SIEMENS

Data sheet

6AG1513-1AM03-7AB0



SIPLUS S7-1500 CPU 1513-1 PN based on 6ES7513-1AM03-0AB0 with conformal coating -40...+70 $^{\circ}\text{C}$. central processing unit with work memory 600 KB for program and 2.5 MB for data, 1st interface: PROFINET IRT with 2-port switch, 25 ns bit performance, SIMATIC Memory Card required

Figure similar

Figure similar	
General information	
Product type designation	CPU 1513-1 PN
Firmware version	
 FW update possible 	Yes
based on	6ES7513-1AM03-0AB0
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 	see entry ID: 109746275
Configuration control	
via dataset	Yes
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	
 Mains/voltage failure stored energy time 	5 ms
Repeat rate, min.	1/s
Input current	
Current consumption (rated value)	0.73 A
Current consumption, max.	0.9 A
Inrush current, max.	1.15 A; Rated value
l²t	0.5 A ² ·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.	7.5 W
Memory	
Number of slots for SIMATIC memory card	1
SIMATIC memory card required	Yes

Work mamon	
Work memory	600 khyte
• integrated (for program)	600 kbyte
• integrated (for data)	2.5 Mbyte
Load memory	
Plug-in (SIMATIC Memory Card), max.	32 Gbyte
Backup	
maintenance-free	Yes
CPU processing times	
for bit operations, typ.	25 ns
for word operations, typ.	32 ns
for fixed point arithmetic, typ.	42 ns
for floating point arithmetic, typ.	170 ns
CPU-blocks	
Number of elements (total)	4 000; 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.	2.5 Mbyte; For DBs with absolute addressing, the max. size 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 250 µs
Number of process alarm OBs	50
Number of DPV1 alarm OBs	3
Number of isochronous mode OBs	2
 Number of technology synchronous alarm OBs 	2
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	27
S7 counter	2.040
Number Petentivity	2 048
Retentivity	Ven
— adjustable	Yes
IEC counter	Any (only limited by the mair
• Number	Any (only limited by the main memory)
Retentivity	V
— adjustable	Yes
S7 times	
• Number	2 048
Retentivity	
— adjustable	Yes
IEC timer	
Number	Any (only limited by the main memory)
Retentivity	
Retentivity — adjustable	Yes
•	Yes
— adjustable	Yes 256 kbyte; in total; available retentive memory for bit memories, timers, counters, DBs, and technology data (axes): 216 KB

Flag	
• Size, max.	16 kbyte
Number of clock memories	8; 8 clock memory bit, grouped into one clock memory byte
Data blocks	e, a season memory on, groupou into one clock memory byte
Retentivity adjustable	Yes
Retentivity preset	No
Local data	110
• per priority class, max.	64 kbyte; max. 16 KB per block
Address area	04 KDyte, max. 10 KD per block
Number of IO modules	2 048; max. number of modules / submodules
I/O address area	2 046, Max. Humber of modules / Submodules
• Inputs	32 kbyte; All inputs are in the process image
Outputs	32 kbyte; All outputs are in the process image
per integrated IO subsystem	32 kbyte, All outputs are in the process image
— Inputs (volume)	8 kbyte
— Outputs (volume)	8 kbyte
per CM/CP	o noyte
— Inputs (volume)	8 kbyte
— Impuls (volume) — Outputs (volume)	
	8 kbyte
Subprocess images • Number of subprocess images may	32
Number of subprocess images, max. Hardware configuration.	V2
Hardware configuration	22: A distributed I/O protom is absorbed and not ask but the internal in
Number of distributed IO systems	32; 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	6; A maximum of 6 CMs (PROFINET + PROFIBUS) can be inserted in total
Number of IO Controllers	
• integrated	1
• Via CM	6; A maximum of 6 CMs (PROFINET + PROFIBUS) can be inserted in total
Rack	
 Modules per rack, max. 	32; CPU + 31 modules
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
Time of day	slots
Time of day	
Clock	Handrian stadt
• Type	Hardware clock
Backup time Deviction not deverage.	6 wk; At 40 °C ambient temperature, typically
Deviation per day, max. Operating hours counter.	10 s; Typ.: 2 s
Operating hours counter	16
Number Clock synchronization	16
Clock synchronization	Von
• supported	Yes
• in AS, master	Yes
• in AS, device	Yes
on Ethernet via NTP Interfaces	Yes
Interfaces	
Number of PROFINET interfaces	1
1. Interface	
Interface types	
• RJ 45 (Ethernet)	Yes; X1
 Number of ports 	2
• integrated switch	Yes
• integrated switch Protocols	
integrated switchProtocolsIP protocol	Yes; IPv4
integrated switch Protocols IP protocol PROFINET IO Controller	Yes; IPv4 Yes
integrated switch Protocols IP protocol PROFINET IO Controller PROFINET IO Device	Yes; IPv4 Yes Yes
integrated switch Protocols IP protocol PROFINET IO Controller	Yes; IPv4 Yes

