SIEMENS

Data sheet

6ES7414-3FM07-0AB0



SIMATIC S7-400, CPU414F-3 PN/DP Central processing unit with: Work memory 4 MB, (2 MB code, 2 MB data), interfaces 1st interface MPI/DP 12 Mbit/s, (X1), 2nd interface Ethernet/PROFINET (X5) 3rd interface IF 964-DP plug-in (IF1)

General information	
Product type designation	CPU 414F-3 PN/DP
Firmware version	V7.0
Product function	
Isochronous mode	Yes; Via PROFIBUS DP or PROFINET interface
Engineering with	
 Programming package 	STEP 7 V5.5 or higher with HSP 262
CiR - Configuration in RUN	
CiR synchronization time, basic load	100 ms
CiR synchronization time, time per I/O byte	15 µs
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.	300 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	4 Mbyte
integrated (for program)	2 Mbyte
integrated (for data)	2 Mbyte
expandable	No
Load memory	
expandable FEPROM	Yes; with Memory Card (FLASH)
 expandable FEPROM, max. 	64 Mbyte
 integrated RAM, max. 	512 kbyte
expandable RAM	Yes; with Memory Card (RAM)
expandable RAM, max.	64 Mbyte
Backup	
present	Yes
with battery	Yes
without battery	No
Battery	
Backup battery	

Sackup current, typ. 180 μA; up to 40 °C		
Backup lime, max. Feeding of external backup voltage to CPU CPU processing times for bit operations, typ. For word operations, typ. For word operations, typ. For word operations, typ. For strong point antihmetic, typ. For strong point antihmetic point antihmet	Backup current, typ.	180 μA; up to 40 °C
Feeding of external backup voltage to CPU 5 V DC to 15 V DC		
Feeding of external backup voltage to CPU CPU processing titles	Backup time, max.	
CPU processing times 18.75 ns 18.75 ns	Feeding of external backup voltage to CPU	
18.75 ns		0.7 20 10 10 7 20
Tor word operations, typ. 18.75 ns 18.		18 75 pc
To fixed point arithmetic, typ. 18.75 ns 37.5 ns 18.75 ns 37.5 ns 18.75 ns 37.5 n		
Tor floating point arithmetic, typ. 37.5 ns		
Number, max. 6 000, Number range: 1 to 16000		
Number Max Size Size Size Max Size Size Size Max Size		37.3118
Number, max. 6 000; Number range: 1 to 16000		
Size, max.		0.000 N
Number, max. 3 000; Number range: 0 to 7999		
• Number, max.		64 kbyte
• Size, max. • Number, max. • Size, max. • Number, max. • Size, max. • Number of free cycle OBs • Number of free cycle OBs • Number of dealy alarm OBs • Number of cycle interupt OBs • Number of process alarm OBs • Number of sectronous mode OBs • Number of suchronous error OBs • Number of suchronous error OBs • Number of startup OBs • Number of startup OBs • Number of startup OBs • Number of sardynous OBs • Number of synchronous error OBs • Ounters, timers and their retentivity 77 counter • Number		0.000 M. J. 7000
FC		
Number, max. Size, max. OB Number, max. Size, mox. Size, max. Size, max. Size, max. Siz		64 kbyte
● Size, max. 64 kbyle ● Number, max. 5ize, max. 64 kbyle ● Number of free cycle OBs 1; OB 1 • Number of free cycle OBs 1; OB 1 • Number of several of Several OBs 4; OB 10-13 • Number of cyclic interrupt OBs 4; OB 20-23 • Number of process alarm OBs 4; OB 32, 33, 34, 35 (shortest cycle that can be set = 500 µs) • Number of process alarm OBs 4; OB 40-43 • Number of process alarm OBs 3; OB 65-57 • Number of isochronous mode OBs 3; OB 66-63 • Number of multicomputing OBs 1 • Number of adaption of sating OBs 2; OB 100, 102 • Number of asynchronous error OBs 2; OB 100, 102 • Number of asynchronous error OBs 2; OB 121, 122 Nesting depth • per priority class 24 • additional within an error OB 1 Counters, times and their retentivity S7 counter • Number Retentivity — adjustable Yes — lower limit 0 — upper limit 0 — upper limit 0 — upper limit 0 Outper imit 0 Outper i		
Number		
