

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)	Yes
<ul style="list-style-type: none"> • 24 V DC 	
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	
Work memory	
<ul style="list-style-type: none"> • integrated (for program) 	700 kbyte
<ul style="list-style-type: none"> • integrated (for data) 	700 kbyte
<ul style="list-style-type: none"> • expandable 	No
Load memory	
<ul style="list-style-type: none"> • expandable FEPR0M 	Yes; with Memory Card (FLASH)

• expandable FEPRAM, 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 μ A
• Backup current, max.	1 530 μ A
• Feeding of external backup voltage to CPU	5 V DC to 15 V DC
CPU processing times	
for bit operations, typ.	0.06 μ s
for word operations, typ.	0.06 μ s
for fixed point arithmetic, typ.	0.06 μ s
for floating point arithmetic, typ.	0.18 μ s
CPU-blocks	
DB	
• Number, max.	4 095; DB 0 reserved
• Size, max.	64 kbyte
FB	
• 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
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	
• Number, max.	8 kbyte
• Retentivity available	Yes; from MB 0 to MB 8191
• Retentivity preset	MB 0 to MB 15
Address area	
I/O address area	
• Inputs	8 kbyte
• Outputs	8 kbyte
of which distributed	
— MPI/DP interface, inputs	2 kbyte
— MPI/DP interface, outputs	2 kbyte
— DP interface, inputs	6 kbyte
— DP interface, outputs	6 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
• 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

Physics	RS 485 / PROFIBUS
Isolated	Yes
Functionality	
• 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
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
— per slot, max.	128 byte
2. Interface	
Physics	RS 485 / PROFIBUS
Isolated	Yes
Functionality	
• PROFIBUS DP master	Yes; Default setting
• PROFIBUS DP slave	No
• Point-to-point connection	No
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
Communication functions	
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
- 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

Configuration software

- STEP 7 Yes; V5.0 SP2

Programming

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: 04/06/2018