SIEMENS

Data sheet

6ES7412-5HK06-0AB0



SIMATIC S7-400H, CPU 412-5H, central processing unit for S7-400H and S7-400F/FH, 5 interfaces: 1x MPI/DP, 1x DP, 1x PN and 2 for sync modules, 1 MB memory (512 KB data/512 KB program)

General information	
Product type designation	CPU 412-5H 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	
Memory Type of memory	RAM
	RAM
Type of memory	RAM 1 Mbyte
Type of memory Work memory	
Type of memory Work memory • integrated	1 Mbyte
Type of memory Work memory • integrated • integrated (for program)	1 Mbyte 512 kbyte
Type of memory Work memory • integrated • integrated (for program) • integrated (for data)	1 Mbyte 512 kbyte 512 kbyte
Type of memory Work memory • integrated • integrated (for program) • integrated (for data) • expandable	1 Mbyte 512 kbyte 512 kbyte
Type of memory Work memory • integrated • integrated (for program) • integrated (for data) • expandable Load memory	1 Mbyte 512 kbyte 512 kbyte No
Type of memory Work memory • integrated • integrated (for program) • integrated (for data) • expandable Load memory • expandable FEPROM	1 Mbyte 512 kbyte 512 kbyte No Yes; with Memory Card (FLASH)
Type of memory Work memory • integrated • integrated (for program) • integrated (for data) • expandable Load memory • expandable FEPROM • expandable FEPROM, max.	1 Mbyte 512 kbyte 512 kbyte No Yes; with Memory Card (FLASH) 64 Mbyte
Type of memory Work memory • integrated • integrated (for program) • integrated (for data) • expandable Load memory • expandable FEPROM • expandable FEPROM, max. • integrated RAM, max.	1 Mbyte 512 kbyte 512 kbyte No Yes; with Memory Card (FLASH) 64 Mbyte 512 kbyte
Type of memory Work memory • integrated • integrated (for program) • integrated (for data) • expandable Load memory • expandable FEPROM • expandable FEPROM, max. • integrated RAM, max. • expandable RAM	1 Mbyte 512 kbyte 512 kbyte No Yes; with Memory Card (FLASH) 64 Mbyte 512 kbyte Yes
Type of memory Work memory • integrated • integrated (for program) • integrated (for data) • expandable Load memory • expandable FEPROM • expandable FEPROM, max. • integrated RAM, max. • expandable RAM • expandable RAM, max.	1 Mbyte 512 kbyte 512 kbyte No Yes; with Memory Card (FLASH) 64 Mbyte 512 kbyte Yes
Type of memory Work memory • integrated • integrated (for program) • integrated (for data) • expandable Load memory • expandable FEPROM • expandable FEPROM, max. • integrated RAM, max. • expandable RAM • expandable RAM, max. Backup	1 Mbyte 512 kbyte 512 kbyte No Yes; with Memory Card (FLASH) 64 Mbyte 512 kbyte Yes 64 Mbyte
Type of memory Work memory • integrated • integrated (for program) • integrated (for data) • expandable Load memory • expandable FEPROM • expandable FEPROM, max. • integrated RAM, max. • expandable RAM • expandable RAM • expandable RAM, max.	1 Mbyte 512 kbyte 512 kbyte No Yes; with Memory Card (FLASH) 64 Mbyte 512 kbyte Yes 64 Mbyte Yes 64 Mbyte
Type of memory Work memory • integrated • integrated (for program) • integrated (for data) • expandable Load memory • expandable FEPROM • expandable FEPROM, max. • integrated RAM, max. • expandable RAM • expandable RAM • expandable RAM, max. Backup • present • with battery	1 Mbyte 512 kbyte 512 kbyte No Yes; with Memory Card (FLASH) 64 Mbyte 512 kbyte Yes 64 Mbyte Yes 64 Mbyte Yes 63 Mbyte
Type of memory Work memory • integrated • integrated (for program) • integrated (for data) • expandable Load memory • expandable FEPROM • expandable FEPROM, max. • integrated RAM, max. • expandable RAM • expandable RAM • expandable RAM, max. Backup • present • with battery • without battery	1 Mbyte 512 kbyte 512 kbyte No Yes; with Memory Card (FLASH) 64 Mbyte 512 kbyte Yes 64 Mbyte Yes 64 Mbyte

Backup current, max.	1 000 µA
Backup time, max.	Dealt with in the module data manual with the secondary conditions and the
	factors of influence
 Feeding of external backup voltage to CPU 	5 V DC to 15 V DC
CPU processing times	
for bit operations, typ.	31.25 ns
for word operations, typ.	31.25 ns
for fixed point arithmetic, typ.	31.25 ns
for floating point arithmetic, typ.	62.5 ns
CPU-blocks	
DB	
Number, max.	6 000; Number range: 1 to 16000
• Size, max.	64 kbyte
FB	
Number, max.	3 000; Number range: 0 to 7999
• Size, max.	64 kbyte
FC	
Number, max.	3 000; 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	4; OB 10-13
 Number of delay alarm OBs 	4; OB 20-23
Number of cyclic interrupt OBs	4; OB 32-35
Number of process alarm OBs	4; OB 40-43
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	
per priority class	24
 additional within an error OB 	1
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	
— 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
— lower limit	0
— upper limit	2 047
— preset	No times retentive
Time range	
— lower limit	10 ms
— upper limit	9 990 s
IEU IIMer	
IEC timer • present	Yes

• Туре	SFB
Number	Unlimited (limited only by RAM capacity)
Data areas and their retentivity	Oninniced (infinited only by forwine apacity)
Retentive data area (incl. timers, counters, flags), max.	Total working and load memory (with backup battery)
Flag	Total working and load memory (with backup battery)
• Size, max.	8 192 byte
Retentivity available	Yes
Retentivity preset	MB 0 to MB 15
Number of clock memories	8; in 1 memory byte
Local data	
adjustable, max.	16 kbyte
• preset	8 kbyte
Address area	
I/O address area	
Inputs	8 kbyte
Outputs	8 kbyte
Process image	
Inputs, adjustable	8 kbyte
Outputs, adjustable	8 kbyte
Inputs, default	256 byte
Outputs, default	256 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	65 536
— of which central	65 536
Outputs	65 536
— of which central	65 536
Analog channels	
Inputs	4 096
— of which central	4 096
Outputs	4 096
— of which central	4 096
Hardware configuration	
Number of expansion units, max.	21
connectable OPs	47
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) FM 	See manual Automation System S7-400H fault-tolerant systems. Limited by
• CP, PtP	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
PROFIBUS and Ethernet CPs	14; Of which max. 10 CP as DP master
Slots	
required slots	2
Time of day	
Clock	

	Ver
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
Isolated	Yes
Interface types	
• RS 485	Yes
 Output current of the interface, max. 	150 mA
Protocols	
• MPI	Yes
PROFIBUS DP master	Yes
PROFIBUS DP slave	No
MPI	
Number of connections	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
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
PROFIBUS DP master	
Number of connections, max.	16; 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
Number of DP slaves, max.	32
Services	
— PG/OP communication	Yes
— Routing	Yes
— Global data communication	No
— S7 basic communication	No
— S7 communication	Yes
— S7 communication, as client	Yes

