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
integratedintegrated (for program)	16 Mbyte 6 Mbyte
-	
• integrated (for program)	6 Mbyte
integrated (for program)integrated (for data)	6 Mbyte 10 Mbyte
 integrated (for program) integrated (for data) expandable 	6 Mbyte 10 Mbyte
 integrated (for program) integrated (for data) expandable Load memory 	6 Mbyte 10 Mbyte No
integrated (for program) integrated (for data) expandable Load memory expandable FEPROM	6 Mbyte 10 Mbyte No Yes; with Memory Card (FLASH)
integrated (for program) integrated (for data) expandable Load memory expandable FEPROM expandable FEPROM, max.	6 Mbyte 10 Mbyte No Yes; with Memory Card (FLASH) 64 Mbyte
 integrated (for program) integrated (for data) expandable Load memory expandable FEPROM expandable FEPROM, max. integrated RAM, max. 	6 Mbyte 10 Mbyte No Yes; with Memory Card (FLASH) 64 Mbyte 1 Mbyte
 integrated (for program) integrated (for data) expandable Load memory expandable FEPROM expandable FEPROM, max. integrated RAM, max. expandable RAM 	6 Mbyte 10 Mbyte No Yes; with Memory Card (FLASH) 64 Mbyte 1 Mbyte Yes
 integrated (for program) integrated (for data) expandable Load memory expandable FEPROM expandable FEPROM, max. integrated RAM, max. expandable RAM expandable RAM, max. 	6 Mbyte 10 Mbyte No Yes; with Memory Card (FLASH) 64 Mbyte 1 Mbyte Yes
 integrated (for program) integrated (for data) expandable Load memory expandable FEPROM expandable FEPROM, max. integrated RAM, max. expandable RAM expandable RAM, max. 	6 Mbyte 10 Mbyte No Yes; with Memory Card (FLASH) 64 Mbyte 1 Mbyte Yes 64 Mbyte 4 Mbyte
 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 	6 Mbyte 10 Mbyte No Yes; with Memory Card (FLASH) 64 Mbyte 1 Mbyte Yes 64 Mbyte Yes 64 Mbyte Yes 78 94 Mbyte Yes 95 Yes
 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 	6 Mbyte 10 Mbyte No Yes; with Memory Card (FLASH) 64 Mbyte 1 Mbyte Yes 64 Mbyte Yes 64 Mbyte Yes 64 Mbyte Yes 64 Mbyte
 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 	6 Mbyte 10 Mbyte No Yes; with Memory Card (FLASH) 64 Mbyte 1 Mbyte Yes 64 Mbyte Yes 64 Mbyte Yes 64 Mbyte Yes 64 Mbyte

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• Feeding of external backup voltage to CPU 5 V DC 0: 15 V DC CPU processing time For disperations, typ. 12.5 n.s. for stored operations, typ. 12.5 n.s. for stored operations, typ. for finde operations, typ. 12.5 n.s. for stored operations, typ. for finde operations, typ. 12.5 n.s. for stored operations, typ. for finde operations, typ. 12.5 n.s. for stored operations, typ. for finde operations, typ. 12.5 n.s. for stored operations, typ. for finde operations, typ. 12.5 n.s. for stored operations, typ. for finde operations, typ. 12.5 n.s. for stored operations, typ. for store, max. 6 000, Number range: 0 to 7899 for store, max. for store, max. 8 K hype for store, max. for store, max. for store, max. 8 K hype for store, max. for store, max. for store, max. 8 K hype for store, max. for store, max. for store, max. 8 K hype for store, max. for store, max. for store, max. 8 K hype for store, max. for store, max. <tr< td=""><td>•</td><td></td></tr<>	•	
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for the operations, typ. 12 5 ns for fixed operations, typ. 12 5 ns for fixed operations, typ. 23 ns CPULations 100 in word operations, typ. 23 ns CPULations 100 in word operations, typ. 23 ns CPULations 10000 in words, max. 10 6000, Number range: 1 to 10000 in Words, max. 64 ktype FB 10000 in Words, max. 64 ktype FC 8000, Number range: 1 to 10000 in Words, max. 64 ktype FC 8000, Number range: 0 to 7890 in Words, max. 64 ktype FC 8000, Number range: 0 to 7890 in Words of the oxycle OBs 1.061 Number of thre oxycle OBs 1.061 Number of delay alarn OBs 8.068 10-17 Number of opciosa alarn OBs 8.068 40-47 Number of opciosa alarn OBs 8.068 40-47 Number of opciosa alarn OBs 2.068 50-57 Number of opciosa alarn OBs 2.068 10-0102 Number of opaloxinatio	 Feeding of external backup voltage to CPU 	5 V DC to 15 V DC
