## **Data sheet**

## 6ES7515-2FM02-0AB0



SIMATIC S7-1500F, CPU 1515F-2 PN, central processing unit with work memory 750 KB for program and 3 MB for data, 1st interface: PROFINET IRT with 2-port switch, 2nd interface: PROFINET RT, 30 ns bit performance, SIMATIC Memory Card required

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)         0.8 A           Current consumption, max.         1.1 A           Inrush current, max.         2.4 A; Rated value           I²t         0.02 A² s           Power         Power to the backplane bus (balanced)         6.2 W           Power loss, typ.         6.3 W	General information	
Firmware version  Product function  • I&M data  • IsAM data  • IsAM data  • Isochronous mode  Persional forms (central)  Engineering with  • STEP 7 TIA Portal configurable/integrated from version  Configuration control  via dataset  Display  Screen diagonal [cm]  Control elements  Number of keys  Rated value (DC)  permissible range, upper limit (DC)  permissible range, upper limit (DC)  permissible range, upper limit (DC)  Alains/voltage failure stored energy time  • Mains/voltage failure stored bus (balanced)  Power consumption, max.  In LA  Inrush current, max.  Power consumption from the backplane bus (balanced)  Power consumption from the backplane bus (balanced)  Power consumption for the backplane bus (balanced)  Power consumption for lots of SIMATIC memory card required  Ves  Minam Duffor (SIMATIC memory card required  Power Loss of SIMATIC memory card required  Power Loss of SIMATIC memory card required  Pose (SIMATIC memory card required)  Ves  Ves  Ves  Ves  Ves  Ves  Ves  Ve	Product type designation	CPU 1515F-2 PN
Product function   18M data   Yes; 18M0 to 18M3   1 sockronous mode   2 ves; Distributed and central; with minimum OB 6x cycle of 500 µs (distributed) and 1 ms (central)   1 ves; Distributed and central; with minimum OB 6x cycle of 500 µs (distributed) and 1 ms (central)   1 ves provided of 1 ves provided 1 ves pr	HW functional status	FS01
• I8M data   Yes; I8M0 to I8M3   Yes; Distributed and central; with minimum OB 6x cycle of 500 µs (distributed) and 1 ms (central) with minimum OB 6x cycle of 500 µs (distributed) and 1 ms (central) with minimum OB 6x cycle of 500 µs (distributed) and 1 ms (central) with central year of 1 ms (central) with Central Yes or Nigher; with older TIA Portal versions configurable as 6ES7515-2FM01-0AB0  **Control control***  **Ves**  **Screen diagonal [cm]**  **Corten diagonal [cm]**  **Corten diagonal [cm]**  **Excreen diagonal [cm]**  **Corten diagonal [cm]**  **Excreen diagonal [cm]**	Firmware version	V2.9
Fingineering with  Fingineering with clear on seasons configurable and entral; with minimum OB 6x cycle of 500 µs (distributed) and in sections)  Fingineering with  Fingineering with  Fingineering with with clear of 100 µs (distributed) as 6ES7515-2FM01-0AB0  Fingineering with older TIA Portal versions configurable as 6ES7515-2FM01-0AB0  Fingineering with older TIA Portal versions configurable as 6ES7515-2FM01-0AB0  Fingineering with older TIA Portal versions configurable as 6ES7515-2FM01-0AB0  Fingineering with older TIA Portal versions configurable as 6ES7515-2FM01-0AB0  Fingineering with older TIA Portal versions configurable as 6ES7515-2FM01-0AB0  Fingineering with older TIA Portal versions configurable as 6ES7515-2FM01-0AB0  Fingineering with older TIA Portal versions configurable as 6ES7515-2FM01-0AB0  Fingineering with older TIA Portal versions configurable as 6ES7515-2FM01-0AB0  Fingineering with older TIA Portal versions configurable as 6ES7515-2FM01-0AB0  Fingineering with older TIA Portal versions configurable as 6ES7515-2FM01-0AB0  Fingineering with older TIA Portal versions configurable as 6ES7515-2FM01-0AB0  Fingineering with older TIA Portal versions configurable as 6ES7515-2FM01-0AB0  Fingineering with older TIA Portal versions configurable as 6ES7515-2FM01-0AB0  Fingineering with older TIA Portal versions configurable as 6ES7515-2FM01-0AB0  Fingineering with older TIA Portal versions configurable as 6ES7515-2FM01-0AB0  Fingineering wit	Product function	
Engineering with  STEP 7 TIA Portal configurable/integrated from version 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) 28.8 V  Reverse polarity protection Yes  Mains/voltage failure stored energy time Repeat rate, min. 1/1s  Input current  Current consumption (rated value) 0.8 A  Current consumption, max. 1.1 A  Inrush current, max. 2.4 A; Rated value  Power consumption from the backplane bus (balanced) 6.2 W  Power loss; typ.  Reverse polas; typ.  Reverse power of selection Selecti	● I&M data	Yes; I&M0 to I&M3
• STEP 7 TIA Portal configurable/integrated from version configurable as 6ES7515-2FM01-0AB0  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) 19.2 V permissible range, lower limit (DC) 19.2 V permissible range, upper limit (DC) 28.8 V  Reverse polarity protection Yes  • Rapeat rate, min. 1/s  Input current  Current consumption (rated value) 0.8 A  Current consumption (rated value) 0.0 AB A  Current consumption (rated value) 0.0 AB A  Current consumption max. 1.1 A  Inrush current, max. 2.4 A; Rated value  Power  Infeet power to the backplane bus (balanced) 6.2 W  Power loss, tp.  Memory  Number of slots for SIMATIC memory card required Yes	• Isochronous mode	
Configuration control	Engineering with	
Via dataset         Yes           Display           Screen diagonal [cm]         6.1 cm           Control elements           Number of keys           8         8           Mode buttons         2           Supply voltage           Rated value (DC)         24 V           permissible range, loyper 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         Urrent consumption (rated value)         0.8 A           Current consumption (rated value)         0.8 A           Current, max.         1.1 A         1.1 A           Inrush current, max.         2.4 A; Rated value         1.1 Power           Power         1.2 W         1.2 W         1.2 W           Power loss         2.2 W         2.3 W         2.3 W           Power loss, typ.         6.3 W         3.3 W           Memory         4.3 W         <	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 • Repeat rate, min. 1/s  Input current  Current consumption (rated value) 0.8 A  Current consumption (rated value) 0.8 A  Current consumption, max. 1.1 A  Inrush current, max. 2.4 A; Rated value  Pt 0.02 A*s  Power  Infeed power to the backplane bus 12 W  Power loss, typ. 6.3 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) 9 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 75 ms 8 • Repeat rate, min. 1/s Input current Current consumption (rated value) 0.8 A Current consumption (rated value) 1.1 A Inrush current, max. 1.1 A Inrush current, max. 2.4 A; Rated value  I**Pt 0.02 A**s  Power Consumption from the backplane bus (balanced) 6.2 W  Power consumption from the backplane bus (balanced) 6.3 W  Memory Number of slots for SIMATIC memory card 1 SIMATIC memory card required Yes	Display	