- 57 communication, as server - Equidinations - Exotinonus mode No - Mode instance No - Mode instance - Section of the server - Advation of DP sizes No - Decide data exchange (size-to-size - Controls, max. - Advation of DP sizes - Decide data exchange (size-to-size - Controls, max. - Decide data exchange (size-to-size - Decide, max. - Advation of DP sizes - Decide data exchange (size-to-size - Decide, max. - Decode, max, max, max, max, max, max, max, max		
- Isochronous modelNo- Sinter States change (since shorter)No- Activation disactivation of DP siaresNo- Outputs, max.Skorter- Number of connection resourcesYes- Number of connection resourcesYes- Number of connection resourcesYes- Number of connection resourcesNo- Number of connection resourcesNo<	— S7 communication, as server	Yes
- SYNCPREEZE No - Activation of DP slaves No - Decid data exclusions (favor-boolance commonsation) No - DPV1 Yes - DPV1 Yes - Origots, max. 2 Maybe - User data per DP slave, max. 24 byte - User data per DP slave, max. 244 byte - User data per DP slave, max. 244 byte - Origots, max. 244 byte - Bools, max. 244 byte - Autore of Connections 244 byte - Autore of Connections Yes - Autore of Connections Yes - Autore of Connections Yes - Autore of Drots Yes - Autore of Drots Yes - ROPCINET IC Decontoine	— Equidistance	No
 Activitationideschalation of DP slaves No DerVi Ves Address ares Inputs, max. Add byte Inputs, max. <li< td=""><td> — Isochronous mode </td><td>No</td></li<>	 — Isochronous mode 	No
Image: Description of the section of the sectin sectin section of the section of the section of the sec	- SYNC/FREEZE	No
	 Activation/deactivation of DP slaves 	No
→ DPV1 Yes Address area 2 kbyte → Outputs, max. 2 kbyte → User data per DP alwar, max. 2 kd kyte → User data per DP alwar, max. 2 kd kyte → User data per DP alwar, max. 2 kd kyte → Outputs, max. 2 kd kyte → Outputs, max. 2 kd kyte → Stok max. 2 kd kyte → User data per DP stoke PROFINET ■ outpression max. 9 kd construction stoke ↓ Interface kyte Yes ■ outpression factor Yes ■ Address at nutline. supported No ■ Number of ports 2 ■ Kather of ports 2 ■ Number of ports 2 ■ ROFINET ID Device No <	— Direct data exchange (slave-to-slave	No
Address area - - Inguts, max. 2 Myle - - Cutoris for DP slave - - - - - Cutor data per DP slave 244 Myle - - - Cutor data per DP slave 244 Myle - - - Cutor data per DP slave 244 Myle - - - Cutor data per DP slave 244 Myle - - - Cutor data per DP slave 244 Myle - - - Cutor data per DP slave 244 Myle - - - No Cutor data per DP slave 2 Autor data per DP slave - Cutor data per DP slave 244 Myle 2 Cutor data per DP slave - - Cutor data per DP slave - 2 Cutor data per DP slave - - Cutor data per DP slave - 2 Cutor data per DP slave - - - - 2 Cutor data per DP slave		
 - Inputs, max. 2 ktyrle - Outputs, max. 2 ktyrle 3 ktyrle	— DPV1	Yes
− Oxputs, max. 2 ktype User data per OP sixee - − Uputs, max. 244 kyte − Uputs, max. 244 kyte − Oxputs, max. 244 kyte − Oxputs, max. 244 kyte − Stots, max. 244 kyte − per sio, max. 128 kyte PROFIDEUS DP size - Protocommode connections No configuration of CPU as DP size Protocommode connections No configuration of CPU as DP size Autoregatisation Yes Protocost Yes PROFINET ID Controller Yes<	Address area	
User data per OP slave, max. 244 byte	— Inputs, max.	2 kbyte
	— Outputs, max.	2 kbyte
	User data per DP slave	
- Outputs, max. 244 byte - Siots, max. 244 byte - Siots, max. 244 byte - Profounce 128 byte PROFINES DP slave No configuration of CPU as DP slave 2 Interior PROFINET Interface byte Yes automatic detection of transmission rate Yes, Autosensing Autoregotiation Yes Interface byte Yes Inte	— User data per DP slave, max.	244 byte
	— Inputs, max.	244 byte
— per slot, max. No configuration of CPU as DP slave PROFIBUS DP slave No configuration of CPU as DP slave 2 Interface Yes Instruction Yes Instruction Yes automatic detection of transmission rate Yes; Autonegatication Autonegatication Yes Autonegatication Yes Autonegatication No Charge of Paddress at runtime, supported No Number of connection resources 48 Interface types Processing Processing Yes Number of ports 2 • Interface types Yes • PROFINET IO Controller Yes • PROFINET IO Controller Yes • PROFINET IO Controller Yes • PROFINED SD Patave No • P	— Outputs, max.	244 byte
— per slot. max. No configuration of CPU as DP slave PROFIBUS DP slave No configuration of CPU as DP slave 2 Interface PROFINET Isolated Yes, Autoscansing Autonogotistican Yes, Autoscansing Autonogotistican Yes, Autoscansing Autonogotistican Yes, Autoscansing Autonogotistican Yes Number of consection resources 48 Interface types Yes PROFINET IO Controller Yes PROFINET IO Controller Yes PROFINED SD Pasave No PROFINED SD Pasave	-	
PROFIBUS DP slave No configuration of CPU as DP slave Interface type PROFINET Isolated Yes automatic detection of transmission rate Yes Autoregristion Yes Change of IP address at numlime, supported No Number of connection resources 48 • Number of ports 2 • Integrated switch Yes • PROFINET IO Controller Yes • PROFINET IO Device No • PROFIBUS DP master No • PROFIBUS DP master No • Open IE communication Yes • Verboriner IO controller Yes • Transmission rate, max. 100 Mbit/s Services No • Open IE communication Yes • PROFIBUS DF act device Yes: Si		
• Number of connections No configuration of CPU as DP slave 2 Interface PROFINET Isolated Yes automatic detection of transmission rate Yes, Autosensing Autonogotation Yes Autonogotation Yes Autonogotation Yes Autonogotation Yes Autonogotation Yes Autonogotation Yes Charge of IP address at runtime, supported No Number of connection resources 48 Interface types Yes • R44 8 (Ethernet) Yes • R44 8 (Ethernet) Yes • No Yes • NoroFINET Controller Yes • PROFINET IO Controller Yes • PROFINET COA No • PROFINET DAB No • PROFINET COA No • PROFINET DAB No • PROFINET DAB No • PROFINED DE connunication Yes • PROFINET OB No • Profined end No • Profined		
2. Interface PROFINET Interface type PROFINET Isolated Yes automatic detection of transmission rate Yes Autocrossing Yes Change of IP address at runtime, supported No Number of connection resources 49 Interface types * • RU 45 (Ethernet) Yes • Number of ports 2 • Interface types * • PROFINET IO Controller Yes • PROFINET IO Device No • PROFINET IO Controller Yes • Profined starting No		No configuration of CPLL as DP slave
Interface type PROFINE T Isolated Yes automatic detection of transmission rate Yes; Autosensing Autorogotation Yes Autorossing Yes Change of IP address at runtime, supported No Number of connection resources 48 Interface types • • R44 S (Ethernat) Yes • R44 S (Ethernat) Yes • Interface types • • R44 S (Ethernat) Yes • Interface types • • RPGFINET IO Controller Yes • PROFINET IO Controller Yes • PROFINET IO Controller Yes • PROFIBUS DP master No • Open IE communication Yes • PROFINET CEA No • Web server No • Open IE controller Yes • PROFINET Controller No • PROFINET Controller Yes • PROFINET Controller No • Profined controller No • ProfOPCINET Controller Yes		No configuration of or as bir slave
