## **SIEMENS**

## **Data sheet**



SIMATIC S7-1500, CPU 1515-2 PN, central processing unit with 500 KB work memory 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

Product type designation CPU 1515-2 PN HW functional status FS01 Firmware version V2.8  Product function  • I&M data Yes; I&M0 to I&M3  • Isochronous mode Yes; Distributed and central; with minimum OB 6x cycle of 500 µs (distributed) and 1 ms (central)  Engineering with  • STEP 7 TIA Portal configurable/integrated from version V16 (FW V2.8); with older TIA Portal versions configurable as 6ES7515-2AM01-0AB0  Configuration control via dataset Yes  Display  Screen diagonal [cm] 6.1 cm  Control elements  Number of keys 8  Mode buttons 2  Supply voltage Type of supply voltage 24 V DC permissible range, lower limit (DC) 19.2 V permissible range, lopper limit (DC) 28.8 V Reverse polarity protection Yes  Mains buffering  • Mains/voltage failure stored energy time • Repeat rate, min.  Input current  Current consumption (rated value) 0.8 A  Current consumption (rated value) 0.9 A* on the backplane bus (balanced)  Power Instead of the product of the backplane bus (balanced)  Power loss  Power loss loss is with minimum of log lanced log value (list lamb and calcenter loss)  V2.8  Power loss loss is with minimum OB &x cycle of 500 µs  V2.8  Power loss loss is with minimum OB &x cycle of 500 µs  V2.8  Power loss loss is with minimum OB &x cycle of 500 µs  V2.8  Power loss loss is with minimum OB extends of the loss of 500 µs  V2.8  Power loss loss is with minimum OB extends of the loss of 500 µs  V2.8  Power loss loss is with minimum OB loss is with minimum OB loss is with minimum OB loss is objected to law is listed to law is listed to law is listed tof	General information	
Firmware version  Product function  • I&M data  • Isochronous mode  Engineering with  • STEP 7 TIA Portal configurable/integrated from version  configuration control  via dataset  Yes  Display  Screen diagonal [cm]  Control elements  Number of keys  Mode buttons  2  Supply voltage  permissible range, lower limit (DC)  permissible range, lower limit (DC)  permissible range, upper limit (DC)  Reverse polarity protection  • Repeat rate, min.  Input current  Current consumption (rated value)  Current consumption, max.  Inrush current, max.  Power  Infeed power to the backplane bus  Power closs, typ.  Power loss, typ.  Power loss, typ.  Power loss, typ.  First NaM3  Yes; I8M0 to I8M3  Yes; I8M0 to I8M3  Yes; Distributed and central; with minimum OB 6x cycle of 500 µs (distributed) and 1 ms (central)  Yes; Distributed and central; with minimum OB 6x cycle of 500 µs (distributed) and 1 ms (central)  Power loss, typ.  Ves; I8M0 to I8M3  Yes; I8M0 to I8M3  Yes; I8M0 to I8M3  Yes; Distributed and central; with minimum OB 6x cycle of 500 µs (distributed) and 1 ms (central)  Post (distributed) and 1 ms (d	Product type designation	CPU 1515-2 PN
Product function    Name   Nam	HW functional status	FS01
● I&M data  ● Isochronous mode  Fingineering with  ● STEP 7 TIA Portal configurable/integrated from version control via dataset  Ves  Configuration control via dataset  Ves  Display  Screen diagonal [cm]  Control elements  Number of keys  Mode buttons  Supply voltage  Type of supply voltage permissible range, lower limit (DC) permissible range, upper limit (DC) permissible range, upper limit (DC)  Alains buffering  ● Mains/voltage failure stored energy time ● Repeat rate, min.  Input current  Current consumption, max.  Inrush current, max.  Power Insert Date Applicable supplements (Date and	Firmware version	V2.8
• Isochronous mode  Yes; Distributed and central; with minimum OB 6x cycle of 500 µs (distributed) and 1 ms (central)  Engineering with  • STEP 7 TIA Portal configurable/integrated from version  Configuration control  via dataset  Yes  Display  Screen diagonal [cm]  Control elements  Number of keys  Mode buttons  2  Supply voltage  Type of	Product function	
Engineering with  STEP 7 TIA Portal configurable/integrated from version  Note: Time 1	• I&M data	Yes; I&M0 to I&M3
STEP 7 TIA Portal configurable/integrated from version version version version  V16 (FW V2.8); with older TIA Portal versions configurable as 6ES7515-2AM01-0AB0  V26 V27 V28	• Isochronous mode	
Version           Configuration control           via dataset         Yes           Display           Screen diagonal [cm]         6.1 cm           Control elements           Number of keys         8           Mode buttons         2           Supply voltage           Type of supply voltage           Permissible range, lower limit (DC)         19.2 V           permissible range, upper limit (DC)         28.8 V           Reverse polarity protection         Yes           Mains buffering         5 ms           • 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; nominal           I²t         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.	Engineering with	
