SIEMENS

Data sheet

6AG1417-4XT07-7AB0



SIPLUS S7-400 CPU 417-4 -25 ... +70°C with conformal coating based on 6ES7417-4XT07-0AB0. Central processing unit with: "Work memory 32 MB, (16 MB code;" 16 MB data) Interfaces 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
HW functional status	01
Firmware version	V7.0
Engineering with	
 Programming package 	STEP 7 V5.4 or higher with HSP 261
CiR – Configuration in RUN	
CiR synchronization time, basic load	60 ms
CiR synchronization time, time per I/O byte	7 µs
Supply voltage	
Rated value (DC)	
• 24 V DC	No; Power supply via system power supply
Input current	
from backplane bus 5 V DC, typ.	1.3 A
from backplane bus 5 V DC, max.	1.6 A
from backplane bus 24 V DC, max.	600 mA; 150 mA per DP interface
from interface 5 V DC, max.	90 mA; At each DP interface

Power loss	
Power loss, typ.	6.5 W
Power loss, max.	8 W
Memory	
Type of memory	RAM
Work memory	
• integrated	32 Mbyte
 integrated (for program) 	16 Mbyte
 integrated (for data) 	16 Mbyte
• expandable	No
Load memory	
• expandable FEPROM	Yes; with Memory Card (FLASH)
 expandable FEPROM, max. 	64 Mbyte
 integrated RAM, max. 	1 Mbyte
• 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. 	225 μA; up to 40 °C
 Backup current, max. 	1 275 µA
 Backup time, max. 	See reference manual, module data, Chapter 3.3
 Feeding of external backup voltage to CPU 	5 V DC to 15 V DC
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
CPU-blocks	
DB	
• Number, max.	16 000; Number range: 1 to 16000
• Size, max.	64 kbyte
FB	
• Number, max.	8 000; Number range: 0 to 7999
• Size, max.	64 kbyte
FC	

• 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 (shortest cycle that can be set = $500 \ \mu$ s)
 Number of process alarm OBs 	8; OB 40-47
 Number of DPV1 alarm OBs 	3; OB 55-57
 Number of isochronous mode OBs 	4; OB 61-64
 Number of multicomputing OBs 	1; OB 60
 Number of background OBs 	1; OB 90
 Number of startup OBs 	3; 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
— lower limit	0
· · · · · · · · · · · · · · · · · · ·	
— upper limit	2 047
	2 047 Z 0 to Z 7
— upper limit	
— upper limit — preset	
— upper limit — preset Counting range	Z 0 to Z 7
— upper limit — preset Counting range — lower limit	Z 0 to Z 7 0
 upper limit preset Counting range lower limit upper limit 	Z 0 to Z 7 0 999 Yes
 upper limit preset Counting range lower limit upper limit IEC counter 	Z 0 to Z 7 0 999
 upper limit preset Counting range lower limit upper limit IEC counter present 	Z 0 to Z 7 0 999 Yes
 upper limit preset Counting range lower limit upper limit IEC counter present Type 	Z 0 to Z 7 0 999 Ves SFB Unlimited (limited only by RAM capacity)
 upper limit preset Counting range lower limit upper limit IEC counter present Type Number 	Z 0 to Z 7 0 999 Ves SFB
 upper limit preset Counting range lower limit upper limit IEC counter present Type Number S7 times	Z 0 to Z 7 0 999 Ves SFB Unlimited (limited only by RAM capacity) 2 048
 upper limit preset Counting range lower limit upper limit IEC counter present Type Number S7 times Number 	Z 0 to Z 7 0 999 V Yes SFB Unlimited (limited only by RAM capacity) 2 048 Yes
 upper limit preset Counting range lower limit upper limit IEC counter present Type Number S7 times Number Retentivity 	Z 0 to Z 7 0 999 Yes SFB Unlimited (limited only by RAM capacity) 2 048 Yes 0
 upper limit preset Counting range lower limit upper limit IEC counter Present Type Number S7 times Retentivity adjustable 	Z 0 to Z 7 0 999 V Yes SFB Unlimited (limited only by RAM capacity) 2 048 Yes

