



Figure similar

\*\*\*\*\* Replacement part \*\*\*\*\* SIMATIC S7-400, CPU 417-4 Central processing unit with: work memory 20 MB (10 MB code; 10 MB data) 1st interface MPI 12 Mbit/s; 2nd interface PROFIBUS DP, 3rd/4th interface plug-in IFM module

General information	
Product type designation	CPU 417-4
Firmware version	V4.0
Product function	
<ul style="list-style-type: none"> <li>• Isochronous mode</li> </ul>	Yes
Engineering with	
<ul style="list-style-type: none"> <li>• Programming package</li> </ul>	STEP 7 V5.2 SP1 HF3 or higher with HW update
CiR - Configuration in RUN	
CiR synchronization time, basic load	100 ms
CiR synchronization time, time per I/O byte	40 µs
Supply voltage	
Rated value (DC)	Power supply via system power supply
Input current	
from backplane bus 5 V DC, max.	1.7 A
from backplane bus 24 V DC, max.	Total current consumption of the components connected to the MPI/DP interfaces, but no more than 150 mA per interface
Power loss	
Power loss, typ.	6 W
Memory	
Type of memory	RAM
Work memory	
<ul style="list-style-type: none"> <li>• integrated (for program)</li> <li>• integrated (for data)</li> <li>• expandable</li> </ul>	10 Mbyte 10 Mbyte No
Load memory	
<ul style="list-style-type: none"> <li>• expandable FEPRM</li> <li>• expandable FEPRM, max.</li> <li>• integrated RAM, max.</li> <li>• expandable RAM</li> <li>• expandable RAM, max.</li> </ul>	Yes; with Memory Card (FLASH) 64 Mbyte 256 kbyte Yes; with Memory Card (RAM) 16 Mbyte
Backup	
<ul style="list-style-type: none"> <li>• present</li> <li>• with battery</li> <li>• without battery</li> </ul>	Yes Yes; all data No
Battery	
Backup battery	
<ul style="list-style-type: none"> <li>• Backup current, typ.</li> <li>• Backup current, max.</li> <li>• Feeding of external backup voltage to CPU</li> </ul>	600 µA 1 810 µA 5 V DC to 15 V DC

CPU processing times	
for bit operations, typ.	0.03 µs
for word operations, typ.	0.03 µs
for fixed point arithmetic, typ.	0.03 µs
for floating point arithmetic, typ.	0.09 µs
CPU-blocks	
DB	
• Number, max.	8 192; DB 0 reserved
• Size, max.	64 kbyte
FB	
• Number, max.	6 144
• Size, max.	64 kbyte
FC	
• Number, max.	6 144
• Size, max.	64 kbyte
OB	
• Number, max.	see instruction list
• Size, max.	64 kbyte
• Number of time alarm OBs	8
• Number of delay alarm OBs	4
• Number of cyclic interrupt OBs	9
• Number of process alarm OBs	8
• Number of multicomputing OBs	1
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
— 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
Retentivity	
— adjustable	Yes
— lower limit	0
— upper limit	2 047
— preset	No times retentive
Time range	
— lower limit	10 ms
— upper limit	9 990 s
IEC timer	
• present	Yes
• Type	SFB
Data areas and their retentivity	
Retentive data area (incl. timers, counters, flags), max.	Total working and load memory (with backup battery)
Flag	
• Size, max.	16 kbyte
• Retentivity available	Yes; MB 0 to MB 16383
• Retentivity preset	MB 0 to MB 15
• Number of clock memories	8; 1 memory byte
Address area	
I/O address area	
• Inputs	16 kbyte

