## **SIEMENS**

## **Data sheet**

6ES7513-1RM03-0AB0





SIMATIC S7-1500R, CPU 1513R-1PN, central processing unit with work memory 600 KB for program and 2.5 MB for data, 1st interface: PROFINET RT with 2-port switch, SIMATIC Memory Card required



General information	
Product type designation	CPU 1513R-1 PN
HW functional status	FS03
Firmware version	V3.1
FW update possible	Yes
Product function	
• I&M data	Yes; I&M0 to I&M3
<ul> <li>Isochronous mode</li> </ul>	No
SysLog	Yes
Engineering with	
STEP 7 TIA Portal configurable/integrated from version	V19 (FW V3.1) / V18 (FW V3.0); with older TIA Portal versions configurable as $6 \text{ES}7513\text{-}1RL00\text{-}0AB0$
Display	
Screen diagonal [cm]	3.45 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	
<ul> <li>Mains/voltage failure stored energy time</li> </ul>	5 ms
Repeat rate, min.	1/s
Input current	
Current consumption (rated value)	0.56 A
Current consumption, max.	0.87 A
Inrush current, max.	1.15 A; Rated value
l²t	0.6 A <sup>2</sup> ·s
Power	
Infeed power to the backplane bus	10 W
Power consumption from the backplane bus (balanced)	5.5 W
Power loss	
Power loss, typ.	3.4 W
Memory	
Number of slots for SIMATIC memory card	1

SIMATIC memory card required	Yes
Work memory	
<ul><li>integrated (for program)</li></ul>	600 kbyte
<ul><li>integrated (for data)</li></ul>	2.5 Mbyte
Load memory	
Plug-in (SIMATIC Memory Card), max.	32 Gbyte
Backup	
maintenance-free	Yes
CPU processing times	
for bit operations, typ.	50 ns
for word operations, typ.	64 ns
·	85 ns
for fixed point arithmetic, typ.	
for floating point arithmetic, typ.	340 ns
CPU-blocks	
Number of elements (total)	4 000; Blocks (OB, FB, FC, DB) and UDTs
DB	
<ul> <li>Number range</li> </ul>	Number range: 1 to 59 999
• Size, max.	2.5 Mbyte; For non-optimized block accesses, the max. size of the DB is 64 KB
FB	
Number range	0 65 535
• Size, max.	600 kbyte
FC	
Number range	0 65 535
• Size, max.	600 kbyte
ОВ	
Size, max.	600 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 10 ms
Number of process alarm OBs	50
Number of DPV1 alarm OBs	3
Number of startup OBs	100
Number of asynchronous error OBs	4
Number of synchronous error OBs	2
Number of diagnostic alarm OBs	1
Nesting depth	
per priority class	24
Counters, timers and their retentivity	
S7 counter	
Number	2 048
Retentivity	
— adjustable	Yes
IEC counter	
• Number	Any (only limited by the main memory)
Retentivity	
— adjustable	Yes
S7 times	
Number	2 048
Retentivity	
— adjustable	Yes
IEC timer	
• Number	Any (only limited by the main memory)
Retentivity	, (only minious sy the main mornory)
— adjustable	Yes
	160
Data areas and their retentivity	OFC librates in Astal, available and the second of the sec
Retentive data area (incl. timers, counters, flags), max.	256 kbyte; in total; available retentive memory for bit memories, timers, counters, DBs, and technology data (axes): 216 KB
Flag	Countries, DDG, and Commoney adda (anou). 210 ND
1 149	
• Size max	16 khyte
<ul><li>Size, max.</li><li>Number of clock memories</li></ul>	16 kbyte 8; 8 clock memory bit, grouped into one clock memory byte

Deat Boxics    - Reterritority project    - Reterritority calas, max.    - Althory class, max.    - Althory class, max.    - Althory class area    - Althory configuration    -		
Per priority class, max. Per priority class, max. Per priority class, max.  Address area  Address area  Number of 10 modules Physics Public volume Physics Ph	Data blocks	
Per printry class, max.   64 ktyler, max. 16 ktil per block		Yes
