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	

- Deckup current two	190 u.A. Valid up to 40°C	
Backup current, typ. Backup current, max	180 μA; Valid up to 40°C	
Backup current, max.	1 000 μ A	
 Backup time, max. 	Dealt with in the module data manual with the secondary conditions ar the factors of influence	
 Feeding of external backup voltage to CPU 	5 V DC to 15 V DC	
CPU processing times	3 V DC 10 13 V DC	
	40.5 m	
for bit operations, typ.	12.5 ns	
for word operations, typ.	12.5 ns	
for fixed point arithmetic, typ.	12.5 ns	
for floating point arithmetic, typ.	25 ns	
CPU-blocks		
DB		
 Number, max. 	16 000; Number range: 1 to 16000	
• Size, max.	64 kbyte	
FB		
 Number, max. 	8 000; Number range: 0 to 7999	
• Size, max.	64 kbyte	
FC		
Number, max.	8 000; Number range: 0 to 7999	
• Size, max.	64 kbyte	
OB		
Number, max.	see instruction list	
• Size, max.	64 kbyte	
Number of free cycle OBs	1; OB 1	
Number of time alarm OBs	8; OB 10-17	
 Number of delay alarm OBs 	4; OB 20-23	
Number of cyclic interrupt OBs	9; OB 30-38	
Number of process alarm OBs	8; OB 40-47	
Number of DPV1 alarm OBs	3; OB 55-57	
Number of startup OBs	2; OB 100, 102	
Number of asynchronous error OBs	9; OB 80-88	
Number of synchronous error OBs	2; OB 121, 122	
Nesting depth	2,00121,122	
per priority class	24	
additional within an error OB	2	
	2	
Counters, timers and their retentivity		
S7 counter		
Number	2 048	
Retentivity		
— adjustable	Yes	
— lower limit	0	
— upper limit	2 047	
— preset	Z 0 to Z 7	
Counting range		
— Iower limit	0	
— upper limit	999	
IEC counter		
• present	Yes	
• Туре	SFB	
Number	Unlimited (limited only by RAM capacity)	
S7 times		
Number	2 048	
Retentivity		
— adjustable	Yes	
— lower limit	0	
— upper limit	2 047	
— preset	No times retentive	
Time range		
— lower limit	10 ms	
— upper limit	9 990 s	
	0.000.0	

IEC timer	
• present	Yes
• Type	SFB
• Number	Unlimited (limited only by RAM capacity)
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	8; in 1 memory byte
Local data	
 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	404.070
 Inputs of which central 	131 072 131 072
Outputs	131 072
- of which central	131 072
Analog channels	101 012
Inputs	8 192
— of which central	8 192
Outputs	8 192
— of which central	8 192
Hardware configuration	
Number of expansion units, max.	21
connectable OPs	95
Multicomputing	No
Interface modules	
 Number of connectable IMs (total), max. 	6
Number of connectable IM 460s, max.	6
Number of connectable IM 463s, max.	4; Single mode only
Number of DP masters	
 integrated 	2
• via CP	10; CP 443-5 Extended
 Mixed mode IM + CP permitted 	No
via interface module	0
Number of IO Controllers	
integrated	1
• via CP	0
Number of operable FMs and CPs (recommended)	Concerning Automotion Contern 07, 40011 for 114 1
• FM	See manual Automation System S7-400H fault-tolerant systems. Limited by number of slots and number of connections
• CP, PtP	See manual Automation System S7-400H fault-tolerant systems.