For word operations, by 12.5 ns for frade point antimente, typ 2.5 ns for frade point antimente, typ 2.5 ns GPULAtoxas CPULAtoxas GPULAtoxas 6.0000, Number range: 1to 150000 • Number, max 6.0000, Number range: 0 to 7599 • State, max 8.0000, Number range: 0 to 7599 • Number, max 8.0000, Number range: 0 to 7599 • State, max 8.0000, Number range: 0 to 7599 • State, max 8.0000, Number range: 0 to 7599 • State, max 8.0000, Number range: 0 to 7599 • State, max 8.0000, Number range: 0 to 7599 • State, max 8.0000, Number range: 0 to 7599 • State, max 8.0000, Number range: 0 to 7599 • State, max 8.0000, Number range: 0 to 7590 • State, max 8.0000, Number range: 0 to 7590 • State, max 8.0000, Number range: 0 to 7590 • State, max 8.0000, Number range: 0 to 7590 • State, max 8.0000, Number range: 0 to 7590 • State, max 8.0000, Number range: 0 to 7590 • State, max 8.0000, Number range: 0 to 7590 • State, max 8.0000, Number range: 0 to 7590 • Number of free ocycle Ottos 1, 081 • Number of Ottos 2, 08100, 102 <td>CPU processing times</td> <td></td>	CPU processing times	
for fact applied autometic, typ. 12.5 ns for facting point attitmetic, typ. 25 ns DB DB Number, max. 16 000; Number range: 10 16000 • Size, max. 84 kbyts FB • Number, max. 84 kbyts • Size, max. 84 kbyts • Number of fine optic 0018 1.08 1 • Number of fine optic 018 1.08 1 • Number of socie 028 1.08 1 • Number of optic interrupt OBs 9.08 80-83 • Number of adarphonous error OBs 2.08 100, 102 • Number of sarctprobase error OBs 2.08 100, 102 • Number of sarctprobase error OBs 2.08 102, 102 • Number of sarctprobase error OBs 2.08 124, 122	for bit operations, typ.	12.5 ns
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
CPU-backs DB • Number, max. 64 kbyte FB 64 kbyte • Number, max. 64 kbyte • Number, max. 64 kbyte • Number, max. 64 kbyte • Size, max. 64 kbyte FC • Size, max. • Number, max. 64 kbyte • Size, max. 64 kbyte OB • Number, max. • Size, max. 64 kbyte OB • Number of the cyclo OBs 1: 0B 1 • Number of the cyclo OBs 1: 0B 1 • Number of the cyclo OBs 1: 0B 1 • Number of the cyclo OBs 1: 0B 1 • Number of the cyclo OBs 1: 0B 1 • Number of the system OBs 8: 0B 40-47 • Number of the cyclo OBs 2: 0B 10-17 • Number of optic Interups OBs 3: 0B 80-48 • Number of optic Interups OBs 3: 0B 80-47 • Number of optic Interups OBs 3: 0B 80-48 • Number of optic Interups OBs 2: 0B 120, 122 • Number of synchronous error OBs 2: 0B 121, 122 • Number of synchronous error OB 2 •	for fixed point arithmetic, typ.	12.5 ns
DB • Number, max. • Size, max. • Size, max. • Number, max. • Size, max. • Number, max. • Size, max. • Ref • Number, max. • Size, max. • Size, max. • Size, max. • Number of free system • Number of system • Profit datas • Number of system • Profit datas • Number of system • Number of system • Preset • Obtas • Obtas • Obtas • Preset • Obtas • Preset • Obtas </td <td>for floating point arithmetic, typ.</td> <td>25 ns</td>	for floating point arithmetic, typ.	25 ns
 Number, max. 94 Koyko 95 Kan, max. 94 Koyko 97 Kombo, Markan, Koyko, K	CPU-blocks	
Size, max. 64 klyte FB 6000, Number range: 0 to 7999 Size, max. 64 klyte FC 6000, Number range: 0 to 7999 Size, max. 64 klyte OB 64 klyte OB 64 klyte OB 64 klyte Number, max. 64 klyte Number of free cyte OBs 1.08 1 Number of free cyte OBs 1.08 1 Number of free cyte OBs 1.08 1 Number of free cyte OBs 8.08 0.17 7 Number of free cyte OBs 8.08 0.17 7 Number of optic hierup OBs 8.08 0.43 7 Number of process alarm OBs 3.08 56.57 Number of process alarm OBs 2.08 100, 102 Number of synchronous error OBs 2.00 27 Counter untro of synchronous error OBs 2.00 27 Counter of prochronous error OBs 2.00 27 Cou	DB	
FB	 Number, max. 	16 000; Number range: 1 to 16000
• Number, max.8 000. Number range: 0 to 7999 	• Size, max.	64 kbyte