via dataset Yes  Display  Screen diagonal [cm] 6.1 cm  Control elements  Number of keys 8 Mode buttons  Supply voltage  Type of supply voltage  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; nominal I't 0.02 A²-s  Power  Infeed power to the backplane bus (balanced) 6.2 W  Power loss  Power loss, typ. 6.3 W		
Screen diagonal [cm] 6.1 cm  Control elements  Number of keys 8 Mode buttons 2  Supply voltage  Type of supply voltage 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, max. 1.1 A Inrush current, max. 2.4 A; nominal IPt 0.02 A²-s  Power  Infeed power to the backplane bus (balanced) 6.2 W  Power loss  Power loss, typ. 6.3 W	Configuration control	
Screen diagonal [cm] 6.1 cm  Control elements  Number of keys 8  Mode buttons 2  Supply voltage  Type of supply voltage 24 V DC 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; nominal  I²t 0.02 A²-s  Power  Infeed power to the backplane bus (balanced) 6.2 W  Power loss  Power loss, typ. 6.3 W	via dataset	Yes
Number of keys  Number of keys  Mode buttons  2  Supply voltage  Type of supply voltage  24 V DC  permissible range, lower limit (DC)  permissible range, upper limit (DC)  permissible range, upper limit (DC)  28.8 V  Reverse polarity protection  **Mains buffering  **Mains Noltage failure stored energy time  **Repeat rate, min.**  Input current  Current consumption (rated value)  Current consumption, max.  1.1 A  Inrush current, max.  1.2 A A; nominal  12 W  Power  Infeed power to the backplane bus  Power loss  Power loss  Power loss, typ.  6.3 W	Display	
Number of keys  Mode buttons  2  Supply voltage  Type of supply voltage  permissible range, lower limit (DC) permissible range, upper limit (DC) 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.  Irt  Double A  1.1 A  Inrush current, max.  1.1 A  Inrush current, max.  2.4 A; nominal Irt  Double A  Current consumption from the backplane bus (balanced)  Power loss  Power loss  Power loss, typ.  6.3 W	Screen diagonal [cm]	6.1 cm
Mode buttons  Supply voltage  Type of supply voltage  permissible range, lower limit (DC)  permissible range, upper limit (DC)  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.  Inrush current, max.  Inrush current, max.  Inrush current, max.  Infeed power to the backplane bus  Power loss  Power loss  Power loss, typ.  4 V DC  9.8 V  Po US. No. No.  1.1 A  1.1	Control elements	
Type of supply voltage permissible range, lower limit (DC) permissible range, upper 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.  Inush current, max.  Inush current, max.  Inush current and	Number of keys	8
Type of supply voltage  permissible range, lower limit (DC)  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.  Ir²t  0.02 A²·s  Power  Infeed power to the backplane bus  Power loss  Power loss, typ.  24 V DC  19.2 V  19.2 V  28.8 V  28.8 V  28.8 V  28.8 V  28.8 V  29.8 A  5 ms  5 ms  6 ms	Mode buttons	2
permissible range, lower limit (DC)  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/	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.  Ir²t  0.02 A²-s  Power  Infeed power to the backplane bus Power consumption from the backplane bus (balanced)  Power loss Power loss, typ.  28.8 V  28.8 V  28.8 V  29.8 V  20.8 A  1/s  1/s  1/s  1/s  1/s  1/s  1/s  1/	Type of supply voltage	24 V 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.  Irush current, max.  Indeed power to the backplane bus Power consumption from the backplane bus (balanced)  Power loss Power loss, typ.  Mains buffering  5 ms  5 ms  1/s  In/s  In	permissible range, lower limit (DC)	19.2 V
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.  6.3 W	permissible range, upper limit (DC)	28.8 V
<ul> <li>Mains/voltage failure stored energy time</li> <li>Repeat rate, min.</li> <li>Input current</li> <li>Current consumption (rated value)</li> <li>Current consumption, max.</li> <li>Inrush current, max.</li> <li>Irush current, max.</li> <li>I²t</li> <li>0.02 A²·s</li> <li>Power</li> <li>Infeed power to the backplane bus</li> <li>Power consumption from the backplane bus (balanced)</li> <li>Power loss</li> <li>Power loss, typ.</li> <li>6.3 W</li> </ul>	Reverse polarity protection	Yes
● Repeat rate, min.  Input current  Current consumption (rated value)  Current consumption, max.  1.1 A  Inrush current, max.  I²t  0.02 A²·s  Power  Infeed power to the backplane bus  Power consumption from the backplane bus (balanced)  Power loss  Power loss, typ.  1/s  1/s  1/s  1/s  1/s  1/s  1/s  1/	Mains buffering	
Input current Current consumption (rated value)  Current consumption, max.  Inrush current, max.  Ire to see the backplane bus  If to see the backplane bus  Power consumption from the backplane bus (balanced)  Power loss  Power loss, typ.  0.8 A  1.1 A  1.1 A  0.02 A²-s  1.2 W  Power consumption from the backplane bus (balanced)  6.2 W  Power loss  Power loss, typ.  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.  I²t  O.02 A²-s  Power  Infeed power to the backplane bus Power consumption from the backplane bus (balanced)  Power loss Power loss, typ.  6.3 W	<ul> <li>Repeat rate, min.</li> </ul>	1/s
