SIEMENS

Data sheet

6ES7416-5HS06-0AB0



SIMATIC S7-400H, CPU 416-5H, central processing unit for S7-400H and S7-400F/FH, 5 interfaces: 1x MPI/DP, 1x DP, 1x PN and 2 for sync modules, 16 MB memory (10 MB data/6 MB program)

General information	
Product type designation	CPU 416-5H PN/DP
HW functional status	1
Firmware version	V6.0
Product function	
Isochronous mode	No
Engineering with	
 Programming package 	As of STEP 7 V5.5 SP2 with HF1
CiR - Configuration in RUN	
CiR synchronization time, basic load	100 ms
CiR synchronization time, time per I/O byte	0 µs
Supply voltage	
Rated value (DC)	Power supply via system power supply
Input current	
from backplane bus 5 V DC, typ.	1.6 A
from backplane bus 5 V DC, max.	1.9 A
from backplane bus 24 V DC, max.	150 mA; 150 mA per DP interface
from interface 5 V DC, max.	90 mA; At each DP interface
Power loss	
Power loss, typ.	7.5 W
Memory	
Type of memory	RAM
Work memory	
 integrated 	16 Mbyte
 integrated (for program) 	6 Mbyte
 integrated (for data) 	10 Mbyte
expandable	No
Load memory	
 expandable FEPROM 	Yes; with Memory Card (FLASH)
 expandable FEPROM, max. 	64 Mbyte
 integrated RAM, max. 	1 Mbyte
expandable RAM	Yes
• expandable RAM, max.	64 Mbyte
Backup	
• present	Yes
with battery	Yes; all data
without battery	No
Battery	
Backup battery	
 Backup current, typ. 	180 μA; Valid up to 40°C

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for factory point arithmetic, typ. 25 ms CPU-blocks CPU-blocks 00 • Number, max. 16 000; Number range: 1to 16000 • Size, max. 64 kbyte FB • Number, max. 8 000; Number range: 0 to 7090 • Size, max. 64 kbyte FC 60 • Number, max. 8 000; Number range: 0 to 7090 • Size, max. 64 kbyte FC 60 • Number, max. 8 000; Number range: 0 to 7090 • Size, max. 64 kbyte FC 60 • Number, max. 8 000; Number range: 0 to 7090 • Size, max. 64 kbyte FC 60 • Number of the cycle OBs 1.00 f1 • Number of free cycle OBs 1.00 f1 • Number of free cycle OBs 9.08 30-38 • Number of process alarm OBs 8.08 40-47 • Number of DFV1 alarm OBs 2.08 55-57 • Number of asynchronous error OBs 2.08 100, 102 • Number of asynchronous error OBs 2.08 121, 122 Number of asynchronous error OBs 2.08 121, 122 Number of asynchronous error OBs 2.08 121, 122 Number of asynchronous error OB 2 • Obser limit 0 <t< td=""><td>for word operations, typ.</td><td>12.5 ns</td></t<>	for word operations, typ.	12.5 ns
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• Number, max.8 000. Number range: 0 to 7999 	• Size, max.	64 kbyte
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S7 counter 2 048 Retentivity - - adjustable Yes - preset Z 0 to Z 7 Counting range - - lower limit 0 - upper limit 999 IEC counter - • present Yes • Type SFB • Number Unlimited (limited only by RAM capacity) S7 times - • Number 2 048 Retentivity - - adjustable Yes - preset No times retentive Time range - - lower limit 10 ms - upper limit 9 990 s IEC timer - • present Yes - lower limit 10 ms - upper limit 9 990 s IEC timer - • present Yes • Type SFB • Number Unlimited (limited only by RAM capacity)		2
• Number2 048Retentivity- adjustableYes- presetZ 0 to Z 7Counting range lower limit0- upper limit999IEC counterYes• presentYes• TypeSFB• NumberUnlimited (limited only by RAM capacity)S7 times2 048Retentivity adjustableYes- nopresetNo times retentive- nopresetNo times retentive- lower limit10 ms- upper limit9 990 sIEC timerYes- lower limit10 ms- upper limit9 990 sIEC timerYes• TypeSFB• Number2 57B• Number9 590 sIEC timerYes• TypeSFB• Number10 ms• upper limit9 590 sIEC timerYes• TypeSFB• NumberVes• TypeSFB• NumberUnlimited (limited only by RAM capacity)Data areas and their retentivityYes		
Retentivity Yes adjustable Yes preset Z 0 to Z 7 Counting range - lower limit 0 upper limit 999 IEC counter - • present Yes • Type SFB • Number Unlimited (limited only by RAM capacity) S7 times - - adjustable Yes - nower limit 2 048 Retentivity - - adjustable Yes - preset No times retentive Time range - - lower limit 9 90 s - upper limit 9 90 s IEC timer - - lower limit 9 90 s - upper limit 9 90 s IEC timer - - present Yes - Type SFB • Number Unlimited (limited only by RAM capacity) Data areas and their retentivity Unlimited limited only by RAM capacity)		2.048