Number of keys   8	Screen diagonal [cm]	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  • Mains/voltage failure stored energy time 5 ms • Repeat rate, min. 1/s  Input current  Current consumption (rated value) 0.8 A  Current consumption, max. 1.1 A  Inrush current, max. 2.4 A; Rated value  Ift 0.02 A²-s  Power  Infeed power to the backplane bus (balanced) 6.2 W  Power loss, typ. 6.3 W  Memory  Number of slots for SIMATIC memory card 1  SIMATIC memory card required	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) 0.8 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 consumption from the backplane bus (balanced) 6.2 W  Power loss, typ. 6.3 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 5 ms • Repeat rate, min. 1/s  Input current  Current consumption (rated value) 0.8 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) 6.2 W  Power consumption from the backplane bus (balanced) 6.3 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.  Input current  Current consumption (rated value)  Current consumption, max.  Inrush current, max.  Iret  Power  Infeed power to the backplane bus Power consumption from the backplane bus (balanced)  Power loss  Power loss, typ.  Memory  Number of slots for SIMATIC memory card  Insula variety in the survey of the survey card required  19.2 V  Poss  19.2 V  28.8 V  28.8 V  29.8 A  20.0 A A  20	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 4 A; Rated value  Ift  0.02 A <sup>2</sup> ·s  Power  Infeed power to the backplane bus Power consumption from the backplane bus (balanced)  Power loss  Power loss, typ.  Memory  Number of slots for SIMATIC memory card  Infeed power dequired  Mains Vess  28.8 V  Pes  Sima   28.8 V  Pows  5 ms  5 ms  5 ms  6 ms	Rated value (DC)	24 V
Reverse polarity protection  Mains buffering  Mains/voltage failure stored energy time Repeat rate, min.  Negret rate, min.  Current consumption (rated value)  Current consumption, max.  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.  6.3 W  Memory  Number of slots for SIMATIC memory card  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.  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  12 W  Power consumption from the backplane bus (balanced)  6.2 W  Power loss  Power loss, typ.  6.3 W  Memory  Number of slots for SIMATIC memory card  1 SIMATIC memory card required  Yes	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) 0.8 A Current consumption, max. 1.1 A 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) 6.2 W  Power loss  Power loss, typ.  Memory  Number of slots for SIMATIC memory card SIMATIC memory card required  5 ms 1/s  1/s  1/s  1/s  1/s  1/s  1/s  1/	Reverse polarity protection	Yes
Repeat rate, min.  Input current  Current consumption (rated value)  Current consumption, max.  Inrush current, max.  Irrush current, max.  If t 0.02 A²-s  Power  Infeed power to the backplane bus  Power consumption from the backplane bus (balanced)  Power loss  Power loss, typ.  A 3 W  Memory  Number of slots for SIMATIC memory card  SIMATIC memory card required  1 //s  0.8 A  0.8 A  0.8 A  1.1 A  1.1 A  1.1 A  1.2 W  9.0 C A²-s  6.2 W  9.0 C A²-s  6.3 W  Memory  Number of slots for SIMATIC memory card  1 Yes	Mains buffering	
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  0.8 A  0.8 A  1.1 A  1.1 A  1.1 A  1.2 4 Rated value  1.2 W  6.2 W  6.2 W  6.3 W  6.3 W	<ul> <li>Mains/voltage failure stored energy time</li> </ul>	5 ms
Current consumption (rated value)  Current consumption, max.  Inrush current, max.  It was a 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 4 A; Rated value  0.02 A²-s  P. W  6.2 W  6.2 W  6.3 W  Memory  Number of slots for SIMATIC memory card  1  Yes	<ul> <li>Repeat rate, min.</li> </ul>	1/s
Current consumption, max.  Inrush current, max.  2.4 A; Rated value  It 0.02 A²-s  Power  Infeed power to the backplane bus 12 W  Power consumption from the backplane bus (balanced) 6.2 W  Power loss  Power loss, typ.  6.3 W  Memory  Number of slots for SIMATIC memory card 1  SIMATIC memory card required Yes	Input current	
Inrush current, max.    Power   Power to the backplane bus   12 W	Current consumption (rated value)	0.8 A
Power  Infeed power to the backplane bus  Power consumption from the backplane bus (balanced)  Power loss  Power loss, typ.  6.3 W  Memory  Number of slots for SIMATIC memory card  SIMATIC memory card required  0.02 A²-s  12 W  6.2 W  6.3 W  Memory  Yes	Current consumption, max.	1.1 A
Infeed power to the backplane bus Power consumption from the backplane bus (balanced) 6.2 W  Power loss Power loss, typ. 6.3 W  Memory  Number of slots for SIMATIC memory card SIMATIC memory card required  Yes	Inrush current, max.	2.4 A; Rated value
Infeed power to the backplane bus Power consumption from the backplane bus (balanced) 6.2 W  Power loss Power loss, typ. 6.3 W  Memory Number of slots for SIMATIC memory card SIMATIC memory card required  12 W 6.2 W 6.3 W  Memory Yes	l²t	0.02 A²·s
Power consumption from the backplane bus (balanced)  Power loss  Power loss, typ.  6.3 W  Memory  Number of slots for SIMATIC memory card  SIMATIC memory card required  Yes	Power	
Power loss Power loss, typ. 6.3 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. 6.3 W  Memory  Number of slots for SIMATIC memory card 1  SIMATIC memory card required Yes	Power consumption from the backplane bus (balanced)	6.2 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.	6.3 W
SIMATIC memory card required Yes	Memory	
	Number of slots for SIMATIC memory card	1
Work memory	SIMATIC memory card required	Yes
	Work memory	

• integrated (for program)	750 khuta
• integrated (for program)	750 kbyte
• integrated (for data)	3 Mbyte
Load memory	22 Chuta
Plug-in (SIMATIC Memory Card), max.  Poelsus	32 Gbyte
Backup	Voc
maintenance-free  CRU processing times	Yes
CPU processing times	00
for bit operations, typ.	30 ns
for word operations, typ.	36 ns
for fixed point arithmetic, typ.	48 ns
for floating point arithmetic, typ.	192 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
• Size, max.	3 Mbyte; For DBs with absolute addressing, the max. size is 64 KB
FB	5 Mbyte, 1 of DB5 With absolute addressing, the max. 3/26 is 64 NB
Number range	0 65 535
Size, max.	500 kbyte
• Size, max.	ood ruyto
	0 65 535
<ul><li>Number range</li><li>Size, max.</li></ul>	500 kbyte
	500 kbyte
OB Size may	500 khyta
Size, max.      Number of free evelo OPa	500 kbyte
Number of free cycle OBs	100
Number of time alarm OBs	20
Number of delay alarm OBs	20
Number of cyclic interrupt OBs	20; With minimum OB 3x cycle of 500 μs
Number of process alarm OBs	50
Number of DPV1 alarm OBs	3
Number of isochronous mode OBs	2
<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
Counters, timers and their retentivity	
S7 counter	
Number	2 048
Retentivity	
