## 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	
<ul> <li>Programming package</li> </ul>	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 16 Mbyte
Type of memory Work memory	
Type of memory Work memory • integrated	16 Mbyte
Type of memory Work memory • integrated • integrated (for program)	16 Mbyte 6 Mbyte
Type of memory Work memory • integrated • integrated (for program) • integrated (for data)	16 Mbyte 6 Mbyte 10 Mbyte
Type of memory Work memory • integrated • integrated (for program) • integrated (for data) • expandable	16 Mbyte 6 Mbyte 10 Mbyte
Type of memory Work memory • integrated • integrated (for program) • integrated (for data) • expandable Load memory	16 Mbyte 6 Mbyte 10 Mbyte No
Type of memory Work memory • integrated • integrated (for program) • integrated (for data) • expandable Load memory • expandable FEPROM	16 Mbyte 6 Mbyte 10 Mbyte 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.	16 Mbyte 6 Mbyte 10 Mbyte 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.	16 Mbyte 6 Mbyte 10 Mbyte No Yes; with Memory Card (FLASH) 64 Mbyte 1 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	16 Mbyte 6 Mbyte 10 Mbyte No Yes; with Memory Card (FLASH) 64 Mbyte 1 Mbyte 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.	16 Mbyte 6 Mbyte 10 Mbyte No Yes; with Memory Card (FLASH) 64 Mbyte 1 Mbyte 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	16 Mbyte 6 Mbyte 10 Mbyte No Yes; with Memory Card (FLASH) 64 Mbyte 1 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 • without battery	16 Mbyte 6 Mbyte 10 Mbyte No Yes; with Memory Card (FLASH) 64 Mbyte 1 Mbyte 1 Mbyte Yes 64 Mbyte 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 • expandable RAM • expandable RAM • expandable RAM • expandable RAM, max.	16 Mbyte 6 Mbyte 10 Mbyte No Yes; with Memory Card (FLASH) 64 Mbyte 1 Mbyte 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 • without battery	16 Mbyte 6 Mbyte 10 Mbyte No Yes; with Memory Card (FLASH) 64 Mbyte 1 Mbyte Yes 64 Mbyte Yes 64 Mbyte

Backprometer and the media calls manual with the secondary conditions and the holes of the media calls manual with the secondary conditions and the holes of the media calls manual with the secondary conditions and the holes of the second secondary conditions and the holes of the secondary conditions and the holes of the secondary conditions (p. 12.5 ns)     For fore port antimese, (p. 12.5 ns)     For many and the media calls manual with the secondary conditions (p. 12.5 ns)     For fore port antimese, (p. 12.5 ns)     For max.     For fore port max.     For max.	Backup current, max.	1 000 µA
• 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<>	•	
CPU processing times     12.5 ns       for bit operations, typ.     12.5 ns       for free dap out antimeter, typ.     12.5 ns       for free dap out antimeter, typ.     12.5 ns       of reading out antimeter, typ.     25 ns       CPU betwain     0000, Number range: 1 to 16000       Size, max.     64 ktyps       FB     10000, Number range: 0 to 7890       Size, max.     64 ktyps       FB     8000, Number range: 0 to 7890       • Number, max.     8000, Number range: 0 to 7890       • Size, max.     64 ktyps       FB     8000, Number range: 0 to 7890       • Number, max.     8000, Number range: 0 to 7890       • Size, max.     64 ktyps       FB     8000, Number range: 0 to 7890       • Number of recessed and OBS     8, 000 ktyps       • Number of free cipct OBS     0.00 ktyps       • Number of free cipct OBS     0.00 ktyps       • Number of opcoses atom OBS     8, 008 ktyps       • Number of opcoses atom OBS     2, 008 20-33       • Number of opcoses atom OBS     2, 008 20-33       • Number of opcoses atom OBS     2, 008 20-33       • Number of opcoses atom OBS     2, 008 20-33       • Number of opcoses atom OBS     2, 008 20-33       • Number of opcoses atom OBS     2, 008 20-33       • Number of opcoses		
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 opalor otaru	<ul> <li>Feeding of external backup voltage to CPU</li> </ul>	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 caycle Ottos     9.0000, State       • Number of Ottos     9.0000, St	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
<ul> <li>Number, max.</li> <li>94 Koyko</li> <li>95 Kan, max.</li> <li>94 Koyko</li> <li>97 Kombo, Markan, Koyko, K</li></ul>	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	<ul> <li>Number, max.</li> </ul>	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       → opporting deptin     9: 00 52       → opporting deptin		