adjustableYes presetZ 0 to Z 7Counting range0 upper limit09 upper limit999IEC counterYes• presentYes• TypeSFB• NumberUnlimited (limited only by RAM capacity)S7 times2 048Retentivity adjustableYes- presetNo times retentiveTime range10 ms- lower limit10 ms- upper limit990 sIEC timerYes- lower limit57 b- upper limit990 sSIEC timerYes- lower limit57 b- upper limit990 sSIEC timerYes- upper limit990 sSFBViumited (limited only by RAM capacity)Data areas and their retentivityJeta areas and their retentivity		2 040
presetZ 0 to Z 7Counting range0 lower limit0 upper limit999IEC counter999IEC counterVes• presentYes• TypeSFB• NumberUnlimited (limited only by RAM capacity)S7 times2 048Retentivity adjustableYes- presetNo times retentiveTime range lower limit10 ms- upper limit990 sIEC timer-• presentYes- lower limit57 times- lower limit990 sIEC timer-• presentYes• presentYes• TypeSFB• NumberUnlimited (limited only by RAM capacity)Data areas and their retentivity-		Vec
Counting range- lower limit0- upper limit999IEC counter• presentYes• TypeSFB• NumberUnlimited (limited only by RAM capacity)S7 times• Number2 048Retentivity adjustableYes- presetNo times retentiveTime range10 ms- lower limit9 990 sIEC timer• presentYes- lower limit9 990 sIEC timer• presentYes• presentY	-	
- lower limit0- upper limit999IEC counter• presentYes• TypeSFB• NumberUnlimited (limited only by RAM capacity)S7 times• Number2 048Retentivity adjustableYes- presetNo times retentiveTime range lower limit10 ms- upper limit9 990 sIEC timer• presentYes- presentSFB• NumberUnlimited (limited only by RAM capacity)Data areas and their retentivity	· · · ·	201021
upper limit999IEC counter• presentYes• TypeSFB• NumberUnlimited (limited only by RAM capacity)S7 times• Number2 048Retentivity- adjustableYes- presetNo times retentiveTime range10 ms- upper limit9 990 sIEC timerYes• presentYes- lower limit10 ms- upper limit9 990 sIEC timerYes• presentYes• presentYes• presentYes• presentYes• presentYes• numberUnlimited only by RAM capacity)Data areas and their retentivityUnlimited only by RAM capacity		0
IEC counter • present Yes • Type SFB • Number Unlimited (limited only by RAM capacity) S7 times 2 048 Retentivity 2 048 — adjustable Yes — preset No times retentive Time range - — lower limit 10 ms — upper limit 9 990 s IEC timer Yes • present Yes • Type SFB • Number Unlimited (limited only by RAM capacity)		
• presentYes• TypeSFB• NumberUnlimited (limited only by RAM capacity)S7 times2 048• Number2 048Retentivity- adjustable- adjustableYes- presetNo times retentiveTime range10 ms- upper limit9 90 sIEC timerYes• presentYes• presentSFB• NumberUnlimited (limited only by RAM capacity)Data areas and their retentivityUnlimited (limited only by RAM capacity)		
• TypeSFB• NumberUnlimited (limited only by RAM capacity)S7 times• Number2 048Retentivity- adjustableYes- presetNo times retentiveTime range- lower limit10 ms- upper limit990 sIEC timer• presentYes• presentSFB• NumberUnlimited (limited only by RAM capacity)Data areas and their retentivity		Yes
• Number Unlimited (limited only by RAM capacity) \$7 times 2 048 • Number 2 048 Retentivity - adjustable - adjustable Yes - preset No times retentive Time range - - lower limit 10 ms - upper limit 9 990 s IEC timer Yes • Type SFB • Number Unlimited (limited only by RAM capacity)		
S7 times 2 048 Retentivity - adjustable - adjustable Yes - preset No times retentive Time range - - lower limit 10 ms - upper limit 9 990 s IEC timer Yes • present Yes • Type SFB • Number Unlimited (limited only by RAM capacity)		
• Number 2 048 Retentivity - - adjustable Yes - preset No times retentive Time range - - lower limit 10 ms - upper limit 9 990 s IEC timer - • present Yes • Type SFB • Number Unlimited (limited only by RAM capacity)		