— adjustable	Yes
IEC counter	
Number	Any (only limited by the main memory)
Retentivity	
— adjustable	Yes
S7 times	
Number	2 048
Retentivity	
— adjustable	V
IEC timer	Yes
• Number	Yes
Retentivity	
	Any (only limited by the main memory)
·	Any (only limited by the main memory)
— adjustable	
— adjustable Data areas and their retentivity	Any (only limited by the main memory)  Yes
— adjustable	Any (only limited by the main memory)
adjustable  Data areas and their retentivity	Any (only limited by the main memory)  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	
<ul> <li>Retentivity adjustable</li> </ul>	Yes
Retentivity preset	No
Local data	
per priority class, max.	64 kbyte; max. 16 KB per block
Address area	o mayte, max. To the per block
Number of IO modules	9.100; may number of modules / submodules
	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	
— Inputs (volume)	8 kbyte
— Outputs (volume)	8 kbyte
Subprocess images	
Number of subprocess images, max.	32
Hardware configuration	
Number of distributed IO systems	64; A distributed I/O system is characterized not only by the integration of
	distributed I/O via PROFINET or PROFIBUS communication modules, but also
	by the connection of I/O via AS-i master modules or links (e.g. IE/PB-Link)
Number of DP masters	
• Via CM	8; A maximum of 8 CMs/CPs (PROFIBUS, PROFINET, Ethernet) can be
N 1 (10 0 1 iii	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	20. CDLL 24 modules
Modules per rack, max.	32; CPU + 31 modules
Number of lines, max.	1
PtP CM	
<ul> <li>Number of PtP CMs</li> </ul>	the number of connectable PtP CMs is only limited by the number of available slots
Time of day	31013
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
• in AS, master	Yes
• in AS, slave	Yes
on Ethernet via NTP	Yes
Interfaces	
Number of PROFINET interfaces	2
1. Interface	
Interface types	V V
• RJ 45 (Ethernet)	Yes; X1
<ul> <li>Number of ports</li> </ul>	2
integrated switch	Yes
Protocols	
IP protocol	Yes; IPv4
<ul> <li>PROFINET IO Controller</li> </ul>	Yes
PROFINET IO Device	Yes
SIMATIC communication	Yes
Open IE communication	Yes; Optionally also encrypted

Web server	Yes
Media redundancy	Yes; MRP Automanager according to IEC 62439-2 Edition 2.0
PROFINET IO Controller	
Services	
— PG/OP communication	Yes
— Isochronous mode	Yes
<ul> <li>Direct data exchange</li> </ul>	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
<ul> <li>Number of connectable IO Devices, max.</li> </ul>	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 500 $\mu s$ 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 $\mu s:375~\mu s,625~\mu s3875~\mu s)$
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	Vee
— PG/OP communication	Yes
— Isochronous mode	No You
— IRT	Yes
PROFlenergy      Shared device	Yes; per user program
	Yes 4
<ul> <li>Number of IO Controllers with shared device, max.</li> <li>activation/deactivation of I-devices</li> </ul>	
— Asset management record	Yes; per user program Yes; per user program
Asset management record  2. Interface	rea, per user program
Interface types	
RJ 45 (Ethernet)	Yes; X2
Number of ports	1
integrated switch	No
Protocols	
IP protocol	Yes; IPv4
PROFINET IO Controller	Yes
PROFINET IO Device	Yes
SIMATIC communication	Yes
Open IE communication	Yes; Optionally also encrypted
Web server	Yes
Media redundancy	No
PROFINET IO Controller	
Services	
— PG/OP communication	Yes

— Isochronous mode	No
Direct data exchange	No
— IRT	No
— PROFlenergy	Yes; per user program No
— Prioritized startup	
Number of connectable IO Devices, max.	32; In total, up to 1 000 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFINET
<ul> <li>Number of connectable IO Devices for RT, max.</li> </ul>	32
— of which in line, max.	32
<ul> <li>Number of IO Devices that can be simultaneously activated/deactivated. max.</li> </ul>	8; in total across all interfaces
— Number of IO Devices per tool, max.	8
— Updating times	The minimum value of the update time also depends on communication share
	set for PROFINET IO, on the number of IO devices, and on the quantity of configured user data
Update time for RT	, and the second
— for send cycle of 1 ms	1 ms to 512 ms
PROFINET IO Device	
Services	
<ul><li>— PG/OP communication</li></ul>	Yes
— Isochronous mode	No
— IRT	No
— PROFlenergy	Yes; per user program
<ul><li>— Prioritized startup</li></ul>	No
— Shared device	Yes
<ul> <li>Number of IO Controllers with shared device, max.</li> </ul>	4
<ul> <li>activation/deactivation of I-devices</li> </ul>	Yes; per user program
Asset management record	Yes; per user program
Interface types	
RJ 45 (Ethernet)	
• 100 Mbps	Yes
<ul> <li>Autonegotiation</li> </ul>	Yes
<ul> <li>Autocrossing</li> </ul>	Yes
Industrial Ethernet status LED	Yes
Protocols	
PROFIsafe	Yes; V2.4 / V2.6
Number of connections	
<ul> <li>Number of connections, max.</li> </ul>	192; via integrated interfaces of the CPU and connected CPs / CMs
<ul> <li>Number of connections reserved for ES/HMI/web</li> </ul>	10
<ul> <li>Number of connections via integrated interfaces</li> </ul>	108
Number of S7 routing paths	16
Redundancy mode	
H-Sync forwarding	Yes
Media redundancy	
— Media redundancy	only via 1st interface (X1)
— MRP	Yes; MRP Automanager according to IEC 62439-2 Edition 2.0, MRP Manager; MRP Client
— MRP interconnection, supported	Yes; as MRP ring node according to IEC 62439-2 Edition 3.0
— MRPD	Yes; Requirement: IRT
— Switchover time on line break, typ.	200 ms; For MRP, bumpless for MRPD
— Number of stations in the ring, max.	50
SIMATIC communication	V
• S7 routing	Yes
<ul> <li>S7 communication, as server</li> </ul>	Yes
O.7	V
S7 communication, as client	Yes
User data per job, max.	Yes See online help (S7 communication, user data size)
User data per job, max.  Open IE communication	See online help (S7 communication, user data size)
User data per job, max.  Open IE communication  TCP/IP	See online help (S7 communication, user data size) Yes
<ul> <li>User data per job, max.</li> <li>Open IE communication</li> <li>TCP/IP  — Data length, max.</li> </ul>	See online help (S7 communication, user data size)  Yes 64 kbyte
User data per job, max.  Open IE communication  TCP/IP  — Data length, max. — several passive connections per port, supported	See online help (S7 communication, user data size)  Yes 64 kbyte Yes
<ul> <li>User data per job, max.</li> <li>Open IE communication</li> <li>TCP/IP  — Data length, max.</li> </ul>	See online help (S7 communication, user data size)  Yes 64 kbyte

UDP — Data length, max. — UDP multicast  → UDP yes  ◆ ENMP  ◆ ENM		
- UDP multicast	• UDP	Yes
DIVICP     DIVICP     SMMP     Yes     SMMP     Yes     SMMP     Yes     CDCP     Yes     LLDP     Yes     Euroyation     Yes; Optional     Yes     Standard and user pages     HTTP     Yes; Standard and user pages     HTTP     Yes; Standard and user pages     HTTP     Yes; Standard and user pages     THTPS     Yes     OPC UA Client     Yes     OPC UA Client     Yes     OPC UA Client     Yes     Sancurity policies: None, Basic128Rsa15, Basic256Rsa15, Basic256Rsa1	— Data length, max.	2 kbyte; 1 472 bytes for UDP broadcast