Current consumption, max.  Inrush current, max.  I²t  O.02 A²-s  Power  Infeed power to the backplane bus Power consumption from the backplane bus (balanced)  Power loss Power loss, typ.  6.3 W	Input current	
Inrush current, max.  I²t  0.02 A²·s  Power  Infeed power to the backplane bus Power consumption from the backplane bus (balanced)  Power loss Power loss, typ.  6.3 W	Current consumption (rated value)	0.8 A
Power Ioss Power loss, typ.  0.02 A²-s  0.02 A²-s  12 W  12 W  6.2 W	Current consumption, max.	1.1 A
Power Ioss Power loss, typ.  Infeed power to the backplane bus 12 W 6.2 W  Power loss Fower loss, typ.  6.3 W	Inrush current, max.	2.4 A; nominal
Infeed power to the backplane bus Power consumption from the backplane bus (balanced)  Power loss Power loss, typ.  6.3 W	l²t	0.02 A <sup>2</sup> ·s
Power consumption from the backplane bus (balanced)  6.2 W  Power loss  Power loss, typ.  6.3 W	Power	
Power loss Power loss, typ. 6.3 W	Infeed power to the backplane bus	12 W
Power loss, typ. 6.3 W	Power consumption from the backplane bus (balanced)	6.2 W
	Power loss	
Memory	Power loss, typ.	6.3 W
	Memory	

Number of slots for SIMATIC memory card	1
SIMATIC memory card required	Yes
Work memory  ● integrated (for program)	500 khyto
• integrated (for data)	500 kbyte
Load memory	3 Mbyte
, and the second	22 Chuto
Plug-in (SIMATIC Memory Card), max.  Pagelup	32 Gbyte
■ Backup  ■ maintenance-free	Von
	Yes
CPU processing times	
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)	6 000; 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	
Number range	0 65 535
• Size, max.	500 kbyte
FC	,
Number range	0 65 535
• Size, max.	500 kbyte
OB	,
• Size, max.	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
<ul> <li>Number of isochronous mode OBs</li> </ul>	2
Number of technology synchronous alarm OBs	2
Number of startup OBs	100
Number of asynchronous error OBs	4
Number of asynchronous error OBs	2
Number of diagnostic alarm OBs	1
Nesting depth	·
per priority class	24
	2-7
Counters, timers and their retentivity	
S7 counter	2.040
Number  Patentivity	2 048
Retentivity	Von
— adjustable	Yes
IEC counter	And the British has the province
Number	Any (only limited by the main memory)
Retentivity	W
— adjustable	Yes
S7 times	0.010
• Number	2 048
Retentivity	
— adjustable	Yes
IEC timer	
• Number	Any (only limited by the main memory)



Data areas and their rotentivity  Retentive data area (incl. timers, counters, flage), max.  Extended retentive data area (incl. timers, counters, flage), max.  Extended retentive data area (incl. timers, counters, flage), max.  Flag  Number, max.  Number of clock memories  Retentivity adjustable  Retentivity preset  No  Local data  Per priority class, max.  Retentivity preset  No  Local data  Per priority class, max.  Retentivity preset  No  Local data  Per priority class, max.  Retentivity preset  Number of 10 modules  Retentivity preset  Number of 10 modules  Per priority class, max.  Retentivity adjustable  Retentivity adjustable  Retentivity adjustable  Retentivity adjustable  Retentivity preset  Retentivity adjustable  Retentivity and interferentive and in total properties and adjustable I/O vis AS-i master modules or interferent in total  Retentivity adjustable	Retentivity	
Retentive data area (incl. timers, counters, flags), max. Extended retentive data area (incl. timers, counters, flags), max. Extended retentive data area (incl. timers, counters, flags), max.  Number, max.  Number max.  Number of dock memories  Retentively adjustable Retentively preset  Retentive presenting preset  Retentively preset  Retentive	,	Yes
Retentive data area (incl. timers, counters, flags), max.  Extended retentive data area (incl. timers, counters, flags), max.  Extended retentive data area (incl. timers, counters, flags), max.  Flag  Number, max.  Number of dock memories  Retentivity adjustable  Per Ponority class, max.  Per Counters area  Inputs  Oper prontity class, max.  Poutputs  Outputs  Poutputs (volume)  Number of distributed IO systems  Number of distributed IO systems  Pumber of Johnsters  Number of Op masters  Via CM  Number of OP masters  Via CM  Number of OP controllers  Inlegrated  Via CM  Number of IO Controllers  Pro CM  Number of IPP CMs  Number of PP CMs  Number of PP CMs  Number of IPP CMs  Number of IPP CMs  Number of PP CMs  Number of IPP	Data areas and their retentivity	
Extender retentive data area (incl. timers, counters, flags).  max.  Flag  Number, max. Number of clock memories Retentivity adjustable Retentivity preset No No No Retentivity preset No No Number of IO modules Retentivity preset No No Number of IO modules Retentivity preset No No Number of IO modules Retentivity adjustable Per priority class, max. Retentivity preset No Number of IO modules Retentivity adjustable Per priority class, max. Retentivity preset Number of IO modules Retentivity adjustable Per priority class, max. Retentivity preset Retentivity preset Number of IO modules Retentivity adjustable Per priority class, max. Retentivity preset Retentivity preset Retentivity preset Retentivity preset Retentivity preset Retentivity preset Number of IO modules Retentivity adjustable Per priority preset in the process image Retentivity adjustable Per priority preset in the process image Retentivity preset Retentivity adjustable Per process image Retentive Ret		512 kbyte