	Limited by number of slots and number of connections
 PROFIBUS and Ethernet CPs 	14; Of which max. 10 CP as DP master
Slots	

 required slots 	2
Time of day	
Clock	
 Hardware clock (real-time) 	Yes
retentive and synchronizable	Yes
Resolution	1 ms
 Deviation per day (buffered), max. 	1.7 s; Power off
 Deviation per day (unbuffered), max. 	8.6 s; Power on
Operating hours counter	
Number	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
• to MPI, slave	Yes
• to DP, master	Yes
• to DP, slave	Yes
• in AS, master	Yes
• in AS, slave	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
	MPI/PROFIBUS DP Yes
Interface type Isolated Interface types	Yes
Interface type Isolated Interface types • RS 485	Yes
Interface type Isolated Interface types • RS 485 • Output current of the interface, max.	Yes
Interface type Isolated Interface types • RS 485 • Output current of the interface, max. Protocols	Yes Yes 150 mA
Interface type Isolated Interface types • RS 485 • Output current of the interface, max. Protocols • MPI	Yes Yes 150 mA Yes
Interface type Isolated Interface types • RS 485 • Output current of the interface, max. Protocols • MPI • PROFIBUS DP master	Yes Yes 150 mA Yes Yes
Interface type Isolated Interface types • RS 485 • Output current of the interface, max. Protocols • MPI • PROFIBUS DP master • PROFIBUS DP slave	Yes Yes 150 mA Yes
Interface type Isolated Interface types • RS 485 • Output current of the interface, max. Protocols • MPI • PROFIBUS DP master • PROFIBUS DP slave MPI	Yes Yes 150 mA Yes Yes No
Interface type Isolated Interface types • RS 485 • Output current of the interface, max. Protocols • MPI • PROFIBUS DP master • PROFIBUS DP slave	Yes Yes 150 mA Yes Yes No 44; If a diagnostics repeater is used on the line, the number of
Interface type Isolated Interface types • RS 485 • Output current of the interface, max. Protocols • MPI • PROFIBUS DP master • PROFIBUS DP slave MPI • Number of connections	Yes Yes 150 mA Yes Yes No 44; If a diagnostics repeater is used on the line, the number of connection resources on the line is reduced by 1
Interface type Isolated Interface types • RS 485 • Output current of the interface, max. Protocols • MPI • PROFIBUS DP master • PROFIBUS DP slave MPI • Number of connections • Transmission rate, max.	Yes Yes 150 mA Yes Yes No 44; If a diagnostics repeater is used on the line, the number of
Interface type Isolated Interface types • RS 485 • Output current of the interface, max. Protocols • MPI • PROFIBUS DP master • PROFIBUS DP slave MPI • Number of connections • Transmission rate, max. Services	Yes Yes 150 mA Yes Yes No 44; If a diagnostics repeater is used on the line, the number of connection resources on the line is reduced by 1 12 Mbit/s
Interface type Isolated Interface types • RS 485 • Output current of the interface, max. Protocols • MPI • PROFIBUS DP master • PROFIBUS DP slave MPI • Number of connections • Transmission rate, max. Services — PG/OP communication	Yes Yes 150 mA Yes Yes No 44; If a diagnostics repeater is used on the line, the number of connection resources on the line is reduced by 1 12 Mbit/s Yes
Interface type Isolated Interface types • RS 485 • Output current of the interface, max. Protocols • MPI • PROFIBUS DP master • PROFIBUS DP slave MPI • Number of connections • Transmission rate, max. Services - PG/OP communication - Routing	Yes Yes 150 mA Yes Yes No 44; If a diagnostics repeater is used on the line, the number of connection resources on the line is reduced by 1 12 Mbit/s Yes Yes
Interface type Isolated Interface types • RS 485 • Output current of the interface, max. Protocols • MPI • PROFIBUS DP master • PROFIBUS DP slave MPI • Number of connections • Transmission rate, max. Services — PG/OP communication — Routing — Global data communication	Yes Yes 150 mA Yes Yes No 44; If a diagnostics repeater is used on the line, the number of connection resources on the line is reduced by 1 12 Mbit/s Yes Yes No