NSMP     SNMP     SNMP     NDCP     Ves     Encryption     Ves: Cytional  Web server     HTTP     Ves: Standard and user pages     Nerview of the Recommended in the Standard and user pages     PoPC UA Client     Ves     Application authentication     Security policies     Application authentication     Number of connections, max.     Number of connections, max.     Number of connections, max.     Number of connections, max.     Number of defenents for one call of ON LIA. Noticelerishand-LattOPC_UA ReadListOPC_ID     Number of defenents for one call of ON LIA. Noticelerishand-LattOPC_UA ReadListOPC_ID     Number of defenents for one call of ON LIA. Noticelerishand-LattOPC_UA ReadListOPC_ID     Number of defenents for one call of ON LIA. Noticelerishand-LattOPC_UA ReadListOPC_ID     Number of defenents for one call of ONC_UA, NameSpaceGetIndex.Lst, max.     Number of defenents for one call of ONC_UA, NameSpaceGetIndex.Lst, max.     Number of defenents for one call of ONC_UA, NameSpaceGetIndex.Lst, max.     Number of simultaneous calls of the client instructions for seasion management, per connection, max.     Number of simultaneous calls of the client instructions for data access, per connection, max.     Number of might standard calls of the client instructions for data access, per connection, max.     Number of might standard calls of the client instructions for data access, per connection, max.     Number of progletable method calls of ONC_UA, MethodCall, max.     OPC UA, MethodCall, max.     OPC UA	<ul><li>UDP multicast</li></ul>	Yes; Max. 5 multicast circuits
SMMP ODP ODP STATE Encryption Press Pres	• DHCP	Yes
DCP     LLDP     LDP	• DNS	Yes
**Euroption**  **Pes Coptional**  **Ves Enroption**  **Ves Coptional**  **Ves Standard and user pages*  **HTTPS**  **Pes Standard and user pages*  **Pes Stand	• SNMP	Yes
**Euroption**  **Pes Coptional**  **Ves Enroption**  **Ves Coptional**  **Ves Standard and user pages*  **HTTPS**  **Pes Standard and user pages*  **Pes Stand	• DCP	Yes
■ Encryption  Wab server  ■ HTTP ■ HTTP ■ HTTP ■ Yes, Standard and user pages  POP UA  ■ Runtime license required ■ OPC UA Clent ■ Application authentication ■ Security policies ■ Application authentication ■ Number of connections, max. ■ Number of connections, max. ■ Number of elements for one call of OPC_UA_NeedSpecifications at elements for one call of OPC_UA_NeedSpecifications. ■ Number of elements for one call of OPC_UA_NeedSpecifications. ■ Number of elements for one call of OPC_UA_NeedSpecifications. ■ Number of elements for one call of OPC_UA_NeedSpecifications. ■ Number of sements for one call of OPC_UA_NeedSpecifications. ■ Number of sements for one call of OPC_UA_NeedSpecifications. ■ Number of sements for one call of OPC_UA_NeedSpecifications. ■ Number of simultaneous calls of the client instructions for data access, per connection, max. ■ Number of simultaneous calls of the client instructions for data access, per connection, max. ■ Number of registerable method calls of OPC_UA_Needoctifications. ■ Number of registerable method calls of OPC_UA_MethodCell max. ■ Number of registerable method calls of OPC_UA_MethodCell max. ■ Number of progleterable method calls of OPC_UA_MethodCell max. ■ Number of implicatioptus when calling OPC_UA_MethodCell max. ■ Number of severity policies ■ Application authentication ■ Repulsion authentication ■ Repulsion authentication ■ Repulsion authentication ■ Number of subscriptions per session, max. ■ Number of subscriptions per session, max. ■ Number of subscriptions per session, max. ■ Number of registerable modes, max. ■ Number of resident eventures, min. ■ Publishing interval, min. ■ Publishing interval, min. ■ Number of prodes for user-defined server interfaces, max. ■ Number of prodes for user-defined server interfaces, max. ■ Number of rodes for user-defined server interfaces, max. ■ Number of prodes for user-defined server interfaces, max. ■ Number of prodes for user-defined server interfaces, max. ■ Number of prodes for user-defined server interfaces, max. ■		Yes
### HTTP ### Ness Standard and user pages #### Ness Standard and user pages #### Ness Standard and user pages ### Ness Standard and		
HTTP  HTTPS  Ves: Standard and user pages  Ves: Standard and user pages  Furthine license required  ● OPC UA Client  — Application authentication — Security policies — Security policies — User authentication — Number of connections, max. — Number of elements for one call of OPC_UA, Neder-Get-Handle-List/OPC_UA, Read-List/OPC_UA, Neder-Get-Handle-List/OPC_UA, Read-List/OPC_UA, Neder-Get-Handle-List/OPC_UA, Read-List/OPC_UA, Neder-Get-Handle-List, max. — Number of elements for one call of OPC_UA, Neder-Get-Handle-List, max. — Number of elements for one call of OPC_UA, Neder-Get-Handle-List, max. — Number of elements for one call of OPC_UA, Neder-Get-Handle-List, max. — Number of elements for one call of OPC_UA, Neder-Get-Handle-List, max. — Number of elements for one call of OPC_UA, Neder-Get-Handle-List, max. — Number of elements for one call of OPC_UA, Neder-Get-Handle-List, max. — Number of elements for one call of OPC_UA, Neder-Get-Handle-List, max. — Number of sevintianeous calls of the client instructions for data access, per connection, max. — Number of registerable nodes, max. — Number of registerable nodes, max. — Number of registerable method calls of OPC_UA, Methodical, max. — Number of properties of the client instructions for data access, per connection, max. — Number of properties of the client instructions for data access, per connection, max. — Number of properties on the client instructions of data access, per connection, max. — Number of properties on the client instructions of data access, per connection, max. — Number of properties on the client instructions of data access, per connection, max. — Number of severities on the client instructions of the client instructions of data access. — Number of subscriptions per session, max. — Number of subscriptions per session, max. — Number of subscriptions per session, max. — Number of properties oneder. — Number of properties oneder. — Number of properties onede	· · · · · · · · · · · · · · · · · · ·	103, Optional
HTTPS Personal variables in the internal intern		Vec. Standard and user pages
Runtime license required   Yes		
