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Data sheet 6ES7414-4HJ04-0AB0



********** Replacement part ********* SIMATIC S7-400H, CPU 414H Central processing unit for S7-400H and S7-400F/FH, 4 interfaces: 1 MPI/DP, 1 DP and 2 for sync modules, 1.4 MB memory (700 KB data/700 KB program)

General information	
Product type designation	CPU 414-4H
Supply voltage	
Rated value (DC)	Power supply via system power supply
Input current	
from backplane bus 5 V DC, typ.	1 800 A
from backplane bus 5 V DC, max.	2 A
Power loss	
Power loss, typ.	4.5 W
Memory	
Type of memory	RAM
Work memory	
● integrated (for program)	700 kbyte
● integrated (for data)	700 kbyte
● expandable	No
Load memory	
● expandable FEPROM	Yes; with Memory Card (FLASH)
● expandable FEPROM, max.	64 Mbyte
● integrated RAM, max.	256 kbyte
● expandable RAM	Yes; with Memory Card (RAM)
● expandable RAM, max.	64 Mbyte
Backup	
● present	Yes
● with battery	Yes; all data
● without battery	No
Battery	
Backup battery	
● Backup current, typ.	550 µA
● Backup current, max.	1 530 µA
● Feeding of external backup voltage to CPU	5 V DC to 15 V DC
CPU processing times	
for bit operations, typ.	0.06 µs
for word operations, typ.	0.06 µs
for fixed point arithmetic, typ.	0.06 µs
for floating point arithmetic, typ.	0.18 µs
CPU-blocks	
DB	
● Number, max.	4 095; DB 0 reserved
● Size, max.	64 kbyte
FB	

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● Number, max.	2 048
● Size, max.	64 kbyte
FC	
● Number, max.	2 048
● Size, max.	64 kbyte
OB	
● Number, max.	see instruction list
● Size, max.	64 kbyte
Nesting depth	
● per priority class	24
Counters, timers and their retentivity	
S7 counter	
● Number	2 048
Retentivity	
— adjustable	Yes
— lower limit	0
— upper limit	2 047
— preset	Z 0 to Z 7
Counting range	
— lower limit	0
— upper limit	999
IEC counter	
● present	Yes
● Type	SFB
S7 times	
● Number	2 048
Time range	
— lower limit	10 ms
— upper limit	9 990 s
IEC timer	
● present	Yes
● Type	SFB
Data areas and their retentivity	
Flag	
● Size, max.	8 kbyte
● Retentivity available	Yes; From MB 0 to MB 8 191
● Retentivity preset	MB 0 to MB 15
Address area	
I/O address area	
● Inputs	8 kbyte
● Outputs	8 kbyte
Process image	
● Inputs, adjustable	8 kbyte
● Outputs, adjustable	8 kbyte
● Inputs, default	1 024 byte
● Outputs, default	1 024 byte
Subprocess images	
● Number of subprocess images, max.	8
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
Multicomputing	No
Interface modules	
● Number of connectable IMs (total), max.	6

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● Number of connectable IM 460s, max.	6
● Number of connectable IM 463s, max.	6; IM 463-2
Number of DP masters	
● integrated	2
● via CP	10
● via IM 467	0
● Mixed mode IM + CP permitted	No; IM 467 cannot be used jointly with CP 443-5 Ext.
● via interface module	0
Number of operable FMs and CPs (recommended)	
● FM	32; Limited by number of slots and number of connections
● CP, PtP	32; Limited by number of slots and number of connections
● CP, LAN	32; Limited by number of slots and number of connections
Slots	
● required slots	2
Time of day	
Clock	
● Hardware clock (real-time)	Yes
● retentive and synchronizable	Yes
Operating hours counter	
● Number	8
Clock synchronization	
● supported	Yes
1. Interface	
Interface type	MPI/PROFIBUS DP
Isolated	Yes
Interface types	
● RS 485	Yes
Protocols	
● MPI	Yes; Default setting
● PROFIBUS DP master	Yes
● PROFIBUS DP slave	No
MPI	
● Number of connections	32
● Transmission rate, max.	12 Mbit/s
Services	
— PG/OP communication	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
● Transmission rate, max.	12 Mbit/s
● Number of DP slaves, max.	32; Number of slots, max. 512
Services	
— PG/OP communication	Yes
— Global data communication	No
— S7 basic communication	No
— S7 communication	No
— S7 communication, as client	No
— S7 communication, as server	No
— Equidistance	No
— SYNC/FREEZE	No
— Activation/deactivation of DP slaves	Yes
— Direct data exchange (slave-to-slave communication)	No
Address area	
— Inputs, max.	2 kbyte
— Outputs, max.	2 kbyte
User data per DP slave	
— Inputs, max.	244 byte
— Outputs, max.	244 byte
— Slots, max.	244

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— per slot, max.	128 byte
2. Interface	
Interface type	PROFIBUS DP
Isolated	Yes
Interface types	
● RS 485	Yes
Protocols	
● PROFIBUS DP master	Yes; Default setting
● PROFIBUS DP slave	No
● Point-to-point connection	No
PROFIBUS DP master	
● Number of connections, max.	16
● Transmission rate, max.	12 Mbit/s
● Number of DP slaves, max.	96
Services	
— PG/OP communication	Yes
— Global data communication	No
— S7 basic communication	No
— S7 communication	No
— S7 communication, as client	No
— S7 communication, as server	No
— Equidistance	No
— SYNC/FREEZE	No
— Activation/deactivation of DP slaves	No
— Direct data exchange (slave-to-slave communication)	No
Address area	
— Inputs, max.	8 kbyte
— Outputs, max.	8 kbyte
User data per DP slave	
— Inputs, max.	244 byte
— Outputs, max.	244 byte
Protocols	
SIMATIC communication	
● S7 routing	Yes
communication functions / header	
PG/OP communication	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
S5 compatible communication	
● supported	Yes; via CP and loadable FC
● User data per job, max.	8 kbyte
Standard communication (FMS)	
● supported	Yes; Via CP and loadable FB
● User data per job, max.	Dependent on CP
Number of connections	
● 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

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● usable for routing	
— reserved for routing	0
— adjustable for routing, max.	0
S7 message functions	
Number of login stations for message functions, max.	8
Test commissioning functions	
Diagnostic buffer	
● present	Yes
● Number of entries, max.	3 200
— adjustable	Yes
— preset	120
configuration / header	
Configuration software	
● STEP 7	Yes; V5.0 SP2
configuration / programming / header	
Programming language	
— LAD	Yes
— FBD	Yes
— STL	Yes
— SCL	Yes
— CFC	Yes
— GRAPH	Yes
— HiGraph®	Yes
Know-how protection	
● User program protection/password protection	Yes
Dimensions	
Width	50 mm
Height	290 mm
Depth	219 mm
Weights	
Weight, approx.	1 070 g

last modified: 3/2/2021

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