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• Size, max. • Number of free cycle OBs • Number of time alarm OBs • Number of delay alarm OBs • Number of delay alarm OBs • Number of cyclic interrupt OBs • Number of process alarm OBs • Number of process alarm OBs • Number of process alarm OBs • Number of DPV1 alarm OBs • Number of DPV1 alarm OBs • Number of inulticomputing OBs • Number of sochronous mode OBs • Number of suchronous mode OBs • Number of startup OBs • Number of satrup OBs • Number of synchronous error OB • Number of synchronous error OB • Number of synchronous error OB • 1 Countros, timors and their retentivity S7 counter • Number • Number • 2 048 Retentivity — adjustable — lower limit — upper limit — upper limit — upper limit — upper limit — upper limit — upper limit — upper limit — upper limit — upper limit — upper limit — upper limit — upper limit — upp		
 Number of free cycle OBs Number of time alarm OBs 4; OB 10-13 Number of delay alarm OBs Number of delay alarm OBs Number of cyclic interrupt OBs Number of process alarm OBs Number of DPV1 alarm OBs Number of process alarm OBs Number of process alarm OBs Number of isochronous mode OBs Number of multicomputing OBs Number of background OBs Number of startup OBs Number of saynchronous error OBs Number of asynchronous error OBs Number of synchronous error OBs Number of synchronous error OBs OB 80-88 Number of synchronous error OB OB 12 Nesting depth Per priority class additional within an error OB Countors, timors and their retentivity Adjustable Inwall of the process o		
 Number of time alarm OBs Number of delay alarm OBs Number of delay alarm OBs Number of cyclic interrupt OBs Number of process alarm OBs Number of process alarm OBs Number of DPV1 alarm OBs Number of DPV1 alarm OBs Number of DPV1 alarm OBs Number of sochronous mode OBs Number of multicomputing OBs Number of startup OBs Number of startup OBs Number of startup OBs Number of synchronous error OBs Number of synchronous error OBs OB 10, 102 Number of synchronous error OBs OB 12, OB 101, 102 Number of synchronous error OBs OB 12, OB 121, 122 Nesting depth Per priority class additional within an error OB Counters, timers and their retentivity S7 counter Number Number Alare Alarem Alarem		
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 Number of cyclic interrupt OBs Number of process alarm OBs Number of process alarm OBs Number of process alarm OBs Number of sochornous mode OBs Number of isochornous mode OBs Number of multicomputing OBs Number of background OBs Number of startup OBs Number of startup OBs Number of synchronous error OB Quality Observable Per priority class additional within an error OB Counters, timers and their retentivity Socunter Number Quality Observable Pes Lower limit Queper limit Queper limit Query observable Perset Zouto Z7 Counting range Lower limit Queper limit Queper limit Pupper limit Persent Yes SFB Number Unlimited (limited only by RAM capacity) S7 times Number Augustable Yes 	 Number of time alarm OBs 	4; OB 10-13
 Number of process alarm OBs Number of DPV1 alarm OBs Number of isochronous mode OBs Number of multicomputing OBs Number of background OBs Number of startup OBs Number of startup OBs Number of startup OBs Number of startup OBs Number of synchronous error OB 1 Counters, timers and their retentivity S7 counter Number Number Ada Retentivity — adjustable — lower limit — upper limit — upper limit — upper limit — upper limit — lower limit — upper limit — upper limit — upper limit — synchronous error OBs Pes Number SFB Number Number O Unlimited (limited only by RAM capacity) S7 times Number Number Ada 	 Number of delay alarm OBs 	4; OB 20-23
 Number of DPV1 alarm OBs Number of isochronous mode OBs Number of isochronous mode OBs Number of background OBs Number of startup OBs Number of startup OBs Number of synchronous error OB 1 Counter of the synchronous error OB 1 Counter of the synchronous error OB 1 Counter of the synchronous error OB Number of synchronous error OB Number of synchronous error OBs Number of synchronous error OBs Yes In the synchronous error OBs Yes In the synchronous error OBs Number of synchronous error OB Number of	 Number of cyclic interrupt OBs 	4; OB 32, 33, 34, 35 (shortest cycle that can be set = 500 μs)