■ Runtime license required ■ OPC UA Client  — Application authentication — Security policies — User authentication — Number of connections, max. — Number of connections, max. — Number of connections of the client interfaces, recommended max. — Number of elements for one call of OPC_UA, NodeCelHandelLst/OPC_UA, ReadList/OPC_I max. — Number of elements for one call of OPC_UA, MethodCelHandelLst, max. — Number of elements for one call of OPC_UA, MethodCelHandelLst, max. — Number of elements for one call of OPC_UA, MethodCelHandelLst, max. — Number of elements for one call of OPC_UA, MethodCelHandelLst, max. — Number of elements for one call of OPC_UA, MethodCelHandelLst, max. — Number of elements for one call of OPC_UA, MethodCelHandelLst, max. — Number of simultaneous calls of the client instructions for session management, per connection, max. — Number of simultaneous calls of the client instructions for data access, per connection, max. — Number of registerable method calls of OPC_UA, MethodCell, max. — Number of registerable method calls of OPC_UA, MethodCell, max.  ■ OPC UB Server  — Application authentication — Security policies — User authentication — Security policies — User authentication — Number of sessions, max. — Number of server methods, max. — Number of server methods, max. — Number of inputs/outputs per server method, max. — Number of nontioned times, recommended max. — Number o		res, Standard and user pages
OPC UA Client		V.
- Application authentication - Security policies - Number of connections, max Number of connections, max Number of connections, max Number of nodes of the client interfaces, recommended max Number of elements for one call of OPC_UA_Node-CetriandicList/OPC_UA_ReadList/OPC_Imax Number of elements for one call of OPC_UA_NemeSpace-Getindex.List, max Number of elements for one call of OPC_UA_MemoSpace-Getindex.List, max Number of elements for one call of OPC_UA_MemoSpace-Getindex.List, max Number of elements for one call of OPC_UA_MemoGoat-MedicList, max Number of simultaneous calls of the client instructions for asian management, per connection, max Number of simultaneous calls of the client instructions for data access, per connection, max Number of registerable method calls of OPC_UA_Method-Call, max Number of registerable method calls of OPC_UA_Method-Call, max Number of inputs/outputs when calling OPC_UA_Method-Call, max OPC UB Server - Application authentication - Security policies - User authentication - Number of sessions, max Number of sessions, max Number of subscriptions per session, max Number of subscriptions per session, max Number of registerable nodes, max Number of registerable nodes, max Number of subscriptions per session, max Number of subscriptions per session, max Number of subscriptions per session, max Number of registerable nodes, max Number of nontroed items, recommended max Number of nontroed ite	•	
- Security policies - User authentication - Number of connections, max Number of connections, max Number of learning to the client interfaces, recommended max Number of elements for one call of OPC_UA, Note GetHandleList/OPC_UA, ReadList/OPC_UA, Note GetHandleList/OPC_UA, ReadList/OPC_UA, Note GetHandleList/OPC_UA, ReadList/OPC_UA, Number of elements for one call of OPC_UA, Names/paceGetIndexList, max Number of elements for one call of OPC_UA, MethodGetHandleList, max Number of simultaneous calls of the client instructions for session management, per connection, max Number of simultaneous calls of the client instructions for data access, per connection, max Number of registerable nodes, max Number of registerable method calls of OPC_UA, MethodGall, max OPC UA Server - Application authentication - Security policies - Security policies - Ves; Data access (read, write, subscribe), method call, custom address spa via the control of the control	OPC UA Client	
- User authentication	<ul> <li>Application authentication</li> </ul>	Yes
- Number of connections, max Number of nodes of the client interfaces, recommended max Number of elements for one call of OPC_UA_ Node-GetHandleList/OPC_UA_ReadList/OPC_I max Number of elements for one call of OPC_UA_Node-GetHandleList, max Number of elements for one call of OPC_UA_Node-GetHandleList, max Number of elements for one call of OPC_UA_Method-GetHandleList, max Number of simultaneous calls of the client instructions for session management, per connection, max Number of simultaneous calls of the client instructions for session management, per connection, max Number of registerable nodes, max Number of registerable method calls of OPC_UA_Method-Gall, max Number of inputs/toutputs when calling OPC_UA_Method-Gall, max OPC UA Server - Application authentication - Security policies - User authentication - Security policies - User authentication - Number of sessions, max Number of sessions max Number of server methods, max Number of server methods, max Number of monitored items, recommended max Number of nontored items, recommended max Number	— Security policies	
- Number of connections, max Number of nodes of the client interfaces, recommended max Number of elements for one call of OPC_UA, Node-GetHandleList/OPC_UA_ReadList/OPC_I max Number of elements for one call of OPC_UA, Node-GetHandleList, max Number of elements for one call of OPC_UA, Method-GetHandleList, max Number of elements for one call of OPC_UA, Method-GetHandleList, max Number of simultaneous calls of the client instructions for session management, per connection, max Number of simultaneous calls of the client instructions for session management, per connection, max Number of registerable method calls of OPC_UA, Method-Getl, max Number of registerable method calls of OPC_UA, Method-Gall, max Number of inputs/couplus when calling OPC_UA, Method-Gall, max OPC UA Server - Application authentication - Security policies - User authentication - Number of sessions, max Number of sessions, max Number of registerable nodes, max Number of registerable nodes, max Number of registerable nodes, max Number of sessions wax Number of sessions wax Number of sessions wax Number of sessions wax Number of server methods, max Number of server methods, max Number of monitored items, recommended max Number of nondes for user-defined server interfaces, max Number of nondes for user-defined server interfaces, max Number of nondes for user-defined server interfaces, max Number of source-defined server interfaces, max Number of source-defined server interfaces, max Number of nondes for user-defined server interfaces, max Number of source-defined	— User authentication	"anonymous" or by user name & password