* Wetta redundancy **PROPRINE I to Controller **Services** - PROCIP communication - Isochronous mode - Direct date exchange - PROCIP communication - Isochronous mode - Direct date exchange - IRT - PROCIP communication - Number of commoctable I/O Devices, max Of which I/O devices with IRT, max Of which I of devices with IRT, max Of which I in line, max Number of commoctable I/O Devices for RT, max Of which I in line, max Number of I/O Devices but can be aimultaneously advivated/decadvated, max Updating times - Number of I/O Devices per tool, max Updating times - Irr and cycle of 250 µs - Irr and cycle	Web server	Yes
Services	Media redundancy	Yes
- PGOP communication - Isochronous mode - Direct data exchange - Direct data exchange - PROFilenergy - PROFilenergy - PROFilenergy - Profilenergy - Number of connectable to Devices, max Of which ID devices with IRT, max Of which ID devices with IRT, max Of which In line, max Of which In line, max Of which In line, max Number of Devices find can be simultaneously advantage/deachivate, max Number of Devices that can be simultaneously advantage/deachivate, max Number of ID Devices that can be simultaneously advantage/deachivate, max Updating times - Updating times - Updating times - The minimum value of the update time also depends on communication share as the PROFINET IO, on the number of ID devices, and on the quantity of configure user data - Update time for IRT - In sear drycle of 500 µs - for send cycle of 500 µs - for send cycle of 4 ms - With IRT and parameterization of "odd" send cycles - for send cycle of 250 µs - for send cycle of 500 µs - for send cycle of 500 µs - for send cycle of 500 µs - for send cycle of 1 ms - the send cycle of 250 µs - for send cycle of 1 ms - the send cycle of 300 µs - for send cycle of 1 ms - for send cycle of 1 ms - for send cycle of 250 µs - for send cycle of 300 µs - for send cycle of 500 µs - for send cyc	·	
- Isochronous mode - Oirect data exchange - Oirect data exchange - IPIT - PROFlenerty - PROFlenerty - Proflexed startup - Proflexed startup - Proflexed startup - Number of connectable I/O Devices, max Of which I/O devices with IRT, max Of which I/O devices with IRT, max Of which I/O devices with IRT, max Of which I/O devices that can be simultaneously activated dideal voted, max Number of I/O Devices per tool, max Number of I/O Devices per tool, max Number of I/O Devices per tool, max Updating times - Updating times - For send cycle of 250 µs - For send cycle of 250 µs - For send cycle of 1 ms - For send cycle of 1 ms - For send cycle of 1 ms - For send cycle of 2 ms - With IRT and parameterization of "odd" send cycles - With IRT and parameterization of "odd" send cycles - For send cycle of 500 µs - For send cycle of 500 µs - For send cycle of 500 µs - For send cycle of 1 ms - For send cycle of 3 ms - With IRT and parameterization of "odd" send cycles - With IRT and parameterization of "odd" send cycles - For send cycle of 500 µs - For send cycle	Services	
- Direct data exchange - IRT - PROFilenergy - Profice florating - PROFilenergy - Profice florating - Number of connectable Io Devices, max Of which IO devices with IRT, max Of which IO devices with IRT, max Of which In line, max Number of IO Devices both of an be simultaneously advalate/dearbitated, max Number of IO Devices per tool, max Updating times - Updating times - Update time for IRT - Of send cycle of 250 µs - For send cycle of 500 µs - For send cycle of 4 ms - With IRT and parameterization of "odd" send cycles - For send cycle of 1500 µs - For send cycle of 1500 µs - For send cycle of 250 µs - For send cycle of 1500 µs - For send	— PG/OP communication	Yes
- IRT - PROFlenergy - Prioritized startup - Promitted startup - Number of connectable IO Devices, max Number of connectable IO Devices, max Number of connectable IO Devices first, max Number of connectable Io Devices for RT, max Number of connectable Io Devices for RT, max Number of IO Devices that can be simultaneously activated/deactivated, max Number of IO Devices that can be simultaneously activated/deactivated, max Number of IO Devices per tool, max - Updating times - Updating times - Updating times - 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 Updating times - The send cycle of 250 µs - The send cycle of 300 µs - To send cycle of 100 µs - To send	— Isochronous mode	Yes