adjustable Yes preset No times retentive Time range - lower limit 10 ms upper limit 9 990 s IEC timer - • present Yes • Type SFB • Number Unlimited (limited only by RAM capacity)		2 048
preset No times retentive Time range 10 ms lower limit 9 990 s upper limit 9 990 s IEC timer Yes • present Yes • Type SFB • Number Unlimited (limited only by RAM capacity)	Retentivity	
Time range - lower limit 10 ms - upper limit 9 990 s IEC timer • present Yes • Type SFB • Number Unlimited (limited only by RAM capacity)	— adjustable	Yes
- lower limit 10 ms - upper limit 9 990 s IEC timer • present Yes • Type SFB • Number Unlimited (limited only by RAM capacity)	-	No times retentive
upper limit 9 990 s IEC timer • present Yes • Type SFB • Number Unlimited only by RAM capacity)	Time range	
IEC timer • present Yes • Type SFB • Number Unlimited (limited only by RAM capacity) Data areas and their retentivity	-	10 ms
• present Yes • Type SFB • Number Unlimited (limited only by RAM capacity)	— upper limit	9 990 s
• Type SFB • Number Unlimited (limited only by RAM capacity) Data areas and their retentivity Image: Comparison of	IEC timer	
Number Unlimited (limited only by RAM capacity) Data areas and their retentivity	• present	Yes
Data areas and their retentivity	• Туре	SFB
	Number	Unlimited (limited only by RAM capacity)
Retentive data area (incl. timers, counters, flags), max. Total working and load memory (with backup battery)	Data areas and their retentivity	
	Retentive data area (incl. timers, counters, flags), max.	Total working and load memory (with backup battery)

Flag	
• Size, max.	16 384 byte
Retentivity available	Yes
Retentivity preset	MB 0 to MB 15
Number of clock memories Local data	8; in 1 memory byte
adjustable, max.	64 kbyte
• preset	32 kbyte
Address area	
I/O address area	
• Inputs	16 kbyte
Outputs	16 kbyte
Process image	
Inputs, adjustable	16 kbyte
Outputs, adjustable	16 kbyte
Inputs, default	1 024 byte
Outputs, default	1 024 byte
 consistent data, max. 	244 byte
Access to consistent data in process image	Yes
Subprocess images	
 Number of subprocess images, max. 	15
Digital channels	
Inputs	131 072
— of which central	131 072
Outputs	131 072
— of which central	131 072
Analog channels	
Inputs	8 192
— of which central	8 192
Outputs	8 192
	8 192
— of which central	0 192
Hardware configuration	0 132
	21
Hardware configuration	
Hardware configuration Number of expansion units, max. connectable OPs Multicomputing	21
Hardware configuration Number of expansion units, max. connectable OPs	21 95
Hardware configuration Number of expansion units, max. connectable OPs Multicomputing	21 95
Hardware configuration Number of expansion units, max. connectable OPs Multicomputing Interface modules	21 95 No
Hardware configuration Number of expansion units, max. connectable OPs Multicomputing Interface modules • Number of connectable IMs (total), max.	21 95 No 6
Hardware configuration Number of expansion units, max. connectable OPs Multicomputing Interface modules • Number of connectable IMs (total), max. • Number of connectable IM 460s, max.	21 95 No 6 6
Hardware configuration Number of expansion units, max. connectable OPs Multicomputing Interface modules • Number of connectable IMs (total), max. • Number of connectable IM 460s, max. • Number of connectable IM 463s, max.	21 95 No 6 6
Hardware configuration Number of expansion units, max. connectable OPs Multicomputing Interface modules • Number of connectable IMs (total), max. • Number of connectable IM 460s, max. • Number of connectable IM 463s, max. Number of DP masters	21 95 No 6 6 4; Single mode only
Hardware configuration Number of expansion units, max. connectable OPs Multicomputing Interface modules • Number of connectable IMs (total), max. • Number of connectable IM 460s, max. • Number of connectable IM 463s, max. Number of DP masters • integrated	21 95 No 6 6 4; Single mode only 2
Hardware configuration Number of expansion units, max. connectable OPs Multicomputing Interface modules • Number of connectable IMs (total), max. • Number of connectable IM 460s, max. • Number of connectable IM 463s, max. Number of DP masters • integrated • via CP	21 95 No 6 6 4; Single mode only 2 10; CP 443-5 Extended