Per priority class, max.  Address area  Number of 10 modules  1 priority  2 048; max. number of modules i submodules  1 priority  2 049; Mil inputs are in the process image  2 byte; All inputs are in the process image  2 byte; All outputs are in the process image  3 byte; All outputs are in the process image  3 byte; All outputs are in the process image  4 byte  Subprocess images  4 burnber of subprocess images, max.  31  Number of distributed I/O systems  4 insurance of I/O Controllers  4 integrated  5 integrated  1 (S; A distributed I/O via PROFINET, but also by the connection of I/O via IEPPB-LINKS.  Number of I/O Controllers  4 integrated  5 cycl + 2 PS + 2 CP  Time of day  6 wic, At 40 **C ambient temperature, typically  6 wic, At 40 **C ambient temperature, typically  1 s. Typic 2 s.  Concessing house someter  4 wumber  5 wich and a TPP  6 wick and themet via ATTP  7 ves  1 integrated bytes  6 Protocol  6 PROFINET interfaces  1 Interfaces  1 Protocol  6 PROFINET interfaces  7 ves  8 controllers  1 integrated your protocol  9 communication  1 ves  1 controllers	Retentivity preset	No
Address ares  Number of IO modules  1 2 48; max. number of modules / submodules  10 address area  1 (pupts 2 2 kbyle: All inputs are in the process image 4 (Durputs) 2 2 kbyle: All inputs are in the process image 5 (Durputs) 2 32 kbyle: All inputs are in the process image 4 (Durputs) 3 2 kbyle: All inputs are in the process image 5 (Durputs) 6 (Durputs) 7 (Durputs	Local data	
Number of IO modules  100 address area  100 addr	per priority class, max.	64 kbyte; max. 16 KB per block
Populs   32 kbyte; All inputs are in the process image    - Outputs   Columbia   32 kbyte; All inputs are in the process image    - Outputs (volume)   8 kbyte    - Imputs (volume)   8 kbyte    - Skbyte   8 kbyte    - S	Address area	
Outputs     O	Number of IO modules	2 048; max. number of modules / submodules
evinegrated (O subsystem  - Inputs (volume) - Outputs (volume) - Outputs (volume) - Outputs (volume) - Strong area  - Number of subprocess images, max.  181  Hardware configuration  Number of distributed I/O systems - Strong area - Number of distributed I/O systems - Strong area - Number of distributed I/O systems - Strong area - Number of I/O Controllers - Integrated - Modules per rack, max ScPU * 2 PS * 2 CP - Very 2 PS * 3 CP - Strong area - Number of General Process area - Number of General Process area - Number of General Process area - Number of PROFINET Interfaces - Number of PROFINET Interfaces - Interfaces - Very 2 PS * 2 CP - Very 2 PS * 2 CP - Very 2 PS * 2 CP - Very 2 PS * 3 CP - Very 3 PS * 3 CP - Very 3 PS * 3 CP - Very 4 PS *	I/O address area	
per integrated IQ subsystem  — Inputs (volume) — Outputs (volume) — Roughts (volume) — Outputs (volume) — Number of subprocess images — Number of distributed IQ systems — If A distributed IQ system is characterized not only by the integration of distributed IQ via PROFINET, but also by the connection of IQ via IE/PB-Links — Integrated — Integrated — Integrated — Integrated — Modules per rack, max. — Modules per rack, max. — S; CPU + 2 PS + 2 CP — Hardware clock — Type — Backup time — Overation per day, max. — Overation per day, max. — Overation per day, max. — Integrated — Number — Integrated — Number — Outputs (A 10 °C ambient temperature, typically — Operating hours counter — Number — Out Element Via NTP — Yes — Ves — Interfaces — Interfaces — Integrated switch — PROFINET ID Device — No — Open IE communication — Ves, Optionally also encrypted — Ves — Ves — Ves — Ves — PROFINET IO Controller — Services — Red Integrated — Ves — Red Integrated — Ves — Ves — PROFINET IO Controller — PROFINET IO Device — No — Open IE communication — Ves, Optionally also encrypted — Ves — Ves, Protocols — IRT — No — Ves, Protocols — IRT — PROFINET IO Controller — Services — Isochtonous mode — IRT — No — Ves, Protocols — IRT — No — PROFINET IO Controller — Services — Isochtonous mode — IRT — Number of connectable IO Devices, max. — Updating times — PROFINET IO controller — PROFI	• Inputs	32 kbyte; All inputs are in the process image