→ Size, max. Defense FC 0000, Number range: 0 to 7999 → Number, max. 60000, Number range: 0 to 7999 OB 0000 OB 0000, Number range: 0 to 7999 → Number, max. 64 kbyte → Number of free cycle OBs 1: 08 1 → Number of free cycle OBs 1: 08 1 → Number of free cycle OBs 9: 08 10-17 → Number of odeby alarn OBs 9: 08 10-33 → Number of odeby alarn OBs 9: 08 10-33 → Number of op/cicle interrupt OBs 9: 08 50-57 → Number of ogenome OBS 9: 08 50-57 → Number of synchronous error OBS 9: 08 50-57 → Number of synchronous error OBS 9: 08 50-57 → Number of synchronous error OBS 9: 08 50-57 → Number of synchronous error OBS 9: 08 50-57 → Number of synchronous error OBS 9: 08 50-57 → Number of synchronous error OBS 9: 08 50-57 → Number of synchronous error OBS 9: 08 50-57 → Number of synchronous error OBS 9: 08 50-57 → Number of synchronous error OBS 9: 08 50-57 → Number of synchronous error OBS 9: 08 50-57 → Number of synchronous error OBS 9: 08 50-57 → opper jonity Casas 9: 08 50-10 → opper jonity Casas		
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• Number, max.8 000; Number nenge: 0 to 7899• Size, max.94 keyteOB• Number, max.94 keyte• Number, max.94 keyte• Number of free cycle OBs1, OB 1• Number of free cycle OBs1, OB 1• Number of free cycle OBs1, OB 1• Number of delay alam OBs9, OB 30-38• Number of cycle interupt OBs9, OB 30-38• Number of process alam OBs8, OB 40-47• Number of process alam OBs8, OB 40-47• Number of spacehonous error OBs2, OB 100, 102• Number of saynchronous error OBs2, OB 121, 122Number of saynchronous error OBs2, OB 100, 102• Number of saynchronous error OBs2, OB 100, 102• Number of saynchronous error OBs2, OB 121, 122Number of saynchronous error OBs2, OB 121, 122Number of saynchronous error OBs2, OB 100, 102• Number of saynchronous error OBs2, OB 121, 122Number of saynchronous error OBs2, OB 121, 122Number of saynchronous error OBs2, OB 121, 122Number of saynchronous error OBs2, OB 2, 201• Number of saynchronous error OBs2, OB 2, 201• Number of saync		64 kbyte
e Size, max.64 kbyteOB• Number, max.see instruction list• Size, max.64 kbyte• Number of tree cycle OBs1; 08 1• Number of tree cycle OBs3; 06 10-17• Number of dealy alarn OBs4; 08 20-23• Number of cycle interrupt OBs9; 08 30-38• Number of process alarn OBs3; 06 55-57• Number of DPV1 alarn OBs2; 06 100, 102• Number of startup OBs2; 00 102• Number of startup OBs2; 00 102• Outnots, linkers and their retentivity10• Outnots, linkers and their retentivity10• Outnots2/10• Outnots20 10 2 7• Counting range0- lower lintt99• Diver lintt99• Diver lintt99• Diver lintt99• Diver lintt10 ms• presentNumber• Lower lintt10 ms• present10 ms• present10 ms• present10 ms• upper lintt </td <td></td> <td></td>		
OB • Number, max. see instruction list • Size, max. 64 kbyte • Number of free cycle OBs 1: 0B 1 • Number of time alarm OBs 8: 0B 10-17 • Number of deby alarm OBs 9: 0B 30-38 • Number of deby alarm OBs 9: 0B 30-38 • Number of process alarm OBs 9: 0B 40-47 • Number of DPV1 alarm OBs 9: 0B 30-38 • Number of dasynchronous error OBs 2: 0B 100, 102 • Number of asynchronous error OBs 2: 0B 100, 102 • Number of asynchronous error OBs 2: 0B 100, 102 • Number of asynchronous error OBs 2: 0B 20, 20, 20, 20, 20, 20, 20, 20, 20, 20,		-
• Number, max.see instruction list• Size, max.64 kbyte• Number of free cycle OBs1; 0B 1• Number of free cycle OBs8; 0B 10-17• Number of delay atem OBs4; 0B 20-23• Number of cycle interrupt OBs9; 0B 30-38• Number of cycle interrupt OBs9; 0B 30-38• Number of brovi atem OBs8; 0B 40-47• Number of brovi atem OBs2; 0B 100, 102• Number of startup OBs2; 0B 100, 102• Number of startup OBs2; 0B 100, 102• Number of startup OBs2; 0B 101, 122• Number of startup OBs2; 0B 121, 122Number of synchronous error OBs2; 0B 121, 122Number of synchronous error OBs2; 0B 121, 122Number2• Number of synchronous error OBs2• Number of synchronous error OBs2• Outners, timers and their retentivity2Strouter2 048- adjusableYes- adjusable2 04 2 7Counting range0- preset2 040 2 7Counting range0- lower limit999StrouterYes• NumberSFB• Number2048Retentivity2048StrouterYes- preset2048Retentivity10 ms- upper limit999 0 sIEC courterYes- upper limit999 0 s- upper limit999 0 s- upper limit999 0 sIEC timerYes <td< td=""><td></td><td>64 kbyte</td></td<>		64 kbyte