Hardware configuration Number of expansion units, max. connectable OPs Multicomputing Interface modules • Number of connectable IMs (total), max. • Number of connectable IM 460s, max. • Number of connectable IM 463s, max. • Number of DP masters • integrated • via CP • Mixed mode IM + CP permitted	21 95 No 6 6 4; Single mode only 2 10; CP 443-5 Extended No
Hardware configuration Number of expansion units, max. connectable OPs Multicomputing Interface modules • Number of connectable IMs (total), max. • Number of connectable IM 460s, max. • Number of connectable IM 463s, max. Number of DP masters • integrated • via CP • Mixed mode IM + CP permitted • via interface module	21 95 No 6 6 4; Single mode only 2 10; CP 443-5 Extended No
Hardware configuration Number of expansion units, max. connectable OPs Multicomputing Interface modules • Number of connectable IMs (total), max. • Number of connectable IM 460s, max. • Number of connectable IM 463s, max. • Number of DP masters • integrated • via CP • Mixed mode IM + CP permitted • via interface module Number of IO Controllers	21 95 No 6 6 4; Single mode only 2 10; CP 443-5 Extended No 0
Hardware configuration Number of expansion units, max. connectable OPs Multicomputing Interface modules • Number of connectable IMs (total), max. • Number of connectable IM 460s, max. • Number of connectable IM 463s, max. • Number of connectable IM 463s, max. • Number of DP masters • integrated • via CP • Mixed mode IM + CP permitted • via interface module Number of IO Controllers • integrated	21 95 No 6 6 4; Single mode only 2 10; CP 443-5 Extended No 0
Hardware configuration Number of expansion units, max. connectable OPs Multicomputing Interface modules • Number of connectable IMs (total), max. • Number of connectable IM 460s, max. • Number of connectable IM 463s, max. • Number of connectable IM 463s, max. • Number of DP masters • integrated • via CP • Mumber of IO Controllers • integrated • via CP	21 95 No 6 6 4; Single mode only 2 10; CP 443-5 Extended No 0
Hardware configuration Number of expansion units, max. connectable OPs Multicomputing Interface modules • Number of connectable IMs (total), max. • Number of connectable IM 460s, max. • Number of connectable IM 460s, max. • Number of connectable IM 463s, max. • Number of DP masters • integrated • via CP • Mixed mode IM + CP permitted • via interface module Number of IO Controllers • integrated • via CP Number of IO Controllers • integrated • via CP Number of IO Controllers • integrated • via CP Number of operable FMs and CPs (recommended)	21 95 No 6 6 4; Single mode only 2 10; CP 443-5 Extended No 0 1 0 See manual Automation System S7-400H fault-tolerant systems. Limited by
Hardware configuration Number of expansion units, max. connectable OPs Multicomputing Interface modules • Number of connectable IMs (total), max. • Number of connectable IM 460s, max. • Number of connectable IM 460s, max. • Number of connectable IM 463s, max. • Number of DP masters • integrated • via CP • Mixed mode IM + CP permitted • via interface module Number of IO Controllers • integrated • via CP Number of operable FMs and CPs (recommended) • FM • CP, PtP • PROFIBUS and Ethernet CPs	21 95 No 6 6 4; Single mode only 2 10; CP 443-5 Extended No 0 1 0 See manual Automation System S7-400H fault-tolerant systems. Limited by number of slots and number of connections See manual Automation System S7-400H fault-tolerant systems. Limited by