Isolated Yes automalic detection of transmission rate Yes Autorcognition Yes Autorcossing Yes Autorconsing Yes Autorconsing Yes Change of IP address at untime, supported No Number of connection resources 48 Interface types • RU45 (Efferent) Yes • Number of ports 2 • Integrated switch Yes • PROFINET IO Controller Yes • PROFINET IO Device No • PROFINET IO Device No • PROFIBUS DP have No • Open IE communication Yes • Web server No • Open IE communication Yes • Open IE communication Yes • PROFINET IO Controller Yes • ProfiCord advindary Yes • Profice I adrup No • Media redundary Yes • PROFINET IO Controller Yes; Single mode only • Profitized I adrup		PROFINET
automatic detection of transmission rate Yes; Autosensing Autorossing Yes Change of IP address at runtime, supported No Number of connection resources 48 Interface types - • RJ 45 (Ethernet) Yes • RJ 45 (Ethernet) Yes • Integrated switch Yes • PROFINET IO Controller Yes • PROFINET TO Device No • PROFINET TO Device No • PROFINET IO Device No • PROFINET IO Device No • PROFINET Data No • PROFINET Data No • PROFINELS DP alave No • Open IE communication Yes • Open IE communication Yes • PROFINET OC Controller Yes • PROFINET OC Controller Yes • PROFINET IO Controller Yes • Proof Promunication Yes • Proof Promunication Yes • Proof Promunication Yes • Proof Promunication Yes • Services Yes Single mode only • PSich Promunication Yes • Shard device Yes Single mode only • No Single mode only • Shard device Yes Single mode only		
Autonegoliation Yes Autorcossing Yes Charge of IP address at runtime, supported No Number of connection resources 48 Interface types Yes • R4 45 (Ethernet) Yes • Number of ports 2 • Integrated switch Yes • PROFINET IO Controller Yes • PROFINET IO Device No • PROFINET CBA No • PROFIBUS DP master No • Open IE communication Yes • PROFINET IO Controller Yes • PROFINET IO Controller Yes • PROFINET IO Controller No • PROFINET IO Communication Yes • PROFINET IO Controller		
Autocrossing Yes Change of IP address at runtime, supported No Number of connection resources 48 Interface types Yes • RU 45 (Ethernet) Yes • Number of ports 2 • integrated switch Yes • PROFINET IO Controller Yes • PROFINET IO Device No • PROFINET CBA No • PROFINET CBA No • PROFIBUS DP master No • Open IE communication Yes • PROFINET IO Controller Yes • PROFINET CDA No • Open IE communication Yes • PROFINET IO Controller No • Problecont connection No • Open IE communication Yes • Problecont controller No • Transmission rate, max. 100 Mbit/s Services - - PGIOP communication Yes • Services Yes - Isochronous mode No - Shared device Yes; Single mode only - Number of connectable IO Devices, max. 256 - Number of connectable IO Devices for RT, max. 256 - Activation/deactivation of IO Devices No - Device replacement without swap medium<		
Change of IP address at runtime, supported No Number of connection resources 48 Interface types • R.1.45 (Ethernet) • R.1.45 (Ethernet) Yes • Number of ports 2 • integrated switch Yes • PROFINET IO Controller Yes • PROFINET IO Device No • PROFINET CBA No • PROFIBUS DP slave No • Open IE communication Yes • Web server No • Open IE Controller Yes • PROFINET IO Controller Yes • Proficitized strup No • PGOP communication Yes • PROFINET IO Controller Yes • Stard device Yes • Signifie mode only No • Stard device Yes • Proficitized strup No • Number of connectable IO Devices, max. 256	Autonegotiation	
Number of connection resources 48 Interface types • RJ 45 (Ethernet) Yes • RJ 45 (Ethernet) Yes • Number of ports 2 • integrated switch Yes Protocols • • PROFINET IO Controller Yes • PROFINET TO Device No • PROFINET CBA No • PROFIBUS DP master No • PROFIBUS DP slave No • Open IE communication Yes • Vebs server No • Vebs server No • Transmission rate, max. 100 Mbit/s Services Yes • PG/OP communication Yes • PG/OP communication Yes • PG/OP communication Yes • PG/OP communication Yes • Shared device Yes; Single mode only • Shared device Yes; Single mode only • No No • Number of connectable IO Devices, max. 256 • Activation/deactivation of IO Devices No • Of which In line, max. 256 • Activation/deactivation of IO Devices No • O Weich in Interfaces 256 • Activation/deactivation of IO Devices No • Device replacement witho	Autocrossing	Yes
Interface types Fill 45 (Ethernet) Yes • Number of ports 2 • integrated switch Yes Protocols ************************************	Change of IP address at runtime, supported	No
• RJ 45 (Ehemet) Yes • Number of ports 2 • integrated switch Yes • PROFINET IO Controller Yes • PROFINET IO Device No • PROFINET CBA No • PROFIBUS DP master No • PROFIBUS DP slave No • PROFIBUS DP slave No • Open IE communication Yes • Veb server No • Open IE communication Yes • PROFINET IO Controller Yes • Veb server No • Open IE communication Yes • PROFINET IO Controller Yes • Transmission rate, max. 100 Mbit/s Services - - PG/OP communication Yes - So communication Yes - Sr communication Yes - Shared device Yes; Single mode only - Piontized startup No - Number of connectable IO Devices, max. 256 - Activation/deactivation of IO Devices No - Or which in line, max. 256 - Activation/deacting outgraperation (partner ports), supported	Number of connection resources	48
• 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 master No • Open IE communication Yes • PROFINET IO Controller No • PROFIBUS DP slave No • Open IE communication Yes • Prototoller No • Prototoller 100 Mbit/s Services - • PGOPO communication Yes • Stared device Yes; Single mode only • Shared device Yes; Single mode only • Prioritized startup No • Number of connectable IO Devices for RT, max. 256 • of which in line, max. 256	Interface types	
• integrated switch Yes Protocols • • PROFINET 10 Device No • PROFINET 0D provide No • PROFINET 0D provide No • PROFINET 0D provide No • PROFIBUS DP master No • Open 1E communication Yes • Open 1E communication Yes • PROFIDE 1D Controller No • Protocolis No • Protocolis No • Protocolis No • Open 1E communication Yes • Protocolis No • Transmission rate, max. 100 Mbit/s Services - • Protocolis Yes • Stronomunication Yes • Stronomunication Yes • Stronomunication Yes • Prioritized startup No • Number of connectable 10 Devices, max. 256 • Number of connectable 10 Devices for RT, max. 256 • Opinito-decativation of 10 Devices No • Opvice schanging during operation (partner ports), supported No <td>RJ 45 (Ethernet)</td> <td>Yes</td>	RJ 45 (Ethernet)	Yes