• Size, mx.64 kbyte• Number of time along OBs1; 0E 1• Number of time along OBs4; 0B 20-23• Number of cyclic interrupt OBs9; 0B 30-38• Number of pyccis alarn OBs4; 0B 20-23• Number of pyccis alarn OBs9; 0B 30-38• Number of pyccis alarn OBs9; 0B 40-47• Number of pyccis alarn OBs3; 0B 55-57• Number of synchronous error OBs2; 0B 101, 102• Number of synchronous error OBs2; 0B 121, 122• Number of synchronous error OBs2; 0B 121, 122• Number of synchronous error OBs2• Outors, thmore and their retontivity2048• Number2048• Number20 No Z 7Ocuritary, thmore and their retontivity0• opersentVes• presentYes• NumberVes• Number2049• NumberVes• presentYes• Number2048• number10 ms• presentYes• presentYes• presentYes• presentYes• presentYes• presentYes <td></td> <td></td>		
• Number of free cycle OBs1: 0B 1• Number of time alarn OBs8: 0B 10-17• Number of delay alarn OBs9: 0B 30-38• Number of cycle interrupt OBs9: 0B 30-38• Number of cycle interrupt OBs9: 0B 30-38• Number of DPV1 alarn OBs3: 0B 55-57• Number of BPV1 alarn OBs3: 0B 55-57• Number of synchronous error OBs9: 0B 80-88• Number of synchronous error OBs9: 0B 80-88• Number of synchronous error OBs2: 0B 121, 122Nesting depth74• additional within an error OB2Counters, timers and their retentivity2S7 counter2 048• Number2 048Retentivity0 adjustable2- preset2 0 to 2 7Counting range0 upper limit999IEC counterYes• NumberSFB• Number2 048Retentivity57 B• Number2 048Retentivity57 B• operant999IEC counterYes• presentYes• lumber2 048Retentivity10 ms• operant10 ms• number990 sIEC timer- operant• lower limit10 ms• preset10 ms• number990 sIEC timerYes• ipresetYes• ipresetYes• ipresetYes• ipresetYes• ipre	,	
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• Number of delay alarm OBs4; OB 20-23• Number of process alarm OBs9; OB 30-38• Number of process alarm OBs3; OB 60-57• Number of asynchronous error OBs2; OB 100, 102• Number of asynchronous error OBs2; OB 100, 102• Number of asynchronous error OBs2; OB 121, 122Netting depth2• ediditional within an error OB2• Counters, timers and their retentivitySr counter2 048• Number of asynchronous error OBs2 048• ediditional within an error OB2• Counters, timers and their retentivitySr counter2 048• Number2 048• Retentivity0- adjustableYes- preset2 0 to 2 7Counting range0- lower limit999IEC counter999IEC counterYes- adjustable2 048Retentivity100 No times retentive• present2 048• Number2 048Retentivity100 No times retentive• present2 048• Number2 048• Retentivity100 No times retentive• Jones990 sIEC time990 s• Lower limit100 ms- upper limit990 s• EC timeYes• presentYes• Jones and their retentivity100 ms• Jones and their retentivity100 ms• Jones AntoneYes• Jones AntoneYes <trt< td=""><td>-</td><td></td></trt<>	-	
• Number of cyclic interrupt OBs9; OB 30-38• Number of porvia laim OBs8; OB 40-47• Number of startup OBs3; OB 55-57• Number of startup OBs2; OB 100, 102• Number of startup OBs2; OB 80-88• Number of startup OBs2; OB 80-88• Number of startup OBs2; OB 121, 122Nesting depth2• er priority class24• er difficial within an error OB2• oddificial within an error OB0• oddificial within an error OB0• oddificial within an error OB2• oddificial within an error OB2• oddificial within an error OB2• oddificial withi		
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• Number of synchronous error OBs 2; OB 121, 122 Nesting depth 2 • edditional within an error OB 2 Counters, timers and their retentivity 2 S7 counter 2 048 Retentivity - - adjustable Yes - preset Z 0 to Z 7 Counters, timers and their extentivity 0 - adjustable Yes - preset Z 0 to Z 7 Counting range 0 - upper limit 999 IEC counter Ves • present Yes • Type SFB • Number Unlimited (limited only by RAM capacity) S7 times - - adjustable Yes - preset No times retentive Time range 10 ms - upper limit 9990 s IEC timer Yes • present SFB • Number SFB <td>-</td> <td></td>	-	
Nesting depth • per priority class 24 • additional within an error OB 2 Counters, times and their retentivity 2 S7 counter 2 048 • Number 2 048 Retentivity 2 - adjustable Yes - preset Z 0 to Z 7 Counters 0 - preset Z 0 to Z 7 Counter 0 - lower limit 999 IEC counter 999 IEC counter Ves • 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 - - upper limit 9 990 s IEC timer Yes • present Yes - upper limit 9 990 s IEC timer Yes • Type SFB • Nu	-	