Hardware configuration Number of expansion units, max. connectable OPs Multicomputing Interface modules • Number of connectable IMs (total), max. • Number of connectable IM 460s, max. • Number of connectable IM 463s, max. • Number of connectable IM 463s, max. • Number of DP masters • integrated • via CP • Mixed mode IM + CP permitted • via interface module Number of IO Controllers • integrated • via CP Number of operable FMs and CPs (recommended) • FM • CP, PtP • PROFIBUS and Ethernet CPs Slots	21 95 No 6 6 4; Single mode only 2 10; CP 443-5 Extended No 0 1 0 See manual Automation System S7-400H fault-tolerant systems. Limited by number of slots and number of connections See manual Automation System S7-400H fault-tolerant systems. Limited by number of slots and number of connections See manual Automation System S7-400H fault-tolerant systems. Limited by number of slots and number of connections 14; Of which max. 10 CP as DP master
Hardware configuration Number of expansion units, max. connectable OPs Multicomputing Interface modules • Number of connectable IMs (total), max. • Number of connectable IM 460s, max. • Number of connectable IM 463s, max. • Number of connectable IM 463s, max. • Number of connectable IM 463s, max. • Number of DP masters • integrated • via CP • Mixed mode IM + CP permitted • via interface module Number of IO Controllers • integrated • via CP Number of operable FMs and CPs (recommended) • FM • CP, PtP • PROFIBUS and Ethernet CPs Slots • required slots	21 95 No 6 6 4; Single mode only 2 10; CP 443-5 Extended No 0 1 0 See manual Automation System S7-400H fault-tolerant systems. Limited by number of slots and number of connections See manual Automation System S7-400H fault-tolerant systems. Limited by number of slots and number of connections
Hardware configuration Number of expansion units, max. connectable OPs Multicomputing Interface modules • Number of connectable IMs (total), max. • Number of connectable IM 460s, max. • Number of connectable IM 463s, max. • Number of connectable IM 463s, max. • Number of connectable IM 463s, max. • Number of DP masters • integrated • via CP • Mixed mode IM + CP permitted • via interface module Number of IO Controllers • integrated • via CP Number of operable FMs and CPs (recommended) • FM • CP, PtP • PROFIBUS and Ethernet CPs Slots • required slots Time of day	21 95 No 6 6 4; Single mode only 2 10; CP 443-5 Extended No 0 1 0 See manual Automation System S7-400H fault-tolerant systems. Limited by number of slots and number of connections See manual Automation System S7-400H fault-tolerant systems. Limited by number of slots and number of connections See manual Automation System S7-400H fault-tolerant systems. Limited by number of slots and number of connections 14; Of which max. 10 CP as DP master
Hardware configuration Number of expansion units, max. connectable OPs Multicomputing Interface modules • Number of connectable IMs (total), max. • Number of connectable IM 460s, max. • Number of connectable IM 463s, max. • Number of connectable IM 463s, max. • Number of DP masters • integrated • via CP • Mixed mode IM + CP permitted • via interface module Number of IO Controllers • integrated • via CP Number of operable FMs and CPs (recommended) • FM • CP, PtP • PROFIBUS and Ethernet CPs Slots • required slots Time of day Clock	21 95 No 6 6 6 6 7 10; CP 443-5 Extended No 0 1 0 See manual Automation System S7-400H fault-tolerant systems. Limited by number of slots and number of connections See manual Automation System S7-400H fault-tolerant systems. Limited by number of slots and number of connections See manual Automation System S7-400H fault-tolerant systems. Limited by number of slots and number of connections 14; Of which max. 10 CP as DP master 2
Hardware configuration Number of expansion units, max. connectable OPs Multicomputing Interface modules • Number of connectable IMs (total), max. • Number of connectable IM 460s, max. • Number of connectable IM 463s, max. • Number of connectable IM 463s, max. • Number of DP masters • integrated • via CP • Mixed mode IM + CP permitted • via interface module Number of IO Controllers • integrated • via CP Number of operable FMs and CPs (recommended) • FM • CP, PtP • PROFIBUS and Ethernet CPs Slots • required slots Time of day Clock • Hardware clock (real-time)	21 95 No 6 6 7 10; CP 443-5 Extended No 0 1 0 See manual Automation System S7-400H fault-tolerant systems. Limited by number of slots and number of connections See manual Automation System S7-400H fault-tolerant systems. Limited by number of slots and number of connections See manual Automation System S7-400H fault-tolerant systems. Limited by number of slots and number of connections 14; Of which max. 10 CP as DP master 2 Yes