PROFilenery Promitted startup Promitted startup Promitted startup Promitted startup Number of connectable IO Devices, max. Of which IO devices with IRT, max. Number of connectable IO Devices for RT, max. PROFINES or PROFINET Of which in line, max. Number of IO Devices but can be simultaneously advicate/decativate, max. Pubmer of IO Devices but can be simultaneously advicate/decativate, max. Updating times Update for IRT Update time for IRT To reard cycle of 250 µs For send cycle of 150 Qus For send cy	— Direct data exchange	Yes; Requirement: IRT and isochronous mode (MRPD optional)
Prioritized startup Number of connectable IO Devices, max. Of which IO devices with IRT, max. Number of connectable Devices for RT, max. Number of connectable Devices for RT, max. Number of connectable IO Devices for RT, max. Number of IO Devices that can be simultaneously activate-diversed prices for RT and activate-diversed visited. In the case of IRT with in line, max. Number of IO Devices per tool, max. Number of IO Devices per tool, max. Number of IO Devices per tool, max. Number of IST - for send cycle of 250 µs - for send cycle of 250 µs - for send cycle of 250 µs - for send cycle of 1 ms - for send cycle of 1 ms - for send cycle of 1 ms - for send cycle of 4 ms - With IRT and parameterization of "odd" send cycles Update time for RT - for send cycle of 4 ms - With IRT and parameterization of "odd" send cycles Update time for RT - for send cycle of 500 µs - for send cycle of 500 µs - for send cycle of 2 ms - for send cycle of 1 ms - for send cycle of 2 ms - for send cycle of 3 ms - for send cycle of 4 ms PROFINET IO Device Services - PCOP communication No - IBCT - PROFINET IO Device Services - PROFINET IO Device Services - PROFINET IO Device - Shared device - Asset management record Yes - Asset management record Yes - Autone-goltation - Ves - Autone-goltation - Autono-cosing - Legitable time also depends on communication and the quantity of confidence of the CPU and connected CPs / CMs Number of connections No Number of connections max - N	— IRT	Yes
- Number of connectable IO Devices, max Of whitch IO devices with IRT, max Number of connectable IO Devices for RT, max Of whitch in Inie, max Number of IO Devices that can be simultaneously achievided-elevated, max Number of IO Devices per tool, max Number of IO Devices per tool, max Updating times - Updating times - The minimum value of the update time also depends on communication share set for RRG/FINET 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 - for send cycle of 1 ms - for send cycle of 1 ms - for send cycle of 2 ms - for send cycle of 2 ms - for send cycle of 500 µs - for send cycle of 4 ms - With IRT and parameterization of "odd" send cycle of 1 ms - for send cycle of 500 µs - for send cycle of 500 µs - for send cycle of 500 µs - for send cycle of 1 ms - for send cycle of 1 ms - for send cycle of 500 µs - for send cycle of 1 ms - for send cycle of 2 ms - for send cycle of 1 ms - for send cycle of 2 ms - for send cycle of 4 ms - for send cycle of 4 ms - for send cycle of 1 ms - for send cycle of 2 ms - for send cycle of 2 ms - for send cycle of 4 ms - for send cycle of 4 ms - for send cycle of 500 µs - for send cycle of 1 ms - for send cycle of 2 ms - for send cycle of 2 ms - for send cycle of 4 ms - for send cycle of 500 ps - for send cycle o	— PROFlenergy	Yes; per user program
PROFIBUS of PROFINET - Of which IO devices with IRT, max Number of connectable IO Devices for RT, max In which in line, max In which in line, max Number of IO Devices that can be simultaneously activated/deactivated, max Number of IO Devices per tool, max Updating times - Updating times - Updating times - Updating times - For send cycle of 250 µs - For send cycle of 250 µs - For send cycle of 1500 µs - For send cycle of 100 ms - For send cycle of 1 ms - For send cycle of 1 ms - For send cycle of 4 ms - For send cycle of 4 ms - With IRT and parameterization of "odd" send cycles - For send cycle of 250 µs - For send cycle of 500 µs - For send cycle of 500 µs - For send cycle of 4 ms - With IRT and parameterization of "odd" send cycles - For send cycle of 500 µs - For send cycle of 1 ms - For send cycle of 1 ms - For send cycle of 4 ms - For send cycle of 500 µs - For send cycle of	 Prioritized startup 	Yes; Max. 32 PROFINET devices