FC     6 000: Number range: 0 to 7999       • Size, max.     6 4 kbyte       OB     6 kbyte       • Number, max.     6 4 kbyte       • Number of free cycle OBs     1: 08 1       • 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 of least atom OBs     8: 08 10-17       • Number of cycle interrupt OBs     9: 08 30-38       • Number of pycle interrupt OBs     9: 08 30-38       • Number of pycle Interrupt OBs     9: 08 40-47       • Number of atsrup OBs     9: 08 10-17       • Number of atsrup OBs     9: 08 10-17       • Number of pycle Interrupt OBs     9: 08 10-17       • Number of atsrup OBs     9: 08 10-112       • Number of atsrup OBs     9: 08 10-112       • Number of atsrup OBs     9: 08 10-112       • Number of asynchronous error OBs     2: 08 12, 1, 122       Number     2       • Outnotry, times and their retentivity     2       St counter     2       • Number of OB     2: 042       • Dissel     2: 010 2.7       • Outning range     0       - prosent     10 ms       • prosent     Yes       • Number     2: 048       • Number     2: 04		-
• 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	,	
• Number of time alarm OBs8; OB 10-17• Number of decise interrupt OBs4; OB 20-23• Number of process alarm OBs8; OB 40-47• Number of process alarm OBs3; OB 55-57• Number of astrup ODs2; OB 100, 102• Number of astrup ODs2; OB 100, 102• Number of astrup ODs2; OB 100, 102• Number of asynchronous error OBs2; OB 100, 102• Number of asynchronous error OBs2; OB 100, 102• Number of synchronous error OBs2; OB 121, 122Nesting dept24• oper priority class24• oper priority class24• additional within an error OB2Counters, times and their rotentivity2048Strouwer2 00 2 7• Number2 048• Retentivity10 2 7• Counters, times and their rotentivity99• IEC counter99• presentYes• presentYes• present2 048• Number2 048• Number2 048• Number2 048• presentYes• presentYes• SPBSPB• Number2 048• entrivity10 ms• presentYes• presentYes• presentYes• presentYes• present990 s• Lice timet10 ms• present10 ms• presentYes• presentYes• presentYes• presen		
• 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		
• Number of process alarm OBs8; OB 40-47• Number of strutp OBs3; OB 55-57• Number of strutp OBs2; OB 100, 102• Number of strutp OBs2; OB 100, 102• Number of strutp OBs2; OB 121, 122Nesting depth• per priority class24• additional within an error OB2Counters, timers and their retentivity2S7 counter• Number2 048RetentivityYes- adjustableYes- preset20 to 2 7Counters0- upper limit999IEC counterVes• NumberSFB• Number2 048Retentivity999IEC counter10 mis negativity• presentYes• presentYes• Number2 048Retentivity999IEC counter10 mis negativity• Number2 048Retentivity999IEC counter999• presentYes• presentYes• presentYes• present10 mis retentive• presetNumber• presetNumber• preset990 s• presetNumber• presetNumber• presetNumber• presetNumber• preset990 s• presetSFB• presetNumber• presetNumber• preset990 s• preset <td></td> <td></td>		
• Number of DPV1 alarm OBs3; OB 55-57• Number of strup ODs2; OB 100, 102• Number of asynchronous error OBs9; OB 80-88• Number of synchronous error OBs2; OB 121, 122Nesting depth24• additional within an error OB2Counters, timers and their retentilvity2S7 counter2 048• Number2 048Retentivity		
• Number of startup OBs2; OB 100, 102• Number of stynchronous error OBs9; OB 80-88• Number of stynchronous error OBs2; OB 121, 122• Nesting depth• per priority class24• additional within an error OB2 <b>Counters:</b> functions and their retentivity2• Number2 048Retentivity- adjustableYes- preset2 0 to 2 7Counter0- upper limit999IEC counterYes• Number2 048Retentivity- preset2 0 to 2 7Counter0- upper limit999IEC counterYes• presentYes• Number2 048Retentivity- onver limit0- upper limit999IEC counterYes• number2 048Retentivity- adjustableYes- nower limit2 048Retentivity- upper limit999IEC counterYes- notestableNo times retentiveTime range- lower limit10 ms- upper limit990 sIEC timerYes• presentYes• TypeSFB• NumberUnlimited (limited only by RAM capacity)Data areas and their retentivityYes• Stat areas and their retentivity		
• 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     2       Counters, timers and their retentivity     2       S7 counter     2 048       Retentivity     2 048       - adjustable     2 048       - preset     2 0 16 2 7       Counting range     -       - lower limit     0       - preset     2 16 2 7       Counting range     -       - lower limit     99 9       EEC counter     -       • present     Yes       • Number     SFB       • Number     Unimited (limited only by RAM capacity)       S7 times     -       - preset     2 048       Retentivity     -       - adjustable     Yes       - number     2 048       Retentivity     -       - preset     No times retentive       - number     2 048       Retentivity     -       - adjustable     -       - preset     No times retentive       - inver limit     9 990 s       EC counter     -       - lower limit     9 990 s		
• 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
IEC counter         • present       Yes         • Type       SFB         • Number       Unlimited (limited only by RAM capacity)         S7 times       2 048         Retentivity       2 048         — adjustable       Yes         — preset       No times retentive         Time range       -         — lower limit       10 ms         — upper limit       9 990 s         IEC timer       Yes         • present       Yes         • Type       SFB         • Number       Unlimited (limited only by RAM capacity)		
• presentYes• TypeSFB• NumberUnlimited (limited only by RAM capacity)S7 times2 048• Number2 048Retentivity- adjustable- adjustableYes- presetNo times retentiveTime range10 ms- upper limit9 90 sIEC timerYes• presentYes• presentSFB• NumberUnlimited (limited only by RAM capacity)Data areas and their retentivityUnlimited (limited only by RAM capacity)		
• TypeSFB• NumberUnlimited (limited only by RAM capacity)S7 times• Number2 048Retentivity- adjustableYes- presetNo times retentiveTime range- lower limit10 ms- upper limit990 sIEC timer• presentYes• presentSFB• NumberUnlimited (limited only by RAM capacity)Data areas and their retentivity		Yes
• Number       Unlimited (limited only by RAM capacity)         \$7 times       2 048         • Number       2 048         Retentivity       - adjustable         - adjustable       Yes         - preset       No times retentive         Time range       -         - lower limit       10 ms         - upper limit       9 990 s         IEC timer       Yes         • Type       SFB         • Number       Unlimited (limited only by RAM capacity)		
S7 times       2 048         Retentivity       - adjustable         - adjustable       Yes         - preset       No times retentive         Time range       -         - lower limit       10 ms         - upper limit       9 990 s         IEC timer       Yes         • present       Yes         • Type       SFB         • Number       Unlimited (limited only by RAM capacity)		
• Number       2 048         Retentivity       -         - adjustable       Yes         - preset       No times retentive         Time range       -         - lower limit       10 ms         - upper limit       9 990 s         IEC timer       -         • present       Yes         • Type       SFB         • Number       Unlimited (limited only by RAM capacity)		
adjustable     Yes       preset     No times retentive       Time range     -       lower limit     10 ms       upper limit     9 990 s       IEC timer     -       • present     Yes       • Type     SFB       • Number     Unlimited (limited only by RAM capacity)		2 048
preset     No times retentive       Time range     10 ms       lower limit     9 990 s       upper limit     9 990 s       IEC timer     Yes       • present     Yes       • Type     SFB       • Number     Unlimited (limited only by RAM capacity)	Retentivity	
Time range         - lower limit       10 ms         - upper limit       9 990 s         IEC timer         • present       Yes         • Type       SFB         • Number       Unlimited (limited only by RAM capacity)	— adjustable	Yes
- lower limit     10 ms       - upper limit     9 990 s       IEC timer        • present     Yes       • Type     SFB       • Number     Unlimited (limited only by RAM capacity)	-	No times retentive
upper limit     9 990 s       IEC timer       • present     Yes       • Type     SFB       • Number     Unlimited only by RAM capacity)	Time range	
IEC timer         • present       Yes         • Type       SFB         • Number       Unlimited (limited only by RAM capacity)         Data areas and their retentivity	-	10 ms
• present     Yes       • Type     SFB       • Number     Unlimited (limited only by RAM capacity)	— upper limit	9 990 s
• Type     SFB       • Number     Unlimited (limited only by RAM capacity)       Data areas and their retentivity     Image: Comparison of	IEC timer	
Number Unlimited (limited only by RAM capacity) Data areas and their retentivity	• present	Yes
Data areas and their retentivity	• Туре	SFB
	Number	Unlimited (limited only by RAM capacity)
Retentive data area (incl. timers, counters, flags), max. Total working and load memory (with backup battery)	Data areas and their retentivity	
	Retentive data area (incl. timers, counters, flags), max.	Total working and load memory (with backup battery)

Flag	
• Size, max.	16 384 byte
Retentivity available	Yes
	MB 0 to MB 15
Retentivity preset	
Number of clock memories	8; in 1 memory byte
Local data	C4 like to
• 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
<ul> <li>consistent data, max.</li> </ul>	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
— of which central	8 192
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
Hardware configuration Number of expansion units, max. connectable OPs Multicomputing Interface modules	21 95
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
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.	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 • Mixed mode IM + CP permitted	21 95 No 6 6 4; Single mode only 2 10; CP 443-5 Extended No
