SIEMENS

Data sheet

6ES7412-3HJ14-0AB0



************ Replacement part ********* SIMATIC S7-400H, CPU 412-3H Central processing unit for S7-400H and S7-400F/FH, 3 interfaces: 1 MPI/DP and 2 for sync modules, 768 KB memory (256 KB data/512 KB program)

General information	
Product type designation	CPU 412-3H PN/DP
HW functional status	1
Firmware version	V4.5
Product function	
 Isochronous mode 	No
Engineering with	
 Programming package 	STEP 7 V5.3 SP2 or higher with HW update
CiR - Configuration in RUN	
CiR synchronization time, basic load	150 ms
CiR synchronization time, time per I/O byte	40 μs
Supply voltage	
Rated value (DC)	Power supply via system power supply
Input current	
from backplane bus 5 V DC, typ.	1.2 A
from backplane bus 5 V DC, max.	1.5 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 loss	
Power loss, typ.	5.5 W
Memory	
Type of memory	RAM
Work memory	
• integrated	768 kbyte
integrated (for program)	512 kbyte
integrated (for data)	256 kbyte
expandable	No
Load memory	
 expandable FEPROM 	Yes
 expandable FEPROM, 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
Battery	
Backup battery	
Backup current, typ.	190 μA; Valid up to 40°C

- Deckup current may	CCOA
Backup current, max. Realtup time, max.	660 µA
Backup time, max.	Dealt with in the module data manual with the secondary conditions and the factors of influence
 Feeding of external backup voltage to CPU 	5 V DC to 15 V DC
CPU processing times	
for bit operations, typ.	0.075 μs
for word operations, typ.	0.075 μs
for fixed point arithmetic, typ.	0.075 µs
for floating point arithmetic, typ.	0.225 μs
CPU-blocks	
DB	
Number, max.	4 095; Number range: 1 to 4095
• Size, max.	64 kbyte
FB	V. 1.6)1.6
Number, max.	2 048; Number range: 0 to 2047
• Size, max.	64 kbyte
FC	of horic
• Number, max.	2 048; Number range: 0 to 2047
• Size, max.	64 kbyte
• Size, Illax.	ot ruyte
• Size, max.	64 kbyte
Number of time alarm OBs	4
Number of delay alarm OBs Number of evelic interrupt OBs	4
Number of cyclic interrupt OBs	4
Number of process alarm OBs	4
Nesting depth	04
per priority class	24
additional within an error OB	1
Counters, timers and their retentivity	
S7 counter	
• Number	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
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
• Type	SFB
Data areas and their retentivity	
Retentive data area (incl. timers, counters, flags), max.	Total working and load memory (with backup battery)
Flag	
• Size, max.	8 kbyte
Retentivity available	Yes
Retentivity available Retentivity preset	MB 0 to MB 15
Number of clock memories	8; in 1 memory byte
Local data	o, in 1 montary byte
	16 khyta
adjustable, max. preset	16 kbyte
• preset	8 kbyte

Address area	
I/O address area	
• Inputs	8 kbyte
Outputs	8 kbyte
Process image	
Inputs, adjustable	8 kbyte
Outputs, adjustable	8 kbyte
 Inputs, default 	256 byte
Outputs, default	256 byte
consistent data, max.	244 byte
 Access to consistent data in process image 	Yes
Subprocess images	
Number of subprocess images, max.	15
Digital channels	
• Inputs	65 536
— of which central	65 536
Outputs	65 536
— of which central	65 536
Analog channels	
• Inputs	4 096
— of which central	4 096
Outputs	4 096
— of which central	4 096
Hardware configuration	
Number of expansion units, max.	21
connectable OPs	15 without message processing, 8 with message processing
Multicomputing	No
Interface modules	
 Number of connectable IMs (total), max. 	6
 Number of connectable IM 460s, max. 	6
 Number of connectable IM 463s, max. 	4; Single mode only
Number of DP masters	
• integrated	1
• via CP	10
 Mixed mode IM + CP permitted 	No
via interface module	0
Number of operable FMs and CPs (recommended)	
• FM	See manual Automation System S7-400H fault-tolerant systems. Limited by
00.00	number of slots and number of connections
• CP, PtP	See manual Automation System S7-400H fault-tolerant systems. Limited by number of slots and number of connections
PROFIBUS and Ethernet CPs	14; Of which max. 10 CP as DP master
Slots	, o
• required slots	2
Time of day	
Clock	
Hardware clock (real-time)	Yes
retentive and synchronizable	Yes
Resolution	1 ms
Deviation per day (buffered), max.	1.7 s; Power off
Deviation per day (unbuffered), max.	8.6 s; Power on
Operating hours counter	
Number	8
Number/Number range	0 to 7
Range of values	0 to 32767 hours
Granularity	1 h
• retentive	Yes
Clock synchronization	
• supported	Yes
- 00000.000	
to MPI, master	Yes
to MPI, masterto MPI, slave	Yes Yes