- Number of connectable IO Devices for RT, max of which in line, max Hundre of IO Devices that can be simultaneously activated device wheel, max Hundre of IO Devices per tool, max Updating times - Updating times - Updating times - 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 IRT - for send cycle of 250 µs - for send cycle of 250 µs - for send cycle of 500 µs - for send cycle of 500 µs - for send cycle of 500 µs - for send cycle of 4 ms - for send cycle of 4 ms - for send cycle of 4 ms - with IRT and parameterization of "odd" send cycles - For send cycle of 250 µs - for send cycle of 4 ms - for send cycle of 500 µs - for send	 Number of connectable IO Devices, max. 	
of which in line, max Number of IO Devices that can be simultaneously activated/descrivated, max Number of IO Devices per tool, max Updating times Number of IO Devices per tool, max Updating times	Of which IO devices with IRT, max.	64
Number of IO Devices that can be simultaneously activated/deactivated, max Humber of IO Devices per tool, max Updating times For send cycle of 250 µs For send cycle of 250 µs For send cycle of 500 µs For send cycle of 500 µs For send cycle of 500 µs For send cycle of 1 ms For send cycle of 4 ms For send cycle of 4 ms With IRT and parameterization of "odd" send cycles For send cycle of 500 µs For send cycle of 4 ms With IRT and parameterization of "odd" send cycles For send cycle of 250 µs For send cycle of 250 µs For send cycle of 500 µs For send cycle of 4 ms For send cycle of 500 µs	 Number of connectable IO Devices for RT, max. 	128
activated/deactivated, max. — Number of 10 Devices per tool, max. — Updating times — Updating times — Updating times — Over the provided of 250 µs — for send cycle of 250 µs — for send cycle of 100 µs — for send cycle of 1 ms — for send cycle of 1 ms — for send cycle of 4 ms — with IRT and parameterization of "odd" send cycles — Vith IRT and parameterization of "odd" send cycles — for send cycle of 250 µs — for send cycle of 250 µs — for send cycle of 4 ms — with IRT and parameterization of "odd" send cycles — Vith IRT and parameterization of "odd" send cycles — for send cycle of 250 µs — for send cycle of 4 ms — for send cycle of 500 µs — for send cycle of 500 µ	— of which in line, max.	128
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 — for send cycle of 500 µs — for send cycle of 1 ms — for send cycle of 1 ms — for send cycle of 2 ms — for send cycle of 4 ms — with IRT and parameterization of "odd" send cycles Update time for RT — for send cycle of 4 ms — with IRT and parameterization of "odd" send cycles Update time for RT — for send cycle of 500 µs — for send cycle of 1 ms — for send cycle of 1 ms — for send cycle of 4 ms — for send cycle of 1 ms — for send cycle of 4 ms — for send cycle of 500 µs — for send cycle of 1 ms — for send cycle of 2 ms — for send cycle of 3 ms — for send cycle of 4 ms — the send cycle of 500 µs — for		8; in total across all interfaces
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 — for send cycle of 500 µs — for send cycle of 1 ms — for send cycle of 2 ms — for send cycle of 4 ms — With IRT and parameterization of "odd" send cycles Update time of 500 µs — for send cycle of 4 ms — With IRT and parameterization of "odd" send cycles Update time for RT — for send cycle of 250 µs — for send cycle of 500 µs — for send cycle of 4 ms — in the send cycle of 500 µs — for send cycle of 4 ms — for send cycle of 500 µs — for send cycl	 Number of IO Devices per tool, max. 	8
for send cycle of 250 µs for send cycle of 500 µs for send cycle of 1500 µs for send cycle of 1 ms for send cycle of 1 ms for send cycle of 4 ms for send cycle of 4 ms for send cycle of 4 ms With IRT and parameterization of "odd" send cycles With IRT and parameterization of "odd" send cycles With IRT and parameterization of "odd" send cycles For send cycle of 250 µs for send cycle of 500 µs for send cycle of 1 ms for send cycle o	— Updating times	set for PROFINET IO, on the number of IO devices, and on the quantity of
update time of \$00 µs of the isochronous OB is decisive	Update time for IRT	