Interface type Isolated Interface types • RS 485 • Output current of the interface, max. Protocols • MPI • PROFIBUS DP master • PROFIBUS DP slave MPI • Number of connections • Transmission rate, max. Services - PG/OP communication - Routing - Global data communication - S7 basic communication	Yes Yes 150 mA Yes Yes No 44; If a diagnostics repeater is used on the line, the number of connection resources on the line is reduced by 1 12 Mbit/s Yes Yes No No
Interface type Isolated Interface types • RS 485 • Output current of the interface, max. Protocols • MPI • PROFIBUS DP master • PROFIBUS DP slave MPI • Number of connections • Transmission rate, max. Services - PG/OP communication - Routing - Global data communication - S7 basic communication - S7 communication	Yes Yes 150 mA Yes Yes No 44; If a diagnostics repeater is used on the line, the number of connection resources on the line is reduced by 1 12 Mbit/s Yes Yes No No No Yes
Interface type Isolated Interface types • RS 485 • Output current of the interface, max. Protocols • MPI • PROFIBUS DP master • PROFIBUS DP slave MPI • Number of connections • Transmission rate, max. Services — PG/OP communication — Routing — Global data communication — S7 basic communication — S7 communication, as client	Yes Yes 150 mA Yes Yes No 44; If a diagnostics repeater is used on the line, the number of connection resources on the line is reduced by 1 12 Mbit/s Yes Yes No No No Yes Yes
Interface type Isolated Interface types • RS 485 • Output current of the interface, max. Protocols • MPI • PROFIBUS DP master • PROFIBUS DP slave MPI • Number of connections • Transmission rate, max. Services — PG/OP communication — Routing — Global data communication — S7 basic communication — S7 communication, as client — S7 communication, as server	Yes Yes 150 mA Yes Yes No 44; If a diagnostics repeater is used on the line, the number of connection resources on the line is reduced by 1 12 Mbit/s Yes Yes No No No Yes
Interface type Isolated Interface types • RS 485 • Output current of the interface, max. Protocols • MPI • PROFIBUS DP master • PROFIBUS DP slave MPI • Number of connections • Transmission rate, max. Services - PG/OP communication - Routing - Global data communication - S7 basic communication - S7 communication - S7 communication, as client - S7 communication, as server PROFIBUS DP master	Yes Yes 150 mA Yes Yes No 44; If a diagnostics repeater is used on the line, the number of connection resources on the line is reduced by 1 12 Mbit/s Yes Yes No No No Yes Yes Yes Yes
Interface type Isolated Interface types • RS 485 • Output current of the interface, max. Protocols • MPI • PROFIBUS DP master • PROFIBUS DP slave MPI • Number of connections • Transmission rate, max. Services — PG/OP communication — Routing — Global data communication — S7 basic communication — S7 communication, as client — S7 communication, as server	Yes Yes 150 mA Yes Yes No 44; If a diagnostics repeater is used on the line, the number of connection resources on the line is reduced by 1 12 Mbit/s Yes Yes No No No Yes Yes
Interface type Isolated Interface types • RS 485 • Output current of the interface, max. Protocols • MPI • PROFIBUS DP master • PROFIBUS DP slave MPI • Number of connections • Transmission rate, max. Services - PG/OP communication - Routing - Global data communication - S7 basic communication - S7 communication - S7 communication, as client - S7 communication, as server PROFIBUS DP master	Yes Yes 150 mA Yes Yes No 44; If a diagnostics repeater is used on the line, the number of connection resources on the line is reduced by 1 12 Mbit/s Yes Yes No No No Yes Yes Yes Yes Yes
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Interface type Isolated Interface types • RS 485 • Output current of the interface, max. Protocols • MPI • PROFIBUS DP master • PROFIBUS DP slave MPI • Number of connections • Transmission rate, max. Services - PG/OP communication - Routing - Global data communication - S7 basic communication - S7 communication - S7 communication - S7 communication, as client - S7 communication, as server PROFIBUS DP master • Number of connections, max. • Transmission rate, max.	Yes Yes 150 mA Yes Yes No 44; If a diagnostics repeater is used on the line, the number of connection resources on the line is reduced by 1 12 Mbit/s Yes Yes No No No Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes
Interface type Isolated Interface types • RS 485 • Output current of the interface, max. Protocols • MPI • PROFIBUS DP master • PROFIBUS DP slave MPI • Number of connections • Transmission rate, max. Services — PG/OP communication — Routing — Global data communication — S7 basic communication — S7 communication — S7 communication — S7 communication, as client — S7 communication, as server PROFIBUS DP master • Number of connections, max. • Transmission rate, max. • Transmission rate, max. • Number of DP slaves, max.	Yes Yes 150 mA Yes Yes No 44; If a diagnostics repeater is used on the line, the number of connection resources on the line is reduced by 1 12 Mbit/s Yes Yes No No No Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes
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 S7 communication as server S7 communication, as server Yes S7 communication, as server Yes Equilations No Isochronous mode No SYNC/FREEZE Na Advisorial of DP slaves Direct data exchange (slave-to-slave communication) DPV1 Yes Address area Used data per DP slave Outputs, max. Z kbyte User data per DP slave. Outputs, max. Z kbyte User data per DP slave. Outputs, max. Z kbyte User data per DP slave. Outputs, max. Z kbyte User data per DP slave. Outputs, max. Z kbyte User data per DP slave. Outputs, max. Z kbyte User data per DP slave. Nonconfiguration of CPU as DP slave. Number of connectons No configuration of CPU as DP slave. Number of connectons No configuration of CPU as DP slave. Interface type PROFINET Distated Yes Autonogotistion Yes Autonogotistion Yes PROFINET for Domination of the sample of prints PROFINET of prints PROFINET IO Controller Yes PROFINET IO Controller Yes PROFINET IO Controller Yes PROFINET IO Controller PROFINET IO Controller	— Global data communication	No	
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Direct data schange (slave-to-slave communication) DeV1 Yes Address area Inputs, max, 2 kbyte User data per DP slave User data per DP slave, max, 24 kbyte User data per DP slave, max, 24 kbyte User data per DP slave, max, 24 kbyte Deputs, max, Duputs, max, 24 kbyte Deputs, max, Duputs, max, 24 kbyte Deputs, max, Duputs, Duputs, Duputs, Duputs, Duputs, Dup	- SYNC/FREEZE	No	
	 Activation/deactivation of DP slaves 	No	
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per slot, max. 128 byte PROFIBUS DP slave	— Outputs, max.	244 byte	
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2. Interface PROFINET Isolated Yes automatic detection of transmission rate Yes, Autosensing Autocrossing Yes Charge of IP address at runtime, supported No Number of connection resources 96 Interface types • RI 45 (Ethernet) • RI 43 (Ethernet) Yes • Interface types • • Ist 43 (Ethernet) Yes • Interface types • • ROFINET IO Controller Yes • PROFINET Do controller Yes • PROFINET IO Controller Yes • PROFINET Device No • PROFINET BAR No • PROFINET CBA No • Open E communication Yes • PROFINET CBA No • Open E communication Yes • PROFINET IO Controller No • Open E communication Yes • PROFINET IO Controller No • Open E communication Yes • PROFINET IO Controller No • Starde advice Yes - Stared device Yes <t< td=""><td>PROFIBUS DP slave</td><td></td></t<>	PROFIBUS DP slave		
2. Interface PROFINET Isolated Yes automatic detection of transmission rate Yes, Autosensing Autocrossing Yes Charge of IP address at runtime, supported No Number of connection resources 96 Interface types • RI 45 (Ethernet) • RI 43 (Ethernet) Yes • Interface types • • Ist 43 (Ethernet) Yes • Interface types • • ROFINET IO Controller Yes • PROFINET Do controller Yes • PROFINET IO Controller Yes • PROFINET Device No • PROFINET BAR No • PROFINET CBA No • Open E communication Yes • PROFINET CBA No • Open E communication Yes • PROFINET IO Controller No • Open E communication Yes • PROFINET IO Controller No • Open E communication Yes • PROFINET IO Controller No • Starde advice Yes - Stared device Yes <t< td=""><td>Number of connections</td><td>No configuration of CPU as DP slave</td></t<>	Number of connections	No configuration of CPU as DP slave	