Protocols • PROFINET IO Controller • PROFINET CBA • PROFINET CBA • PROFINET CBA • PROFIBUS DP master • PROFIBUS DP slave • PROFIBUS DP slave • PROFIBUS DP slave • PROFINET CBA • PROFINET COMMUNICATION • PROFINET IO Controller • Point-to-point connection • Media redundancy • Profile Controller • Transmission rate, max. • PC/OP communication • Sarce device • Prioritized startup • Prioritized startup • Number of connectable IO Devices, max. • Stared device • Number of connectable IO Devices for RT, max. • Of which in line, max. • Of which in line, max. • O Devices changing during operation (partner ports), supported • Do Devices changing during operation (partner ports), supported	Number of ports	2
• PROFINET IO Controller Yes • PROFINET IO Device No • PROFINET CBA No • PROFIBUS DP master No • PROFIBUS DP slave No • Open IE communication Yes • Open IE communication Yes • Open IE communication Yes • Web server No • Media redundancy Yes • PROFINET IO Controller 100 Mbit/s • Media redundancy Yes • PROFINET IO Controller 100 Mbit/s • Services - • PG/OP communication Yes - S7 communication Yes - Isochronous mode No - Shared device Yes; Single mode only - Number of connectable IO Devices, max. 256; In redundant mode via both interfaces - Adviation/decutavation of IO Devices No - Adviation/decutavation of IO Devices No - Obvice replacement without swap medium Yes - Obvice 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 th	 integrated switch 	Yes
PROFINET IO DeviceNoPROFINET CBANoPROFIBUS DP masterNoPROFIBUS DP slaveNo• Open IE communicationYes• Web serverNo• Moit connection connectionNo• Media redundancyYesPROFINET IO ControllerYes• Transmission rate, max.100 Mbit/sServices PG/OP communicationYes- Stransmission rate, max.100 Mbit/sServices Sochronous modeNo- Shared deviceYes; Single mode only- Prioritized startupNo- Number of connectable IO Devices, max.256; In redundant mode via both interfaces- of which in line, max.256- of which in line, max.256- No Doevices changing during operation (partner ports), supportedNo- Devices replacement without swap mediumYes- Send cycles250 µs, 500 µs, 1 ms, 2 ms, 4 ms- Updating time250 µs, 500 µs, 1 ms, 2 ms, 4 ms- Updating time250 µs, 500 µs, 1 ms, 2 ms, 4 ms- Updating time250 µs, 500 µs, 1 ms, 2 ms, 4 ms- Updating time250 µs, 500 µs, 1 ms, 2 ms, 4 ms- Updating time250 µs, 500 µs, 1 ms, 2 ms, 4 ms- Updating time250 µs, 500 µs, 1 ms, 2 ms, 4 ms- Updating time250 µs, 500 µs, 1 ms, 2 ms, 4 ms- Updating time250 µs, 500 µs, 1 ms, 2 ms, 4 ms- Updating time250 µs, 500 µs, 1 ms, 2 ms, 4 ms- Updating time250 µs, 500 µs, 1	Protocols	
• PROFINET CBANo• PROFIBUS DP masterNo• PROFIBUS DP slaveNo• Open IE communicationYes• Web serverNo• Point-to-point connectionNo• Media redundancyYes• PROFINET IO ControllerYes• Transmission rate, max.100 Mbit/s• Serveres-• PG/OP communicationYes• PG/OP communicationYes• Sortonus modeNo• Shared deviceYes; Single mode only• Prioritized startupNo• Number of connectable IO Devices, max.256; In redundant mode via both interfaces• Of which in line, max.256• Activation/deactivation of IO DevicesNo• Shared deviceNo• Number of connectable IO Devices for RT, max.256• Of which in line, max.256• Of which in line, max.256• Obvices changing during operation (partner ports), supportedNo• Device replacement without swap medium • Device replacement without swap mediumYes• Send cycles250 µs, 500 µs, 1 ms, 2 ms, 4 ms• Updating time250 µs to 512 ms, minimum value depends on the number of configured user adat and the configured single or redundant mode• Activation/deactivation of Single mode on the configured single or redundant mode• Updating time260 µs to 512 ms, minimum value depends on the number of configured user 	PROFINET IO Controller	Yes
• PROFIBUS DP masterNo• PROFIBUS DP slaveNo• Open IE communicationYes• Web serverNo• Point-to-point connectionNo• Media redundancyYes• PROFINET IO ControllerYes• Transmission rate, max.100 Mbit/sServicesServices• PG/OP communicationYes• S7 communicationYes- S7 communicationYes- S7 communicationYes- Sr controllerNo- Shared deviceYes; Single mode only- Number of connectable IO Devices, max.256- Number of connectable IO Devices for RT, max.256- of which in line, max.256- Activation/deactivation of IO DevicesNo- Devices changing during operation (partner ports), supportedNo- Device replacement without swap mediumYes- Send cycles250 µs, 500 µs, 1 ms, 2 ms, 4 ms- Updating time250 µs to 512 ms, minimum value depends on the number of configured user data and the configured single or redundant mode- Hupts, max.8 kbyte	PROFINET IO Device	No
• PROFIBUS DP slaveNo• Open IE communicationYes• Web serverNo• Point-to-point connectionNo• Media redundancyYes• Transmission rate, max.100 Mbit/s PROFINET IO Controller Yes• PG/OP communicationYes• PG/OP communicationYes- S7 communicationYes- Isochronous modeNo- Shared deviceYes Single mode only- Prioritized startupNo- 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 DevicesNo- Dovices replacement without swap mediumYes- Device replacement without swap mediumYes- Device replacement without swap mediumYes- Send cycles250 µs, 500 µs, 1 ms, 2 ms, 4 ms- Updating time250 µs to 512 ms, minimum value depends on the number of configured user data and the configured single or redundant modeAddress area- Inputs, max.8 kbyte	PROFINET CBA	No
• Open IE communicationYes• Web serverNo• Point-to-point connectionNo• Media redundancyYesPROFINET IO Controller100 Mbit/sServices PG/OP communicationYes- PG/OP communicationYes- S7 communicationYes- Isochronous modeNo- Shared deviceYes/single mode only- Prointized startupNo- Number of connectable IO Devices, max.256 (in redundant mode via both interfaces- of which in line, max.256- of which in line, max.256- Devices rehaging during operation (partner profs), supportedNo- Devices replacement without swap mediumYes- Devices replacement without swap mediumYes- Updating time250 (ps to 512 ms, minimum value depends on the number of configured user data and the configured single or redundant mode- Luptats, max.8 kbyte	PROFIBUS DP master	No
• Open IE communicationYes• Web serverNo• Point-to-point connectionNo• Media redundancyYesPROFINET IO Controller100 Mbit/sServices PG/OP communicationYes- PG/OP communicationYes- S7 communicationYes- Isochronous modeNo- Shared deviceYes/single mode only- Prointized startupNo- Number of connectable IO Devices, max.256 (in redundant mode via both interfaces- of which in line, max.256- of which in line, max.256- Devices rehaging during operation (partner profs), supportedNo- Devices replacement without swap mediumYes- Devices replacement without swap mediumYes- Updating time250 (ps to 512 ms, minimum value depends on the number of configured user data and the configured single or redundant mode- Luptats, max.8 kbyte	PROFIBUS DP slave	No