• per priority class 24 • additional within an error OB 2 Counters, timers and their retentivity 57 S7 counter 2 048 Retentivity 2 048 Retentivity 2 040 - adjustable 2 040 27 Counting range - - lower limit 0 - upper limit 999 IEC counter Ves • Number Unlimited (limited only by RAM capacity) S7 times 2 048 Retentivity - - adjustable Yes - preset No times retentive Time range - - lower limit 9 990 s IEC timer Yes - upper limit 9 990 s IEC timer Yes - present Yes - present Yes - present Yes - Type		2, OB 121, 122
• additional within an error OB 2 Counters, timers and their retentivity S7 counter 2 048 Retentivity 2 048 — adjustable Yes — preset Z 0 to Z 7 Counting range 0 — lower limit 0 — upper limit 999 IEC counter Yes • Type SFB • Number Unlimited (limited only by RAM capacity) S7 times 2 048 Retentivity — - adjustable Yes • Number 2 048 Retentivity — — adjustable Yes — adjustable Yes — preset No times retentive — newer limit 10 ms — upper limit 9 990 s IEC timer Yes — upper limit 9 990 s IEC timer Yes • present Yes • present Yes • present Yes • Type SFB • Number Unlimited (limited		24
Counters, timers and their retentivity S7 counter 2 048 Retentivity - adjustable - adjustable Yes - preset Z 0 to Z 7 Counting range 0 - lower limit 0 - upper limit 999 IEC counter Ves • Type SFB • Number Ulmited (limited only by RAM capacity) S7 times - - preset 2 048 Retentivity - - adjustable Yes - number 2 048 IEC counter - - outper limit 9 00 s ITime range - - lower limit 10 ms - upper limit 9 990 s IEC timer - - upper limit 9 990 s IEC timer - • present Yes - upper limit 9 990 s IEC timer - • present Yes - type SFB • Number Unlimited (limited only by RAM capacity)		
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
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• 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)

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Flag	
-	16 384 hyte
Size, max. Botontivity ovaliable	16 384 byte Yes
Retentivity available	
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	
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
	0.400
— of which central	8 192
— of which central Hardware configuration	8 192
	21
Hardware configuration	
Hardware configuration Number of expansion units, max.	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 • via CP	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	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 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
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 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 • 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 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 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 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 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 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	21 95 No 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
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	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 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 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
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 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 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 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 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 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 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 14; Of which max. 10 CP as DP master 2 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 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 14; Of which max. 10 CP as DP master 2 Yes

Deviation per day (unbuffered), max.	8.6 s; Power on
Operating hours counter	40
• 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	1h
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	
 Number of connections 	44; If a diagnostics repeater is used on the line, the number of connection
- Transmission rate may	resources on the line is reduced by 1