 Number of isochronous mode OBs Number of multicomputing OBs Number of background OBs Number of startup OBs Number of startup OBs Number of startup OBs Number of synchronous error OBs OB 11, 122 Nesting depth per priority class additional within an error OB 1 Counters, timers and their retentivity S7 counter Number Augustable — adjustable — lower limit — upper limit 999 IEC counter • present • present • present • SFB • Number SFB • Number Q 048 Retentivity — adjustable Yes 	 Number of process alarm OBs 	4; OB 40-43
 Number of multicomputing OBs Number of background OBs Number of startup OBs Number of asynchronous error OBs Number of asynchronous error OBs Number of synchronous error OBs Number of synchronous error OBs Number of synchronous error OBs Nesting depth per priority class additional within an error OB Tounters, timers and their retentivity Counter Number Adjustable — adjustable — lower limit — upper limit — lower limit — upper limit 999 IEC counter • present • present • Type • Number Number Number Number Number Augustable Yes 	 Number of DPV1 alarm OBs 	3; OB 55-57
 Number of background OBs Number of startup OBs Number of asynchronous error OBs Number of synchronous error OBs Per priority class additional within an error OB 1 Counters, timers and their retentivity S7 counter Number Number adjustable — lower limit — upper limit — upper limit — upper limit — lower limit — upper limit — lower limit — upper limit Unlimited (limited only by RAM capacity) S7 times Number Number Number Ad8 Retentivity — adjustable Yes 	 Number of isochronous mode OBs 	3; OB 61-63
 Number of startup OBs Number of asynchronous error OBs Number of synchronous error OBs Number of synchronous error OBs Number of synchronous error OBs YOB 80-88 Number of synchronous error OBs Per priority class additional within an error OB Counters, timers and their retentivity To counter Number Number Adjustable Lower limit Uniper limit Pigesent FB Number Number Number Number Number Number Auda Number Auda Auda Pes 	 Number of multicomputing OBs 	1
 Number of startup OBs Number of asynchronous error OBs Number of synchronous error OBs Number of synchronous error OBs Number of synchronous error OBs YOB 80-88 Number of synchronous error OBs Per priority class additional within an error OB Counters, timers and their retentivity To counter Number Number Adjustable Lower limit Uniper limit Pigesent FB Number Number Number Number Number Number Auda Number Auda Auda Pes 	Number of background OBs	1
 Number of asynchronous error OBs Number of synchronous error OBs 2; OB 121, 122 Nesting depth per priority class additional within an error OB 1 Counters, timers and their retentivity S7 counter Number Aumber Adjustable Hower limit Upper limit Type Number Number Number Number Aumber Augustable Yes 		2; OB 100, 102
Number of synchronous error OBs 2; OB 121, 122 Nesting depth • per priority class • additional within an error OB 1 Counters, timers and their retentivity S7 counter • Number • Number 2 048 Retentivity — adjustable — lower limit — upper limit — preset — lower limit — upper limit 9999 IEC counter • present • present • Type • Number • Algustable • Yes • Number • Number • Algustable • Yes • Retentivity — adjustable Yes		
Nesting depth		
per priority class additional within an error OB Counters, timers and their retentivity S7 counter Number 2 048 Retentivity — adjustable — lower limit — upper limit — preset — lower limit — upper limit SFB Number Number Number Number Alumber	•	, ,
additional within an error OB Counters, timers and their retentivity S7 counter Number Number 2 048 Retentivity - adjustable - lower limit - upper limit 999 IEC counter Present Type Number Number Unlimited (limited only by RAM capacity) S7 times Number Number Pessent Ves Retentivity - adjustable Yes		24