Web serverNo• Point-to-point connectionNo• Media redundancyYes PROFINET IO Controller 100 Mbit/sServicesServices- PG/OP communicationYes- S7 communicationYes- S7 communicationYes- Isochronous modeNo- Shared deviceYes; Single mode only- Prioritized startupNo- 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- O Devices changing during operation (partner ports), supportedNo- Device replacement without swap mediumYes- Device replacement without swap mediumYes- Updating time250 µs, 500 µs, 1 ms, 2 ms, 4 ms- Updating time250 µs to 512 ms, minimum value depends on the number of configured user data and the configured single or redundant mode- Hiputs, max.8 kbyte		Yes
• Point-to-point connectionNo• Media redundancyYesPROFINET IO Controller100 Mbit/s• Transmission rate, max.100 Mbit/sServices PG/OP communicationYes- Sf communicationYes- Isochronous modeNo- Shared deviceYes; Single mode only- Prioritized startupNo- Number of connectable IO Devices, max.256; In redundant mode via both interfaces- Of which in line, max.256- Of which in line, max.256- Devices changing during operation (partner ports), supportedNo- Device replacement without swap mediumYes- Send cycles250 µs, 500 µs, 1 ms, 2 ms, 4 ms- Updating time250 µs to 501 µs, 2 ms, 4 ms- Updating time250 µs to 501 µs, 1 ms, 2 ms, 4 ms- Updating time8 kbyte		
Media redundancy Yes PROFINET IO Controller PROFINET IO Controller Transmission rate, max. 100 Mbit/s Services PG/OP communication Yes ST communication Yes Structure S		
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 - of which in line, max. 256 - Activation/deactivation of IO Devices No - IO Devices changing during operation (partner ports), supported No - 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		
• 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 — of which in line, max. 256 — Activation/deactivation of IO Devices No — IO Devices changing during operation (partner ports), supported No — 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		
Services — PG/OP communication Yes — S7 communication Yes — Isochronous mode No — 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 — of which in line, max. 256 — Activation/deactivation of IO Devices No — IO Devices changing during operation (partner ports), supported No — 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		100 Mbit/c
PG/OP communicationYes S7 communicationYes Isochronous modeNo Shared deviceYes; Single mode only Prioritized startupNo 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 Nourbeer of Devices changing during operation (partner ports), supportedNo Device replacement without swap mediumYes Send cycles250 μs, 500 μs, 1 ms, 2 ms, 4 ms Updating time250 μs to 512 ms, minimum value depends on the number of configured user data and the configured single or redundant modeAddress area Inputs, max Inputs, max.8 kbyte		TOU IVIDIT/S
		No.
Shared deviceYes; Single mode only Prioritized startupNo 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 DevicesNo Activation/deactivation of IO DevicesNo IO Devices changing during operation (partner ports), supportedNo Device replacement without swap mediumYes Send cycles250 µs, 500 µs, 1 ms, 2 ms, 4 ms Updating time250 µs to 512 ms, minimum value depends on the number of configured user data and the configured single or redundant modeAddress area		
 Prioritized startup No Number of connectable IO Devices, max. Start of connectable IO Devices for RT, max. Start of which in line, max. of which in line, max. Activation/deactivation of IO Devices Activation/deactivation of IO Devices No IO Devices changing during operation (partner ports), supported Device replacement without swap medium Send cycles Updating time Start of the configured single or redundant mode Address area Inputs, max. 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 DevicesNo- IO Devices changing during operation (partner ports), supportedNo- Device replacement without swap mediumYes- Send cycles250 µs, 500 µs, 1 ms, 2 ms, 4 ms- Updating time250 µs to 512 ms, minimum value depends on the number of configured user data and the configured single or redundant modeAddress area8 kbyte		Yes; Single mode only
- Number of connectable IO Devices for RT, max.256- of which in line, max.256- Activation/deactivation of IO DevicesNo- IO Devices changing during operation (partner ports), supportedNo- Device replacement without swap mediumYes- Send cycles250 µs, 500 µs, 1 ms, 2 ms, 4 ms- Updating time250 µs to 512 ms, minimum value depends on the number of configured user data and the configured single or redundant modeAddress area Inputs, max.8 kbyte	— Prioritized startup	No
- of which in line, max.256- Activation/deactivation of IO DevicesNo- IO Devices changing during operation (partner ports), supportedNo- Device replacement without swap mediumYes- Send cycles250 µs, 500 µs, 1 ms, 2 ms, 4 ms- Updating time250 µs to 512 ms, minimum value depends on the number of configured user data and the configured single or redundant modeAddress area8 kbyte	 — Number of connectable IO Devices, max. 	256; In redundant mode via both interfaces
- Activation/deactivation of IO Devices No - IO Devices changing during operation (partner ports), supported No - 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 8 kbyte	 — Number of connectable IO Devices for RT, max. 	256
- IO Devices changing during operation (partner ports), supportedNo- Device replacement without swap mediumYes- Send cycles250 μs, 500 μs, 1 ms, 2 ms, 4 ms- Updating time250 μs to 512 ms, minimum value depends on the number of configured user data and the configured single or redundant modeAddress area8 kbyte	— of which in line, max.	256
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 - - Inputs, max. 8 kbyte	- Activation/deactivation of IO Devices	No
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 8 kbyte		No
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		
— 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	 Device replacement without swap medium 	Yes
Address area — Inputs, max. 8 kbyte	— Send cycles	250 μs, 500 μs, 1 ms, 2 ms, 4 ms
Address area — Inputs, max. 8 kbyte	— Updating time	250 μs to 512 ms, minimum value depends on the number of configured user
- Inputs, max. 8 kbyte		data and the configured single or redundant mode
- Outputs, max. 8 kbyte		
	— Outputs, max.	8 kbyte

— User data consistency, max.	1 024 byte
Open IE communication	
Number of connections, max.	46
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	16
Interface types	
• 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.	16
Transmission rate, max.	12 Mbit/s
Number of DP slaves, max.	64
Services	
— PG/OP communication	Yes
— Routing	Yes
— Global data communication	No
- S7 basic communication	No
— S7 communication	Yes
	Yes
- S7 communication, as client	Yes
— S7 communication, as server	
— Equidistance	No
— Isochronous mode	No
- SYNC/FREEZE	No
Activation/deactivation of DP slaves	No
 Direct data exchange (slave-to-slave communication) DPV0 	No Yes
— DPV0 — DPV1	
	Yes
Address area	4 kbyte
— Inputs, max.	