Flag   Number max.   16 kbyte		
Number of clock memories  Non-  Retentivity adjustable Yes Retentivity preset No  Local data Per priority class, max.  Address area  Inputs Proper of IO modules Proper of IO modules Proper profit (alse, max.  Address area Pumber of IO modules Proper of IO modu	max.	·
■ Number of clock memories  ■ Retentivity adjustable ■ Retentivity preset ■ No  Local data ■ per priority class, max. ■ 64 kbyte  Address arcs  Number of IO modules ■ 1900 10 modules ■ 1900	Flag	
Data blocks  Retentivity adjustable Retentivity preset No  Retentivity preset No  No  Local data Per priority class, max.  64 kbyte  Address area  Inputs Outputs Outputs Per integrated IO subsystem  Inputs (volume) Purputs (vol	<ul><li>Number, max.</li></ul>	16 kbyte
Retentivity adjustable Retentivity preset No  Retentivity preset No  Retentivity preset Per priority class, max.  4 kbyte  Address area  Number of IO modules No address area  Number of IO modules No address area  IO address area  Inputs Outputs Outputs Outputs Outputs Number of Io modules (Skyte All inputs are in the process image) Per integrated IO subsystem  Inputs (volume) Outputs (volume) Per MicP  Inputs (volume) Outputs (volume) Outputs (volume) Outputs (volume) Outputs (volume) Number of subprocess images Number of subprocess images, max.  Retrivivare configuration  Number of distributed IO systems  Address area  At A distributed IO system is characterized not only by the integration of distributed IO was PROFINET or PROFIBUS communication modules, but also by the connection of IO wis ASH master modules or links (e.g., IE/PS-Link)  Number of DP masters Via CM  Number of IO Controllers Integrated Via CM  Number of IO Controllers Integrated Via CM  Number of Indeptited IO Systems  Ask A maximum of 8 CMs/CPs (PROFIBUS, PROFINET, Ethernet) can be inserted in total  Number of Inegrated Via CM  Number of Ines, max.  Number o	Number of clock memories	8
Retentivity preset Local data per priority class, max. 64 kbyte Address area Inputs Inputs Outputs Ou		
Local data  • per priority class, max.  64 kbyte  Address area  Number of IO modules  8 192; max. number of modules / submodules  80 address area  • Inputs • Outputs • Outputs • Outputs — Inputs (volume) — Inpu	<ul> <li>Retentivity adjustable</li> </ul>	Yes
Per priority class, max.  Address area  Number of IO modules  B 192; max. number of modules / submodules  B 192; max. number of in the process image  P 1 inputs  B 2 kbyte; All inputs are in the process image  P 1 inputs (volume)  B 2 kbyte  D 1 inputs (volume)  B 2 kbyte  P 1 inputs (volume)  B 2 kbyte  P 1 inputs (volume)  B 3 kbyte  B 2 inputs (volume)  B 3 kbyte  B 2 inputs (volume)  B 3 kbyte  Subprocess images  Number of subprocess images, max.  B 4 kbyte  Subprocess images  Number of subprocess images, max.  B 4 kbyte  B 4 kbyte  B 4 kbyte  B 5 kbyte  B 5 kbyte  B 5 kbyte  B 6 kbyte  B		No
Address area	Local data	
Number of IO modules  8 192; max. number of modules / submodules  9 1		64 kbyte
Inputs   32 kbyte; All inputs are in the process image	Address area	
Injust Outputs Output	Number of IO modules	8 192; max. number of modules / submodules
Outputs per integrated IO subsystem - Inputs (volume) - Outputs (volume) - Number of subprocess images, max.  132  Hardware configuration  Number of distributed IO systems - Number of IO systems - Via CM - Number of IPP CMs - Number of Ines, max Inestred in total  Rack - Modules per rack, max Number of Ines, max PIP CM - Number of IPP CMs - Number of Ines, max Pip CM - Number of Ines, max Pip CM - Number of Ines, max Inestred in total  Time of day  Clock - Type - Backup time - Outputs (volume) - Sk kbyte - Ves - Number - Number - Inestred Inestre	I/O address area	
per integrated IO subsystem  - Inputs (volume)	• Inputs	32 kbyte; All inputs are in the process image
Inputs (volume) 8 kbyte Outputs (volume) 8 kbyte Outputs (volume) 8 kbyte Inputs (volume) 8 kbyte Outputs (volume) 9 kbyte Outputs	Outputs	32 kbyte; All outputs are in the process image
- Outputs (volume) per CM/CP - Inputs (volume) - Outputs (volume) 8 k byte  Subprocess images • Number of subprocess images, max.  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 inserted in total  Number of IO Controllers • integrated • Via CM  8: A maximum of 8 CMs/CPs (PROFIBUS, PROFINET, Ethernet) can be inserted in total  Rack • Modules per rack, max. • Number of lines, max.  1 PIP CM • Number of PIP CMs  * Number of PIP CMs  * Time of day  Clock • Type • Backup time • Deviation per day, max.  Operating hours counter • Number • Deviation per day, max.  10 s  Operating hours counter • Number • Number • Clock synchronization • supported • supported • in AS, master • in AS, slave • on Ethernet via NTP  Yes  Interfaces		