Hardware configuration Number of expansion units, max. connectable OPs Multicomputing Interface modules • Number of connectable IMs (total), max. • Number of connectable IM 460s, max. • Number of connectable IM 463s, max. • Number of connectable IM 463s, max. • Number of DP masters • integrated • via CP • Mixed mode IM + CP permitted • via interface module Number of IO Controllers • integrated • via CP Number of IO Controllers • integrated • via CP Number of operable FMs and CPs (recommended) • FM • CP, PtP • PROFIBUS and Ethernet CPs Slots • required slots Time of day Clock • Hardware clock (real-time) • retentive and synchronizable	21 95 No 6 6 7 10; CP 443-5 Extended No 0 1 0 See manual Automation System S7-400H fault-tolerant systems. Limited by number of slots and number of connections See manual Automation System S7-400H fault-tolerant systems. Limited by number of slots and number of connections See manual Automation System S7-400H fault-tolerant systems. Limited by number of slots and number of connections 2 2 Yes Yes Yes
Hardware configuration Number of expansion units, max. connectable OPs Multicomputing Interface modules • Number of connectable IMs (total), max. • Number of connectable IM 460s, max. • Number of connectable IM 463s, max. • Number of connectable IM 463s, max. • Number of DP masters • integrated • via CP • Mixed mode IM + CP permitted • via interface module Number of IO Controllers • integrated • via CP Number of operable FMs and CPs (recommended) • FM • CP, PtP • PROFIBUS and Ethernet CPs Slots • required slots Time of day Clock • Hardware clock (real-time)	21 95 No 6 6 7 10; CP 443-5 Extended No 0 1 0 See manual Automation System S7-400H fault-tolerant systems. Limited by number of slots and number of connections See manual Automation System S7-400H fault-tolerant systems. Limited by number of slots and number of connections See manual Automation System S7-400H fault-tolerant systems. Limited by number of slots and number of connections 14; Of which max. 10 CP as DP master 2 Yes

 Deviation per day (unbuffered), max. 	8.6 s; Power on
	o.o s, Power on
Operating hours counter • Number	10
	16
Number/Number range	0 to 15
Range of values	SFCs 2, 3 and 4: 0 to 32767 hours SFC 101: 0 to 2^31 - 1 hours
• Granularity	1 h
retentive	Yes
Clock synchronization	
 supported 	Yes
• to MPI, master	Yes
• on MPI, device	Yes
• to DP, master	Yes
• on DP, device	Yes
• in AS, master	Yes
• in AS, device	Yes
on Ethernet via NTP	Yes; As client
Time difference in system when synchronizing via	
• Ethernet, max.	10 ms; Via NTP
• MPI, max.	200 ms
Interfaces	
Number of RS 485 interfaces	2
Number of other interfaces	2; Fiber-optic interface
Optical interface	No
1. Interface	
Interface type	MPI/PROFIBUS DP
Isolated	Yes
Interface types	
• RS 485	Yes
Output current of the interface, max.	150 mA
Protocols	
• MPI	Yes
PROFIBUS DP master	Yes
PROFIBUS DP device	No
MPI	INU
Number of connections	44; If a diagnostics repeater is used on the line, the number of connection
	resources on the line is reduced by 1
• Transmission rate, max.	12 Mbit/s
Services	
— PG/OP communication	Yes
- Routing	Yes
— Global data communication	No
- S7 basic communication	No
- S7 communication	Yes
- S7 communication	Yes
- S7 communication, as server	Yes
PROFIBUS DP master	20. If a diamontian repeater is used as the line that is a first the
Number of connections, max.	32; If a diagnostics repeater is used on the line, the number of connection resources on the line is reduced by 1
Transmission rate, max.	12 Mbit/s
max. number of DP devices	32
Services	
— PG/OP communication	Yes
— Routing	Yes
— Routing — Global data communication	No
— S7 basic communication	No
