

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

<ul style="list-style-type: none"> <li>• expandable FEPRAM, max.</li> </ul>	64 Mbyte
<ul style="list-style-type: none"> <li>• integrated RAM, max.</li> </ul>	256 kbyte
<ul style="list-style-type: none"> <li>• expandable RAM</li> </ul>	Yes; with Memory Card (RAM)
<ul style="list-style-type: none"> <li>• expandable RAM, max.</li> </ul>	64 Mbyte
<b>Backup</b>	
<ul style="list-style-type: none"> <li>• present</li> </ul>	Yes
<ul style="list-style-type: none"> <li>• with battery</li> </ul>	Yes; all data
<ul style="list-style-type: none"> <li>• without battery</li> </ul>	No
<b>Battery</b>	
<b>Backup battery</b>	
<ul style="list-style-type: none"> <li>• Backup current, typ.</li> </ul>	550 $\mu$ A
<ul style="list-style-type: none"> <li>• Backup current, max.</li> </ul>	1 530 $\mu$ A
<ul style="list-style-type: none"> <li>• Feeding of external backup voltage to CPU</li> </ul>	5 V DC to 15 V DC
<b>CPU processing times</b>	
for bit operations, typ.	0.06 $\mu$ s
for word operations, typ.	0.06 $\mu$ s
for fixed point arithmetic, typ.	0.06 $\mu$ s
for floating point arithmetic, typ.	0.18 $\mu$ s
<b>CPU-blocks</b>	
<b>DB</b>	
<ul style="list-style-type: none"> <li>• Number, max.</li> </ul>	4 095; DB 0 reserved
<ul style="list-style-type: none"> <li>• Size, max.</li> </ul>	64 kbyte
<b>FB</b>	
<ul style="list-style-type: none"> <li>• Number, max.</li> </ul>	2 048
<ul style="list-style-type: none"> <li>• Size, max.</li> </ul>	64 kbyte
<b>FC</b>	
<ul style="list-style-type: none"> <li>• Number, max.</li> </ul>	2 048
<ul style="list-style-type: none"> <li>• Size, max.</li> </ul>	64 kbyte
<b>OB</b>	
<ul style="list-style-type: none"> <li>• Number, max.</li> </ul>	see instruction list
<ul style="list-style-type: none"> <li>• Size, max.</li> </ul>	64 kbyte
<b>Nesting depth</b>	
<ul style="list-style-type: none"> <li>• per priority class</li> </ul>	24
<b>Counters, timers and their retentivity</b>	
<b>S7 counter</b>	
<ul style="list-style-type: none"> <li>• Number</li> </ul>	2 048
<b>Retentivity</b>	
— adjustable	Yes
— lower limit	0
— upper limit	2 047