per CM/CP		8 kbyte
Inputs (volume) 8 k byte Outputs (volume) 9 k byte Outputs (volum		8 kbyte
Outputs (volume)  Subprocess images  Number of subprocess images, max.  Ardware configuration  Number of distributed I/O systems  64; A distributed I/O system is characterized not only by the integration of distributed I/O via 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 inserted in total  Number of IO Controllers  • integrated  • Via CM  8; A maximum of 8 CMs/CPs (PROFIBUS, PROFINET, Ethernet) can be inserted in total  Rack  • Modules per rack, max.  • Number of lines, max.  1  PIP CM  • Number of PIP CMs  the number of connectable PIP CMs is only limited by the number of available slots  Time of day  Clock  • Type  • Backup time  • Deviation per day, max.  10 s  Operating hours counter  • Number  • Number  • Number  • Supported  • Supported  • Supported  • Supported  • Supported  • Supported  • In AS, master  • In AS, slave  • On Ethernet via NTP  Yes  Interfaces	per CM/CP	
Number of subprocess images, max.  Number of subprocess images, max.  Number of distributed I/O systems  64; A distributed I/O system is characterized not only by the integration of distributed I/O system is characterized not only by the integration of distributed I/O system is characterized not only by the integration of distributed I/O system is characterized not only by the integration of distributed I/O system is characterized not only by the integration of distributed I/O system is characterized not only by the integration of distributed I/O system is characterized not only 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 inserted in total  Number of I/O controllers  • Number of EMs/CPs (PROFIBUS, PROFINET, Ethernet) can be inserted in total  Rack  • Modules per rack, max.  • Number of lines, max.  1  PtP CM  • Number of PtP CMs  • Number of PtP CMs  the number of connectable PtP CMs is only limited by the number of available slots  Time of day  Clock  • Type  • Backup time  • Backup time  • Deviation per day, max.  10 s  Operating hours counter  • Number  • Number  • Number  • Number  • Number  • Saynchronization  • supported  • In AS, master  • In AS, slave  • In AS, slave  • On Ethernet via NTP  Yes  Interfaces	— Inputs (volume)	8 kbyte
<ul> <li>Number of subprocess images, max.</li> <li>Hardware configuration</li> <li>Number of distributed I/O systems</li> <li>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)</li> <li>Number of DP masters         <ul> <li>Via CM</li> <li>8; A maximum of 8 CMs/CPs (PROFIBUS, PROFINET, Ethernet) can be inserted in total</li> </ul> </li> <li>Number of IO Controllers         <ul> <li>integrated</li> <li>Via CM</li> <li>8; A maximum of 8 CMs/CPs (PROFIBUS, PROFINET, Ethernet) can be inserted in total</li> </ul> </li> <li>Rack         <ul> <li>Modules per rack, max.</li> <li>Number of lines, max.</li> <li>Number of lines, max.</li> <li>Number of PtP CMs</li> <li>Number of connectable PtP CMs is only limited by the number of available slots</li> </ul> </li> <li>Time of day         <ul> <li>Clock</li> <li>Type</li> <li>Backup time</li> <li>Deviation per day, max.</li> <li>Operating hours counter</li> <li>Number</li> <li>Number</li> <li>Clock synchronization</li> <li>supported</li> <li>yes</li> <li>in AS, master</li> <li>Yes</li> <li>in AS, slave</li> <li>on Ethernet via NTP</li> </ul> </li> <li>Materiaces</li> </ul>	— Outputs (volume)	8 kbyte
Hardware configuration  Number of distributed I/O 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 inserted in total  Number of IO Controllers  • integrated  • Via CM  8; A maximum of 8 CMs/CPs (PROFIBUS, PROFINET, Ethernet) can be inserted in total  Rack  • Modules per rack, max.  • Number of lines, max.  1  PIP CM  • Number of PtP CMs  • Number of PtP CMs  the number of connectable PtP CMs is only limited by the number of available slots  Time of day  Clock  • Type  • Backup time  • Deviation per day, max.  10 s  Operating hours counter  • Number  • Number  • Number  • Number  • Clock synchronization  • supported  • supported  • in AS, slave  • in AS, slave  • on Ethernet via NTP  Yes  Interfaces	Subprocess images	
Number of distributed I/O 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 inserted in total  Number of IO Controllers  • integrated  • Via CM  8; A maximum of 8 CMs/CPs (PROFIBUS, PROFINET, Ethernet) can be inserted in total  Rack  • Modules per rack, max.  • Number of lines, max.  1  PtP CM  • Number of PtP CMs  • Number of PtP CMs  the number of connectable PtP CMs is only limited by the number of available slots  Time of day  Clock  • Type  • Backup time  • Backup time  • Deviation per day, max.  10 s  Operating hours counter  • Number  • Number  • Number  • Number  • Our additional of the properties	Number of subprocess images, max.	32