Time range	
— lower limit	10 ms
— upper limit	9 990 s
IEC timer	
• present	Yes
• Туре	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)
Flag	
• Number, max.	16 kbyte; Size of bit memory address area
 Retentivity available 	Yes
Retentivity preset	MB 0 to MB 15
Number of clock memories	8; in 1 memory byte
Local data	
● adjustable, max.	64 kbyte
• preset	32 kbyte
Address area	
I/O address area	
Inputs	16 kbyte
Outputs	16 kbyte
Process image	
 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
Subprocess images	
 Number of subprocess images, max. 	15
Digital channels	
Inputs	131 072
— of which central	131 072
Outputs	131 072
— of which central	131 072
Analog channels	
Inputs	8 192
— of which central	8 192
Outputs	8 192
— of which central	8 192

Hardware configuration	
Number of expansion units, max.	21
connectable OPs	119
Multicomputing	Yes; 4 CPUs max. (with UR1 or UR2)
Interface modules	
 Number of connectable IMs (total), max. 	6
 Number of connectable IM 460s, max. 	6
 Number of connectable IM 463s, max. 	4; IM 463-2
Number of DP masters	
• integrated	2
• via CP	10; CP 443-5 Extended
• via IM 467	4
 Mixed mode IM + CP permitted 	No; IM 467 cannot be used jointly with CP 443-5 Ext. or CP 443-1 in PROFINET IO mode
• via interface module	2
 Number of pluggable S5 modules (via adapter capsule in central device), max. 	6
Number of IO Controllers	
• integrated	0
● via CP	4; Max. 4 in the central controller; no mixed operation of different CP 443-1 types in PROFINET IO mode
Number of operable FMs and CPs (recommended)	
• 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
 PROFIBUS and Ethernet CPs 	14; Of which 10 CPs max. or IMs as DP master, 4 PROFINET controller maximum
Slots	
 required slots 	2
Time of day	
Clock	
 Hardware clock (real-time) 	Yes
 retentive and synchronizable 	Yes
Resolution	1 ms
Resolution	1 ms
 Deviation per day (buffered), max. 	1.7 s; Power off
 Deviation per day (unbuffered), max. 	8.6 s; For power On
Operating hours counter	
• Number	16
Number/Number range	0 to 15
Range of values	SFCs 2, 3 and 4: 0 to 32767 hours SFC 101: 0 to 2^31 - 1 hours
Granularity	1 h

• retentive	Yes
Clock synchronization	
• 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
 on Ethernet via NTP 	No; Via CP
• to IF 964 DP	Yes
Time difference in system when synchronizing via	
• MPI, max.	200 ms
Interfaces	
Interfaces/bus type	1 x MPI/PROFIBUS DP, 1 x PROFIBUS DP, 2 x PROFIBUS DP
	(optionally pluggable)
Number of RS 485 interfaces	2; Combined MPI / PROFIBUS DP and PROFIBUS DP
Number of other interfaces	2; PROFIBUS DP with IF 964-DP (plug-in option; MLFB:
	6ES7964-2AA04-0AB0)
1. Interface	
Interface type	Integrated
Physics	RS 485 / PROFIBUS + MPI
Isolated	Yes
Power supply to interface (15 to 30 V DC), max.	150 mA
Number of connection resources	MPI: 44, DP: 32
Protocols	
• MPI	Yes
PROFIBUS DP master	Yes
PROFIBUS DP slave	Yes
MPI	
Number of connections	44; 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
Services	
— PG/OP communication	Yes
— Routing	Yes
— Global data communication	Yes
- S7 basic communication	Yes
- S7 communication	Yes
- S7 communication, as client	Yes
- S7 communication, as server	Yes
PROFIBUS DP master	