Number of nodes of the client interfaces, recommended max.  Number of elements for one call of OPC_UA_NodeGetHandleList/OPC_UA_ReadList/OPC_U max.  Number of elements for one call of OPC_UA_NameSpaceGetIndex.List, max.  Number of elements for one call of OPC_UA_NameSpaceGetIndex.List, max.  Number of elements for one call of OPC_UA_NameSpaceGetIndex.List, max.  Number of elements for one call of OPC_UA_MethodGetHandleList, max.  Number of simultaneous calls of the client instructions for session management, per connection, max.  Number of simultaneous calls of the client instructions for data access, per connection, max.  Number of registerable nodes, max.  Number of registerable method calls of OPC_UA_MethodCall, max.  Number of progristerable method calls of OPC_UA_MethodCall, max.  Number of Inputs/outputs when calling OPC_UA_MethodCall, max.  Number of progristerable method calls of Yes  Application authentication  Security policies  Security policies  User authentication  Number of sessions, max.  Number of sessions, max.  Number of sessions, max.  Number of sessions, max.  Number of segisterable nodes, max.  Number of segisterable nodes, max.  Number of registerable nodes, max.  Number of registerable nodes, max.  Number of inputs/outputs per server method, max.  Number of onoitored items, recommended max.  Number of onoitored items, reco	<ul> <li>Number of connections, max.</li> </ul>	
OPC_UA_NodeGetHandleList/OPC_UA_ReadList/OPC_I max.  - Number of elements for one call of OPC_UA_NameSpaceGetIndexList, max Number of elements for one call of OPC_UA_NameSpaceGetIndexList, max Number of simultaneous calls of the client instructions for session management, per connection, max Number of simultaneous calls of the client instructions for data access, per connection, max Number of registerable nedtes, max Number of registerable method calls of OPC_UA_MethodCall, max Number of inputs/outputs when calling OPC_UA_MethodCall, max Number of inputs/outputs when calling OPC_UA_MethodCall, max OPC_UA_Method	— Number of nodes of the client interfaces,	2 000
OPC_UA_NameSpaceGetIndexList, max.  - Number of elements for one call of OPC_UA_MethodGetHandleList, max.  - Number of simultaneous calls of the client instructions for session management, per connection, max.  - Number of simultaneous calls of the client instructions for data access, per connection, max.  - Number of registerable method calls of OPC_UA_MethodCall, max.  - Number of registerable method calls of OPC_UA_MethodCall, max.  - Number of inputs/outputs when calling OPC_UA_MethodCall, max.  • OPC UA Server  - Application authentication - Security policies - Security policies - User authentication - Number of sessions, max Number of sessions, max Number of sessions, max Number of subscriptions per session, max Number of server methods, max Number of server methods, max Number of inputs/outputs per server method, max Number of monitored items, recommended max Number of monitored items, recommended max Number of nodes for user-defined server interfaces, max.  - Number of nodes for user-defined server interfaces, max.  - Number of modes for user-defined server interfaces, max Number of server interfaces, max Number of modes for user-defined server interfaces, max Number of modes for user-defined server interfaces, max Number	OPC_UA_NodeGetHandleList/OPC_UA_ReadList/OPC_U	
OPC_UA_MethodCetHandleList, max.  — Number of simultaneous calls of the client instructions for session management, per connection, max.  — Number of simultaneous calls of the client instructions for data access, per connection, max.  — Number of registerable modes, max.  — Number of registerable method calls of OPC_UA_MethodCall, max.  — Number of inputs/outputs when calling OPC_UA_MethodCall, max.  — Number of inputs/outputs when calling OPC_UA_MethodCall, max.  — OPC UA Server  — Application authentication — Security policies  — User authentication — Number of sessions, max.  — Number of sessions, max.  — Number of secsestble variables, max. — Number of subscriptions per session, max.  — Number of subscriptions per session, max.  — Number of subscriptions per session, max.  — Number of server methods, max.  — Number of inputs/outputs per server method, max.  — Number of nodes for user-defined server interfaces, max.  — Number of nodes for user-defined server interfaces, max.  — Number of nodes for user-defined server interfaces, max.  Further protocols  • MODBUS  • MODBUS  • MODBUS  OPC_UA, MethodCall, max.  1 00  100  20  20  20  20  20  20  20  20		20
instructions for session management, per connection, max.  — Number of simultaneous calls of the client instructions for data access, per connection, max.  — Number of registerable nodes, max.  — Number of registerable method calls of OPC_UA_MethodCall, max.  — Number of inputs/outputs when calling OPC_UA_MethodCall, max.  — Number of inputs/outputs when calling OPC_UA_MethodCall, max.  • OPC UA Server  — Application authentication — Security policies  — Security policies  — User authentication — Number of sessions, max.  — Number of sessions, max.  — Number of sessions per session, max.  — Number of subscriptions per session, max.  — Number of subscriptions per session, max.  — Number of server methods, max.  — Publishing interval, min.  — Publishing interval, min.  — Publishing interval, min.  — Number of monitored items, recommended max.  — Number of nodes for user-defined server interfaces, max.  — Number of nodes for user-defined server interfaces, max.  Further protocols  • MODBUS  • MODBUS  Testing the client instruction for data access (pread, write, subscribe), method call, custom address spa 100 000  Available security policies: None, Basic128Rsa15, Basic256Rsa15, Basic256Sha256  — User authentication — "anonymous" or by user name & password  48  — 100 000 — "anonymous" or by user name & password  48  — 100 000 — "anonymous" or by user name & password  40  — "anonymous" or by user name & password  40  — "anonymous" or by user name & password  40  — "anonymous" or by user name & password  40  — "anonymous" or by user name & password  40  — "anonymous" or by user name & password  41  42  40  40  40  40  40  40  40  40  40		100
instructions for data access, per connection, max.  — Number of registerable method calls of OPC_UA_MethodCall, max.  — Number of inputs/outputs when calling OPC_UA_MethodCall, max.  • OPC UA Server  — Application authentication  — Security policies  — User authentication  — Number of sessions, max.  — Number of accessible variables, max.  — Number of sessions of sessions, max.  — Number of subscriptions per session, max.  — Number of subscriptions per session, max.  — Publishing interval, min.  — Publishing interval, min.  — Number of server methods, max.  — Number of server interfaces, max.  — Number of monitored items, recommended max.  — Number of nodes for user-defined server interfaces, max.  — Number of nodes for user-defined server interfaces, max.  Further protocols  • MODBUS  Testing the value of registerable method calls of 100 000  100 000	instructions for session management, per connection,	1
- Number of registerable method calls of OPC_UA_MethodCall, max Number of inputs/outputs when calling OPC_UA_MethodCall, max.  • OPC UA Server  - Application authentication - Security policies - Security policies - User authentication - Number of sessions, max Number of accessible variables, max Number of accessible variables, max Number of subscriptions per session, max Number of subscriptions per session, max Number of subscriptions per session, max Sampling interval, min Publishing interval, min Number of inputs/outputs per server method, max Number of monitored items, recommended max Number of server interfaces, max Number of server interfaces max Number of server interfaces, max Number of server interfaces max Number of		5