• Transmission rate, max.	12 Mbit/s
Services	Ver
- 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. 	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
— Global data communication	No
- S7 basic communication	No
— S7 communication	Yes
— S7 communication — S7 communication, as client	Yes
— S7 communication, as server	Yes
— Equidistance	No
— Equidistance — Isochronous mode	No
— SYNC/FREEZE	No
- STNO/I REELE	

activation/deactivation of DR devises	No
— activation/deactivation of DP devices	
 Direct data exchange (slave-to-slave communication) 	No
— DPV1	Yes
Address area	
— Inputs, max.	2 kbyte
— Outputs, max.	2 kbyte
PROFIBUS DP slave	Z KUYK
Number of connections	No configuration of CPU as DP slave
2. Interface	
	PROFINET
Interface type Isolated	Yes
automatic detection of transmission rate	Yes; Autosensing
	Yes
Autonegotiation Autocrossing	Yes
	No
Change of IP address at runtime, supported	NO
Interface types	Vaa
RJ 45 (Ethernet)	Yes 2
Number of ports	
integrated switch	Yes
Protocols	Vez
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
Transmission rate, max. Services	100 Mbit/s
	100 Mbit/s Yes
Services	
Services — PG/OP communication	Yes
Services — PG/OP communication — S7 communication	Yes Yes
Services — PG/OP communication — S7 communication — Isochronous mode	Yes Yes No
Services — PG/OP communication — S7 communication — Isochronous mode — Shared device	Yes Yes No Yes; Single mode only
Services — PG/OP communication — S7 communication — Isochronous mode — Shared device — Prioritized startup	Yes Yes No Yes; Single mode only No
Services — PG/OP communication — S7 communication — Isochronous mode — Shared device — Prioritized startup — Number of connectable IO Devices, max.	Yes Yes No Yes; Single mode only No 256; In redundant mode via both interfaces
Services — PG/OP communication — S7 communication — Isochronous mode — Shared device — Prioritized startup — Number of connectable IO Devices, max. — Number of connectable IO Devices for RT, max.	Yes Yes No Yes; Single mode only No 256; In redundant mode via both interfaces 256
Services - PG/OP communication - S7 communication - Isochronous mode - Shared device - Prioritized startup - Number of connectable IO Devices, max. - Number of connectable IO Devices for RT, max. - Number of connectable IO Devices for RT, max. - Of which in line, max. - Activation/deactivation of IO Devices - IO Devices changing during operation (partner	Yes Yes No Yes; Single mode only No 256; In redundant mode via both interfaces 256 256
Services 	Yes Yes No Yes; Single mode only No 256; In redundant mode via both interfaces 256 256 No No
Services - PG/OP communication - S7 communication - Isochronous mode - Shared device - Prioritized startup - Number of connectable IO Devices, max. - Number of connectable IO Devices for RT, max. - Number of connectable IO Devices for RT, max. - of which in line, max. - Activation/deactivation of IO Devices - IO Devices changing during operation (partner ports), supported - Device replacement without swap medium	Yes Yes No Yes; Single mode only No 256; In redundant mode via both interfaces 256 256 No No Yes
Services - PG/OP communication - S7 communication - Isochronous mode - Shared device - Prioritized startup - Number of connectable IO Devices, max. - Number of connectable IO Devices for RT, max. - Number of connectable IO Devices for RT, max. - Of which in line, max. - Activation/deactivation of IO Devices - IO Devices changing during operation (partner ports), supported - Device replacement without swap medium - Send cycles	Yes Yes No Yes; Single mode only No 256; In redundant mode via both interfaces 256 256 No No No Yes 250 µs, 500 µs, 1 ms, 2 ms, 4 ms
Services - PG/OP communication - S7 communication - Isochronous mode - Shared device - Prioritized startup - Number of connectable IO Devices, max. - Number of connectable IO Devices for RT, max. - Number of connectable IO Devices for RT, max. - of which in line, max. - Activation/deactivation of IO Devices - IO Devices changing during operation (partner ports), supported - Device replacement without swap medium	Yes Yes No Yes; Single mode only No 256; In redundant mode via both interfaces 256 256 No No Yes 250 µs, 500 µs, 1 ms, 2 ms, 4 ms 250 µs to 512 ms, minimum value depends on the number of configured user