S7 counter ◆ Number 2 048 Retentivity ✓ Yes ✓ O — lower limit 0 ✓ O — upper limit 2 047 ✓ O — preset Z 0 to Z 7 Counting range ✓ Iower limit 0 ✓ O — upper limit 999 IEC counter ✓ Yes ✓ Type ✓ SFB • Number Unlimited (limited only by RAM capacity) ✓ S7 times • Number 2 048 Retentivity — adjustable Yes		1
S7 counter ◆ Number 2 048 Retentivity ✓ Yes ✓ O — lower limit 0 ✓ O — upper limit 2 047 ✓ O — preset Z 0 to Z 7 Counting range ✓ Iower limit 0 ✓ O — upper limit 999 IEC counter ✓ Yes ✓ Type ✓ SFB • Number Unlimited (limited only by RAM capacity) ✓ S7 times • Number 2 048 Retentivity — adjustable Yes	Counters, timers and their retentivity	
● Number 2 048 Retentivity — adjustable — lower limit 0 — upper limit 2 047 — preset Z 0 to Z 7 Counting range — lower limit — upper limit 999 IEC counter Yes ● present Yes ● Type SFB ● Number Unlimited (limited only by RAM capacity) S7 times ● Number ● Number 2 048 Retentivity — adjustable		
Retentivity — adjustable Yes — lower limit 0 — upper limit 2 047 — preset Z 0 to Z 7 Counting range — lower limit — upper limit 999 IEC counter Yes • present Yes • Type SFB • Number Unlimited (limited only by RAM capacity) S7 times • Number • Number 2 048 Retentivity — adjustable		2 048
— adjustable Yes — lower limit 0 — upper limit 2 0 to Z 7 Counting range — lower limit 0 — upper limit 999 IEC counter • present Yes • Type SFB • Number Unlimited (limited only by RAM capacity) S7 times Vunder • Number 2 048 Retentivity Yes		2 040
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— upper limit 2 047 — preset Z 0 to Z 7 Counting range — lower limit 0 — upper limit 999 IEC counter • present Yes • Type SFB • Number Unlimited (limited only by RAM capacity) S7 times Number • Number 2 048 Retentivity — adjustable		
— preset Z 0 to Z 7 Counting range 0 — lower limit 999 IEC counter Yes ● present Yes ● Type SFB ● Number Unlimited (limited only by RAM capacity) S7 times ● Number ● Number 2 048 Retentivity Yes		
Counting range lower limit upper limit 999 IEC counter present present Type Number Number Number Number Number Number 2 048 Retentivity adjustable Retentivity adjustable Number Retentivity Adjustable Retentivity Adjustable Number Present Output Outp		
lower limit 0 999 IEC counter		20021
— upper limit 999 IEC counter		٥
IEC counter		
 present Type Number Number Unlimited (limited only by RAM capacity) S7 times Number 2 048 Retentivity — adjustable Yes 		333
● Type SFB ● Number Unlimited (limited only by RAM capacity) S7 times ● Number 2 048 Retentivity — adjustable Yes		Voc
 Number S7 times Number 2 048 Retentivity — adjustable Yes 	•	
S7 times ● Number 2 048 Retentivity — adjustable Yes		
● Number 2 048 Retentivity — adjustable Yes		Onlimited (illinited only by KAIVI capacity)
Retentivity — adjustable Yes		2.048
— adjustable Yes		Z U40
		Van
— iower limit		
	— iowei iiriit	U

— 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
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	Total Working and load memory (with backup battery)
Number, max.	8 kbyte; Size of bit memory address area
	Yes
Retentivity available Detentivity project	
Retentivity preset	MB 0 to MB 15
Number of clock memories	8
Local data	40 lib. 4-
adjustable, max.	16 kbyte
• preset	8 kbyte
Address area	
I/O address area	
Inputs	8 kbyte
 Outputs 	8 kbyte
Process image	
Inputs, adjustable	8 kbyte
Outputs, adjustable	8 kbyte
Inputs, default	256 byte
Outputs, default	256 byte
consistent data, max.	244 byte
Access to consistent data in process image	Yes
Subprocess images	133
Number of subprocess images, max.	15
Digital channels	10
_	65 536
Inputs of which control	65 536
— of which central	
• Outputs	65 536
— of which central	65 536
Analog channels	
• 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	Yes; 4 CPUs max. (with UR1 or UR2)
Interface modules	
- Number of connectable IMe (total) may	
 Number of connectable IMs (total), max. 	6
 Number of connectable livis (total), max. Number of connectable IM 460s, max. 	6 6
Number of connectable IM 460s, max.	6
Number of connectable IM 460s, max.Number of connectable IM 463s, max.	