Imputs (volume) 8 kbyte 8 kbyte 9 kurberoess images • Number of subprocess images, max.  16; 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 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 IE/PB.  Number of I/O Controllers • Integrated   1  **Example of Agency   1  **Integrated   1  **	<ul><li>Outputs</li></ul>	32 kbyte; All outputs are in the process image
Imputs (volume) 8 kbyte 8 kbyte 9 kurberoess images • Number of subprocess images, max.  16; 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 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 IE/PB.  Number of I/O Controllers • Integrated   1  **Example of Agency   1  **Integrated   1  **	per integrated IO subsystem	
- Outputk (volume)  Subprocess images.  Number of subprocess images, max.  Number of distributed I/O systems  11. Additiouted I/O system is characterized not only by the integration of distributed I/O via PROFINET, but also by the connection of I/O via IE/PB-Links.  Number of I/O Controllers  Integrated  Another of I/O Controllers  Integrated  Integrated  Integrated  Integrated  Another of I/O Controllers  Integrated  Another of I/O Controllers  Integrated  Integrated  Integrated  Integrated  Integrated  Integrated  Integrated  Integrated switch  Int	— Inputs (volume)	8 kbyte
Subprocess images   Number of subprocess images, max.   31		
Number of subprocess images, max.  Number of distributed I/O systems  16; 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 connection of I/O via IE/PB-Links.  Number of I/O Controllers  • Integrated  • Integrated  • Noducles per rack, max.  5; CPU + 2 PS + 2 CP  Time of day  Clock  • Type  • Backup time • Or System is characterized not only by the integration of distributed I/O system is characterized not only by the connection of I/O via IE/PB-Links.  • Type  • Integrated system is characterized not only by the integration of distributed I/O system is characterized not only by the connection of I/O via IE/PB-Links.  • Integrated system is characterized not only by the integration of distributed I/O system is characterized not only by the connection of I/O via IE/PB-Links.  • Integrated system is characterized not only by the integrated not only by the connection of I/O via IE/PB-Links.  • Integrated system is characterized not only by the connection of I/O via IE/PB-Links.  • Integrated system is characterized not only by the connection of I/O via IE/PB-Links.  • Integrated system is characterized not only by the connection of I/O via IE/PB-Links.  • Integrated system is characterized not only by the connection of I/O via IE/PB-Links.  • Integrated system is characterized not only by the connection of I/O via IE/PB-Links.  • Integrated system is characterized not only by the connection of I/O via IE/PB-Links.  • Integrated system is characterized not only by the connection of I/O via IE/PB-Links.  • Integrated system is characterized not only by the connection of I/O via IE/PB-Links.  • Integrated system is characterized not integrated system.  • Integrated system is characterized not integrated system.  • Integrated system is characterized not integrated system.  • Integrated system is chara		,
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Number of distributed IO systems    16; A distributed IO system is characterized not only by the integration of distributed IO via PROFINET, but also by the connection of IO via IE/PB-Links.    Number of IO Controllers		
distributed I/O via PROFINET, but also by the connection of I/O via IE/PB-Links.  Number of IO Controllers  • integrated • integrated • on the grack, max. • Modules per rack, max. • Modules per rack, max. • S; CPU + 2 PS + 2 CP  Time of day  Clock • Type • Backup time • Deviation per day, max. • 10 s; Typ.: 2 s  Operating hours counter • Number • Number • Number • Number • Number • Olicick synchronization • supported • on Ethernet via NTP • Yes  Interfaces  Number of PROFINET interfaces • I, Interface  Interface types • RJ 45 (Ethernet) • Number of ports • 2 • integrated switch • Yes • PROFINET IO Controller • PROFINET IO Device • SIMATIC communication • Ves yeaver • Media redundancy • Yes • PROFINET IO Controller • Yes • Media redundancy • Yes • Media redundancy • Yes • Media redundancy • Yes • PROFINET IO Controller • Services • Isochronous mode • INT • No • INT • PROFilenergy • Number of connectable IO Devices, max. • Update time of RT • 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		16: A distributed I/O system is observed act only by the integration of
Integrated  Integrated switch  Integrated	Number of distributed to systems	distributed I/O via PROFINET, but also by the connection of I/O via IE/PB-
Rack  • Modules per rack, max.  10 s; CPU + 2 PS + 2 CP  Time of day  Clock  • Type • Backup time • Deviation per day, max.  10 s; Typ.: 2 s  Operating hours counter • Number • Number • Number  • on Ethernet via NTP  Titerfaces  Number of PROFINET interfaces  • R1 45 (Ethernet) • Number of ports • integrated switch • PROFINET IO Controller • PROFINET IO Device • SIMATIC communication • Yes; Optionally also encrypted • Yes; Optionally also encrypted • Web server • Media redundancy • Yes  PROFINET IO Controller • Media redundancy • Yes  PROFINET IO Controller • Media redundancy • Web server • Media redundancy • Web server • Media redundancy • PROFINET IO Controller • Media redundancy • Yes; Profines • IRT • No • PROFINET IO Controller • Media redundancy • Yes • PROFINET IO Controller • Media redundancy • Yes • PROFINET IO Controller • Media redundancy • Yes • PROFINET IO Controller • Media redundancy • Yes • PROFINET IO Controller • Media redundancy • Yes • PROFINET IO Controller • Media redundancy • Yes • PROFINET IO Controller • Media redundancy • Yes • PROFINET IO Controller • Media redundancy • Yes • PROFINET IO Controller • Media redundancy • Yes • PROFINET IO Controller • Media redundancy • Yes • PROFINET IO Controller • IRT • No • PROFINET IO Controller • IRT • No • PROFINET IO Controller • PROFINET IO Controller • IRT • No • PROFINET IO Controller • IRT • No • PROFINET IO Controller • 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	Number of IO Controllers	
Modules per rack, max.  Firms of day  Clock  Type Backup time Deviation per day, max.  Operating hours counter Number Number On Ethernet via NTP Number of PROFINET interfaces  Interface by Ses RJ 45 (Ethernet) Number of prots PROFINET IO Controller PR	• integrated	1
Time of day  Clock  Type Backup time Deviation per day, max. Destaining hours counter Number Supported On Elbernet Via NTP Yes On Elbernet Via NTP Yes Interfaces  Number of PROFINET interfaces Interface types Interface types Protocol PROFINET IO Controller PROFINET IO Device No Services  PROFINET IO Controller Services  No Servi	Rack	
Clock  • Type • Backup time • Deviation per day, max.  Operating hours counter • Number • Number • Number • Number of Clock synchronization • supported • on Ethernet via NTP  Interfaces  Number of PROFINET interfaces  1 1.Interface types  • RJ 45 (Ethernet) • Number of ports • integrated switch • PROFINET IO Controller • Services  — Isochronous mode — IRT — PROFInergy — Number of connectable IO Devices, max. — Updating times  1 ms to 512 ms  1 ms to 512 ms  1 ms to 512 ms	Modules per rack, max.	5; CPU + 2 PS + 2 CP