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Isolated Yes automatic detection of transmission rate Yes; Autosensing Autoregotistion Yes Autoregotistion Yes Autoregotistion Yes Autoregotistion Yes Autoregotistion Yes Change of IP address at runtime, supported No Number of connection resources 96 Interface types Iterface types • RU 45 (Ethernet) Yes • Integrated switch Yes • Integrated switch Yes • PROFINET IO Controller Yes • PROFINET IO Device No • PROFINET CBA No • PROFINET IO Device No • PROFINET IO Device No • PROFINET IO Controller Yes • Velot-to-point connection No • Web server No • Orient-to-point connection No • Media redundancy Yes PROFINET IO Controller Yes • PG/OP communication Yes - Services Yes <		PROFINET	
automatic detection of transmission rate Yes; Autosensing Autocrossing Yes Autocrossing Yes Charge of IP address at runtime, supported No Number of connection resources 96 Interface types • • RJ 43 (Ethernet) Yes • Number of ports 2 • integrated switch Yes Protocols • • PROFINET IO Controller Yes • PROFINET IO Controller Yes • PROFINET IO Device No • PROFIBUS DP master No • PROFIBUS DP master No • Open IE communication Yes • Veb server No • Web server No • Otomolier Yes PROFINET IO Controller Yes PROFINET IO Controller Yes • Protocols • • Cransmission rate, max. 100 Mbit/s Services - • PG/OP communication Yes • Shared device Yes; Single mode only			
Autonegotiation Yes Autocrossing Yes Change of IP address at runtime, supported No Number of connection resources 96 Interface types 96 Interface types Yes • RJ 45 (Ethernet) Yes • Integrated switch Yes Protocols 2 • Integrated switch Yes • PROFINET IO Controller Yes • PROFINET O Device No • Open IE communication Yes • Open IE communication Yes • PROFINET IO Controller Ves • Transmission rate, max. 100 Mbit/s Services - • PG/OP communication Yes • S7 communication Yes • Sromonous mode No • Shared device Yes; Single mode only • Stared device Yes; Single mode only <			
Autocrossing Yes Change of IP address at runtime, supported No Number of connection resources 96 Interface types 96 • RJ 45 (Ethernet) Yes • Number of ports 2 • integrated switch Yes Protocols 7 • PROFINET IO Controller Yes • PROFINET IO Device No • PROFINET CBA No • PROFINET CBA No • PROFIBUS DP master No • Open IE communication Yes • PROFIEUS DP slave No • Open IE communication Yes • PROFIDET IO Controller Yes • PROFIDET IO Controller Yes • PROFIDE T IO Controller Yes • PROFIDET IO Controller Yes • Transmission rate, max. 100 Mbit/s Services - • PG/OP communication Yes • Stared device Yes • Shared device Yes • Number of connectable IO Devices, max. 256		-	
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• 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 slave No • Open IE communication Yes • Web server No • Protection No • Protection Yes • Protection No • Open IE communication Yes • Protection No • Point-to-point connection No • Media redundancy Yes PROFINET IO Controller - • Transmission rate, max. 100 Mbit/s Services - - PGOP communication Yes - Soft communication Yes - Soft device Yes; Single mode only - Shared device Yes; Single mode only - Number of connectable IO Devices for RT, max. 256 - Activation/deactivation of IO Devices No - Of which		90	
• Number of ports 2 • integrated switch Yes Protocols - • PROFINET IO Controller Yes • PROFINET IO Device No • PROFINET SP master No • PROFIBUS DP master No • Open IE communication Yes • Veb server No • PROFINET IO Controller Yes • Profinet IO Controller Yes • Profinet IO Controller Yes • PROFINET IO Controller No • Profinet IO Controller Yes • PROFINET IO Controller - • Transmission rate, max. 100 Mbit/s Services - • PG/OP communication Yes • Soft communication Yes • Services - • PG/OP communication Yes • Soft connotler - • Of which in line, max. 256; In redundant mode via both interfaces • Number of connectable IO Devices for RT, max. 256 • Activation/deactivation of IO Devices No • O Which in		Von	