Hardware configuration          Number of expansion units, max.         connectable OPs         Multicomputing         Interface modules         • Number of connectable IMs (total), max.         • Number of connectable IM 460s, max.         • Number of connectable IM 463s, max.         • Number of DP masters         • integrated         • via CP         • Mixed mode IM + CP permitted         • via interface module	21 95 No 6 6 4; Single mode only 2 10; CP 443-5 Extended
Hardware configuration          Number of expansion units, max.         connectable OPs         Multicomputing         Interface modules         • Number of connectable IMs (total), max.         • Number of connectable IM 460s, max.         • Number of connectable IM 460s, max.         • Number of connectable IM 463s, max.         • Number of DP masters         • integrated         • via CP         • Mixed mode IM + CP permitted         • via interface module         Number of IO Controllers	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 460s, max.         • Number of connectable IM 463s, max.         • Number of DP masters         • integrated         • via CP         • Mixed mode IM + CP permitted         • via interface module         Number of IO Controllers         • integrated	21 95 No 6 6 4; Single mode only 2 10; CP 443-5 Extended No 0
Hardware configuration          Number of expansion units, max.         connectable OPs         Multicomputing         Interface modules         • Number of connectable IMs (total), max.         • Number of connectable IM 460s, max.         • Number of connectable IM 460s, max.         • Number of connectable IM 463s, max.         • Number of DP masters         • integrated         • via CP         • Mixed mode IM + CP permitted         • via interface module         Number of IO Controllers	21 95 No 6 6 4; Single mode only 2 10; CP 443-5 Extended No 0
Hardware configuration          Number of expansion units, max.         connectable OPs         Multicomputing         Interface modules         • Number of connectable IMs (total), max.         • Number of connectable IM 460s, max.         • Number of connectable IM 460s, max.         • Number of connectable IM 463s, max.         • Number of DP masters         • integrated         • via CP         • Mixed mode IM + CP permitted         • via interface module         Number of IO Controllers         • integrated	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 DP masters         • integrated         • via CP         • Mixed mode IM + CP permitted         • via interface module         Number 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 DP masters         • integrated         • via CP         • Mixed mode IM + CP permitted         • via interface module         Number of IO Controllers         • integrated         • via CP         Number of IO Controllers         • integrated         • via CP         Number of IO Controllers         • integrated         • via CP         • Number of operable FMs and CPs (recommended)	21 95 No 6 6 4; Single mode only 2 10; CP 443-5 Extended No 0 1 0 See manual Automation System S7-400H fault-tolerant systems. Limited by
Hardware configuration          Number of expansion units, max.         connectable OPs         Multicomputing         Interface modules         • Number of connectable IMs (total), max.         • Number of connectable IM 460s, max.         • Number of connectable IM 463s, max.         • Number of DP masters         • integrated         • via CP         • Mixed mode IM + CP permitted         • via interface module         Number of IO Controllers         • integrated         • via CP         Number of operable FMs and CPs (recommended)         • FM         • CP, PtP         • PROFIBUS and Ethernet CPs	21         95         No         6         6         4; Single mode only         2         10; CP 443-5 Extended         No         0         1         0         See manual Automation System S7-400H fault-tolerant systems. Limited by number of slots and number of connections         See manual Automation System S7-400H fault-tolerant systems. Limited by
Hardware configuration          Number of expansion units, max.         connectable OPs         Multicomputing         Interface modules         • Number of connectable IMs (total), max.         • Number of connectable IM 460s, max.         • Number of connectable IM 463s, max.         • Number of connectable IM 463s, max.         • Number of DP masters         • integrated         • via CP         • Mixed mode IM + CP permitted         • via interface module         Number of IO Controllers         • integrated         • via CP         Number of IO Controllers         • integrated         • via CP         Number of IO Controllers         • integrated         • via CP         Number of operable FMs and CPs (recommended)         • FM         • CP, PtP         • PROFIBUS and Ethernet CPs         Slots	21         95         No         6         6         4; Single mode only         2         10; CP 443-5 Extended         No         0         5         95         No         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         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