Clock  • Type • Backup time • Deviation per day, max.  Operating hours counter • Number • Number • Number • Number of Clock synchronization • supported • on Ethernet via NTP  Interfaces  Number of PROFINET interfaces  1 1.Interface types  • RJ 45 (Ethernet) • Number of ports • integrated switch • PROFINET IO Controller • Services  — Isochronous mode — IRT — PROFInergy — Number of connectable IO Devices, max. — Updating times  1 ms to 512 ms  1 ms to 512 ms  1 ms to 512 ms		
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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  • nethered to NTP Yes  Interfaces  Number of PROFINET interfaces 1  Interface types  • RJ 45 (Ethernet) Yes; X1  • Number of ports 2  • Interface yes  • RPOFINET IO Controller Yes  • PROFINET IO Device No  • SIMATIC communication Yes; Only Server  • Media redundancy Yes  PROFINET IO Controller  • Wes server Yes  • Media redundancy Yes  PROFINET IO Controller  • Yes  • No  • Services  — Isochronous mode  — IRT  — PROFINET OD Devices, max.  — Updating times  • PROFINET Security Class  1 ms to 512 ms  1 ms to 512 ms		Hardware clock
Operating hours counter     Number     Number     Number     Supported     Supported     Yes     On Ethernet via NTP     Yes     Number of PROFINET interfaces     Interface Vyes     Number of profs     Number of profs     Number of ports     Number of connectation     Number of connectable to Devices, max.     Number of connentable to Devices, max.     Number of connectable to Devices, max		
Number 16 Clock synchronization  ● supported ● on Ethernet via NTP  **Ves  **Interfaces  Number of PROFINET interfaces 1  1.Interface  Interface types  ● RJ 45 (Ethernet) ● Number of ports ● integrated switch  **Protocols  ● IP protocol  ● PROFINET IO Controller ● PROFINET IO Device ● No  • SIMATIC communication ● Open IE communication ● Open IE communication ● Open IE communication ● PROFINET IO Controller ● Services  ■ Isochronous mode ● No  PROFINET IO Controller ● Yes ● Media redundancy PROFINET IO Controller  Services  ■ Isochronous mode ● No  - IRT ● PROFINET O Controller  Services  ■ Isochronous mode ● No - IRT ● PROFINET or Controller  Services  ■ Isochronous mode ● No - IRT ● PROFINET or Controller  Services  ■ Isochronous mode ● No - IRT ● PROFInergy ● Number of connectable IO Devices, max. ● 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  — PROFINET Security Class  1 ms to 512 ms	•	
Number		10 S, Typ 2 S
Clock synchronization  • supported • on Ethernet via NTP  Interfaces  Number of PROFINET interfaces  1  Interface Interface (Profix Controller (Pr	· · ·	46
• supported • on Ethernet via NTP  Yes  Interfaces  Number of PROFINET interfaces  1  1. Interface  Interface types  • RJ 45 (Ethernet) • Number of ports • Integrated switch • Number of ports • Integrated switch • Yes; X1 • Integrated switch • Yes  Protocols  • IP protocol • PROFINET IO Controller • PROFINET IO Device • No • SIMATIC communication • Yes; Only Server • Open IE communication • Web server • Media redundancy • Yes  PROFINET IO Controller  Services  — Isochronous mode — IRT — PROFINETO Connectable IO Devices, max. — Updating times  • PROFINET IO, on the number of IO devices, and on the quantity of configured user data  1  Update time for RT — for send cycle of 1 ms  1 ms to 512 ms		10