* In DP, nater * In DP, store * In AS, store * In In AS, store * In AS, store * In In AS, store * In In In AS, store * In		
** in AS, dative ** in	• to DP, master	Yes
MPI, max. 200 ms 1MPI, max. 200 ms	 to DP, slave 	Yes
Miles	• in AS, master	Yes
Number of RS 485 interfaces		Yes
Interfaces	Time difference in system when synchronizing via	
Number of RS 485 Interfaces		200 ms
Number of other interfaces Optical interface Ves	Interfaces	
Cyclical interface No MPIPROFIBUS DP		
Interface MPEPROFIBUS DP		
Interface type Interface types Interface type Interface type Interface type Interface type Interface Interfac		No
Isolated interface byces Interface Interface byces In		
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Protocols		
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Number of connections 16		
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Interface type Pluggable synchronization submodule (FO)	Plug-in interface modules	Synchronization submodule IF 960 6ES7960-1AA04-0XA0
	4. Interface	
Plug-in interface modules Synchronization submodule IF 960 6ES7960-1AA04-0XA0	Interface type	Pluggable synchronization submodule (FO)
	Plug-in interface modules	Synchronization submodule IF 960 6ES7960-1AA04-0XA0

Protocols	
SIMATIC communication	
S7 routing	Yes
Isochronous mode	
Equidistance	No
communication functions / header	
PG/OP communication	Yes
Number of connectable OPs without message processing	15
Number of connectable OPs with message processing	8
Global data communication	
• supported	No
S7 basic communication	
communication function / S7 basic communication	No
S7 communication	
supported	Yes
• as server	Yes
• as client	Yes
User data per job, max.	64 kbyte
 User data per job (of which consistent), max. 	462 byte; 1 variable
S5 compatible communication	
• supported	Yes; (via CP max. 10 and FC AG_SEND and FC AG_RECV)
User data per job, max.	8 kbyte
User data per job (of which consistent), max.	240 byte
Number of simultaneous AG-SEND/AG-RECV orders per	24/24
CPU, max.	
Standard communication (FMS)	
• supported	Yes; Via CP and loadable FB
Number of connections	
• overall	16
 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.	8
Symbol-related messages	No
Program alarms	Yes
simultaneously active Alarm-S blocks, max.	100
Alarm 8-blocks	Yes
 Number of instances for alarm 8 and S7 communication blocks, max. 	600
• preset, max.	300
Process control messages	Yes
Number of archives that can log on simultaneously (SFB 37	16
AR_SEND)	
Test commissioning functions	
Status block	Yes
Single step	Yes
Number of breakpoints	4
Status/control	

- Chahua la amhra la rania bla	Vee
Status/control variable	Yes
Variables	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.	256
Diagnostic buffer	
• present	Yes
 Number of entries, max. 	3 200
— adjustable	Yes
— preset	120
configuration / header	
Configuration software	
• STEP 7	Yes
configuration / programming / header	
Command set	see instruction list
 Nesting levels 	8
 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	e 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	
— RDREC	8
— WRREC	8
Know-how protection	
User program protection/password protection	Yes
Dimensions	
Width	50 mm
Height	290 mm
Depth	219 mm
Weights	219 11111
	000 a
Weight, approx.	990 g

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