- Number of registerable method calls of OPC_UA_MethodCall, max Number of inputs/outputs when calling OPC_UA_MethodCall, max.  • OPC UA Server - Application authentication - Security policies - Security policies - Security policies - User authentication - Number of sessions, max Number of accessible variables, max Number of accessible variables, max Number of subscriptions per session, max Number of subscriptions per session, max Number of subscriptions per session, max Publishing interval, min Publishing interval, min Number of inputs/outputs per server method, max Number of monitored items, recommended max Number of server interfaces, max Number of server interfaces, max Number of server interfaces, max Number of nodes for user-defined server interfaces, max Number of nodes for user-defined server interfaces, max MODBUS - MODBUS - MODBUS - Yes - MODBUS - Yes - Equidistance - Yes - Ves	<ul> <li>Number of registerable nodes, max.</li> </ul>	5 000
- Number of inputs/outputs when calling OPC_UA_MethodCall, max.  OPC UA Server - Application authentication - Security policies - Security policies - Security policies - Security policies - User authentication - Number of sessions, max Number of accessible variables, max Number of registerable nodes, max Number of registerable nodes, max Number of subscriptions per session, max Sampling interval, min Publishing interval, min Number of server methods, max Number of inputs/outputs per server method, max Number of server interfaces, max Number of server interfaces, max Number of server interfaces, max Number of monitored items, recommended max Number of nodes for user-defined server interfaces, max.  MODBUS  Yes; MODBUS TCP	Number of registerable method calls of	100
OPC UA Server  Application authentication  Security policies  Available security policies: None, Basic128Rsa15, Basic256Rsa15, Basic256Sha256  User authentication  Number of sessions, max.  Number of accessible variables, max.  Number of registerable nodes, max.  Number of subscriptions per session, max.  Number of subscriptions per session, max.  Number of server methods, max.  Publishing interval, min.  Publishing interval, min.  Number of inputs/outputs per server method, max.  Number of monitored items, recommended max.  Number of server interfaces, max.  Number of nodes for user-defined server interfaces, max.  Further protocols  MODBUS  Yes; Data access (read, write, subscribe), method call, custom address spatyes  Available security policies: None, Basic128Rsa15, Basic256Rsa15, Basic256Sha256  available security policies: None, Basicala Shasicala Shasicala Shasicala Shasicala Shasicala Shasi		20
- Application authentication - Security policies - Security policies - Security policies - Available security policies: None, Basic128Rsa15, Basic256Rsa15, Basic256Sha256 - User authentication - Number of sessions, max Number of secssible variables, max Number of registerable nodes, max Number of subscriptions per session, max Number of subscriptions per session, max Sampling interval, min Publishing interval, min Number of server methods, max Number of inputs/outputs per server method, max Number of monitored items, recommended max Number of server interfaces, max Number of nodes for user-defined server interfaces, max.  Further protocols  ■ MODBUS  Yes; MODBUS TCP		Yes; Data access (read, write, subscribe), method call, custom address space
- Security policies - Security policies - Security policies - User authentication - Number of sessions, max Number of accessible variables, max Number of registerable nodes, max Number of subscriptions per session, max Number of subscriptions per session, max Sampling interval, min Publishing interval, min Publishing interval, min Number of server methods, max Number of inputs/outputs per server method, max Number of monitored items, recommended max Number of server interfaces, max Number of nodes for user-defined server interfaces, max.  - Number of nodes for user-defined server interfaces, max MODBUS - MODBUS - Yes; MODBUS TCP - Value of sexual security policies: None, Basic128Rsa15, Basic256Rsa15, Basica16, B		
<ul> <li>Number of sessions, max.</li> <li>Number of accessible variables, max.</li> <li>Number of registerable nodes, max.</li> <li>Number of subscriptions per session, max.</li> <li>Sampling interval, min.</li> <li>Publishing interval, min.</li> <li>Number of server methods, max.</li> <li>Number of inputs/outputs per server method, max.</li> <li>Number of monitored items, recommended max.</li> <li>Number of server interfaces, max.</li> <li>Number of nodes for user-defined server interfaces, max.</li> <li>Further protocols</li> <li>MODBUS</li> <li>Yes; MODBUS TCP</li> </ul>	• •	Available security policies: None, Basic128Rsa15, Basic256Rsa15,
<ul> <li>Number of sessions, max.</li> <li>Number of accessible variables, max.</li> <li>Number of registerable nodes, max.</li> <li>Number of subscriptions per session, max.</li> <li>Sampling interval, min.</li> <li>Publishing interval, min.</li> <li>Number of server methods, max.</li> <li>Number of inputs/outputs per server method, max.</li> <li>Number of monitored items, recommended max.</li> <li>Number of server interfaces, max.</li> <li>Number of nodes for user-defined server interfaces, max.</li> <li>Further protocols</li> <li>MODBUS</li> <li>Yes; MODBUS TCP</li> </ul>	— User authentication	"anonymous" or by user name & password
<ul> <li>Number of accessible variables, max.</li> <li>Number of registerable nodes, max.</li> <li>Number of subscriptions per session, max.</li> <li>Sampling interval, min.</li> <li>Publishing interval, min.</li> <li>Number of server methods, max.</li> <li>Number of inputs/outputs per server method, max.</li> <li>Number of monitored items, recommended max.</li> <li>Number of server interfaces, max.</li> <li>Number of nodes for user-defined server interfaces, max.</li> <li>Further protocols</li> <li>MODBUS</li> <li>Yes; MODBUS TCP</li> </ul>		
<ul> <li>Number of registerable nodes, max.</li> <li>Number of subscriptions per session, max.</li> <li>Sampling interval, min.</li> <li>Publishing interval, min.</li> <li>Number of server methods, max.</li> <li>Number of inputs/outputs per server method, max.</li> <li>Number of monitored items, recommended max.</li> <li>Number of server interfaces, max.</li> <li>Number of server interfaces, max.</li> <li>Number of server interfaces, max.</li> <li>To of each "Server interfaces" / "Companion specification" type and 20 of the type "Reference namespace"</li> <li>Number of nodes for user-defined server interfaces, max.</li> <li>Further protocols</li> <li>MODBUS</li> <li>Yes; MODBUS TCP</li> </ul>		