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	21         95         No         6         6         4; Single mode only         2         10; CP 443-5 Extended         No         0         1         0         See manual Automation System S7-400H fault-tolerant systems. Limited by number of slots and number of connections         See manual Automation System S7-400H fault-tolerant systems. Limited by number of slots and number of connections         See manual Automation System S7-400H fault-tolerant systems. Limited by number of slots and number of connections         14; Of which max. 10 CP as DP master
Hardware configuration         Number of expansion units, max.         connectable OPs         Multicomputing         Interface modules         • Number of connectable IMs (total), max.         • Number of connectable IM 460s, max.         • Number of connectable IM 463s, max.         • Number of connectable IM 463s, max.         • Number of DP masters         • integrated         • via CP         • Mixed mode IM + CP permitted         • via interface module         Number of IO Controllers         • integrated         • via CP         Number of operable FMs and CPs (recommended)         • FM         • CP, PtP         • PROFIBUS and Ethernet CPs         Slots         • required slots         Time of day         Clock	21         95         No         6         6         4; Single mode only         2         10; CP 443-5 Extended         No         0         5         95         No         1         0         See manual Automation System S7-400H fault-tolerant systems. Limited by number of slots and number of connections         See manual Automation System S7-400H fault-tolerant systems. Limited by number of slots and number of connections         See manual Automation System S7-400H fault-tolerant systems. Limited by number of slots and number of connections         14; Of which max. 10 CP as DP master
Hardware configuration         Number of expansion units, max.         connectable OPs         Multicomputing         Interface modules         • Number of connectable IMs (total), max.         • Number of connectable IM 460s, max.         • Number of connectable IM 463s, max.         • Number of connectable IM 463s, max.         • Number of DP masters         • integrated         • via CP         • Mixed mode IM + CP permitted         • via interface module         Number of IO Controllers         • integrated         • via CP         Number of operable FMs and CPs (recommended)         • FM         • CP, PtP         • PROFIBUS and Ethernet CPs         Slots         • required slots         Time of day         Clock         • Hardware clock (real-time)	21         95         No         6         6         7         10; CP 443-5 Extended         No         0         1         0         See manual Automation System S7-400H fault-tolerant systems. Limited by number of slots and number of connections         See manual Automation System S7-400H fault-tolerant systems. Limited by number of slots and number of connections         See manual Automation System S7-400H fault-tolerant systems. Limited by number of slots and number of connections         14; Of which max. 10 CP as DP master         2         Yes
Hardware configuration         Number of expansion units, max.         connectable OPs         Multicomputing         Interface modules         • Number of connectable IMs (total), max.         • Number of connectable IM 460s, max.         • Number of connectable IM 463s, max.         • Number of connectable IM 463s, max.         • Number of DP masters         • integrated         • via CP         • Mixed mode IM + CP permitted         • via interface module         Number of IO Controllers         • integrated         • via CP         Number of IO Controllers         • integrated         • via CP         Number of operable FMs and CPs (recommended)         • FM         • CP, PtP         • PROFIBUS and Ethernet CPs         Slots         • required slots         Time of day         Clock         • Hardware clock (real-time)         • retentive and synchronizable	21         95         No         6         6         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         2         Yes         Yes         Yes         Yes         Yes         Yes