Services - PG/OP communication - S7 communication - Isochronous mode - Shared device - Prioritized startup - Number of connectable IO Devices, max. - Number of connectable IO Devices for RT, max. - Number of connectable IO Devices for RT, max. - Number of connectable IO Devices for RT, max. - Of which in line, max. - Activation/deactivation of IO Devices - IO Devices changing during operation (partner ports), supported - Device replacement without swap medium - Send cycles - Updating time	Yes Yes No Yes; Single mode only No 256; In redundant mode via both interfaces 256 256 No No No Yes 250 µs, 500 µs, 1 ms, 2 ms, 4 ms
Services - PG/OP communication - S7 communication - Isochronous mode - Shared device - Prioritized startup - Number of connectable IO Devices, max. - Number of connectable IO Devices for RT, max. - Number of connectable IO Devices for RT, max. - of which in line, max. - Activation/deactivation of IO Devices - IO Devices changing during operation (partner ports), supported - Device replacement without swap medium - Send cycles - Updating time Address area	Yes Yes No Yes; Single mode only No 256; In redundant mode via both interfaces 256 256 256 No No Yes 250 µs, 500 µs, 1 ms, 2 ms, 4 ms 250 µs to 512 ms, minimum value depends on the number of configured user data and the configured single or redundant mode
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Services — PG/OP communication — S7 communication — Isochronous mode — Shared device — Prioritized startup — Number of connectable IO Devices, max. — Number of connectable IO Devices for RT, max. — of which in line, max. — of which in line, max. — Activation/deactivation of IO Devices — IO Devices changing during operation (partner ports), supported — Device replacement without swap medium — Send cycles — Updating time Address area — Inputs, max. — Outputs, max. — User data consistency, max. — User data consistency max. — Local port numbers used at the system end • Keep-alive function, supported	Yes Yes No Yes; Single mode only No 256; In redundant mode via both interfaces 256 256 No No Yes 250 µs, 500 µs, 1 ms, 2 ms, 4 ms 250 µs to 512 ms, minimum value depends on the number of configured user data and the configured single or redundant mode 8 kbyte 8 kbyte 8 kbyte 1 024 byte 94 0, 20, 21, 25, 102, 135, 161, 34962, 34963, 34964, 65532, 65533, 65534, 65535
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Protocols	
PROFIBUS DP master	Yes
PROFIBUS DP device	No
	NO
PROFIBUS DP master	20
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	No
communication)	
— DPV0	Yes
— DPV1	Yes
Address area	
— Inputs, max.	8 kbyte
— Outputs, max.	8 kbyte
User data per DP slave	
— 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
	32 kbyte
 Data length, max. several passive connections per port, supported 	Yes
 several passive connections per port, supported ISO on TCP (PEC1006) 	
ISO-on-TCP (RFC1006) Number of connections max	Yes; Via integrated PROFINET interface or CP 443-1 and loadable FBs
— Number of connections, max.	94 22 khuto: 1 452 hutoo via CD 442 1 Adv
— 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 (of which consistent), max.	240 byte
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	
- 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,
Number of login stations for message functions, max.	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	
Status block	
Status Diock	Yes
Single step	Yes
Single step	Yes
Single step Number of breakpoints	Yes
Single step Number of breakpoints Status/control	Yes 16

Forcing	
Forcing	Yes
Forcing, variables	Inputs/outputs, bit memories, distributed I/Os
Number of variables, max.	512
Diagnostic buffer	512
• 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
— HiGraph®	Yes
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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