for send cycle of 2 ms 2 ms to 32 ms 4 ms to 64 ms 2 ms to 32 ms 4 ms to 64 ms 8 ms to 64 ms 9 ms to 75 ms to	— for send cycle of 250 μs	
- for send cycle of 2 ms - for send cycle of 4 ms - With IRT and parameterization of "odd" send cycles - With IRT and parameterization of "odd" send cycles Wight IRT and parameterization of "odd" send cycles Wight IRT and parameterization of "odd" send cycles Wight IRT and parameterization of "odd" send cycles Wight IRT and parameterization of "odd" send cycles Wight IRT and parameterization of "odd" send cycles Wight IRT and parameterization of "odd" send cycles Wight IRT and parameterization of "odd" send cycles Wight IRT and parameterization of 90 μs to 128 ms Wight IRT and parameterization of 1 ms to 512 ms Wight IRT and parameterization of 2 ms to 18 ms Wight IRT and parameterization of 2 ms to 18 ms Wight IRT and parameterization of 2 ms to 18 ms Wight IRT and parameterization of 3 ms to 18 ms Wight IRT and parameterization of 3 ms to 18 ms Wight IRT and parameterization of 3 ms to 18 ms Wight IRT and parameterization of 3 ms to 18 ms Wight IRT and parameterization of 4 ms to 18 ms Wigh	— for send cycle of 500 μs	500 µs to 8 ms
- for send cycle of 4 ms - With IRT and parameterization of "odd" send cycle With IRT and parameterization of "odd" send cycle By Digate time = set "odd" send clock (any multiple of 125 μs: 375 μs, 625 μs 3 875 μs) Update time for RT - for send cycle of 250 μs - for send cycle of 500 μs - for send cycle of 1 ms - for send cycle of 2 ms - for send cycle of 2 ms - for send cycle of 4 ms - for send cycle of 500 μs - for send cycle of 4 ms - for send cycle of 4 ms - for send cycle of 500 μs - for send cycle of 500 μs - for send cycle of 4 ms - for send cycle of 500 μs - for send cycle of 2 ms - for send cycle of 8 ms - for send cycle of 2 ms - for send cycle of 8 ms - for send cycle of 2 ms - for send cycle of 8 ms - for send	— for send cycle of 1 ms	1 ms to 16 ms
Update time = set "odd" send clock (any multiple of 125 µs: 375 µs, 625 µs 3 675 µs) Update time for RT — for send cycle of 250 µs — for send cycle of 500 µs — for send cycle of 10 ms — for send cycle of 2 ms — for send cycle of 2 ms — for send cycle of 4 ms — provinces PROFINET IO Device Services — PG/OP communication — IRT — PROFIlenergy — Shared device — Number of IO Controllers with shared device, max. — activation/deactivation of I-devices — Asset management record — es; per user program Interface types RJ 45 (Ethernet) — 100 Mbps — Autonegotiation — Yes — Autonegotiation — Yes — Industrial Ethernet status LED — Yes Protocols PROFIsate No Number of connections, max. — Number of connections via integrated interfaces — Number of connections via integrated interfaces — Number of 57 routing paths — 108 Redundancy mode — H-Sync forwarding — Yes Protocorial parts and cycle of 250 µs to 128 ms — Send **Connection** Update time = set **odd** send clock (any multiple of 125 µs, 625 µs 3 250 µs to 128 ms — send **Color ms — send **Color ms — send **Color ms — send **Color ms — send **Color ms — s	•	2 ms to 32 ms
Update time for RT for send cycle of 250 µs for send cycle of 500 µs for send cycle of 1 ms for send cycle of 1 ms for send cycle of 1 ms for send cycle of 4 ms for send cycle of 52 ms for send cycle	•	4 ms to 64 ms
- for send cycle of 250 μs	 With IRT and parameterization of "odd" send cycles 	
for send cycle of 500 μs for send cycle of 1 ms for send cycle of 1 ms for send cycle of 2 ms for send cycle of 4 ms FORDFINET IO Device Services PROFIDENT PROFIDENT PROFIDENT PROFIDENT PROFIDENT PROFIDENT Number of IO Controllers with shared device, max activation/deactivation of I-devices Number of IO Controllers with shared device, max activation/deactivation of I-devices Asset management record Asset management record For send cycle of 4 ms For send cycle of 5 ms -	Update time for RT	
for send cycle of 1 ms	— for send cycle of 250 μs	250 µs to 128 ms
for send cycle of 2 ms	— for send cycle of 500 μs	500 µs to 256 ms