<ul> <li>— Number of subscriptions per session, max.</li> <li>— Sampling interval, min.</li> <li>— Publishing interval, min.</li> <li>— Number of server methods, max.</li> <li>— Number of inputs/outputs per server method, max.</li> <li>— Number of monitored items, recommended max.</li> <li>— Number of server interfaces, max.</li> <li>— Number of server interfaces, max.</li> <li>— Number of nodes for user-defined server interfaces, max.</li> <li>Further protocols</li> <li>◆ MODBUS</li> <li>◆ MODBUS TCP</li> <li>Ochronous mode</li> <li>Equidistance</li> <li>Yes</li> </ul>		
— Sampling interval, min.  — Publishing interval, min.  — Number of server methods, max.  — Number of inputs/outputs per server method, max.  — Number of monitored items, recommended max.  — Number of server interfaces, max.  — Number of server interfaces, max.  — Number of nodes for user-defined server interfaces, max.  Further protocols  ■ MODBUS  Testing interval, min.  200  2 000; for 1 s sampling interval and 1 s send interval  10 of each "Server interfaces" / "Companion specification" type and 20 of the type "Reference namespace"  5 000  Yes; MODBUS TCP  Ochronous mode  Equidistance  Yes	•	
<ul> <li>— Publishing interval, min.</li> <li>— Number of server methods, max.</li> <li>— Number of inputs/outputs per server method, max.</li> <li>— Number of monitored items, recommended max.</li> <li>— Number of server interfaces, max.</li> <li>— Number of server interfaces, max.</li> <li>— Number of nodes for user-defined server interfaces, max.</li> <li>Further protocols</li> <li>◆ MODBUS</li> <li>◆ MODBUS TCP</li> <li>Ochronous mode</li> <li>Equidistance</li> <li>Yes</li> </ul>		
<ul> <li>Number of server methods, max.</li> <li>Number of inputs/outputs per server method, max.</li> <li>Number of monitored items, recommended max.</li> <li>Number of server interfaces, max.</li> <li>Number of server interfaces, max.</li> <li>Number of nodes for user-defined server interfaces, max.</li> <li>Further protocols         <ul> <li>MODBUS</li> <li>Yes; MODBUS TCP</li> </ul> </li> <li>Yes</li> </ul>		
<ul> <li>Number of inputs/outputs per server method, max.</li> <li>Number of monitored items, recommended max.</li> <li>Number of server interfaces, max.</li> <li>Number of nodes for user-defined server interfaces, max.</li> <li>Number of nodes for user-defined server interfaces, max.</li> <li>Further protocols         <ul> <li>MODBUS</li> <li>MODBUS TCP</li> </ul> </li> <li>Ochronous mode</li> <li>Equidistance</li> <li>Yes</li> </ul>	-	
<ul> <li>Number of monitored items, recommended max.</li> <li>Number of server interfaces, max.</li> <li>Number of nodes for user-defined server interfaces, max.</li> <li>Number of nodes for user-defined server interfaces, max.</li> <li>Turther protocols</li> <li>MODBUS</li> <li>MODBUS TCP</li> <li>MODBUS TCP</li> <li>MODBUS TCP</li> <li>Yes</li> </ul>		
<ul> <li>— Number of server interfaces, max.</li> <li>— Number of nodes for user-defined server interfaces, max.</li> <li>Further protocols         <ul> <li>MODBUS</li> <li>MODBUS TCP</li> </ul> </li> <li>Ochronous mode</li> <li>Equidistance</li> <li>Yes</li> </ul>	<ul> <li>Number of inputs/outputs per server method, max.</li> </ul>	20
type "Reference namespace"  Number of nodes for user-defined server interfaces, max.  Further protocols  • MODBUS  Yes; MODBUS TCP  cochronous mode  Equidistance  Yes	<ul> <li>Number of monitored items, recommended max.</li> </ul>	2 000; for 1 s sampling interval and 1 s send interval
max.  Further protocols	<ul><li>Number of server interfaces, max.</li></ul>	10 of each "Server interfaces" / "Companion specification" type and 20 of the type "Reference namespace"
MODBUS     Yes; MODBUS TCP  sochronous mode  Equidistance Yes	•	5 000
Equidistance Yes	Further protocols	
ochronous mode  Equidistance Yes	• MODBUS	Yes; MODBUS TCP
Equidistance Yes		
		Yes
A HIGS SPACE TURING (UIS	·	
		CA
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	
<ul> <li>Number of program alarms</li> </ul>	800
<ul> <li>Number of alarms for system diagnostics</li> </ul>	200
<ul> <li>Number of alarms for motion technology objects</li> </ul>	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)
Single step	No
Number of breakpoints	8
Status/control	
<ul> <li>Status/control variable</li> </ul>	Yes; without fail-safe
Variables	inputs/outputs, bit memories, DBs, peripheral I/Os (without fail-safe), times, counters
<ul> <li>Number of variables, max.</li> </ul>	
<ul><li>of which status variables, max.</li></ul>	200; per job
<ul><li>of which control variables, max.</li></ul>	200; per job
Forcing	
• Forcing	Yes; without fail-safe
• Forcing, variables	peripheral inputs/outputs (without fail-safe)
Number of variables, max.	200
Diagnostic buffer	
• present	Yes
Number of entries, max.	3 200
— of which powerfail-proof	500
Traces	
Number of configurable Traces	4; Up to 512 KB of data per trace are possible
Interrupts/diagnostics/status information	
Diagnostics indication LED	
RUN/STOP LED	Yes
• ERROR LED	Yes
MAINT LED	Yes
STOP ACTIVE LED	Yes
Connection display LINK TX/RX	Yes
Supported technology objects	
Motion Control	Yes; Note: The number of technology objects affects the cycle time of the PLC
Number of available Motion Control resources for	program; selection guide via the TIA Selection Tool 2 400
technology objects	
<ul> <li>Required Motion Control resources</li> </ul>	
— 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
<ul> <li>Positioning axis</li> </ul>	
<ul> <li>Number of positioning axes at motion control cycle of 4 ms (typical value)</li> </ul>	7
<ul> <li>Number of positioning axes at motion control cycle of 8 ms (typical value)</li> </ul>	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
Standards, approvals, certificates	
Highest safety class achievable in safety mode	
Performance level according to ISO 13849-1	PLe
•	

SIL acc. to IEC 61508	SIL 3
Probability of failure (for service life of 20 years and repair time	e of 100 hours)
— Low demand mode: PFDavg in accordance with SIL3	< 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	
horizontal installation, min.	-25 °C; No condensation
horizontal installation, max.	60 °C; Display: 50 °C, at an operating temperature of typically 50 °C, the display is switched off
• vertical installation, min.	-25 °C; No condensation
• vertical installation, max.	40 °C; Display: 40 °C, at an operating temperature of typically 40 °C, the display is switched off
Ambient temperature during storage/transportation	
• min.	-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>Password for display</li> </ul>	Yes
<ul> <li>Protection level: Write protection</li> </ul>	Yes; Specific write protection both for Standard and for Failsafe
<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.	830 g

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