• 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
Services	
— PG/OP communication	Yes
— Routing	Yes; S7 routing
— Global data communication	No
— S7 basic communication	Yes
— S7 communication	Yes
- S7 communication, as client	Yes
— S7 communication, as server	Yes
— Equidistance	Yes
— Equidistance	Yes
— Isochronous mode	Yes
- SYNC/FREEZE	Yes
 Activation/deactivation of DP slaves 	Yes
— Direct data exchange (slave-to-slave	Yes
communication)	
— DPV1	Yes
Address area	
— Inputs, max.	2 kbyte
— Outputs, max.	2 kbyte
User data per DP slave	
— User data per DP slave, max.	244 byte
— Inputs, max.	244 byte
— Outputs, max.	244 byte
— Slots, max.	244
— per slot, max.	128 byte
PROFIBUS DP slave	
Number of connections	32
GSD file	http://support.automation.siemens.com/WW/view/en/113652
• Transmission rate, max.	12 Mbit/s
 automatic baud rate search 	No
 Address area, max. 	32; Virtual slots
 User data per address area, max. 	32 byte
— of which consistent, max.	32 byte
Services	
— PG/OP communication	Yes; with interface active
— S7 routing	Yes; with interface active
— Global data communication	No

— S7 basic communication	No
— S7 communication	Yes
— S7 communication, as client	Yes
— S7 communication, as server	Yes
 — Direct data exchange (slave-to-slave communication) 	No
— DPV1	No
Transfer memory	
— Inputs	244 byte
— Outputs	244 byte

2. Interface	
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	32
Protocols	
 PROFIBUS DP master 	Yes
 PROFIBUS DP slave 	Yes
PROFIBUS DP master	
 Number of connections, max. 	32
• Transmission rate, max.	12 Mbit/s
 Number of DP slaves, max. 	125
Services	
— PG/OP communication	Yes
— Routing	Yes; S7 routing
— Global data communication	No
— S7 basic communication	Yes
— S7 communication	Yes
— S7 communication, as client	Yes
— S7 communication, as server	Yes
— Equidistance	Yes
— Isochronous mode	Yes
- SYNC/FREEZE	Yes
— Activation/deactivation of DP slaves	Yes
— Direct data exchange (slave-to-slave	Yes
communication)	
— DPV1	Yes
Address area	
— Inputs, max.	8 kbyte
— Outputs, max.	8 kbyte

User data per DP slave	
— User data per DP slave, max.	244 byte
— Inputs, max.	244 byte
— Outputs, max.	244 byte
— Slots, max.	244
— per slot, max.	128 byte
PROFIBUS DP slave	
Number of connections	32
• GSD file	http://support.automation.siemens.com/WW/view/en/113652
 Transmission rate, max. 	12 Mbit/s
 Address area, max. 	32
 User data per address area, max. 	32 byte
— of which consistent, max.	32 byte
Services	
— Routing	Yes; with interface active
Transfer memory	
— Inputs	244 byte
— Outputs	244 byte
3. Interface Interface type	Pluggable interface module (IF), technical data as for 2nd
	interface
Plug-in interface modules	IF 964-DP (MLFB: 6ES7964-2AA04-0AB0)
Physics	RS 485 / PROFIBUS
Isolated	Yes
Power supply to interface (15 to 30 V DC), max.	150 mA
automatic detection of transmission rate	No
Number of connection resources	32
Protocols	
• MPI	No
 PROFIBUS DP master 	Yes
PROFIBUS DP slave	Yes
PROFIBUS DP slave PROFIBUS DP master	
	32
PROFIBUS DP master	
PROFIBUS DP masterNumber of connections, max.	32
PROFIBUS DP masterNumber of connections, max.Transmission rate, max.	32 12 Mbit/s 125
 PROFIBUS DP master Number of connections, max. Transmission rate, max. Number of DP slaves, max. 	32 12 Mbit/s 125 Yes
 PROFIBUS DP master Number of connections, max. Transmission rate, max. Number of DP slaves, max. Services 	32 12 Mbit/s 125
PROFIBUS DP master Number of connections, max. Transmission rate, max. Number of DP slaves, max. Services PG/OP communication 	32 12 Mbit/s 125 Yes
PROFIBUS DP master Number of connections, max. Transmission rate, max. Number of DP slaves, max. Services PG/OP communication Routing 	32 12 Mbit/s 125 Yes Yes; S7 routing
PROFIBUS DP master Number of connections, max. Transmission rate, max. Number of DP slaves, max. Services PG/OP communication Routing Global data communication 	32 12 Mbit/s 125 Yes Yes; S7 routing No

