SIEMENS

Data sheet

6ES7414-3EM07-0AB0



SIMATIC S7-400, CPU 414-3 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 414-3 PN/DP
HW functional status	01
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
Supply voltage	
Rated value (DC)	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.	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
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
• present	
• with battery	Yes; all data
	Yes; all data No
with battery	
with batterywithout battery	

	050
Backup current, max.	850 μA
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 	5 V DC to 15 V DC
CPU processing times	
for bit operations, typ.	18.75 ns
for word operations, typ.	18.75 ns
for fixed point arithmetic, typ.	18.75 ns
for floating point arithmetic, typ.	37.5 ns
CPU-blocks	01.0110
DB	
Number, max.	6 000; Number range: 1 to 16000
	-
• Size, max.	64 kbyte
FB	2.000 Number renges 0 to 7000
Number, max.	3 000; Number range: 0 to 7999
• Size, max.	64 kbyte
FC	
• Number, max.	3 000; 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	4; OB 10-13
 Number of delay alarm OBs 	4; OB 20-23
 Number of cyclic interrupt OBs 	4; OB 32, 33, 34, 35 (shortest cycle that can be set = 500 μ s)
 Number of process alarm OBs 	4; OB 40-43
 Number of DPV1 alarm OBs 	3; OB 55-57
 Number of isochronous mode OBs 	3; OB 61-63
 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	1
Counters, timers and their retentivity	
S7 counter	
Number	2 048
Retentivity	
— adjustable	Yes
— 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	2.049
Number	2 048
Retentivity	
— adjustable	Yes
— preset	No times retentive
Time range	
— lower limit	10 ms
— upper limit	9 990 s
IEC timer	
present Type	Yes SFB

Data areas and their researching Total aversign and back memory (with backup battery) Field Total aversign and back memory (with backup battery) Field Bobyte: Size of bit memory address area • Receiving present Mit 0 to Mit 15 • Receiving present Mit 0 to Mit 15 • Anuther of ock memories Bit 1 memory byte • adjustable: Bit Network • adjustable: Bit Network <th>Number</th> <th>Unlimited (limited only by RAM capacity)</th>	Number	Unlimited (limited only by RAM capacity)
Figs. Bit Stars, max. Bit Stars, