Fault-tolerant CPUs

Three CPUs are available for the SIMATIC S7-400H to suit different performance requirements.

Apart from high volumes, the H-CPUs are also characterized by high performance.

This is not only visible in a high processing speed, but also in a large communication output. Furthermore, an integrated memory type that detects and automatically corrects memory cells corrupted through external influences is also used. The H-CPUs now also permit a firmware update via the network.

Technical data: H CPUs			
CPU	CPU 412-3H [2]	CPU 414-4H [2]	CPU 417-4H [2]
Dimensions (mm)	50 x 290 x 219		
Slots	2		
Order No. group: 6ES7	412-3HJ.	414-4HM.	417-4HT.
Work memory			
Integrated	768 KB	2.8 MB	30 MB
Instructions	128 K	460 K	5 M
For program	512 KB	1.4 MB	15 MB
For data	256 KB	1.4 MB	15 MB
Processing times			
Bit operation	0.075 µs	0.045 µs	0.018 µs
Word operation	0.075 µs	0.045 µs	0.018 µs
Fixed-point operation	0.075 µs	0.045 µs	0.018 µs
Floating-point operation	0.225 µs	0.135 µs	0.054 µs
Bit memories, timers, counters			
Bit memory	8 KB		16 KB
S7 timers/counters	2 048 / 2 048		
IEC timers/counters	●		
Address ranges			
I/O	8 KB / 8 KB		16 KB / 16 KB
I/O process image	8 KB / 8 KB		16 KB / 16 KB
Digital channels	65 536 / 65 536		131 072 / 131 072
Analog channels	4 096 / 4 096		8 192 / 8 192
Interfaces			
DP	1 [1]	2 [1]	
Sync modules	2		

[1] One interface can be used either as a PROFIBUS DP or as MPI (Multipoint Interface)

[2] As SIPLUS extreme component also for corrosive atmosphere/condensation (for further details, see page 98 or **www.siemens.com/siplus-extreme**)

Sync modules

The three H CPUs are connected by means of fiber-optic cables and "Sync modules" that can be directly plugged into the CPU. This means that no slot in the rack is lost and that communication is extremely fast. The Sync modules can be replaced with the voltage applied.

There are two types of Sync modules:

• For Sync cables up to 10 m in length
• For Sync cables up to 10 km in length with the CPUs 414-4H or 417-4H for applications in which the subunits have to be set up at some distance