for send cycle of 4 ms 4 ms to 512 ms PROFINET IO Device Services PG/OP communication Yes Isochronous mode No IRT Yes PROFlenergy Yes; per user program Shared device Yes Number of IO Controllers with shared device, max activation/deactivation of I-devices Yes; per user program Asset management record Yes; per user program Interface types RJ 45 (Ethernet) 100 Mbps Yes Autoregotiation Yes Autoregotiation Yes Autoregotiation Yes Industrial Ethernet status LED Yes Protocols PROFIsafe No Number of connections, max Number of connections reserved for ES/HMI/web Number of sonnections reserved for ES/HMI/web Number of S routing paths Redundancy mode H-Sync forwarding Yes H-Sync forwarding Industrial Ethernet status LED Redundancy mode H-Sync forwarding From Size Number of S routing paths H-Sync forwarding Industrial Ethernet S S HMI/web H-Sync forwarding From Size Number of S routing paths H-Sync forwarding	— for send cycle of 1 ms	1 ms to 512 ms
PROFINET IO Device Services - PG/OP communication Yes - Isochronous mode No - IRT Yes - PROFlenergy Yes; per user program - Shared device Yes - Number of IO Controllers with shared device, max activation/deactivation of I-devices Yes; per user program - Asset management record Yes; per user program Interface types RJ 45 (Ethernet) • 100 Mbps Yes • Autonegotiation Yes • Autocrossing Yes • Industrial Ethernet status LED Yes Protocols PROFIsafe No Number of connections, max. • Number of connections reserved for ES/HMI/web • Number of connections via integrated interfaces 88 • Number of Sr routing paths Redundancy mode • H-Sync forwarding Yes	•	
Services - PG/OP communication Yes - Isochronous mode No - IRT Yes - PROFlenergy Yes; per user program - Shared device Yes - Number of IO Controllers with shared device, max activation/deactivation of I-devices Yes; per user program - Asset management record Yes; per user program - Asset management record Yes; per user program Interface types RJ 45 (Ethernet) • 100 Mbps Yes • Autorossing Yes • Autorossing Yes • Industrial Ethernet status LED Yes PROFisafe No Number of connections, max. • Number of connections, max. • Number of connections reserved for ES/HMI/web • Number of connections via integrated interfaces 88 • Number of S7 routing paths Redundancy mode • H-Sync forwarding Yes		4 ms to 512 ms
- PG/OP communication Yes - Isochronous mode No - IRT Yes Yes; per user program - PROFlenergy Yes; per user program - Shared device Yes - Number of IO Controllers with shared device, max. 4 - activation/deactivation of I-devices Yes; per user program - Asset management record Yes; per user program Interface types RJ 45 (Ethernet) • 100 Mbps Yes • Autocrossing Yes • Autocrossing Yes • Industrial Ethernet status LED Yes Protocols PROFIsafe No Number of connections, max. 128; via integrated interfaces of the CPU and connected CPs / CMs • Number of connections reserved for ES/HMI/web 10 • Number of connections via integrated interfaces 8 • Number of S routing paths 16 Redundancy mode • H-Sync forwarding Yes		
Isochronous mode IRT PROFlenergy Shared device Number of IO Controllers with shared device, max activation/deactivation of I-devices Asset management record Asset management record Asset management record 100 Mbps Autoroossing Autoroossing Autoroossing Autoroossing Number of connections Protocots PROFIsafe No Number of connections, max Number of connections reserved for ES/HMI/web Number of connections reserved for ES/HMI/web Number of S7 routing paths Redundancy mode H-Sync forwarding Yes Yes Roof Hamiltonia Pyes Protocots Proto		V
- IRT - PROFlenergy - Shared device - Number of IO Controllers with shared device, max activation/deactivation of I-devices - Asset management record Interface types RJ 45 (Ethernet) - 100 Mbps - Autonegotiation - Autocrossing - Autocrossing - Industrial Ethernet status LED Protocols PROFIsafe No Number of connections - Number of connections, max Number of connections reserved for ES/HMI/web - Number of connections via integrated interfaces - Number of S7 routing paths - Redundancy mode - H-Sync forwarding - Yes - Ves		
PROFlenergy Shared device Number of IO Controllers with shared device, max activation/deactivation of I-devices Asset management record Yes; per user program Yes; per user program Yes; per user program		
- Shared device Yes - Number of IO Controllers with shared device, max activation/deactivation of I-devices Yes; per user program - Asset management record Yes; per user program Interface types RJ 45 (Ethernet) • 100 Mbps Yes • Autonegotiation Yes • Autocrossing Yes • Industrial Ethernet status LED Yes Protocols PROFIsafe No Number of connections, max. • Number of connections, max. • Number of connections reserved for ES/HMI/web • Number of connections via integrated interfaces 88 • Number of S7 routing paths Redundancy mode • H-Sync forwarding Yes		
