible for up to 8 engineering systems Yes; Up to 8 simultaneously (in total across all ES clients) No 8  Yes Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters  200; per job 200; per job  Yes Peripheral inputs/outputs 200  Yes 3 200 500  4; Up to 512 KB of data per trace are possible  Yes Yes
Number of alarms for system diagnostics Number of alarms for motion technology objects  Test commissioning functions  Joint commission (Team Engineering)  Status block Single step Number of breakpoints  Status/control  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; Parallel online access possible for up to 8 engineering systems Yes; Up to 8 simultaneously (in total across all ES clients) No 8  Yes Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters  200; per job 200; per job  Yes Peripheral inputs/outputs 200  Yes 3 200 500  4; Up to 512 KB of data per trace are possible

Connection display LINK TX/RX	Yes
Supported technology objects	
Motion Control	Yes; Note: The number of technology objects affects the cycle time of the PLC
	program; selection guide via the TIA Selection Tool
Number of available Motion Control resources for	2 400
technology objects	
Required Motion Control resources	40
— per speed-controlled axis	40
— per positioning axis	80
— per synchronous axis	160
— per external encoder	80
— per output cam	20 160
— per cam track	40
<ul><li>per probe</li><li>Positioning axis</li></ul>	40
Number of positioning axes at motion control cycle of 4 ms (typical value)	7
Number of positioning axes at motion control cycle of 8 ms (typical value)	14
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
Ambient conditions	
Ambient temperature during operation	
horizontal installation, min.	-25 °C; No condensation
<ul> <li>horizontal installation, max.</li> </ul>	60 °C; Display: 50 °C, at an operating temperature of typically 50 °C, the
	display is switched off
• vertical installation, min.	-25 °C; No condensation
<ul> <li>vertical installation, max.</li> </ul>	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	
Autuae during operation relating to sea level	
Installation altitude above sea level, max.	5 000 m; Restrictions for installation altitudes > 2 000 m, see manual
• • •	5 000 m; Restrictions for installation altitudes > 2 000 m, see manual
Installation altitude above sea level, max.	5 000 m; Restrictions for installation altitudes > 2 000 m, see manual
Installation altitude above sea level, max. configuration / header	5 000 m; Restrictions for installation altitudes > 2 000 m, see manual
Installation altitude above sea level, max.  configuration / header  configuration / programming / header	5 000 m; Restrictions for installation altitudes > 2 000 m, see manual  Yes
Installation altitude above sea level, max.  configuration / header  configuration / programming / header  Programming language	
Installation altitude above sea level, max.  configuration / header  configuration / programming / header  Programming language  — LAD	Yes
Installation altitude above sea level, max.  configuration / header  configuration / programming / header  Programming language  — LAD  — FBD	Yes Yes
<ul> <li>Installation altitude above sea level, max.</li> <li>configuration / header</li> <li>configuration / programming / header</li> <li>Programming language</li> <li>LAD</li> <li>FBD</li> <li>STL</li> </ul>	Yes Yes Yes
● Installation altitude above sea level, max.  configuration / header  configuration / programming / header  Programming language  — LAD  — FBD  — STL  — SCL	Yes Yes Yes Yes
Installation altitude above sea level, max.  configuration / header  configuration / programming / header  Programming language  — LAD  — FBD  — STL  — SCL  — GRAPH	Yes Yes Yes Yes
Installation altitude above sea level, max.  configuration / header  configuration / programming / header  Programming language  — LAD  — FBD  — STL  — SCL  — GRAPH  Know-how protection  • User program protection/password protection  • Copy protection	Yes Yes Yes Yes Yes Yes
Installation altitude above sea level, max.  configuration / header  configuration / programming / header  Programming language  — LAD  — FBD  — STL  — SCL  — GRAPH  Know-how protection  • User program protection/password protection  • Copy protection  • Block protection	Yes Yes Yes Yes Yes Yes
Installation altitude above sea level, max.  configuration / header  configuration / programming / header  Programming language  — LAD  — FBD  — STL  — SCL  — GRAPH  Know-how protection  • User program protection/password protection  • Copy protection  • Block protection  Access protection	Yes Yes Yes Yes Yes Yes Yes Yes
Installation altitude above sea level, max.  configuration / header  configuration / programming / header  Programming language  — LAD  — FBD  — STL  — SCL  — GRAPH  Know-how protection  • User program protection/password protection  • Copy protection  • Block protection  Access protection  • protection of confidential configuration data	Yes
Installation altitude above sea level, max.  configuration / header  configuration / programming / header  Programming language  — LAD  — FBD  — STL  — SCL  — GRAPH  Know-how protection  • User program protection/password protection • Copy protection  • Block protection  Access protection  • protection of confidential configuration data • Password for display	Yes
Installation altitude above sea level, max.  configuration / header  configuration / programming / header  Programming language  — LAD  — FBD  — STL  — SCL  — GRAPH  Know-how protection  • User program protection/password protection  • Copy protection  • Block protection  Access protection  • protection of confidential configuration data  • Password for display  • Protection level: Write protection	Yes
Installation altitude above sea level, max.  configuration / header  configuration / programming / header  Programming language  — LAD  — FBD  — STL  — SCL  — GRAPH  Know-how protection  • User program protection/password protection  • Copy protection  • Block protection  Access protection  • protection of confidential configuration data  • Password for display  • Protection level: Write protection  • Protection level: Read/write protection	Yes
Installation altitude above sea level, max.  configuration / header  configuration / programming / header  Programming language  — LAD  — FBD  — STL  — SCL  — GRAPH  Know-how protection  • User program protection/password protection  • Copy protection  • Block protection  Access protection  • protection of confidential configuration data  • Password for display  • Protection level: Write protection  • Protection level: Read/write protection  • Protection level: Complete protection	Yes
Installation altitude above sea level, max.  configuration / header  configuration / programming / header  Programming language  — LAD  — FBD  — STL  — SCL  — GRAPH  Know-how protection  • User program protection/password protection  • Copy protection  • Block protection  Access protection  • protection of confidential configuration data  • Password for display  • Protection level: Write protection  • Protection level: Read/write protection  • Protection level: Complete protection  programming / cycle time monitoring / header	Yes
Installation altitude above sea level, max.  configuration / header  configuration / programming / header  Programming language  — LAD  — FBD  — STL  — SCL  — GRAPH  Know-how protection  • User program protection/password protection • Copy protection  • Block protection  Access protection  • protection of confidential configuration data  • Password for display  • Protection level: Write protection  • Protection level: Read/write protection  • Protection level: Complete protection  programming / cycle time monitoring / header  • lower limit	Yes
Installation altitude above sea level, max.  configuration / header  configuration / programming / header  Programming language  — LAD  — FBD  — STL  — SCL  — GRAPH  Know-how protection  • User program protection/password protection  • Copy protection  • Block protection  Access protection  • protection of confidential configuration data  • Password for display  • Protection level: Write protection  • Protection level: Read/write protection  • Protection level: Complete protection  programming / cycle time monitoring / header  • lower limit  • upper limit	Yes
Installation altitude above sea level, max.  configuration / header  configuration / programming / header  Programming language  — LAD  — FBD  — STL  — SCL  — GRAPH  Know-how protection  • User program protection/password protection • Copy protection  • Block protection  Access protection  • protection of confidential configuration data  • Password for display  • Protection level: Write protection  • Protection level: Read/write protection  • Protection level: Complete protection  programming / cycle time monitoring / header  • lower limit	Yes

Depth	129 mm
Weights	
Weight, approx.	845 g

last modified:

8/16/2023