Number of connectable IM 460s, max. Number of connectable IM 463s, max. Number of DP masters	6 4; IM 463-2
 Number of connectable IM 460s, max. Number of connectable IM 463s, max. Number of DP masters integrated 	6 4; IM 463-2 1
 Number of connectable IM 460s, max. Number of connectable IM 463s, max. Number of DP masters integrated via CP 	6 4; IM 463-2 1 10
 Number of connectable IM 460s, max. Number of connectable IM 463s, max. Number of DP masters integrated via CP via IM 467 	6 4; IM 463-2 1 10 4
 Number of connectable IM 460s, max. Number of connectable IM 463s, max. Number of DP masters integrated via CP via IM 467 Mixed mode IM + CP permitted 	6 4; IM 463-2 1 10 4 No; IM 467 cannot be used jointly with CP 443-5 Ext. or CP 443-1 in PROFINET IO mode
 Number of connectable IM 460s, max. Number of connectable IM 463s, max. Number of DP masters integrated via CP via IM 467 Mixed mode IM + CP permitted via interface module	6 4; IM 463-2 1 10 4 No; IM 467 cannot be used jointly with CP 443-5 Ext. or CP 443-1 in PROFINET IO mode 1; IF 964-DP
 Number of connectable IM 460s, max. Number of connectable IM 463s, max. Number of DP masters integrated via CP via IM 467 Mixed mode IM + CP permitted 	6 4; IM 463-2 1 10 4 No; IM 467 cannot be used jointly with CP 443-5 Ext. or CP 443-1 in PROFINET IO mode

Number of IO Controllers	
integrated	1
• via CP	4
Number of operable FMs and CPs (recommended)	4
FM	Limited by number of clots and number of connections
• CP, PtP	Limited by number of slots and number of connections CP 440: Limited by number of slots; CP 441: Limited by number of slots and number of connections
PROFIBUS and Ethernet CPs	14; In total max. 10 CPs as DP master and PROFINET controller, of which up to 10 IMs or CPs as DP master and up to 4 CPs as PROFINET controller
Slots	PROFINE I CONTroller
required slots	2
Time of day	
Clock	
Hardware clock (real-time)	Yes
	Yes
retentive and synchronizable Resolution	
	1 ms
Deviation per day (buffered), max. Deviation per day (subseffered), max.	1.7 s; Power off
Deviation per day (unbuffered), max.	8.6 s; For power On
Operating hours counter	40
• 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	Yes
• to IF 964 DP	Yes
Time difference in system when synchronizing via	
• Ethernet, max.	10 ms
• MPI, max.	200 ms
nterfaces	200 1110
Interfaces/bus type	1 v MDI/DDOEIRI IS DD 1 v DDOEINET (2 north) 1 v DDOEIRI IS DD
interraces/bus type	1 x MPI/PROFIBUS DP, 1 x PROFINET (2 ports), 1 x PROFIBUS DP (optionally pluggable)
Number of RS 485 interfaces	1; Combined MPI / PROFIBUS DP
Number of other interfaces	1; PROFIBUS DP with IF 964-DP (plug-in option; MLFB: 6ES7964-
	2AA04-0AB0)
1. Interface	
Interface type	MPI/PROFIBUS DP
Isolated	Yes
Power supply to interface (15 to 30 V DC), max.	150 mA
Interface types	
• RS 485	Yes
Protocols	
• MPI	Yes
PROFIBUS DP master	Yes
PROFIBUS DP slave	Yes
MPI	100
Number of connections	32; If a diagnostics repeater is used on the line, the number of
Townsiesies and and	connection resources on the line is reduced by 1