• Outputs	16 kbyte
<b>Process image</b>	
• Inputs, adjustable	16 kbyte
• Outputs, adjustable	16 kbyte
• Inputs, default	1 024 byte
• Outputs, default	1 024 byte
• consistent data, max.	244 byte
• Access to consistent data in process image	Yes
<b>Subprocess images</b>	
• Number of subprocess images, max.	15
<b>Digital channels</b>	
• Inputs	131 072
— of which central	131 072
• Outputs	131 072
— of which central	131 072
<b>Analog channels</b>	
• Inputs	8 192
— of which central	8 192
• Outputs	8 192
— of which central	8 192
<b>Hardware configuration</b>	
Number of expansion units, max. connectable OPs	21; of which 6 ER with K-bus 63 without message processing, 16 with message processing
Multicomputing	Yes; 4 CPUs max. (with UR1 or UR2)
<b>Interface modules</b>	
• Number of connectable IMs (total), max.	6
• Number of connectable IM 460s, max.	6
• Number of connectable IM 463s, max.	4; IM 463-2
<b>Number of DP masters</b>	
• integrated	2
• via CP	10; via CP 443-5 Ext.
• via IM 467	4
• Mixed mode IM + CP permitted	No; IM 467 cannot be used with CP 443-5 Ext., IM 467 cannot be used with CP 443-1 EX40 in PROFINET IO mode
• via interface module	2; IF 964-DP
• Number of pluggable S5 modules (via adapter capsule in central device), max.	6
<b>Number of operable FMs and CPs (recommended)</b>	
• FM	Limited by number of slots and number of connections
• CP, PtP	CP 440: Limited by number of slots; CP 441: limited by number of connections
• CP, LAN	Limited by number of slots and number of connections
• PROFIBUS and Ethernet CPs	14; incl. CP 443-5 Ext. and IM 467
<b>Slots</b>	
• required slots	2
<b>Time of day</b>	
<b>Clock</b>	
• Hardware clock (real-time)	Yes
• retentive and synchronizable	Yes
• Resolution	1 ms
• Deviation per day (buffered), max.	Power off
• Deviation per day (unbuffered), max.	Power on
<b>Operating hours counter</b>	
• Number	8
<b>Clock synchronization</b>	
• supported	Yes
• to MPI, master	Yes
• to MPI, slave	Yes
• to DP, master	Yes
• to DP, slave	Yes
• in AS, master	Yes
• in AS, slave	Yes
• to IF 964 DP	Yes; as Master or Slave

## 1. Interface

Interface type	MPI/PROFIBUS DP
Isolated	Yes
<b>Interface types</b>	
• RS 485	Yes
<b>Protocols</b>	
• MPI	Yes
• PROFIBUS DP master	Yes
• PROFIBUS DP slave	Yes
<b>MPI</b>	
• Number of connections	44
• Transmission rate, max.	12 Mbit/s
<b>Services</b>	
— PG/OP communication	Yes
— Routing	Yes
— Global data communication	Yes
— S7 basic communication	Yes
— S7 communication	Yes
<b>PROFIBUS DP master</b>	
• Number of connections, max.	32; If a diagnostics repeater is used on the line, the number of connection resources on the line is reduced by 1
• Transmission rate, max.	12 Mbit/s
• Number of DP slaves, max.	32
<b>Services</b>	
— PG/OP communication	Yes
— Routing	Yes
— Global data communication	Yes
— S7 basic communication	Yes
— S7 communication	Yes
— Equidistance	Yes
— SYNC/FREEZE	Yes
— Activation/deactivation of DP slaves	Yes
— Direct data exchange (slave-to-slave communication)	Yes
<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>PROFIBUS DP slave</b>	
• Transmission rate, max.	12 Mbit/s
• Address area, max.	32
• User data per address area, max.	32 byte
— of which consistent, max.	32 byte
<b>Services</b>	
— PG/OP communication	Yes
— Routing	Yes
<b>Transfer memory</b>	
— Inputs	244 byte
— Outputs	244 byte
<b>2. Interface</b>	
Interface type	PROFIBUS DP
Isolated	Yes
Number of connection resources	32
<b>Interface types</b>	
• RS 485	Yes
<b>Protocols</b>	
• PROFIBUS DP master	Yes
• PROFIBUS DP slave	Yes
<b>PROFIBUS DP master</b>	
• Number of connections, max.	32; If a diagnostics repeater is used on the line, the number of connection resources on the line is reduced by 1