— Outputs, max.	4 kbyte
User data per DP slave	014 http:
— User data per DP slave, max.	244 byte
— Inputs, max.	244 byte
— Outputs, max.	244 byte
— Slots, max.	244 120 http://
— 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.	46
— 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. 	46
— 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. 	46
— 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 	47
 Number of connectable OPs with message processing 	47; When using Alarm_S/SQ and Alarm_D/DQ
Data record routing	Yes
Global data communication	
supported	No
S7 basic communication	
 communication function / S7 basic communication 	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
Number of connections	
• overall	48
 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 	
 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.	47; Max. 47 with Alarm_S/SQ and Alarm_D/DQ (OPs); max. 8 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
	250: Cimultanaqualy active clarm, C/CO blocks or clarm, D/DO blocks
simultaneously active Alarm-S blocks, max.	250; Simultaneously active alarm_S/SQ blocks or alarm_D/DQ blocks
simultaneously active Alarm-S blocks, max. Alarm 8-blocks	Yes

• preset, max. 300 Process control messages Yes Number of archives that can log on simultaneously (SFB 37 AR, SSAD) 16 Status block Yes Single step Yes Number of breakpoints 16 Status block Yes • Status/control 16 Status/control 266<	blocks, max.	
Number of archives that can log on simultaneously (SFB 37 AR_SEND) 16 Test commissioning functions Yes Status block Yes Number of breakpoints 16 Status/control 18 Status/control variable Yes; Up to 16 variable tables Inputs/outputs, memory bits, DBs, distributed Wos, timers, counters 70 Porcing Inputs/outputs, bit memories, distributed Wos, timers, counters Porcing Yes Inputs/outputs, bit memories, distributed Wos, timers, counters 70 Porcing Yes Imputs/outputs, bit memories, distributed Wos, timers, counters 70 Porcing Yes Imputs/outputs, bit memories, distributed Wos, timers, counters 70 Porcing Yes Imputs/outputs, bit memories, distributed Wos, timers, counters 70 Porcing Yes Indicate Yes Diagonalis buffer Yes Imputs/outputs, bit memories, distributed Wos Yes Diagonalis buffer Yes Imputs/outputs, bit memories, distributed Wos Yes Diagonalis Yes Diagonalis Yes Effect Yes Effect Indicatinal areas Stery of the output inditatinal areas Y		300
Number of archives that can log on simultaneously (SFB 37 AR_SEND) 16 Test commissioning functions Yes Status block Yes Number of breakpoints 16 Status/control 18 Status/control variable Yes; Up to 16 variable tables Inputs/outputs, memory bits, DBs, distributed Wos, timers, counters 70 Porcing Inputs/outputs, bit memories, distributed Wos, timers, counters Porcing Yes Inputs/outputs, bit memories, distributed Wos, timers, counters 70 Porcing Yes Imputs/outputs, bit memories, distributed Wos, timers, counters 70 Porcing Yes Imputs/outputs, bit memories, distributed Wos, timers, counters 70 Porcing Yes Imputs/outputs, bit memories, distributed Wos, timers, counters 70 Porcing Yes Indicate Yes Diagonalis buffer Yes Imputs/outputs, bit memories, distributed Wos Yes Diagonalis buffer Yes Imputs/outputs, bit memories, distributed Wos Yes Diagonalis Yes Diagonalis Yes Effect Yes Effect Indicatinal areas Stery of the output inditatinal areas Y		Yes
Test commissioning functions Yes Single step Yes Number of breakpoints 16 Status/control variable Yes, Up to 16 variable tables • Status/control variables Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters • Variables Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters • Variables Inputs/outputs, bit memories, distributed I/Os • Forcing Yes • Forcing Yes • Forcing Yes • Forcing Yes • Number of variables, max. 256 Diagnostic buffer Yes • present Yes • Present 200 — adjustable Yes • can be read out Yes Emission of radio interference acc. to EX 55 011 Emission of radio interference acc. to EX 55 011 • Limit class B, for use in industrial areas No configuration / broadynming / header Yes • Configuration / programming / header Yes • StEP 7 Yes • Optingruation / prooptimuling / header Yes </td <td>Number of archives that can log on simultaneously (SFB 37</td> <td>16</td>	Number of archives that can log on simultaneously (SFB 37	16
Status block Yes Single step Yes Number of breakpoints 16 Status/control Yes • Variable Input/solution, memory bits, DBs, distributed I/Os, timers, counters • Number of variables, max. 70 Forcing • Forcing, variables • Forcing, variables, max. 256 Diagnostic buffer • • present Yes • or and or entries, max. 3 200 - adjustable Yes • an be read out Yes • or ab cread out Yes Emission of radio interference acc. to EN 55 011 • • limit class B, for use in residential areas Yes • oring uration / header Configuration / header • Command set see instruction list • Oronmand set see instruction list • System function blocks (SFB) yes - SPED Yes - SPED Yes - GRAPH Yes - GRAPH Yes		
Single step Yes Number of breakpoints 16 Status/control variable Yes: Up to 16 variable tables • Variables Input/soutputs, memory bits, DBs, distributed I/Os, timers, counters • Number of variables, max. 70 Forcing Yes • Forcing variables Input/soutputs, bit memories, distributed I/Os, timers, counters • Number of variables, max. 256 Diagnostic buffer Yes • present Yes • Number of entrables, max. 3 200 - adjustable Yes • Justocontrol Yes • Conting variables 120 Service data Yes - can be read out Yes Emission of radio interference acc. to EN 55 011 Interview • Limit class A, for use in industrial areas Yes • Limit class A, for use in industrial areas Yes • Configuration / Insoler Configuration software • Configuration / Insoler Yes • Configuration software Yes • StEP 7 Yes • Nesting levels 7 • Nesting levels 7 • Access to consistent data in process image Yes • System function blocks (SFE) see instruction list		Yes
Number of breakpoints 16 Status/control Yes; Up to 16 variable tables • Variables Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters • Variables Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters • Forcing Yes • Forcing, variables, max. 70 • Forcing Yes • Forcing, variables, max. 70 • Orubner of variables, max. 250 • Jumber of antiables, max. 3 200 - adjustable Yes - adjustable Yes - anglustable Yes - anglustable Yes - anglustable Yes - anglustable Yes - preset 120 Stervise data - - and be read out Yes EMG - Configuration of fuel interference acc. to EN 55 011 • Limit class A, for use in industrial areas Yes • Configuration software Yes configuration software - • STEP 7 Yes • Access to consistent data in process image Yes • Access to consistent data in process image Yes • System function blocks (SFB) see instruction list • System function blocks		