on Ethernet via NTP         Yes           Interfaces           Number of PROFINET interfaces         1           Interface types           • RJ 45 (Ethernet)         Yes; X1           • Number of ports         2           • integrated switch         Yes           Protocols         Yes; IPv4           • IP protocol         Yes; IPv4           • PROFINET IO Controller         Yes           • PROFINET IO Device         No           • SIMATIC communication         Yes; Only Server           • Open IE communication         Yes; Optionally also encrypted           • Web server         Yes           • Media redundancy         Yes           PROFINET IO Controller           Services           - Isochronous mode         No           - IRT         No           - PROFInergy         Yes; per user program           - Number of connectable IO Devices, max.         64           - 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           - PROFINET Security Class         1           Update time for RT         - For send cycle of 1 ms         1 ms to 512 ms <td>·</td> <td></td>	·	
Interfaces		
Number of PROFINET interfaces  Interface types  • RJ 45 (Ethernet) Yes; X1 • Number of ports 2 • integrated switch Yes  Protocols  • IP protocol Yes; IPv4 • PROFINET IO Controller Yes • PROFINET IO Device No • SIMATIC communication Yes; Optionally also encrypted • Web server Yes • Media redundancy Yes  PROFINET IO Controller  Services  — Isochronous mode No — IRT No — PROFlenergy Yes; per user program — Number of connectable IO Devices, max. — 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		Yes
Interface types  RJ 45 (Ethernet) Number of ports interface witch Yes; X1  Number of ports interface witch Yes  Protocols  IP protocol PROFINET IO Controller PROFINET IO Device SIMATIC communication Yes; Optionally also encrypted Web server Media redundancy Yes PROFINET IO Controller Yes No PROFINET IO Controller Yes Yes PROFINET IO Controller Yes; Optionally also encrypted Yes PROFINET IO Controller Services  In Isochronous mode IND PROFINET IO Controller Services  In Isochronous mode In I		
Interface types  RJ 45 (Ethernet) Number of ports integrated switch Yes  Protocols  IP protocol PROFINET IO Controller Services  - Isochronous mode - IRT - PROFIenergy - Number of connectable IO Devices, max.  Update time for RT - For send cycle of 1 ms  Yes; X1  Yes; X1  Yes; X1  Yes; X1  Yes  Yes  Yes  Yes  Yes  No  Yes; IPv4  Yes  Yes  No  Yes; Only Server  Yes; Optionally also encrypted  Yes; Optionally also encrypted  Yes  Yes  PROFINET IO Controller  Services  - Isochronous mode - IRT - No - PROFIenergy - Number of connectable IO Devices, max.  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  Yes; X1  Yes; X1  Yes  Yes  Yes; Pru4  Yes; IPv4  Yes; Only Server  Yes  Yes; Optionally also encrypted  Yes; Optionally also encrypted  Yes; Optionally also encrypted  Yes  Yes  Yes  PROFINET IO Controller  Services  - Isochronous mode - IRT - No - PROFINET Security Class - In 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  I ms to 512 ms		1
RJ 45 (Ethernet) Number of ports Integrated switch Yes  Protocols  IP protocol PROFINET IO Controller PROFINET IO Device No SIMATIC communication Ves; Optionally also encrypted Web server Media redundancy Yes Media redundancy PROFINET IO Controller  Services  Isochronous mode IRT PROFIenergy No No No PROFIenergy No No No PROFIEDER  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  Ins to 512 ms	1. Interface	
<ul> <li>Number of ports</li> <li>integrated switch</li> <li>Yes</li> </ul> Protocols <ul> <li>IP protocol</li> <li>Yes; IPv4</li> <li>PROFINET IO Controller</li> <li>PROFINET IO Device</li> <li>SIMATIC communication</li> <li>Open IE communication</li> <li>Wes conjusted</li> <li>Web server</li> <li>Media redundancy</li> <li>Yes</li> </ul> PROFINET IO Controller <ul> <li>Services</li> <li>Isochronous mode</li> <li>IRT</li> <li>PROFlenergy</li> <li>No</li> <li>PROFlenergy</li> <li>Number of connectable IO Devices, max.</li> <li>Updating times</li> <li>1 ms in immum 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</li> <li>Update time for RT</li> <li>for send cycle of 1 ms</li> <li>1 ms to 512 ms</li> </ul>	Interface types	