Transmission rate, max.	12 Mbit/s
Transmission rate, max. Services	12 MDIVS

— PG/OP communication	Yes
	Yes
— Routing— Global data communication	Yes
Global data communication S7 basic communication	Yes
— S7 communication	Yes
— S7 communication, as client	Yes
— S7 communication, as server PROFIBUS DP master	Yes
	16: If a diagnostics repeater is used on the line, the number of
Number of connections, max.	16; 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
Isochronous mode	Yes
— SYNC/FREEZE	Yes
 Activation/deactivation of DP slaves 	Yes
 Direct data exchange (slave-to-slave communication) 	Yes
— 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	16
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
— 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)	No
communication)	
— DPV1	No
Transfer memory	
— Inputs	244 byte
— Outputs	244 byte
2. Interface	

Inclated	Voc
Isolated	Yes Vac: Autoconcing
automatic detection of transmission rate	Yes; Autosensing
Autonegotiation Autocrossing	Yes Yes
Change of IP address at runtime, supported	Yes
	165
Interface types	Yes
RJ 45 (Ethernet)Number of ports	2
	Yes
integrated switch Protocols	165
PROFINET IO Controller	Yes
PROFINET IO Device	Yes
PROFINET CBA	Yes
PROFIBUS DP master	No
PROFIBUS DP slave	No
Open IE communication	Yes
Web server	Yes
Point-to-point connection	No
Media redundancy	Yes
PROFINET IO Controller	160
Transmission rate, max.	100 Mbit/s
Services	100 Mibius
— PG/OP communication	Yes
— S7 communication	Yes
— Isochronous mode	Yes; Only with IRT and the High Performance option
Shared device	Yes
Prioritized startup	Yes
Number of IO devices with prioritized startup,	32
max.	J2
 Number of connectable IO Devices, max. 	256
 Of which IO devices with IRT, max. 	64
— of which in line, max.	64
 Number of IO Devices with IRT and the option "high flexibility" 	256
— of which in line, max.	61
 Number of connectable IO Devices for RT, max. 	256
— of which in line, max.	256
 Activation/deactivation of IO Devices 	Yes
 Number of IO Devices that can be simultaneously activated/deactivated, max. 	8
— IO Devices changing during operation (partner ports), supported	Yes
Number of IO Devices per tool, max.	8; 8 parallel calls of the SFC 12 "D_ACT_DP" possible per line. Max. 32 IO Devices changing during operation (partner ports) are supported
Device replacement without swap medium	Yes
— Send cycles	250 μs, 500 μs, 1 ms, 2 ms, 4 ms additionally with IRT with high performance: 250 μs to 4 ms in 125 μs frame
— Updating time	250 µs to 512 ms; minimum value depends on preset communication share for PROFINET IO, on the number of IO Devices and on the amount of configured user data, see PROFINET system description
Address area	and a confidence and a
— Inputs, max.	8 kbyte
— Outputs, max.	8 kbyte
User data consistency, max.	1 024 byte
PROFINET IO Device	
Services	
— PG/OP communication	Yes
— S7 communication	Yes
Isochronous mode	No

— IRT	Yes
 Prioritized startup 	Yes
— Shared device	Yes
 Number of IO Controllers with shared device, 	2
max.	