Hardware configuration         Number of expansion units, max.         connectable OPs         Multicomputing         Interface modules         • Number of connectable IMs (total), max.         • Number of connectable IM 460s, max.         • Number of connectable IM 463s, max.         • Number of connectable IM 463s, max.         • Number of DP masters         • integrated         • via CP         • Mixed mode IM + CP permitted         • via interface module         Number of IO Controllers         • integrated         • via CP         Number of operable FMs and CPs (recommended)         • FM         • CP, PtP         • PROFIBUS and Ethernet CPs         Slots         • required slots         Time of day         Clock         • Hardware clock (real-time)	21         95         No         6         6         7         10; CP 443-5 Extended         No         0         1         0         See manual Automation System S7-400H fault-tolerant systems. Limited by number of slots and number of connections         See manual Automation System S7-400H fault-tolerant systems. Limited by number of slots and number of connections         See manual Automation System S7-400H fault-tolerant systems. Limited by number of slots and number of connections         14; Of which max. 10 CP as DP master         2         Yes

• Deviation per day (unbuffered), max.	8.6 s; Power on
	6.6 S, POWEI OII
Operating hours counter  • Number	40
	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
<ul> <li>to DP, slave</li> </ul>	Yes
<ul> <li>in AS, master</li> </ul>	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
<ul> <li>Output current of the interface, max.</li> </ul>	150 mA
Protocols	
• MPI	Yes
PROFIBUS DP master	Yes
PROFIBUS DP slave	No
MPI	
Number of connections	44; If a diagnostics repeater is used on the line, the number of connection
	resources on the line is reduced by 1
<ul> <li>Transmission rate, max.</li> </ul>	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.	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
<ul> <li>Number of DP slaves, max.</li> </ul>	32
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
— Equidistance — Isochronous mode	No
— SYNC/FREEZE	No
	INU

Activation/deactivation of DP slaves	No
<ul> <li>— Direct data exchange (slave-to-slave communication)</li> </ul>	No
— DPV1	Yes
Address area	
— Inputs, max.	2 kbyte
- Outputs, max.	2 kbyte
User data per DP slave	
— User data per DP slave, max.	244 byte
— Inputs, max.	244 byte
- Outputs, max.	244 byte
— Slots, max.	244
— per slot, max.	128 byte
PROFIBUS DP slave	
Number of connections	No configuration of CPU as DP slave
2. Interface	
Interface type	PROFINET
Isolated	Yes
automatic detection of transmission rate	Yes; Autosensing
Autonegotiation	Yes
Autocrossing	Yes
Change of IP address at runtime, supported	No
Interface types	
RJ 45 (Ethernet)	Yes
Number of ports	2
integrated switch	Yes
Protocols	
PROFINET IO Controller	Yes
PROFINET IO Device	No
PROFINET CBA	No
PROFIBUS DP master	No
PROFIBUS DP slave	No
Open IE communication	Yes
Web server	No
Point-to-point connection	No
Media redundancy	Yes
PROFINET IO Controller	100
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
<ul> <li>Activation/deactivation of IO Devices</li> </ul>	No
- IO Devices changing during operation (partner	No
ports), supported	
<ul> <li>— Device replacement without swap medium</li> </ul>	Yes
— Send cycles	250 μs, 500 μs, 1 ms, 2 ms, 4 ms
— Updating time	250 $\mu s$ to 512 ms, minimum value depends on the number of configured user
	data and the configured single or redundant mode
Address area	
— Inputs, max.	8 kbyte
— Outputs, max.	8 kbyte
— User data consistency, max.	1 024 byte
Open IE communication	24
Number of connections, max.	94
<ul> <li>Local port numbers used at the system end</li> </ul>	0, 20, 21, 25, 102, 135, 161, 34962, 34963, 34964, 65532, 65533, 65534, 65535

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

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

Single sten	Yes
Single step	Yes 16
Number of breakpoints Status/control	
	Vac: Up to 16 variable tables
<ul><li>Status/control variable</li><li>Variables</li></ul>	Yes; Up to 16 variable tables
	Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters
Number of variables, max.	70
Forcing	V
• Forcing	Yes
Forcing, variables	Inputs/outputs, bit memories, distributed I/Os
Number of variables, max.	512
Diagnostic buffer	V
• present	Yes
Number of entries, max.	3 200
— adjustable	Yes
— preset	120
Service data	N.
can be read out	Yes
EMC	
Emission of radio interference acc. to EN 55 011	N .
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
<ul> <li>Access to consistent data in process image</li> </ul>	Yes
<ul> <li>System functions (SFC)</li> </ul>	see instruction list
<ul> <li>System function blocks (SFB)</li> </ul>	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	SFC / header
- 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	
<ul> <li>User program protection/password protection</li> </ul>	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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