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• PROFIBUS DP slaveNo• Open IE communicationYes• Web serverNo• Point-to-point connectionNo• Media redundancyYes• PROFINET IO Controller100 Mbit/s• Transmission rate, max.100 Mbit/sServicesServices• PG/OP communicationYes• S7 communicationYes• Shared deviceYes; Single mode only• Shared deviceYes; Single mode only• 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• of which in line, max.256• O Devices changing during operation (partner ports), supportedNo			
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- 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- of which in line, max.256- Activation/deactivation of IO DevicesNo- IO Devices changing during operation (partner ports), supportedNo			
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— of which in line, max.256— Activation/deactivation of IO DevicesNo— IO Devices changing during operation (partner ports), supportedNo	— Number of connectable IO Devices for RT,		
 Activation/deactivation of IO Devices No IO Devices changing during operation (partner ports), supported No 		256	
— IO Devices changing during operation (partner No ports), supported			
ports), supported			
— Device replacement without swap medium Yes		NU	
	 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	
— Inputs, max.	8 kbyte
— Outputs, max.	8 kbyte
— User data consistency, max.	1 024 byte
Open IE communication	
 Number of connections, max. 	94
 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
Number of connection resources	32
	52
Interface types	No.
• RS 485	Yes
Output current of the interface, max.	150 mA
Protocols	
 PROFIBUS DP master 	Yes
PROFIBUS DP slave	No
PROFIBUS DP master	
 Number of connections, max. 	32
 Transmission rate, max. 	12 Mbit/s
 Number of DP slaves, max. 	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 slaves 	No
 Direct data exchange (slave-to-slave 	No
communication)	
- DPV0	Yes
— DPV1	Yes
Address area	
— Inputs, max.	8 kbyte
— Outputs, max.	8 kbyte
User data per DP slave	
	244 hyto
— User data per DP slave, 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	
media redundancy	

— Switchover time on line break, typ.	200 ms
 — Switchover time of fine break, typ. — 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
-	Yes
 — several passive connections per port, supported 	
 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 without message processing 	95
 Number of connectable OPs with message processing 	95; When using Alarm_S/SQ and Alarm_D/DQ
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, max. User data per job (of which consistent), max. 	240 byte
Number of simultaneous AG-SEND/AG-RECV	
• Number of simultaneous AG-SEND/AG-RECV orders per CPU, max.	64/64
Standard communication (FMS)	
supported	Yes; Via CP and loadable FB
Number of connections	
• overall	96
usable for PG communication	
- reserved for PG communication	1
— adjustable for PG communication, max.	0
usable for OP communication	
reserved for OP communication	1
— adjustable for OP communication, max.	0
usable for S7 basic communication	Ŭ
	0
— reserved for S7 basic communication adjustable 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.
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— adjustable for routing, max.	U
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 	10 000
communication blocks, max.	
• preset, max.	1 200
Process control messages	Yes
Number of archives that can log on simultaneously (SFB 37 AR_SEND)	64
Test commissioning functions	
Status block	Yes
Single step	Yes
Number of breakpoints	16
Status/control	
Status/control variable	Yes; Up to 16 variable tables
Variables	Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters
 Number of variables, max. 	70
Forcing	
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	120
can be read out	Yes
EMC	163
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
— HiGraph®	Yes
configuration / programming / number of simultaneously	
- RD_REC	8
- WR_REC	8
- WR_PARM	8
	0

— 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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