— S7 communication	Yes
— S7 communication, as client	Yes
— S7 communication, as server	Yes
— Equidistance	No
 — Isochronous mode — SYNC/FREEZE 	No

	No
— activation/deactivation of DP devices	No
 — Direct data exchange (slave-to-slave communication) 	No
— DPV1	Yes
Address area	
— Inputs, max.	2 kbyte
- Outputs, max.	2 kbyte
User data per DP device	
— user data per DP device, max.	244 byte
— Inputs, max.	244 byte
- Outputs, max.	244 byte
— Slots, max.	244
— per slot, max.	128 byte
1st interface / PROFIBUS DP device / header	
Number of connections	No configuration of CPU as DP slave
2. Interface	
Interface type	PROFINET
Isolated	Yes
automatic detection of transmission rate	Yes; Autosensing
Autonegotiation	Yes
Autocrossing	Yes
Change of IP address at runtime, supported	No
Interface types	
• RJ 45 (Ethernet)	Yes
Number of ports	2
integrated switch	Yes
Protocols	
PROFINET IO Controller	Yes
PROFINET IO Device	No
PROFINET CBA	No
PROFIBUS DP master	No
PROFIBUS DP device	No
Open IE communication	Yes
Web server	No
 Point-to-point connection 	No
Media redundancy	Yes
PROFINET IO Controller	
 Transmission rate, max. 	100 Mbit/s
Services	
— PG/OP communication	Yes
- S7 communication	Yes
— Isochronous mode	No
— Shared device	Yes; Single mode only
— Prioritized startup	No
 — Number of connectable IO Devices, max. 	256; In redundant mode via both interfaces
 — Number of connectable IO Devices for RT, max. 	256
— of which in line, max.	256
- Activation/deactivation of IO Devices	No
— IO Devices changing during operation (partner	No
ports), supported	
 Device replacement without swap medium 	Yes
— Send cycles	250 µs, 500 µs, 1 ms, 2 ms, 4 ms
— Updating time	250 μs to 512 ms, minimum value depends on the number of configured user data and the configured single or redundant mode
Address area	data and the configured single of redundant mode
— Inputs, max.	8 kbyte
— Outputs, max.	8 kbyte
— User data consistency, max.	1 024 byte
Open IE communication	1 024 Dyte
Number of connections, max.	94
- Hamber of connociono, max.	
 Local port numbers used at the system end 	
Local port numbers used at the system end	0, 20, 21, 25, 102, 135, 161, 34962, 34963, 34964, 65532, 65533, 65534, 65535

 Keep-alive function, supported 	Yes
3. Interface	
Interface type	PROFIBUS DP
Interface types	
• RS 485	Yes
 Output current of the interface, max. 	150 mA
Protocols	
PROFIBUS DP master	Yes
PROFIBUS DP device	No
PROFIBUS DP master	
 Number of connections, max. 	32
 Transmission rate, max. 	12 Mbit/s
 max. number of DP devices 	125
Services	
— PG/OP communication	Yes
— Routing	Yes
 — Global data communication 	No
— S7 basic communication	No
— S7 communication	Yes
— S7 communication, as client	Yes
- S7 communication, as server	Yes
— Equidistance	No
— Isochronous mode	No
- SYNC/FREEZE	No
- activation/deactivation of DP devices	No
 Direct data exchange (slave-to-slave communication) 	No
— DPV0	Yes
— DPV1	Yes
Address area	
— Inputs, max.	8 kbyte
— Outputs, max.	8 kbyte
User data per DP device	
— user data per DP device, max.	244 byte
— Inputs, max.	244 byte
— Outputs, max.	244 byte
— Slots, max.	244
— per slot, max.	128 byte
4. Interface	
Interface type	Pluggable synchronization submodule (FO)
Plug-in interface modules	Synchronization modules 6ES7960-1AA06-0XA0 or 6ES7960-1AB06-0XA0
5. Interface	
Interface type	Pluggable synchronization submodule (FO)
Plug-in interface modules	Synchronization modules 6ES7960-1AA06-0XA0 or 6ES7960-1AB06-0XA0
Protocols	
Redundancy mode	
Media redundancy	
— Switchover time on line break, typ.	200 ms
— Number of stations in the ring, max.	50
SIMATIC communication	
S7 routing	Yes
Open IE communication	
• TCP/IP	Yes; via integrated PROFINET interface and loadable FBs
- Number of connections, max.	94
— Data length, max.	32 kbyte
- several passive connections per port, supported	Yes
• ISO-on-TCP (RFC1006)	Yes; Via integrated PROFINET interface or CP 443-1 and loadable FBs
 Number of connections, max. 	94
— Data length, max.	32 kbyte; 1 452 bytes via CP 443-1 Adv.