- Number of IO Controllers with shared device, max. - activation/deactivation of I-devices - Asset management record Interface types RJ 45 (Ethernet) • 100 Mbps • Autonegotiation • Autocrossing • Industrial Ethernet status LED Protocols PROFIsafe No Number of connections, max. • Number of connections, max. • Number of connections reserved for ES/HMI/web • Number of connections via integrated interfaces • Number of S7 routing paths Redundancy mode • H-Sync forwarding Yes; per user program Yes Yes 100 Mbps Yes		
activation/deactivation of I-devices Asset management record Interface types RJ 45 (Ethernet) • 100 Mbps • Autonegotiation • Autocrossing • Industrial Ethernet status LED Protocols PROFIsafe No Number of connections, max. • Number of connections reserved for ES/HMI/web • Number of connections via integrated interfaces • Number of S7 routing paths Redundancy mode • H-Sync forwarding Yes; per user program		
Interface types RJ 45 (Ethernet) • 100 Mbps • Autonegotiation • Autocrossing • Industrial Ethernet status LED Protocols PROFIsafe No Number of connections, max. • Number of connections reserved for ES/HMI/web • Number of connections via integrated interfaces • Number of S7 routing paths Redundancy mode • H-Sync forwarding Yes; per user program Yes		
Interface types RJ 45 (Ethernet) • 100 Mbps • Autonegotiation • Autocrossing • Industrial Ethernet status LED Protocols PROFIsafe No Number of connections, max. • Number of connections, max. • Number of connections reserved for ES/HMI/web • Number of connections via integrated interfaces • Number of S7 routing paths Redundancy mode • H-Sync forwarding Yes		
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Redundancy mode • H-Sync forwarding Yes	 Number of connections via integrated interfaces 	88
H-Sync forwarding Yes	 Number of S7 routing paths 	16
·	Redundancy mode	
Media redundancy	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 SIMATIC communication • PG/OP communication Yes; encryption with TLS V1.3 pre-selected S7 routing Yes Data record routing Yes • S7 communication, as server Yes Yes • S7 communication, as client • User data per job, max See online help (S7 communication, user data size) Open IE communication • TCP/IP Yes - Data length, max. 64 kbyte — several passive connections per port, supported Yes • ISO-on-TCP (RFC1006) Yes - Data length, max. 64 kbyte UDP Yes - Data length, max. 2 kbyte; 1 472 bytes for UDP broadcast — UDP multicast Yes; max. 78 multicast circuits DHCP DNS Yes SNMP Yes DCP Yes • LLDP Yes Encryption Yes; Optional Web server • HTTP Yes; Standard and user pages • HTTPS Yes; Standard and user pages OPC UA • Runtime license required Yes; "Small" license required OPC UA Client Yes; Data Access (registered Read/Write), Method Call - Application authentication Yes - Security policies Available security policies: None, Basic128Rsa15, Basic256Rsa15, Basic256Sha256 - User authentication "anonymous" or by user name & password - Number of connections, max. 4 - Number of nodes of the client interfaces, 1 000 recommended max. - Number of elements for one call of 300 OPC UA NodeGetHandleList/OPC UA ReadList/OPC U - Number of elements for one call of 20 OPC_UA_NameSpaceGetIndexList, max. - Number of elements for one call of 100 OPC_UA_MethodGetHandleList, max. - Number of simultaneous calls of the client 1 instructions for session management, per connection, - Number of simultaneous calls of the client 5 instructions for data access, per connection, max. Number of registerable nodes, max. 5 000 - Number of registerable method calls of 100 OPC_UA_MethodCall, max. - Number of inputs/outputs when calling 20 OPC_UA_MethodCall, max. OPC UA Server Yes; Data Access (Read, Write, Subscribe), Method Call, Alarms & Condition (A&C), Custom Address Space - Application authentication - Security policies available security policies: None, Basic128Rsa15, Basic256Rsa15, Basic256Sha256, Aes128Sha256RsaOaep, Aes256Sha256RsaPss User authentication "anonymous" or by user name & password

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terminogy objects	MAINT LED STOP ACTIVE LED Connection display LINK TX/RX Supported technology objects Motion Control	Yes; Note: The number of technology objects affects the cycle time of the PLC program; selection guide via the TIA Selection Tool

Required Motion Control resources	
— per speed-controlled axis	40
— per positioning axis	80
— per synchronous axis	160
— per external encoder	80
— per output cam	20
— per cam track	160
— per probe	40
Positioning axis	
 Number of positioning axes at motion control cycle of 4 ms (typical value) 	11
Number of positioning axes at motion control cycle	14
of 8 ms (typical value)	
Controller	
PID_Compact	Yes; Universal PID controller with integrated optimization
PID_3Step	Yes; PID controller with integrated optimization for valves
PID-Temp	Yes; PID controller with integrated optimization for temperature
Counting and measuring	
High-speed counter	Yes
Ambient conditions	
Ambient temperature during operation	
horizontal installation, min.	-40 °C; = Tmin (incl. condensation/frost)
 horizontal installation, max. 	70 °C; = Tmax; display: 50 °C, the display is switched off at an operating temperature of typically 50 °C
vertical installation, min.	-40 °C; = Tmin
vertical installation, max.	40 °C; = Tmax; display: 40 °C, at an operating temperature of typically 40 °C,
- vortion motanation, max.	the display is switched off
Ambient temperature during storage/transportation	
• min.	-40 °C
• max.	70 °C
Altitude during operation relating to sea level	
Installation altitude above sea level, max.	5 000 m; Restrictions for installation altitudes > 2 000 m, see manual
Relative humidity	
 With condensation, tested in accordance with IEC 60068- 2-38, max. 	100 %; RH incl. condensation / frost (no commissioning in bedewed state), horizontal installation
Resistance	nonzonal motalidation
Coolants and lubricants	
Resistant to commercially available coolants and	Yes; Incl. diesel and oil droplets in the air
lubricants	
Use in stationary industrial systems	
 to biologically active substances according to EN 60721-3-3 	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
 to chemically active substances according to EN 60721-3-3 	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
 to mechanically active substances according to EN 60721-3-3 	Yes; Class 3S4 incl. sand, dust, *
Use on ships/at sea	
 to biologically active substances according to EN 60721-3-6 	Yes; Class 6B2 mold, fungal and dry rot spores (excluding fauna)
 to chemically active substances according to EN 60721-3-6 	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
— to mechanically active substances according to EN 60721-3-6	Yes; Class 6S3 incl. sand, dust; *
Usage in industrial process technology	
Against chemically active substances acc. to EN 60654-4	Yes; Class 3 (excluding trichlorethylene)
 Environmental conditions for process, measuring and control systems acc. to ANSI/ISA-71.04 	Yes; Level GX group A/B (excluding trichlorethylene; harmful gas concentrations up to the limits of EN 60721-3-3 class 3C4 permissible); level LC3 (salt spray) and level LB3 (oil)
Remark	
 Note regarding classification of environmental conditions acc. to EN 60721, EN 60654-4 and ANSI/ISA-71.04 	* The supplied plug covers must remain in place over the unused interfaces during operation!
Conformal coating	
 Coatings for printed circuit board assemblies acc. to EN 61086 	Yes; Class 2 for high reliability

• Protection against fouling acc. to EN 60664-3

• Military testing according to MIL-I-46058C, Amendment 7

 Qualification and Performance of Electrical Insulating Compound for Printed Board Assemblies according to IPC-CC-830A Yes; Type 1 protection

Yes; Discoloration of coating possible during service life

Yes; Conformal coating, Class A

CC-030A	
configuration / header	
configuration / programming / header	
Programming language	
— LAD	Yes
— FBD	Yes
— STL	Yes
— SCL	Yes
— CFC	Yes
— GRAPH	Yes
Know-how protection	
 User program protection/password protection 	Yes
Copy protection	Yes
Block protection	Yes
Access protection	
 protection of confidential configuration data 	Yes
 Password for display 	Yes
 Protection level: Write protection 	Yes
 Protection level: Read/write protection 	Yes
 Protection level: Write protection for Failsafe 	No
Protection level: Complete protection	Yes
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.	400 g

last modified:

