

# SIEMENS

## Product data sheet

**6ES7414-4HM14-0AB0**


SIMATIC S7-400H,  
CPU 414H CENTRAL UNIT FOR S7-400H AND S7-400F/FH,  
4 INTERFACES: 1 MPI/DP,  
1 DP AND 2 FOR SYNC MODULES,  
2.8 MB MEMORY (1.4 MB DATA/1.4 MB CODE)

General information	
Hardware product version	1
Firmware version	V4.5
Engineering with	
Programming package	STEP7 V 5.3 SP2 or higher with HW update
CiR - Configuration in RUN	
CiR synchronization time, basic load	100 ms
CiR synchronization time, time per I/O slave	25 µs
Supply voltage	
24 V DC	No ; Power supply via system power supply
Input current	
from backplane bus 5 V DC, typ.	1.4 A
from backplane bus 5 V DC, max.	1.7 A
from backplane bus 24 V DC, max.	150 mA ; Per DP interface
from interface 5 V DC, max.	90 mA ; At each DP interface

Power losses	
Power loss, typ.	6 W
Backup battery	
Battery operation	
Backup current, typ.	190 $\mu$ A ; Valid up to 40°C
Backup current, max.	660 $\mu$ A
Backup time, max.	Dealt with in the module data manual with the secondary conditions and the factors of influence
Feeding of external backup voltage to CPU	5 to 15 VDC
Feeding of external backup voltage to CPU	5 to 15 VDC
Memory	
Work memory	
integrated	2.8 Mbyte
integrated (for program)	1.4 Mbyte
integrated (for data)	1.4 Mbyte
expandable	No
Load memory	
expandable FEPRM	Yes
expandable FEPRM, max.	64 Mbyte
integrated RAM, max.	256 kbyte
expandable RAM	Yes
expandable RAM, max.	64 Mbyte
Backup	
present	Yes
with battery	Yes ; all data
without battery	No
CPU processing times	
for bit operations, min.	0.045 $\mu$ s
for word operations, min.	0.045 $\mu$ s
for fixed point arithmetic, min.	0.045 $\mu$ s
for floating point arithmetic, min.	0.135 $\mu$ s
CPU-blocks	
DB	
Number, max.	4095 ; Number range: 1 to 4095

Size, max.	64 kbyte
<b>FB</b>	
Number, max.	2048 ; Number range: 0 to 2047
Size, max.	64 kbyte
<b>FC</b>	
Number, max.	2048 ; Number range: 0 to 2047
Size, max.	64 kbyte
<b>OB</b>	
Size, max.	64 kbyte
Number of time alarm OBs	4
Number of delay alarm OBs	4
Number of time interrupt OBs	4
Number of process alarm OBs	4
<b>Nesting depth</b>	
per priority class	24
additional within an error OB	1
<b>Counters, timers and their retentivity</b>	
<b>S7 counter</b>	
Number	2048
<b>Retentivity</b>	
adjustable	Yes
lower limit	0
upper limit	2047
preset	Z 0 to Z 7
<b>Counting range</b>	
lower limit	0
upper limit	999
<b>IEC counter</b>	
present	Yes
Type	SFB
<b>S7 times</b>	
Number	2048
<b>Retentivity</b>	

adjustable	Yes
lower limit	0
upper limit	2047
preset	No times retentive
<b>Time range</b>	
lower limit	10 ms
upper limit	9990 s
<b>IEC timer</b>	
present	Yes
Type	SFB
<b>Data areas and their retentivity</b>	
retentive data area, total	Total working and load memory (with backup battery)
<b>Flag</b>	
Number, max.	8 kbyte
Retentivity available	Yes
Retentivity preset	MB 0 to MB 15
Number of clock memories	8 ; (in 1 memory byte)
<b>Data blocks</b>	
Number, max.	4095 ; Number range: 1 to 4095
Size, max.	64 kbyte
<b>Local data</b>	
adjustable, max.	16 kbyte
preset	8 kbyte
<b>Address area</b>	
<b>I/O address area</b>	
Inputs	8 kbyte
Outputs	8 kbyte
<b>of which, distributed</b>	
MPI/DP interface, inputs	2 kbyte
MPI/DP interface, outputs	2 kbyte
DP interface, inputs	6 kbyte
DP interface, outputs	6 kbyte
<b>Process image</b>	

Inputs, adjustable	8 kbyte
Outputs, adjustable	8 kbyte
Inputs, default	256 byte
Outputs, default	256 byte
consistent data, max.	244 byte
Access to consistent data in process image	Yes
<b>Subprocess images</b>	
Number of subprocess images, max.	15
<b>Digital channels</b>	
Inputs	65536
Outputs	65536
Inputs, of which central	65536
Outputs, of which central	65536
<b>Analog channels</b>	
Inputs	4096
Outputs	4096
Inputs, of which central	4096
Outputs, of which central	4096
<b>Hardware configuration</b>	
Expansion devices, max.	21
connectable OPs	31 without message processing, 8 with message processing
Multicomputing	No
<b>Interface modules</b>	
Number of connectable IMs (total), max.	6
Number of connectable IM 460s, max.	6
Number of connectable IM 463s, max.	4 ; Single mode only
<b>Number of DP masters</b>	
integrated	2
via CP	10
Mixed mode IM + CP permitted	No
<b>Number of operable FMs and CPs (recommended)</b>	

FM	See manual Automation System S7-400H fault-tolerant systems. Limited by number of slots and number of connections
CP, point-to-point	See manual Automation System S7-400H fault-tolerant systems. Limited by number of slots and number of connections
PROFIBUS and Ethernet CPs	14 ; Of which max. 10 CP as DP master
<b>Time of day</b>	
<b>Clock</b>	
Hardware clock (real-time clock)	Yes
battery-backed and synchronizable	Yes
Resolution	1 ms
Deviation per day (buffered), max.	1.7 ms ; Power off
Deviation per day (unbuffered) max.	8.6 ms ; Power on
<b>Operating hours counter</b>	
Number	8
Number/Number range	0 to 7
Range of values	0 to 32767 hours
Granularity	1 hour
retentive	Yes
<b>Clock synchronization</b>	
supported	Yes
to MPI, master	Yes
to MPI, slave	Yes
to DP, master	Yes
to DP, slave	Yes
in AS, master	Yes
in AS, slave	Yes
<b>Time difference in system when synchronizing via</b>	
MPI, max.	200 ms
<b>Digital outputs</b>	
integrated channels (DO)	0
<b>Analog inputs</b>	
Integrated channels (AI)	0

Interfaces	
Number of parallel interfaces	0
Number of 20 mA interfaces (TTY)	0
Number of RS 232 interfaces	0
Number of RS 422 interfaces	0
Number of other interfaces	0
1st interface	
Type of interface	integrated
Physics	RS 485 / PROFIBUS + MPI
Isolated	Yes
Power supply to interface (15 to 30 V DC), max.	150 mA
Number of connection resources	MPI: 32, DP: 32
Functionality	
MPI	Yes
DP master	Yes
DP slave	No
MPI	
Number of connections	32
Services	
PG/OP communication	Yes
Routing	Yes
Global data communication	No
S7 basic communication	No
S7 communication	Yes
Transmission rate, max.	12 Mbit/s
DP master	
Number of connections, max.	16
Services	
PG/OP communication	Yes
Routing	Yes
Global data communication	No
S7 basic communication	No
S7 communication	Yes

Equidistance mode support	No
SYNC/FREEZE	No
Activation/deactivation of DP slaves	No
Direct data exchange (slave-to-slave communication)	No
Transmission rate, max.	12 Mbit/s
Number of DP slaves, max.	32
<b>Address area</b>	
Inputs, max.	2 kbyte
Outputs, max.	2 kbyte
<b>User data per DP slave</b>	
User data per DP slave, max.	244 byte
Inputs, max.	244 byte
Outputs, max.	244 byte
Slots, max.	244
per slot, max.	128 byte
<b>2nd interface</b>	
Type of interface	integrated
Physics	RS 485 / PROFIBUS + MPI
Isolated	Yes
Power supply to interface (15 to 30 V DC), max.	150 mA
<b>Media redundancy</b>	
Number of connection resources	16
<b>Functionality</b>	
DP master	Yes
DP slave	No
<b>DP master</b>	
Number of connections, max.	16
<b>Services</b>	
PG/OP communication	Yes
Routing	Yes
Global data communication	No
S7 basic communication	No
S7 communication	Yes