Transfer memory	4.4401 (
— Inputs, max.	1 440 byte; Per IO Controller with shared device
— Outputs, max.	1 440 byte; Per IO Controller with shared device
Submodules	
— Number, max.	64
— User data per submodule, max.	1 024 byte
PROFINET CBA	
acyclic transmission	Yes
cyclic transmission	Yes
Open IE communication	
 Number of connections, max. 	62
 Local port numbers used at the system end 	0, 20, 21, 25, 80, 102, 135, 161, 34962, 34963, 34964, 65532, 65533, 65534, 65535
 Keep-alive function, supported 	Yes
3. Interface	
Interface type	Pluggable interface module (IF)
Plug-in interface modules	IF 964-DP (MLFB: 6ES7964-2AA04-0AB0)
Isolated	Yes
Power supply to interface (15 to 30 V DC), max.	150 mA
automatic detection of transmission rate	No
Interface types	
• RS 485	Yes
Protocols	
• MPI	No
PROFIBUS DP master	Yes
PROFIBUS DP slave	Yes
PROFIBUS DP master	133
Number of connections, max.	16
Transmission rate, max. Transmission rate, max.	12 Mbit/s
Number of DP slaves, max.	96
Services	30
— 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 communication) 	Yes
— DPV0	Yes
— DPV1	Yes
Address area	
— Inputs, max.	6 kbyte
— Outputs, max.	6 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	.20 0)(0
Number of connections	16
GSD file	http://support.automation.siemens.com/WW/view/en/113652
Transmission rate, max.	12 Mbit/s
automatic baud rate search	No No
Address area, max.	32; Virtual slots
User data per address area, max.	32 byte
— of which consistent, max.	32 byte
Services	V
— PG/OP communication	Yes
— 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)	No
communication)	
— DPV1	No
Transfer memory	
— Inputs	244 byte
— Outputs	244 byte
Protocols	
Redundancy mode	
Media redundancy	
 Switchover time on line break, typ. 	200 ms
Number of stations in the ring, max.	50
SIMATIC communication	
S7 routing	Yes
Open IE communication	
• TCP/IP	Yes; via integrated PROFINET interface and loadable FBs
 Number of connections, max. 	62
— Data length, max.	32 kbyte
 several passive connections per port, supported 	Yes
• ISO-on-TCP (RFC1006)	Yes; Via integrated PROFINET interface or CP 443-1 Adv. and loadable
	FBs
 Number of connections, max. 	62
— Data length, max.	32 kbyte; 1 452 bytes via CP 443-1 Adv.
• UDP	Yes; via integrated PROFINET interface and loadable FBs
 Number of connections, max. 	62
— Data length, max.	1 472 byte
Web server	
• supported	Yes
 User-defined websites 	Yes
Number of HTTP clients	5
Isochronous mode	
Equidistance	Yes
Number of DP masters with isochronous mode	2
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 	63
 Number of connectable OPs with message processing 	63; When using Alarm_S/SQ and Alarm_D/DQ

Data record routing	Yes
Global data communication	
• supported	Yes
 Number of GD loops, max. 	8
 Number of GD packets, transmitter, max. 	8
 Number of GD packets, receiver, max. 	16
 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
Standard communication (FMS)	
• supported	Yes; Via CP and loadable FB
PROFINET CBA (at set setpoint communication load)	
Setpoint for the CPU communication load	20 %
 Number of remote interconnection partners 	32
 Number of functions, master/slave 	150
 Total of all master/slave connections 	4 500
 Data length of all incoming connections 	45 000 byte
master/slave, max.	45.000 / 4
 Data length of all outgoing connections master/slave, max. 	45 000 byte
 Number of device-internal and PROFIBUS interconnections 	1 000
 Data length of device-internal und PROFIBUS interconnections, max. 	16 000 byte
Data length per connection, max.	2 000 byte
Remote interconnections with acyclic transmission	
— Sampling interval, min.	200 ms; Depending on preset communication load, number of interconnections and data length used
