

SIMATIC S7, CPU 410SIS Safety Controller Central processing unit for S7-400F and S7-400FH, 5 interfaces: 2x PN, 1x DP, 2x for sync modules for using as spare part, without System Expansion Card



Figure similar

General information	
Product type designation	CPU 410SIS
HW functional status	1
Firmware version	V8.2
Design of PLC basic unit	With Conformal Coating (ISA-S71.04 severity level G1; G2; G3) and operating temperature to 70 °C
Product function	
• SysLog	Yes; via TCP; up to 4 receivers can be parameterized; buffer capacity max. 3 200 entries
• Field interface security	Yes
Engineering with	
• Programming package	SIMATIC SIS COMPACT V9.0 or higher
CiR - Configuration in RUN	
CiR synchronization time, basic load	60 ms
CiR synchronization time, time per I/O byte	0 µs
Input current	
from backplane bus 5 V DC, typ.	2 A

from backplane bus 5 V DC, max.	2.4 A
from backplane bus 24 V DC, max.	150 mA; DP interface
from interface 5 V DC, max.	90 mA; At the DP interface

### Power loss

Power loss, typ.	10 W
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### Processor

CPU speed	450 MHz; Multi-processor system
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### Memory

#### Work memory

• integrated	4 Mbyte
• integrated (for program)	2 Mbyte
• integrated (for data)	2 Mbyte
• expandable	No

#### Load memory

• integrated RAM, max.	48 Mbyte
• expandable RAM	No

#### Backup

• present	Yes
• with battery	Yes; all data
• without battery	Yes; Program and data of the load memory

### Battery

#### Backup battery

• Backup current, typ.	370 µA; Valid up to 40°C
• Backup current, max.	2.1 mA
• 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	No

### CPU processing times

for bit operations, typ.	7.5 ns
for word operations, typ.	7.5 ns
for fixed point arithmetic, typ.	7.5 ns
for floating point arithmetic, typ.	15 ns
Process tasks, max.	9; Individually adjustable from 10 ms to 5 s

### CPU-blocks

#### DB

• Number, max.	16 000; Number range: 1 to 16 000 (= Instances)
• Size, max.	64 kbyte

#### FB

• Number, max.	8 000; Number range: 0 to 7999
• Size, max.	64 kbyte

FC	
• Number, max.	8 000; Number range: 0 to 7999
• Size, max.	64 kbyte
OB	
• Number, max.	see instruction list
• Size, max.	64 kbyte
• Number of free cycle OBs	1; OB 1
• Number of time alarm OBs	8; OB 10-17
• Number of delay alarm OBs	4; OB 20-23
• Number of cyclic interrupt OBs	9; OB 30-38 (= Process Tasks)
• Number of process alarm OBs	8; OB 40-47
• Number of DPV1 alarm OBs	3; OB 55-57
• Number of startup OBs	2; OB 100, 102
• Number of asynchronous error OBs	9; OB 80-88
• Number of synchronous error OBs	2; OB 121, 122
Nesting depth	
• per priority class	24
• additional within an error OB	2
Counters, timers and their retentivity	
S7 counter	
• Number	2 048
Retentivity	
— adjustable	Yes
Counting range	
— lower limit	0
— upper limit	999
IEC counter	
• present	Yes
• Type	SFB
• Number	Unlimited (limited only by RAM capacity)
S7 times	
• Number	2 048
Retentivity	
— adjustable	Yes
Time range	
— lower limit	10 ms
— upper limit	9 990 s
IEC timer	
• present	Yes
• Type	SFB
• Number	Unlimited (limited only by RAM capacity)

## Data areas and their retentivity

retentive data area in total	Total working and load memory (with backup battery)
<b>Flag</b>	
• Number, max.	16 384 byte
• Retentivity available	Yes
• Number of clock memories	8; in 1 memory byte
<b>Local data</b>	
• adjustable, max.	64 kbyte
• preset	64 kbyte

## Address area

<b>I/O address area</b>	
• Inputs	2 048 byte
• Outputs	2 048 byte
<b>Process image</b>	
• Inputs, adjustable	2 048 byte
• Outputs, adjustable	2 048 byte
• Inputs, default	2 048 byte; Total peripheral address range, cannot be changed
• Outputs, default	2 048 byte; Total peripheral address range, cannot be changed
• consistent data, max.	244 byte
• Access to consistent data in process image	Yes
<b>Subprocess images</b>	
• Number of subprocess images, max.	15

## Hardware configuration

connectable OPs	119
Multicomputing	No
<b>Number of DP masters</b>	
• integrated	1
• via CP	0
<b>Number of IO Controllers</b>	
• integrated	0
• via CP	0
<b>Slots</b>	
• required slots	2

## Time of day

<b>Clock</b>	
• 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
<b>Operating hours counter</b>	

• Number	16
• Number/Number range	0 to 15
• Range of values	SFCs 2, 3 and 4: 0 to 32767 hours SFC 101: 0 to 2 <sup>31</sup> - 1 hours
• Granularity	1 h
• retentive	Yes

<b>Clock synchronization</b>	
• supported	Yes
• to DP, master	Yes
• to DP, slave	Yes
• in AS, master	Yes
• in AS, slave	Yes
• on Ethernet via NTP	Possible as client and master/slave via SIMATIC process

<b>Interfaces</b>	
Number of industrial Ethernet interfaces	2
Number of PROFINET interfaces	0
Number of RS 485 interfaces	1; PROFIBUS DP
Number of other interfaces	2; 2x synchronization

<b>1. Interface</b>	
Interface type	Integrated
Physics	RS 485 / PROFIBUS
Isolated	Yes
Power supply to interface (15 to 30 V DC), max.	150 mA
Number of connection resources	16

<b>Protocols</b>	
• PROFIBUS DP master	Yes
• PROFIBUS DP slave	No

<b>PROFIBUS DP master</b>	
• Number of connections, max.	16
• Transmission rate, max.	12 Mbit/s
• Number of DP slaves, max.	96
• Number of slots per interface, max.	1 632

<b>Services</b>	
— PG/OP communication	Yes
— Routing	Yes; S7 routing
— Global data communication	No
— S7 basic communication	No
— S7 communication	Yes
— S7 communication, as client	Yes
— S7 communication, as server	Yes
— Equidistance	No
— Isochronous mode	No

— SYNC/FREEZE	No
— Activation/deactivation of DP slaves	Yes; Approved for stand-alone operation only, not in conjunction with CiR (Configuration in Run)
— Direct data exchange (slave-to-slave communication)	No
— DPV1	Yes
<b>Address area</b>	
— Inputs, max.	1 536 byte
— Outputs, max.	1 536 byte
<b>User data per DP slave</b>	
— User data per DP slave, max.	244 byte
— Inputs, max.	244 byte
— Outputs, max.	244 byte
— Slots, max.	244
— per slot, max.	128 byte

## 2. Interface

Interface type	Integrated Ethernet interface
Physics	Ethernet RJ45
Isolated	Yes
automatic detection of transmission rate	Yes; Autosensing
Autonegotiation	Yes
Autocrossing	Yes
Change of IP address at runtime, supported	No
Number of connection resources	120
<b>Interface types</b>	
• Number of ports	2
• integrated switch	Yes
<b>Protocols</b>	
• PROFINET IO Controller	No
• PROFINET IO Device	No
• PROFINET CBA	No
• Open IE communication	Yes
• Web server	No
• Media redundancy	Yes
<b>Open IE communication</b>	
• Number of connections, max.	118
• Local port numbers used at the system end	0, 20, 21, 25, 102, 135, 161, 34962, 34963, 34964, 65532, 65533, 65534, 65535
• Keep-alive function, supported	Yes

## 3. Interface

Interface type	Integrated Ethernet interface
Physics	Ethernet RJ45

Isolated	Yes
automatic detection of transmission rate	Yes; Autosensing
Autonegotiation	Yes
Autocrossing	Yes
Number of connection resources	120
<b>Interface types</b>	
• Number of ports	2
• integrated switch	Yes
<b>Protocols</b>	
• PROFINET IO Controller	No
• PROFINET IO Device	No
• PROFINET CBA	No
• Open IE communication	Yes
• Web server	No
• Media redundancy	Yes
<b>Open IE communication</b>	
• Number of connections, max.	118
• Local port numbers used at the system end	0, 20, 21, 25, 102, 135, 161, 34962, 34963, 34964, 65532, 65533, 65534, 65535
• Keep-alive function, supported	Yes

#### 4. Interface

Interface type	Pluggable synchronization submodule (FO)
Plug-in interface modules	Synchronization module 6ES7960-1AA06-0XA0, 6ES7960-1AB06-0XA0 or 6ES7960-1AA08-0XA0

#### 5. Interface

Interface type	Pluggable synchronization submodule (FO)
Plug-in interface modules	Synchronization module 6ES7960-1AA06-0XA0, 6ES7960-1AB06-0XA0 or 6ES7960-1AA08-0XA0

#### Protocols

Supports protocol for PROFINET IO	No
PROFINET CBA	No
PROFIsafe	Yes
PROFIBUS	Yes
AS-Interface	Yes; Via add-on
<b>Redundancy mode</b>	
<b>Media redundancy</b>	
— Switchover time on line break, typ.	< 200 ms
— Number of stations in the ring, max.	50
<b>SIMATIC communication</b>	
• S7 routing	Yes
<b>Open IE communication</b>	
• TCP/IP	Yes