— S7 communication, as client	Yes
— S7 communication, as server	Yes
— Equidistance	Yes
— Isochronous mode	Yes
— SYNC/FREEZE	Yes
 Activation/deactivation of DP slaves 	Yes
 — Direct data exchange (slave-to-slave communication) 	Yes
— DPV0	Yes
— DPV1	Yes
Address area	
— Inputs, max.	8 kbyte
— Outputs, max.	8 kbyte
User data per DP slave	
— User data per DP slave, max.	244 byte
— Inputs, max.	244 byte
— Outputs, max.	244 byte
— Slots, max.	244
— per slot, max.	128 byte
PROFIBUS DP slave	
 Number of connections 	32
• GSD file	http://support.automation.siemens.com/WW/view/en/113652
• Transmission rate, max.	12 Mbit/s
 automatic baud rate search 	No
 Address area, max. 	32
 User data per address area, max. 	32 byte
— of which consistent, max.	32 byte
Services	
— PG/OP communication	Yes
— S7 routing	Yes; with interface active
 — S7 routing — Global data communication 	Yes; with interface active No
— Global data communication	No
 Global data communication S7 basic communication 	No No
 Global data communication S7 basic communication S7 communication 	No No Yes
 Global data communication S7 basic communication S7 communication S7 communication, as client 	No No Yes Yes
 Global data communication S7 basic communication S7 communication S7 communication, as client S7 communication, as server Direct data exchange (slave-to-slave 	No No Yes Yes
 Global data communication S7 basic communication S7 communication S7 communication, as client S7 communication, as server Direct data exchange (slave-to-slave communication) 	No No Yes Yes No
 Global data communication S7 basic communication S7 communication S7 communication, as client S7 communication, as server Direct data exchange (slave-to-slave communication) DPV1 	No No Yes Yes No
 Global data communication S7 basic communication S7 communication S7 communication, as client S7 communication, as server Direct data exchange (slave-to-slave communication) DPV1 	No Yes Yes No

4. Interface	
Interface type	Pluggable interface module (IF), technical data as for 2nd interface
Plug-in interface modules	IF 964-DP (MLFB: 6ES7964-2AA04-0AB0)
Protocols	
Open IE communication	
 ISO-on-TCP (RFC1006) 	Via CP 443-1 and loadable FB
— Data length, max.	1452 bytes via CP 443-1 Adv.
Web server	
● supported	No
Isochronous mode	
Isochronous operation (application synchronized up to terminal)	Yes; For PROFIBUS only
Equidistance	Yes
Number of DP masters with isochronous mode	4
User data per isochronous slave, max.	244 byte
shortest clock pulse	1 ms; 0.5 ms without use of SFC 126, 127
max. cycle	32 ms
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
Global data communication	
• supported	Yes
 Number of GD loops, max. 	16
 Number of GD packets, transmitter, max. 	16
 Number of GD packets, receiver, max. 	32
 Size of GD packets, max. 	54 byte
 Size of GD packet (of which consistent), max. 	1 variable
S7 basic communication	
• supported	Yes
● User data per job, max.	76 byte
 User data per job (of which consistent), max. 	1 variable
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
S5 compatible communication	
 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
• User data per job (of which consistent), max.	240 byte
 Number of simultaneous AG-SEND/AG-RECV orders per CPU, max. 	64/64
Standard communication (FMS)	
• supported	Yes; Via CP and loadable FB
Number of connections	
• overall	120
 usable for PG communication 	119
- reserved for PG communication	1
— adjustable for PG communication, max.	0
 usable for OP communication 	119
— reserved for OP communication	1
— adjustable for OP communication, max.	0
 usable for S7 basic communication 	118
— reserved for S7 basic communication	0
— adjustable for S7 basic communication,	0
max.	
 usable for S7 communication 	118
— reserved for S7 communication	0
— adjustable for S7 communication, max.	0
 usable for routing 	59
— reserved for routing	0
— adjustable for routing, max.	0
7 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, Alarm_8, Alarm_8P, Notify and Notify_8 (e.g. WinCC)
Symbol-related messages	Yes
SCAN procedure	Yes
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.	1 200
Process control messages	Yes