Status/control variable Yes, Up to 16 variable tables • Status/control variables, max. 70 Forcing 70 • Number of variables, max. 70 • Forcing Yes • Forcing, variables, max. 256 Diagnostic buffer 9 • present Yes • Number of variables, max. 3 200 - adjustable Yes • Number of nariables, max. 3 200 - adjustable Yes • Present 120 Service data Ves • Diagnostic buffer Yes • Intri class A, for use in industrial areas Yes • Limit class A, for use in industrial areas Yes • Limit class A, for use in industrial areas Yes • Orofiguration / header Yes • STEP 7 Yes • Orofiguration / header See instruction list • Nesting levels 7 • Access to consistent data in process image Yes • System function block (SFB) see instruction list • Nesting levels 7 • Acceses to consistent data in process image <td></td> <td></td>		
• Status/control variableYes; Up to 16 variable tables• VariablesInputs/outputs, memory bits, DBs, distributed I/Os, timers, counters• ForcingYes• ForcingYes• Forcing, variables, max.256• Number of variables, max.256Diagnostic bufferYes• presentYes• Number of entries, max.3 200- adjustableYes• Number of entries, max.3 200- adjustableYes• Number of entries, max.3 200- adjustableYes• Number of entries, max.3 200- preset120Service dataYes- presetYes• Limit class A, for use in industrial areasYes• Limit class A, for use in industrial areasYes• Limit class A, for use in esidential areasYes• Configuration softwareYes• Configuration / programming / headerYes• Command setsee instruction list• Access to consistent data in process imageYes• System function block (SFE)see instruction list• Programming languageYes- preset- preset• LADYes- acclYes- accl <td< td=""><td>· · · · · · · · · · · · · · · · · · ·</td><td></td></td<>	· · · · · · · · · · · · · · · · · · ·	
• VariablesInputs/outputs, memory bits, DBs, distributed i/Os, timers, counters• Number of variables, max.70• ForcingYes• Forcing, variables, max.256Diagnostic bufferYes• presentYes• adjustable, max.3 200- adjustableYes• nadjustableYes- adjustableYes- adjustableYes <t< td=""><td></td><td>Yes: Up to 16 variable tables</td></t<>		Yes: Up to 16 variable tables
• Number of variables, max.70ForcingYes• Forcing, variablesInputs/outputs, bit memories, distributed I/Os• Number of variables, max.256Diagnostic bufferYes• presentYes• Number of entries, max.3 200- adjustableYes- adjustableYes- anglestableYes- adjustableYes- adjustableYes- adjustableYes- adjustableYes- anglestableYes- adjustableYes- can be read outYesEMCEMC- Configuration of radio interference acc. to EN 55 011• Limit class A, for use in industrial areasYes• Limit class A, for use in industrial areasYes• Configuration / headerVesconfiguration / headerSec instruction list• STEP 7Yes• StEP 7Yes• Socas to consistent data in process imageYes• Notocks (SFB)sec instruction list• System function books (SFB)sec instruction list• System function books (SFB)sec instruction list• System function books (SFB)sec instruction list• Socas to consistent data in process imageYes- LADYes- SCLYes- SCLYes- SCLYes- SCLYes- SCLYes- SCLYes- SCLYes- SCLYes- SCL <td< td=""><td></td><td></td></td<>		
Forcing Yes • Forcing, variables Inputs/outputs, bit memories, distributed I/Os • Number of variables, max. 256 Diagnostic buffer Yes • Present Yes • Number of entries, max. 3 200 - adjustable Yes - adjustable Yes - adjustable Yes - adjustable Yes • can be read out Yes Emission of radio interference acc. to EN 55 011 • Limit class A, for use in industrial areas Yes • Limit class B, for use in industrial areas No configuration / header • STEP 7 Yes configuration / programming / header see instruction list • Command set see instruction list • Nating levels 7 • Access to consistent data in process image Yes • System function block (SFB) see instruction list • System function block (SFB) see instruction list • FBD Yes - STL Yes - SCL Yes		• • • • • • • • • • • • • • • • • • • •
• ForcingYes• Forcing, variablesInputs/outputs, bit memories, distributed I/Os• Number of variables, max.256Diagnostic buffer///////////////////////////////		10
• Forcing, variablesInputs/outputs, bit memories, distributed I/Os• Number of variables, max.256Diagnostic bufferYes• present3 200- adjustableYes- preset120Service dataYes• can be read outYesEmission of radio interference acc. to EN 55 011Interference acc. to EN 55 011• Limit class A, for use in industrial areasYes• Limit class A, for use in residential areasNoconfiguration / headerYesconfiguration softwareYes• Command setsee instruction list• Nesting levels7• Access to consistent data in process imageYes• System functions (SFC)see instruction list• System functions (SFC)see instruction list• System functions (SFC)see instruction list• System function blocks (SFB)see instruction list• System function blocks (SFB)Yes- SCLYes- SCLYes- SCLYes- GRAPHYes- HiGraph®Yes	<u> </u>	Vec
• Number of variables, max.256Diagnostic bufferVes• present3 200- adjustableYes- adjustable120- preset120Service dataVes• can be read outYesEMCEmission of radio interference acc. to EN 55 011.• Limit class A, for use in industrial areasNoconfiguration / headerYesConfiguration / headerYes• Configuration / programming / headerYes• Command setsee instruction list• Nesting levels7• Access to consistent data in process imageYes• System functions (SFC)see instruction list• System function blocks (SFB)see instruction list• System function blocks (SFB)see instruction listProgramming lenguageYes- LADYes- SCLYes- SCLYes- SCLYes- GRAPHYes- HiGraph®Yes	-	
Diagnostic buffer present Ves adjustable yes preset 120 Service data can be read out Yes Emission of radio interference acc. to EN 55 011 Emission of radio interference acc. to EN 55 011 Emission of radio interference acc. to EN 55 011 Emission of radio interference acc. to EN 55 011 Configuration / headar Ves Configuration / headar Configuration / headar Configuration / programming / header Comfiguration software StEP 7 Ves configuration / programming / header Command set see instruction list Nesting levels 7 Access to consistent data in process image Yes System function blocks (SFB) see instruction list System function blocks (SFB) Second (STE) Sec		