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 inserted in total  Number of IO Controllers  • integrated  • Via CM  8; A maximum of 8 CMs/CPs (PROFIBUS, PROFINET, Ethernet) can be inserted in total  Rack  • Modules per rack, max.  • Number of lines, max.  1  PtP CM  • Number of PtP CMs  the number of connectable PtP CMs is only limited by the number of available slots  Time of day  Clock  • Type  • Backup time  • Backup time  • Deviation per day, max.  10 s  Coperating hours counter  • Number  • Number  16  Clock synchronization  • supported  • supported  • in AS, master  • in AS, slave  • on Ethernet via NTP  Interfaces	Hardware configuration	
Via CM  8; A maximum of 8 CMs/CPs (PROFIBUS, PROFINET, Ethernet) can be inserted in total  Number of IO Controllers  integrated  Via CM  8; A maximum of 8 CMs/CPs (PROFIBUS, PROFINET, Ethernet) can be inserted in total  Rack  Modules per rack, max.  Number of lines, max.  Number of lines, max.  1  PtP CM  Number of PtP CMs  the number of connectable PtP CMs is only limited by the number of available slots  Time of day  Clock  Type  Backup time  Sexup time  Mardware clock  Sexup time  Mardware clock  Sexup time  Deviation per day, max.  10 s  Operating hours counter  Number  Number  16  Clock synchronization  Supported  in AS, master  in AS, slave  On Ethernet via NTP  Timerfaces	Number of distributed IO systems	of distributed I/O via PROFINET or PROFIBUS communication modules, but also by the connection of I/O via AS-i master modules or
Number of IO Controllers  integrated Via CM S; A maximum of 8 CMs/CPs (PROFIBUS, PROFINET, Ethernet) can be inserted in total  Rack Modules per rack, max. Number of lines, max.  Number of PtP CM Number of PtP CMs  Number of PtP CMs  Time of day  Clock  Type Backup time Deviation per day, max.  Deviation per day, max.  Deviation per day, max.  Operating hours counter  Number  Numb	Number of DP masters	
integrated Via CM  integrated V	• Via CM	
Stack  Modules per rack, max.  Mumber of lines, max.  Number of PtP CMs  Number of PtP CMs  Number of PtP CMs  Number of Adv  Clock  Time of day  Clock  Backup time Deviation per day, max.  Deviation per day, max.  Departing hours counter  Number Number Number  Deviation per day, max.  Description  Ptype Number  Deviation per day, max.  Description  Ptype Number  Ptype Ardware clock  We We, At 40 °C ambient temperature, typically  Deviation per day, max.  Description  Ptype Ardware clock  We We, At 40 °C ambient temperature, typically  Ptype Number  Number  Ptype Number  Ptype Ardware clock  We We, At 40 °C ambient temperature, typically  Ptype Number  Ptype Number Number  Ptype Number Number  Ptype Number Number Number  Ptype Number	Number of IO Controllers	
Be inserted in total  Rack  Modules per rack, max. Number of lines, max.  Number of PtP CM  Number of PtP CMs  Number of PtP CMs  Number of Ay  Clock  Time of day  Clock  Rack  Naview of Ay  Clock  Rack  Number of Ay  Clock  Number of Ay  Clock  Sackup time  Deviation per day, max.  Operating hours counter  Number  N	<ul><li>integrated</li></ul>	2
Modules per rack, max. Number of lines, max.  Number of PtP CM  Number of PtP CMs  Ithe number of connectable PtP CMs is only limited by the number of available slots  Time of day  Clock  Type Backup time Deviation per day, max.  Operating hours counter  Number  Number  Supported Supp	Via CM	
Number of lines, max.  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 Backup time Suckup time Deviation per day, max.  Operating hours counter Number Number  Clock synchronization supported Suppor	Rack	
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 Backup time Deviation per day, max.  Operating hours counter  Number Number  Rock synchronization  supported in AS, master in AS, slave on Ethernet via NTP  Number  Hardware clock Sw; At 40 °C ambient temperature, typically 10 s  Yes Yes Operating hours counter  Yes Yes On Ethernet via NTP Yes  Interfaces		32; CPU + 31 modules
<ul> <li>Number of PtP CMs</li> <li>the number of connectable PtP CMs is only limited by the number of available slots</li> </ul> Time of day Clock <ul> <li>Type</li> <li>Backup time</li> <li>6 wk; At 40 °C ambient temperature, typically</li> <li>Deviation per day, max.</li> </ul> Operating hours counter <ul> <li>Number</li> <li>Clock synchronization</li> <li>supported</li> <li>in AS, master</li> <li>in AS, slave</li> <li>on Ethernet via NTP</li> </ul> Interfaces The number of connectable PtP CMs is only limited by the number of available slots <ul> <li>Fty CM</li> <li>Interfaces</li> </ul> Time of day We available slots Fty CM <ul> <li>Ye Cambient temperature, typically</li> <li>Ye Cambient temperature, typically</li> <li>Ye S</li> </ul> Yes <ul> <li>Interfaces</li> </ul> The Number of connectable PtP CMs is only limited by the number of available slots <ul> <li>Yes</li> <li>Yes</li> <li>Yes</li> <li>Yes</li> <li>Yes</li> </ul> Interfaces <ul> <li>Interfaces</li> </ul>	Number of lines, max.	1
Time of day  Clock  Type Backup time Deviation per day, max.  Operating hours counter Number  Number  Clock synchronization supported in AS, master in AS, slave on Ethernet via NTP  At a vailable slots  Hardware clock 6 wk; At 40 °C ambient temperature, typically 10 s  10 s  16 Clock synchronization  Yes Yes Yes On Ethernet via NTP  Interfaces		