• UDP	Yes; via integrated PROFINET interface and loadable FBs
 Number of connections, max. 	94

— Data length, max.	1 472 byte
Web server	
supported	No
Isochronous mode	
Equidistance	No
communication functions / header	
PG/OP communication	Yes
 Number of connectable OPs with message processing 	95; When using Alarm_S/SQ and Alarm_D/DQ
Number of connectable OPs without message processing	95
Data record routing	Yes
Global data communication	
supported	No
S7 basic communication	
supported	No
S7 communication	
 supported 	Yes
• as server	Yes
• as client	Yes
 User data per job, max. 	64 kbyte
 User data per job (of which consistent), max. 	462 byte; 1 variable
S5 compatible communication	
supported	Yes; (via CP max. 10 and FC AG_SEND and FC AG_RECV)
 User data per job, max. 	8 kbyte
 User data per job (of which consistent), max. 	240 byte
Number of simultaneous AG-SEND/AG-RECV orders per	64/64
CPU, max.	
Standard communication (FMS) supported 	Yes; Via CP and loadable FB
Supported Number of connections	
overall	96
usable for PG communication	30
	1
- adjustable for PG communication, max.	0
usable for OP communication	Ŭ
— reserved for OP communication	1
— adjustable for OP communication, max.	0
usable for S7 basic communication	
- reserved for S7 basic communication	0
— adjustable for S7 basic communication, max.	0
usable for S7 communication	
 reserved for S7 communication 	0
 adjustable for S7 communication, max. 	0
usable for routing	
— reserved for routing	0
— adjustable for routing, max.	0
S7 message functions	
Number of login stations for message functions, max.	95; Max. 95 with Alarm_S/SQ and Alarm_D/DQ (OPs); max. 16 with Alarm, Alarm_8, Alarm_8P, Notify and Notify_8 (e.g. WinCC)
Symbol-related messages	No
SCAN procedure	No
Program alarms	Yes
Process diagnostic messages	Yes
simultaneously active Alarm_S blocks, max.	1 000; Simultaneously active alarm_S/SQ blocks or alarm_D/DQ blocks
Alarm 8-blocks	Yes
 Number of instances for alarm 8 and S7 communication blocks, max. 	10 000
• preset, max.	1 200
Process control messages	Yes
Number of archives that can log on simultaneously (SFB 37 AR_SEND)	64
Test commissioning functions	Vee
Status block	Yes

Single sten	Yes
Single step Number of breakpoints	16
Status/control	10
Status/control variable	Vee: Lin to 16 veriable tables
Variables	Yes; Up to 16 variable tables Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters
	70
Number of variables, max.	10
Forcing	Vee
• Forcing	Yes
• Forcing, variables	Inputs/outputs, bit memories, distributed I/Os
Number of variables, max.	512
Diagnostic buffer	
• present	Yes
Number of entries, max.	3 200
— adjustable	Yes
— preset	120
Service data	
• can be read out	Yes
EMC	
Emission of radio interference acc. to EN 55 011	
 Limit class A, for use in industrial areas 	Yes
Limit class B, for use in residential areas	No
configuration / header	
Configuration software	
• STEP 7	Yes
configuration / programming / header	
Command set	see instruction list
Nesting levels	7
Access to consistent data in process image	Yes
System functions (SFC)	see instruction list
System function blocks (SFB)	see instruction list
Programming language	
— LAD	Yes
— FBD	Yes
— STL	Yes
— SCL	Yes
— CFC	Yes
— GRAPH	Yes
	Yes
— HiGraph®	
configuration / programming / number of simultaneously active	
- RD_REC	8
- WR_REC	8
- WR_PARM	8
- PARM_MOD	1
- WR_DPARM	2
— DPNRM_DG	8
- RDSYSST	8
- DP_TOPOL	1
configuration / programming / number of simultaneously active	SFB / header
- RDREC	8
— WRREC	8
Know-how protection	
 User program protection/password protection 	Yes
Block encryption	Yes; With S7 block Privacy
Dimensions	
Width	50 mm
Height	290 mm
Depth	219 mm
Weights	
Weight, approx.	995 g
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