• Transmission rate, max.	12 Mbit/s
• Number of DP slaves, max.	125
<b>Services</b>	
— PG/OP communication	Yes
— Routing	Yes
— Global data communication	Yes
— S7 basic communication	Yes
— S7 communication	Yes
— Equidistance	Yes
— SYNC/FREEZE	Yes
— Activation/deactivation of DP slaves	Yes
— Direct data exchange (slave-to-slave communication)	Yes
<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
— Slots, max.	244
— per slot, max.	128 byte
<b>PROFIBUS DP slave</b>	
• Transmission rate, max.	12 Mbit/s
• Address area, max.	32
• User data per address area, max.	32 byte
— of which consistent, max.	32 byte
<b>Services</b>	
— Routing	Yes
<b>Transfer memory</b>	
— Inputs	244 byte
— Outputs	244 byte
<b>3. Interface</b>	
Interface type	pluggable interface module (IF), technical data as for 2nd interface
Plug-in interface modules	IF 964-DP
<b>4. Interface</b>	
Interface type	pluggable interface module (IF), technical data as for 2nd interface
Plug-in interface modules	IF 964-DP
<b>Isochronous mode</b>	
Equidistance	Yes
User data per isochronous slave, max.	244 byte
shortest clock pulse	1 ms
<b>communication functions / header</b>	
PG/OP communication	Yes
<b>Global data communication</b>	
• supported	Yes
• Number of GD packets, transmitter, max.	16
• Number of GD packets, receiver, max.	32
• Size of GD packets, max.	64 byte
• Size of GD packet (of which consistent), max.	1 variable
<b>S7 basic communication</b>	
• supported	Yes; in MPI mode via: SFC X_SEND, X_RCV, X_GET and X_PUT; in DP master mode via: SFC I_GET and I_PUT
• User data per job, max.	76 byte
• User data per job (of which consistent), max.	1 variable
<b>S7 communication</b>	
• supported	Yes
• as server	Yes
• as client	Yes
• User data per job, max.	64 kbyte
• User data per job (of which consistent), max.	1 variable
<b>S5 compatible communication</b>	
• supported	Yes; Via FC AG_SEND and AG_RECV, max. via 10 CP 443-1 or 443-5
• User data per job, max.	8 kbyte

<b>Standard communication (FMS)</b>	
• supported	Yes; Via CP and loadable FB
<b>Number of connections</b>	
• overall	64
• usable for PG communication — reserved for PG communication	1
• usable for OP communication — reserved for OP communication	1
<b>S7 message functions</b>	
Number of login stations for message functions, max.	16
Symbol-related messages	Yes
Program alarms	Yes
simultaneously active Alarm-S blocks, max.	ALARM_S/SQ blocks or ALARM_D/DQ blocks
Alarm 8-blocks	Yes
• Number of instances for alarm 8 and S7 communication blocks, max.	Number of communication jobs for Alarm_8 blocks and for blocks for S7 Communication
Process control messages	Yes
<b>Number of messages</b>	
• overall, max.	1 024
• in 100 ms grid, max.	128
• in 500 ms grid, max.	512
• in 1000 ms grid, max.	1 024
<b>Number of additional values</b>	
• with 100 ms grid, max.	1
• with 500, 1000 ms grid, max.	10
<b>Test commissioning functions</b>	
Status block	Yes
Single step	Yes
Number of breakpoints	4
<b>Status/control</b>	
• Status/control variable	Yes
<b>Forcing</b>	
• Forcing	Yes
<b>Diagnostic buffer</b>	
• present	Yes
• Number of entries, max.	3 200
— adjustable	Yes
— preset	120
<b>configuration / header</b>	
<b>Configuration software</b>	
• STEP 7	Yes
<b>configuration / programming / header</b>	
• Nesting levels	8
<b>Programming language</b>	
— LAD	Yes
— FBD	Yes
— STL	Yes
— SCL	Yes
— CFC	Yes
— GRAPH	Yes
— HiGraph®	Yes
<b>configuration / programming / number of simultaneously active SFC / header</b>	
— RDSYSST	1 to 8
<b>Know-how protection</b>	
• User program protection/password protection	Yes
<b>Dimensions</b>	
Width	50 mm
Height	290 mm
Depth	219 mm
<b>Weights</b>	
Weight, approx.	1 070 g
<b>last modified:</b>	4/1/2022 