Equidistance mode support	No
SYNC/FREEZE	No
Activation/deactivation of DP slaves	No
Direct data exchange (slave-to-slave communication)	No
Transmission rate, max.	12 Mbit/s
Number of DP slaves, max.	96
<b>Address area</b>	
Inputs, max.	6 kbyte
Outputs, max.	6 kbyte
<b>User data per DP slave</b>	
User data per DP slave, max.	244 byte
Inputs, max.	244 byte
Outputs, max.	244 byte
Slots, max.	244
per slot, max.	128 byte
<b>3rd interface</b>	
Type of interface	Pluggable synchronization submodule (FO)
Plug-in interface modules	Synchronization submodule IF 960 6ES7 960-1AA04-0XA0 or 6ES7 960-1AB04-0XA0
<b>4th interface</b>	
Type of interface	Pluggable synchronization submodule (FO)
Plug-in interface modules	Synchronization submodule IF 960 6ES7 960-1AA04-0XA0 or 6ES7 960-1AB04-0XA0
<b>Communication functions</b>	
PG/OP communication	Yes
Number of connectable OPs without message processing	31
Number of connectable OPs with message processing	8
<b>Global data communication</b>	
supported	No
<b>S7 basic communication</b>	
supported	No
<b>S7 communication</b>	

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
<b>S5-compatible communication</b>	
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.	24/24
<b>Standard communication (FMS)</b>	
supported	Yes ; Via CP and loadable FB
<b>Number of connections</b>	
overall	32
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
<b>S7 message functions</b>	
Number of login stations for message functions, max.	8

Symbol-related messages	No
<b>Number of additional values</b>	
Block related messages	Yes
simultaneously active Alarm-S blocks, max.	100
Alarm 8-blocks	Yes
Number of instances for alarm 8 and S7 communication blocks, max.	1200
preset, max.	900
Process control messages	Yes
Number of archives that can log on simultaneously (SFB 37 AR_SEND)	16
<b>Test commissioning functions</b>	
<b>Status/control</b>	
Status/control variable	Yes
Variables	Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters
Number of variables, max.	70
<b>Forcing</b>	
Forcing	Yes
Force, variables	Inputs/outputs, bit memories, distributed I/Os
Number of variables, max.	256
Status block	Yes
Single step	Yes
Number of breakpoints	4
<b>Diagnostic buffer</b>	
present	Yes
Number of entries, max.	3200
adjustable	Yes
preset	120
<b>Configuration</b>	
<b>Configuration software</b>	
STEP 7	Yes
<b>programming</b>	
<b>Programming language</b>	

LAD	Yes
FBD	Yes
STL	Yes
SCL	Yes
CFC	Yes
GRAPH	Yes
HiGraph®	Yes
Command set	see instruction list
Nesting levels	8
Access to consistent data in process image	Yes
System functions (SFC)	see instruction list
<b>Number of simultaneously active SFCs</b>	
RD_REC	8
WR_REC	8
WR_PARM	8
PARM_MOD	1
WR_DPARM	2
DPNRM_DG	8
RDSYSST	8
DP_TOPOL	1
System function blocks (SFB)	see instruction list
<b>Number of simultaneously active SFBs</b>	
RD_REC	8
WR_REC	8
<b>Know-how protection</b>	
User program protection/password protection	Yes
<b>Dimensions</b>	
Width	50 mm
Height	290 mm
Depth	219 mm
Required slots	2
<b>Weight</b>	
Weight, approx.	995 g

Status

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