integrated switch  Protocols  IP protocol  PROFINET IO Controller PROFINET IO Device PROFINET IO Device SIMATIC communication Yes; Only Server Open IE communication Yes; Optionally also encrypted Web server Media redundancy Yes PROFINET IO Controller  Services  Isochronous mode IRT PROFIenergy No PROFIenergy Number of connectable IO Devices, max. Updating times  Yes  1 ms to 512 ms  Yes  Yes  1 ms to 512 ms	• RJ 45 (Ethernet)	Yes; X1
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IP protocol PROFINET IO Controller PROFINET IO Device No SIMATIC communication Yes; Only Server Open IE communication Yes; Optionally also encrypted Web server Media redundancy Yes Media redundancy Yes PROFINET IO Controller  Services  Isochronous mode IRT PROFlenergy No PROFlenergy Number of connectable IO Devices, max. Updating times  No PROFINET Security Class  Update time for RT  Insto 512 ms  Yes; Optionally also encrypted	<ul> <li>integrated switch</li> </ul>	Yes
PROFINET IO Controller PROFINET IO Device No SIMATIC communication Open IE communication Web server Media redundancy PROFINET IO Controller  Services  Insochronous mode IRT PROFIenergy No PROFInergy No PROFINET Gonnectable IO Devices, max.  Update time for RT  For send cycle of 1 ms  No Ves; Optionally also encrypted Yes; Optionally also encrypted Yes Yes  PROFINET IO Controller Services  In 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 In the property 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  In the property 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  In the property 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  In the property 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  In the property 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	Protocols	
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— for send cycle of 1 ms 1 ms to 512 ms	— PROFINET Security Class	1
·	Update time for RT	
·	— for send cycle of 1 ms	1 ms to 512 ms
	Interface types	
RJ 45 (Fthernet)		

• 100 Mbps	Yes
<ul> <li>Autonegotiation</li> </ul>	Yes
<ul> <li>Autocrossing</li> </ul>	Yes
<ul> <li>Industrial Ethernet status LED</li> </ul>	Yes
Protocols	
PROFIsafe	No
Number of connections	
<ul> <li>Number of connections, max.</li> </ul>	128; via integrated interfaces of the CPU and connected CPs
<ul> <li>Number of connections reserved for ES/HMI/web</li> </ul>	10
<ul> <li>Number of connections via integrated interfaces</li> </ul>	88
Number of S7 routing paths	16
Redundancy mode	
<ul> <li>PROFINET system redundancy (S2)</li> </ul>	Yes
PROFINET system redundancy (R1)	No
Media redundancy	
— MRP	Yes; MRP Automanager according to IEC 62439-2 Edition 2.0
<ul> <li>MRP interconnection, supported</li> </ul>	Yes; as MRP ring node according to IEC 62439-2 Edition 3.0
— MRPD	No
<ul> <li>Switchover time on line break, typ.</li> </ul>	200 ms; PROFINET MRP
Number of stations in the ring, max.	50; Only 16 are recommended, however
SIMATIC communication	
<ul> <li>PG/OP communication</li> </ul>	Yes; encryption with TLS V1.3 pre-selected
• S7 routing	Yes
<ul> <li>S7 communication, as server</li> </ul>	Yes
S7 communication, as client	No
Open IE communication	
• TCP/IP	Yes
— Data length, max.	64 kbyte
— several passive connections per port, supported	Yes
• ISO-on-TCP (RFC1006)	Yes
— Data length, max.	64 kbyte
• UDP	Yes
— Data length, max.	2 kbyte; 1 472 bytes for UDP broadcast
— UDP multicast	Yes; max. 78 multicast circuits
• DHCP	No
• DNS	Yes
• SNMP	Yes
• DCP	Yes
• LLDP	Yes
Encryption	Yes; Optional
Web server	
• HTTP	No
• HTTPS	Yes; only via Web API
web API  Alumbar of coordinate may	Yes
— Number of sessions, max.	50
— number of simultaneous HTTP calls, max.	404.070 h. t.