• presentYes• Number of entries, max.3 200- adjustableYes- preset120Service dataYes• can be read outYesEMCImit class A, for use in industrial areasYes• Limit class A, for use in industrial areasYes• Configuration / headerYesConfiguration / programming / headerYes• STEP 7Yes• Configuration / programming / header7• Comfiguration / programming / header7• Access to consistent data in process imageYes• System functions (SFC)see instruction list• System function bicks (SFB)see instruction list• System function bicks (SFB)see instruction list• System function bicks (SFB)yes- FBDYes- SCLYes- SCLYes- GRAPHYes- GRAPHYes- HiGraph®Yes- HiGraph®Yes		230
Number of entries, max.3 200 adjustableYes preset120Service dataYes- can be read outYesEmission of radio interference acc. to EN 55 011Interference acc. to EN 55 011Limit class A, for use in industrial areasYesoroffiguration / headerNoConfiguration / headerYesConfiguration / programming / headerServicion list• STEP 7Yesconfiguration / programming / headerSee instruction list• Nesting levels7• Access to consistent data in process imageYes• System functions (SFC)see instruction list• System function softs/SFC)see instruction list• System function blocks (SFB)see instruction list• System function blocks (SFB)Yes- LADYes- SCLYes- SCLYes- SCLYes- GRAPHYes- HiGraph®Yes		Va
adjustableYes preset120Service data• can be read outYesEmission of radio interference acc. to EN 55 011• Limit class A, for use in industrial areasYes• Limit class B, for use in residential areasNoconfiguration / header• Configuration of radio interference acc. to EN 55 011• Configuration softwareYes• Configuration softwareYes• STEP 7Yes• Command setsee instruction list• Nesting levels7• Access to consistent data in process imageYes• System function (SFC)see instruction list• System function blocks (SFB)see instruction list• System function blocks (SFB)see instruction list- LADYes- FBDYes- SCLYes- SCLYes- SCLYes- GRAPHYes- HiGraph®Yes		
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● 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 offware Configuration of 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 - STL Yes - SCL Yes - SCL Yes - GRAPH Yes - GRAPH Yes - HiGraph® Yes		120
EMC Emission of radio interference acc. to EN 55 011 Limit class A, for use in industrial areas Ves Limit class B, for use in residential areas No configuration / header Configuration software STEP 7 Yes configuration of programming / header Command set See instruction list No Command set No Command set See instruction list No Sec instruction sist No Sec instruction blocks (SFB) See instruction list Programming language - LAD Yes STL - EBD Yes SCL - SCL - CFC Yes - GRAPH		
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• Limit class A, for use in industrial areas Yes • Limit class B, for use in residential areas No configuration / header • STEP 7 Yes configuration / programming / header Yes • Command set see instruction list • No 7 • Access to consistent data in process image Yes • System function blocks (SFB) see instruction list • System function blocks (SFB) see instruction list • Programming language Yes - LAD Yes - STL Yes - STL Yes - SCL Yes - SCL Yes - CFC Yes - GRAPH Yes - HiGraph® Yes		
• Limit class B, for use in residential areas No configuration / header Configuration software • STEP 7 Yes configuration / programming / header see instruction list • Command set see instruction list • No sting 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 Yes - LAD Yes - STL Yes - SCL Yes - SCL Yes - CFC Yes - GRAPH Yes - HiGraph® Yes	Emission of radio interference acc. to EN 55 011	
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Configuration software● STEP 7Yesconfiguration / programming / headersee instruction list● Command setsee instruction list● Nesting levels7● Access to consistent data in process imageYes● System functions (SFC)see instruction list● System function blocks (SFB)see instruction list● Programming languageYes- LADYes- FBDYes- STLYes- SCLYes- CFCYes- GRAPHYes- HiGraph®Yes	 Limit class B, for use in residential areas 	No
• STEP 7Yesconfiguration / programming / header• Command setsee instruction list• Nesting levels7• Access to consistent data in process imageYes• System functions (SFC)see instruction list• System function blocks (SFB)see instruction list• Programming languageYes- LADYes- FBDYes- STLYes- SCLYes- CFCYes- GRAPHYes- HiGraph®Yes	configuration / header	
configuration / programming / headerCommand setsee instruction listNesting levels7Access to consistent data in process imageYesSystem functions (SFC)see instruction listSystem function blocks (SFB)see instruction listProgramming languageYes- LADYes- FBDYes- STLYes- SCLYes- CFCYes- GRAPHYes- HiGraph®Yes	Configuration software	
● Command setsee instruction list● Nesting levels7● Access to consistent data in process imageYes● System functions (SFC)see instruction list● System function blocks (SFB)see instruction list● System function blocks (SFB)see instruction listProgramming languageYes- LADYes- FBDYes- STLYes- SCLYes- CFCYes- GRAPHYes- HiGraph®Yes	• STEP 7	Yes
• Nesting levels7• Access to consistent data in process imageYes• System functions (SFC)see instruction list• System function blocks (SFB)see instruction list• Programming languageYes- LADYes- FBDYes- STLYes- SCLYes- CFCYes- GRAPHYes- HiGraph®Yes	configuration / programming / header	
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 System functions (SFC) System function blocks (SFB) System function blocks (SFB) Programming language - LAD - FBD - FBD Yes - STL SCL - SCL Yes - CFC - GRAPH - HiGraph® Yes 	Nesting levels	7
• System function blocks (SFB) see instruction list Programming language - LAD Yes - FBD Yes - STL Yes - SCL Yes - CFC Yes - GRAPH Yes - HiGraph® Yes	 Access to consistent data in process image 	Yes
Programming language - LAD Yes - FBD Yes - STL Yes - SCL Yes - CFC Yes - GRAPH Yes - HiGraph® Yes	 System functions (SFC) 	see instruction list
−LADYes−FBDYes−STLYes−SCLYes−CFCYes−GRAPHYes−HiGraph®Yes		see instruction list
−FBDYes−STLYes−SCLYes−CFCYes−GRAPHYes−HiGraph®Yes	Programming language	
STLYes-SCLYes-CFCYes-GRAPHYes-HiGraph®Yes	— LAD	Yes
- SCLYes- CFCYes- GRAPHYes- HiGraph®Yes	— FBD	Yes
- SCLYes- CFCYes- GRAPHYes- HiGraph®Yes		
- CFC Yes - GRAPH Yes - HiGraph® Yes		
— GRAPH Yes — HiGraph® Yes		
— HiGraph® Yes		
configuration / programming / number of ofinitiatioodary active of 07 fielder		
- RD_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	- RDREC	
- WRREC 8	— WRREC	8
Know-how protection	Know-how protection	
User program protection/password protection Yes	 User program protection/password protection 	Yes
Block encryption Yes; With S7 block Privacy	Block encryption	Yes; With S7 block Privacy
Dimensions	Dimensions	

Width	50 mm	
Height Depth	290 mm	
Depth	219 mm	
Weights		
Weight, approx.	995 g	

last modified:

9/7/2023 🖸