Clock  Type Backup time Supported Su	Number of PtP CMs	
<ul> <li>Type</li> <li>Backup time</li> <li>Deviation per day, max.</li> <li>Operating hours counter</li> <li>Number</li> <li>Clock synchronization</li> <li>supported</li> <li>in AS, master</li> <li>in AS, slave</li> <li>on Ethernet via NTP</li> <li>Interfaces</li> </ul>	Time of day	
Backup time Deviation per day, max.  Operating hours counter  Number  Number  16  Clock synchronization  supported in AS, master in AS, slave on Ethernet via NTP  Interfaces  6 wk; At 40 °C ambient temperature, typically  10 s  7 ves  10 s  12 ves  13 ves  14 ves  15 ves  16 ves  16 ves  17 ves  18 ves  19 ves  19 ves  10 v	Clock	
<ul> <li>Deviation per day, max.</li> <li>Operating hours counter</li> <li>Number</li> <li>16</li> <li>Clock synchronization</li> <li>supported</li> <li>in AS, master</li> <li>in AS, slave</li> <li>on Ethernet via NTP</li> <li>Interfaces</li> </ul>	• Type	Hardware clock
Operating hours counter  Number 16  Clock synchronization  supported Yes in AS, master in AS, slave on Ethernet via NTP  Interfaces	Backup time	6 wk; At 40 °C ambient temperature, typically
<ul> <li>Number</li> <li>Clock synchronization</li> <li>supported</li> <li>in AS, master</li> <li>in AS, slave</li> <li>on Ethernet via NTP</li> <li>Interfaces</li> </ul>	Deviation per day, max.	10 s
Clock synchronization  • supported • in AS, master • in AS, slave • on Ethernet via NTP  Interfaces  Yes  Yes  Yes  Yes  Yes	Operating hours counter	
<ul> <li>supported</li> <li>in AS, master</li> <li>in AS, slave</li> <li>on Ethernet via NTP</li> <li>Interfaces</li> </ul>		16
<ul> <li>in AS, master</li> <li>in AS, slave</li> <li>on Ethernet via NTP</li> <li>Interfaces</li> </ul> Yes Yes Yes Yes	Clock synchronization	
<ul> <li>in AS, slave</li> <li>on Ethernet via NTP</li> <li>Interfaces</li> </ul>	• •	Yes
on Ethernet via NTP     Yes  Interfaces	• in AS, master	Yes
Interfaces	• in AS, slave	Yes
	on Ethernet via NTP	Yes
Number of PROFINET interfaces 2	Interfaces	
	Number of PROFINET interfaces	2



1. Interface	
Interface types	
	Vac. V1
<ul><li>RJ 45 (Ethernet)</li><li>Number of ports</li></ul>	Yes; X1
·	
• integrated switch	Yes
Protocols	Yes
<ul><li>IP protocol</li><li>PROFINET IO Controller</li></ul>	Yes
PROFINET IO Device     SIMATIC company profitor	Yes Yes
SIMATIC communication     Oner IF communication	
Open IE communication     Web corres	Yes; Optionally also encrypted
Web server  Media radiundana.	Yes
Media redundancy  PROFINET IO Controller	Yes
PROFINET IO Controller	
Services	V
— PG/OP communication	Yes
— Isochronous mode	Yes
— Direct data exchange	Yes
— IRT	Yes
— PROFlenergy	Yes; per user program
— Prioritized startup	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
Number of connectable IO Devices for RT,	256
max.	230
— of which in line, max.	256
Number of IO Devices that can be	8; in total across all interfaces
simultaneously activated/deactivated, max.	
<ul> <li>Number of IO Devices per tool, max.</li> </ul>	8
<ul><li>Updating times</li></ul>	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	quantity of configured user data
— for send cycle of 250 µs	250 μs to 4 ms; Note: In the case of IRT with isochronous mode, the
— for seria cycle of 250 µs	minimum update time of 500 µs of the isochronous OB is decisive
— for send cycle of 500 μs	500 μs to 8 ms
— for send cycle of 1 ms	1 ms to 16 ms
— 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	Update time = set "odd" send clock (any multiple of 125 μs: 375 μs, 625
cycles	μs 3 875 μs)
Update time for RT	
— for send cycle of 250 μs	250 μs to 128 ms
— for send cycle of 500 μs	500 μs to 256 ms
— for send cycle of 1 ms	1 ms to 512 ms
— for send cycle of 2 ms	2 ms to 512 ms
— for send cycle of 4 ms	4 ms to 512 ms
PROFINET IO Device	
Services	
— PG/OP communication	Yes
<ul><li>— Isochronous mode</li></ul>	No
— IRT	Yes
— PROFlenergy	Yes; per user program
— Shared device	Yes
<ul> <li>Number of IO Controllers with shared device,</li> </ul>	4
max.	
Asset management record	Yes
2. Interface	
Interface types	



<ul> <li>RJ 45 (Ethernet)</li> </ul>	Yes; X2
<ul> <li>Number of ports</li> </ul>	1
<ul><li>integrated switch</li></ul>	No
Protocols	
<ul> <li>IP protocol</li> </ul>	Yes
<ul> <li>PROFINET IO Controller</li> </ul>	Yes
PROFINET IO Device	Yes
<ul> <li>SIMATIC communication</li> </ul>	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	
Prioritized startup	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</li> </ul>	8; in total across all interfaces
simultaneously activated/deactivated, max.	
<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 RT	
— for send cycle of 1 ms	1 ms to 512 ms
PROFINET IO Device	
Services	
— PG/OP communication	Yes
— Isochronous mode	No
— IRT	No
— PROFlenergy	Yes; per user program
Prioritized startup	No
— Shared device	Yes
<ul> <li>Number of IO Controllers with shared device,</li> </ul>	4
max.	