Number of archives that can log on simultaneously (SFB 37 AR_SEND)	64
Number of messages	
● overall, max.	1 024
• in 100 ms grid, max.	128
• in 500 ms grid, max.	512
• in 1000 ms grid, max.	1 024
Number of additional values	
• with 100 ms grid, max.	1
• with 500, 1000 ms grid, max.	10
Test commissioning functions	
Status block	Yes; Up to 16 simultaneously
Single step	Yes
Number of breakpoints	16
Status/control	
Status/control variable	Yes; Up to 16 variable tables
Variables	Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters
 Number of variables, max. 	70; Status/control
Forcing	
• Forcing	Yes
 Forcing, variables 	Inputs, outputs, bit memories, peripheral inputs, peripheral outputs
 Number of variables, max. 	512
Diagnostic buffer	
• present	Yes
 Number of entries, max. 	3 200
— adjustable	Yes
— preset	120
Service data	
• can be read out	Yes
Standards, approvals, certificates	
CE mark	Yes
EAC (formerly Gost-R)	Yes
Ambient conditions	
Ambient temperature during operation	
• min.	-25 °C; = Tmin
• max.	70 °C; = Tmax
Altitude during operation relating to sea level	
 Installation altitude above sea level, max. 	5 000 m

 Ambient air temperature-barometric pressure- altitude 	Tmin Tmax at 1 140 hPa 795 hPa (-1 000 m +2 000 m) // Tmin (Tmax - 10 K) at 795 hPa 658 hPa (+2 000 m +3 500 m) // Tmin (Tmax -20 K) at 658 hPa 540 hPa (+3 500 m +5 000 m)
Relative humidity	
 With condensation, tested in accordance with IEC 60068-2-38, max. 	100 %; RH incl. condensation / frost (no commissioning in bedewed state), horizontal installation
Resistance	
Use in stationary industrial systems	
 — to biologically active substances according to EN 60721-3-3 	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
 — to chemically active substances according to EN 60721-3-3 	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2- 52 (severity degree 3); *
 — to mechanically active substances according to EN 60721-3-3 	Yes; Class 3S4 incl. sand, dust, *
Use on ships/at sea	
 — to biologically active substances according to EN 60721-3-6 	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request
 — to chemically active substances according to EN 60721-3-6 	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2- 52 (severity degree 3); *
 — to mechanically active substances according to EN 60721-3-6 	Yes; Class 6S3 incl. sand, dust; *
Remark	
 — Note regarding classification of environmental conditions acc. to EN 60721 	* The supplied plug covers must remain in place over the unused interfaces during operation!
Conformal coating	
 Coatings for printed circuit board assemblies acc. to EN 61086 	Yes; Class 2 for high availability
 Military testing according to MIL-I-46058C, Amendment 7 	Yes; Discoloration of coating possible during service life
 Qualification and Performance of Electrical Insulating Compound for Printed Board Assemblies according to IPC-CC-830A 	Yes; Conformal coating, Class A
Configuration	
Configuration software	
• STEP 7	Yes
Programming	
Command set	see instruction list
Nesting levels	7
Access to consistent data in process image	Yes
System functions (SFC)System function blocks (SFB)	see instruction list see instruction list
Programming language	
— LAD	Yes

— FBD	Yes
— STL	Yes
— SCL	Yes
— CFC	Yes
— GRAPH	Yes
— HiGraph®	Yes
Number of simultaneously active SFCs	
- DPSYC_FR	2; SFC 11; per interface
— D_ACT_DP	8; SFC 12; per interface
	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
Number of simultaneously active SFBs	
— RDREC	8; SFB 52; per interface, but not more than 32 across all external interfaces
— WRREC	8; SFB 53; per interface, but not more than 32 across all external interfaces
Know-how protection	
 User program protection/password protection 	Yes
Block encryption	Yes; With S7 block Privacy
Dimensions	
Width	50 mm
Height	290 mm
Depth	219 mm
Weights	
Weight, approx.	900 g
last modified:	12/29/2018