— HTTP request body, max.	131 072 byte
OPC UA	Very "Consult licenses years and a second
Runtime license required     ODC LIA Client	Yes; "Small" license required per CPU
OPC UA Client     OPC UA Server	No
OPC UA Server  Application outbontication	Yes; Data access (read, write, subscribe), method call, custom address space
Application authentication	Yes
— Security policies	available security policies: None, Basic128Rsa15, Basic256Rsa15, Basic256Sha256, Aes128Sha256RsaOaep, Aes256Sha256RsaPss
— User authentication	"anonymous" or by user name & password
— GDS support (certificate management)	No
Number of sessions, max.	16
Number of subscriptions per session, max.	25
— Sampling interval, min.	250 ms
— Publishing interval, min.	500 ms
Number of server methods, max.	20

	20
Number of inputs/outputs per server method, max.	20
Number of monitored items, recommended max.	2 000; for 1 s sampling interval and 1 s send interval
<ul> <li>Number of server interfaces, max.</li> </ul>	10 of each "Server interfaces" / "Companion specification" type and 20 of the type "Reference namespace"
<ul> <li>Number of nodes for user-defined server interfaces, max.</li> </ul>	15 000
Alarms and Conditions	No
Further protocols	
• MODBUS	Yes; MODBUS TCP
S7 message functions	
Number of login stations for message functions, max.	32
number of subscriptions, max.	250
number of tags/attributes for subscriptions, max.	2 000
Program alarms	Yes
Number of configurable program messages, max.	5 000; 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>	600
<ul> <li>Number of alarms for system diagnostics</li> </ul>	100
Test commissioning functions	
Joint commission (Team Engineering)	No
Status block	Yes; up to 8 simultaneously
Single step	No
Number of breakpoints	8; Breakpoints are only supported in RUN-Solo status
Status/control	
<ul> <li>Status/control variable</li> </ul>	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
<ul><li>of which control variables, max.</li></ul>	200; per job
Forcing	
<ul><li>Forcing</li></ul>	Yes
<ul> <li>Forcing, variables</li> </ul>	Peripheral inputs/outputs
<ul> <li>Number of variables, max.</li> </ul>	200
Diagnostic buffer	
• present	Yes
<ul> <li>Number of entries, max.</li> </ul>	1 000
— of which powerfail-proof	500
Traces	
<ul> <li>Number of configurable Traces</li> </ul>	4
<ul> <li>Memory size per trace, max.</li> </ul>	512 kbyte
Interrupts/diagnostics/status information	
Diagnostics indication LED	
• RUN/STOP LED	Yes
• ERROR LED	Yes
MAINT LED	Yes
STOP ACTIVE LED	Yes
<ul> <li>Connection display LINK TX/RX</li> </ul>	Yes
Supported technology objects	
Motion Control	No
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	Yes
Standards, approvals, certificates	
Ecological footprint	
environmental product declaration	Yes
Global warming potential	
— global warming potential, (total) [CO2 eq]	80.1 kg
J / L	

<ul> <li>— global warming potential, (during production) [CO2 eq]</li> </ul>	23.8 kg
global warming potential, (during operation) [CO2 eq]	57.4 kg
global warming potential, (after end of life cycle) [CO2 eq]	-1.29 kg
Ambient conditions	
Ambient temperature during operation	
<ul> <li>horizontal installation, min.</li> </ul>	-30 °C; No condensation
horizontal installation, max.	60 °C; Display: 50 °C, at an operating temperature of typically 50 °C, the display is switched off
<ul> <li>vertical installation, min.</li> </ul>	-30 °C; No condensation
vertical installation, max.	40 °C; Display: 40 °C, at an operating temperature of typically 40 °C, the display is switched off
Ambient temperature during storage/transportation	
• min.	-40 °C
• max.	70 °C
Altitude during operation relating to sea level	
<ul> <li>Installation altitude above sea level, max.</li> </ul>	5 000 m; Restrictions for installation altitudes > 2 000 m, see manual
configuration / header	
configuration / programming / header	
Programming language	
— LAD	Yes
— FBD	Yes
— STL	Yes
— SCL	Yes
— CFC	Yes
— GRAPH	Yes
Know-how protection	
<ul> <li>User program protection/password protection</li> </ul>	Yes
<ul> <li>Copy protection</li> </ul>	No
Block protection	Yes
Access protection	
<ul> <li>protection of confidential configuration data</li> </ul>	Yes
<ul> <li>Password for display</li> </ul>	Yes
<ul> <li>Protection level: Write protection</li> </ul>	Yes
<ul> <li>Protection level: Read/write protection</li> </ul>	Yes
<ul> <li>Protection level: Complete protection</li> </ul>	Yes
User administration	Yes; device-wide
programming / cycle time monitoring / header	
• lower limit	adjustable minimum cycle time
• upper limit	adjustable maximum cycle time
Dimensions	
Width	35 mm
Height	147 mm
Depth	129 mm
Weights	
Weight, approx.	336 g

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