<ul> <li>Asset management record</li> </ul>	Yes
Interface types	
RJ 45 (Ethernet)	
• 100 Mbps	Yes
Autonegotiation	Yes
Autocrossing	Yes
Protocols	
Number of connections	
Number of connections, max.	192; via integrated interfaces of the CPU and connected CPs / CMs
Number of connections, max.     Number of connections reserved for ES/HMI/web	10
Number of connections via integrated interfaces	108
Number of S7 routing paths	16
Redundancy mode	10
•	Yes
H-Sync forwarding  Media redundancy	1 63
Media redundancy  — MRP	Vac: ac MPD redundancy manager and/or MPD clients may number of
	Yes; as MRP redundancy manager and/or MRP client; max. number of devices in the ring: 50
— MRPD	Yes; Requirement: IRT



<ul> <li>Switchover time on line break, typ.</li> </ul>	200 ms; For MRP, bumpless for MRPD
Number of stations in the ring, max.	50
SIMATIC communication	
• S7 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
<ul> <li>several passive connections per port, supported</li> </ul>	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
• DHCP	No
• SNMP	Yes
• DCP	Yes
• LLDP	Yes
Web server	100
• HTTP	Yes; Standard and user pages
• HTTPS	Yes; Standard and user pages
OPC UA	100, Otaliaala alia abbi pagoo
Runtime license required	Yes
OPC UA Client	Yes
Application authentication	Yes
Number of connections, max.	10
Number of nodes of the client interfaces, max.	2 000
Number of elements for one call of	300
OPC_UA_NodeGetHandleList/OPC_UA_ReadList/C max.	
<ul> <li>Number of elements for one call of OPC_UA_NameSpaceGetIndexList, max.</li> </ul>	20
<ul> <li>Number of elements for one call of OPC_UA_MethodGetHandleList, max.</li> </ul>	100
<ul> <li>Number of simultaneous calls of the client instructions per connection (except OPC_UA_ReadList,OPC_UA_WriteList,OPC_UA_M max.</li> </ul>	1
<ul> <li>Number of simultaneous calls of the client</li> </ul>	5
instructions OPC_UA_ReadList,OPC_UA_WriteList and OPC_UA_MethodCall, max.	
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
<ul> <li>Application authentication</li> </ul>	Yes
<ul><li>Number of sessions, max.</li></ul>	48
<ul> <li>Number of accessible variables, max.</li> </ul>	100 000
<ul> <li>Number of registerable nodes, max.</li> </ul>	20 000
Number of subscriptions per session, max.	20
— Sampling interval, min.	100 ms
— Publishing interval, min.	200 ms
Number of server methods, max.	50
Number of inputs/outputs per server method,	20
max.	



<ul> <li>Number of monitored items, max.</li> </ul>	2 000
Number of server interfaces, max.	10
<ul> <li>Number of nodes for user-defined server interfaces, max.</li> </ul>	5 000
Further protocols	
MODBUS	Yes; MODBUS TCP
Isochronous mode	
Equidistance	Yes
S7 message functions	
Number of login stations for message functions, max.	64
Program alarms	Yes
Number of configurable program messages, max.	10 000; Program messages are generated by the "Program_Alarm" block, ProDiag or GRAPH
Number of loadable program messages in RUN, max.	5 000
Number of simultaneously active program alarms	
Number of program alarms	800
Number of alarms for system diagnostics	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	
Status/control variable	Yes
<ul><li>Variables</li></ul>	Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters
<ul> <li>Number of variables, max.</li> </ul>	
<ul><li>of which status variables, max.</li></ul>	200; per job
— of which control variables, max.	200; per job
Forcing	
<ul> <li>Forcing, variables</li> </ul>	Peripheral inputs/outputs
Number of variables, max.	200
Diagnostic buffer	
• present	Yes
<ul> <li>Number of entries, max.</li> </ul>	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 axes affects the cycle time of the PLC
Number of available Motion Control resources for	program; selection guide via the TIA Selection Tool or SIZER 2 400
technology objects	2 400
Required Motion Control resources	
per speed-controlled axis	40
— per positioning axis	80
— per synchronous axis	160
— per external encoder	80
— per output cam	20
— per cam track	160
— per probe	
— per probe	40
Positioning axis	40



<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	
<ul><li>PID_Compact</li></ul>	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
• horizontal installation, max.	60 °C; Display: 50 °C, at an operating temperature of typically 50 °C, the display is switched off
<ul> <li>vertical installation, min.</li> </ul>	-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	
Programming	
Programming language	
— LAD	Yes
— FBD	Yes
— STL	Yes
— SCL	Yes
— GRAPH	Yes
Know-how protection	
<ul> <li>User program protection/password protection</li> </ul>	Yes
<ul> <li>Copy protection</li> </ul>	Yes
<ul> <li>Block protection</li> </ul>	Yes
Access protection	
<ul> <li>Password for display</li> </ul>	Yes
<ul> <li>Protection level: Write protection</li> </ul>	Yes
<ul> <li>Protection level: Read/write protection</li> </ul>	Yes
Protection level: Complete protection	Yes
Cycle time monitoring	
<ul> <li>lower limit</li> </ul>	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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