— 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	2 048
<b>Time range</b>	
— lower limit	10 ms
— upper limit	9 990 s
<b>IEC timer</b>	
• present	Yes
• Type	SFB
<b>Data areas and their retentivity</b>	
<b>Flag</b>	
• Number, max.	8 kbyte
• Retentivity available	Yes; From MB 0 to MB 8 191
• Retentivity preset	MB 0 to MB 15
<b>Address area</b>	
<b>I/O address area</b>	
• Inputs	8 kbyte
• Outputs	8 kbyte
<b>Process image</b>	
• Inputs, adjustable	8 kbyte
• Outputs, adjustable	8 kbyte
• Inputs, default	1 024 byte
• Outputs, default	1 024 byte
<b>Subprocess images</b>	
• Number of subprocess images, max.	8
<b>Digital channels</b>	
• Inputs	65 536
— of which central	65 536
• Outputs	65 536
— of which central	65 536
<b>Analog channels</b>	
• 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	
<ul style="list-style-type: none"> <li>Number of connectable IMs (total), max.</li> </ul>	6
<ul style="list-style-type: none"> <li>Number of connectable IM 460s, max.</li> </ul>	6
<ul style="list-style-type: none"> <li>Number of connectable IM 463s, max.</li> </ul>	6; IM 463-2
Number of DP masters	
<ul style="list-style-type: none"> <li>integrated</li> </ul>	2
<ul style="list-style-type: none"> <li>via CP</li> </ul>	10
<ul style="list-style-type: none"> <li>via IM 467</li> </ul>	0
<ul style="list-style-type: none"> <li>Mixed mode IM + CP permitted</li> </ul>	No; IM 467 cannot be used jointly with CP 443-5 Ext.
<ul style="list-style-type: none"> <li>via interface module</li> </ul>	0
Number of operable FMs and CPs (recommended)	
<ul style="list-style-type: none"> <li>FM</li> </ul>	32; Limited by number of slots and number of connections
<ul style="list-style-type: none"> <li>CP, PtP</li> </ul>	32; Limited by number of slots and number of connections
<ul style="list-style-type: none"> <li>CP, LAN</li> </ul>	32; Limited by number of slots and number of connections
Slots	
<ul style="list-style-type: none"> <li>required slots</li> </ul>	2
Time of day	
Clock	
<ul style="list-style-type: none"> <li>Hardware clock (real-time)</li> </ul>	Yes
<ul style="list-style-type: none"> <li>retentive and synchronizable</li> </ul>	Yes
Operating hours counter	
<ul style="list-style-type: none"> <li>Number</li> </ul>	8
Clock synchronization	
<ul style="list-style-type: none"> <li>supported</li> </ul>	Yes
1. Interface	
Physics	RS 485 / PROFIBUS
Isolated	Yes
Protocols	
<ul style="list-style-type: none"> <li>MPI</li> </ul>	Yes; Default setting
<ul style="list-style-type: none"> <li>PROFIBUS DP master</li> </ul>	Yes
<ul style="list-style-type: none"> <li>PROFIBUS DP slave</li> </ul>	No
MPI	
<ul style="list-style-type: none"> <li>Number of connections</li> </ul>	32
<ul style="list-style-type: none"> <li>Transmission rate, max.</li> </ul>	12 Mbit/s
Services	
<ul style="list-style-type: none"> <li>PG/OP communication</li> </ul>	Yes
<ul style="list-style-type: none"> <li>Global data communication</li> </ul>	No
<ul style="list-style-type: none"> <li>S7 basic communication</li> </ul>	No

— S7 communication	Yes
— S7 communication, as client	Yes
— S7 communication, as server	Yes
<b>PROFIBUS DP master</b>	
• Number of connections, max.	32
• Transmission rate, max.	12 Mbit/s
• Number of DP slaves, max.	32; Number of slots, max. 512
<b>Services</b>	
— 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
<b>Address area</b>	
— Inputs, max.	2 kbyte
— Outputs, max.	2 kbyte
<b>User data per DP slave</b>	
— Inputs, max.	244 byte
— Outputs, max.	244 byte
— Slots, max.	244
— per slot, max.	128 byte
<b>2. Interface</b>	
Physics	RS 485 / PROFIBUS
Isolated	Yes
<b>Protocols</b>	
• PROFIBUS DP master	Yes; Default setting
• PROFIBUS DP slave	No
• Point-to-point connection	No
<b>PROFIBUS DP master</b>	
• Number of connections, max.	16
• Transmission rate, max.	12 Mbit/s
• Number of DP slaves, max.	96
<b>Services</b>	
— 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
<b>Address area</b>	
— Inputs, max.	8 kbyte
— Outputs, max.	8 kbyte
<b>User data per DP slave</b>	
— Inputs, max.	244 byte
— Outputs, max.	244 byte
<b>Communication functions</b>	
PG/OP communication	Yes
<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
<b>S5 compatible communication</b>	
• supported	Yes; via CP and loadable FC
• User data per job, max.	8 kbyte
<b>Standard communication (FMS)</b>	
• supported	Yes; Via CP and loadable FB
• User data per job, max.	Dependent on CP
<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 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:** 08/19/2020