— Number of connections, max.	118
— Data length, max.	32 kbyte
— several passive connections per port, supported	Yes
• ISO-on-TCP (RFC1006)	Yes
— Number of connections, max.	118
— Data length, max.	32 kbyte
• UDP	Yes
— Number of connections, max.	118
— Data length, max.	1 472 byte

**Further protocols**

• MODBUS	Yes; Via add-on
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**Communication functions**

PG/OP communication	Yes
• Number of connectable OPs without message processing	119
• Number of connectable OPs with message processing	119; When using Alarm_S/SQ and Alarm_D/DQ

Data record routing	Yes
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**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

**Number of connections**

• overall	120
• usable for PG communication	
— reserved for PG communication	1
• usable for OP communication	
— reserved for OP communication	1

**S7 message functions**

Number of login stations for message functions, max.	119; max. 119 with Alarm_S/SQ and Alarm_D/DQ (OPs); max. 16 with Alarm_8, Alarm_8P, Notify and Notify_8 (e.g. WinCC)
Program alarms	Yes
Process diagnostic messages	Yes
simultaneously active Alarm-S blocks, max.	1 000; Simultaneously active alarm_S/SQ blocks or alarm_D/DQ blocks
Alarm 8-blocks	Yes
• Number of instances for alarm 8 and S7 communication blocks, max.	10 000
• preset, max.	10 000





Process control messages	Yes
Number of archives that can log on simultaneously (SFB 37 AR_SEND)	64
<b>Test commissioning functions</b>	
Status block	Yes
Single step	Yes
Number of breakpoints	4
<b>Status/control</b>	
<ul style="list-style-type: none"> <li>• Status/control variable</li> </ul>	Yes
<ul style="list-style-type: none"> <li>• Variables</li> </ul>	Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters
<ul style="list-style-type: none"> <li>• Number of variables, max.</li> </ul>	70
<b>Diagnostic buffer</b>	
<ul style="list-style-type: none"> <li>• present</li> </ul>	Yes
<ul style="list-style-type: none"> <li>• Number of entries, max.</li> </ul>	3 200
<b>Service data</b>	
<ul style="list-style-type: none"> <li>• can be read out</li> </ul>	Yes
<b>Standards, approvals, certificates</b>	
CE mark	Yes
CSA approval	Yes
UL approval	Yes
cULus	Yes
FM approval	Yes
RCM (formerly C-TICK)	Yes
KC approval	Yes
EAC (formerly Gost-R)	Yes
<b>Use in hazardous areas</b>	
<ul style="list-style-type: none"> <li>• ATEX</li> </ul>	ATEX II 3G Ex nA IIC T4 Gc
<b>Ambient conditions</b>	
<b>Ambient temperature during operation</b>	
<ul style="list-style-type: none"> <li>• min.</li> </ul>	0 °C
<ul style="list-style-type: none"> <li>• max.</li> </ul>	70 °C
<b>Altitude during operation relating to sea level</b>	
<ul style="list-style-type: none"> <li>• Installation altitude above sea level, max.</li> </ul>	2 000 m
<b>Configuration</b>	
<b>Programming</b>	
<ul style="list-style-type: none"> <li>• Command set</li> </ul>	see instruction list
<ul style="list-style-type: none"> <li>• Nesting levels</li> </ul>	7
<ul style="list-style-type: none"> <li>• Access to consistent data in process image</li> </ul>	Yes
<ul style="list-style-type: none"> <li>• System functions (SFC)</li> </ul>	see instruction list
<ul style="list-style-type: none"> <li>• System function blocks (SFB)</li> </ul>	see instruction list

<b>Programming language</b>	
— CFC	Yes
<b>Number of simultaneously active SFCs</b>	
— RD_REC	8; SFC 59; per interface
— WR_REC	8; SFC 58; per interface
— WR_PARM	8; SFC 55; per interface
— PARM_MOD	1; SFC 57; per interface
— WR_DPARM	2; SFC 56; per interface
— DPNRM_DG	8; SFC 13; per interface
— RDSYSST	8; SFC 51
— DP_TOPOL	1; SFC 103; per interface
<b>Number of simultaneously active SFBs</b>	
— RDREC	8; SFB 52; per interface
— WRREC	8; SFB 53; per interface
<b>Know-how protection</b>	
• User program protection/password protection	Yes
• Block encryption	Yes; With S7 block Privacy
<b>Dimensions</b>	
Width	50 mm
Height	290 mm
Depth	219 mm
<b>Weights</b>	
Weight, approx.	1.1 kg
<b>last modified:</b>	10/05/2020