 Number of incoming interconnections 	250
 Number of outgoing interconnections 	250
 Data length of all incoming interconnections, max. 	8 000 byte
 Data length of all outgoing interconnections, max. 	8 000 byte
 Data length per connection, max. 	2 000 byte
Remote interconnections with cyclic transmission	
 Transmission frequency: Transmission interval, min. 	1 ms; Depending on preset communication load, number of interconnections and data length used
 Number of incoming interconnections 	300
 Number of outgoing interconnections 	300
 Data length of all incoming interconnections, max. 	4 800 byte
 Data length of all outgoing interconnections, max. 	4 800 byte
 Data length per connection, max. 	450 byte
HMI variables via PROFINET (acyclic)	
 Number of stations that can log on for HMI variables (PN OPC/iMap) 	2x PN OPC/1x iMap

— HMI variable updating	500 ms
Number of HMI variables	1 000
Data length of all HMI variables, max.	32 000 byte
PROFIBUS proxy functionality	32 000 byte
— supported	Yes; 32 PROFIBUS slaves max. connectable
Data length per connection, max.	240 byte; Slave-dependent
Number of connections	240 byte, Glave-dependent
• overall	64
usable for PG communication	63
reserved for PG communication	1
adjustable for PG communication, max.	0
usable for OP communication	63
reserved for OP communication	1
adjustable for OP communication, max.	0
usable for S7 basic communication	62
reserved for S7 basic communication	0
	0
 adjustable for S7 basic communication, max. usable for S7 communication 	
usable for S7 communication reserved for S7 communication	62 0
	0
— adjustable for S7 communication, max.	
usable for routing	31
— reserved for routing	0
— adjustable for routing, max. S7 message functions	0
	63
Number of login stations for message functions, max. Symbol-related messages	Yes
SCAN procedure	Yes
Program alarms	Yes
Process diagnostic messages	Yes
simultaneously active Alarm-S blocks, max.	400; Simultaneously active alarm_S/SQ blocks or alarm_D/DQ blocks
Alarm 8-blocks	Yes
Number of instances for alarm 8 and S7	1 200
communication blocks, max.	1 200
• preset, max.	300
Process control messages	Yes
Number of archives that can log on simultaneously (SFB	16
37 AR_SEND)	
Number of messages	
• overall, max.	512
• in 100 ms grid, max.	128
• in 500 ms grid, max.	256
• in 1000 ms grid, max.	512
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	V 11 / /2 11 / / /
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, distributed I/Os
Number of variables, max.	256
Diagnostic buffer	V
• present	Yes

 Number of entries, max. 	3 200
— adjustable	Yes
— preset	120
Service data	V
• can be read out	Yes
Standards, approvals, certificates	v.
CE mark	Yes
CSA approval	Yes
UL approval	Yes
cULus	Yes
FM approval	Yes Yes
KC approval Use in hazardous areas	Tes
ATEX	ATEX II 3G Ex nA IIC T4 Gc
Ambient conditions	ATEX II 39 EXTIA IIC 14 GC
Ambient temperature during operation • min.	0 °C
• max.	0 °C
	00 C
Configuration coffware	
Configuration software • STEP 7	Yes
Programming	165
Command set	see instruction list
Nesting levels	7
Access to consistent data in process image	Yes
System functions (SFC)	see instruction list
System functions (OF O) System function blocks (SFB)	see instruction list
Programming language	See instruction list
— 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
— 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
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
Know-how protection	interfaces
User program protection/password protection	Yes
Block encryption	Yes
Dimensions	
Width	50 mm
	290 mm
Height Denth	219 mm
Depth	2 19 Hill

Weights	
Weight, approx.	900 g
last modified:	12/18/2020 🗗
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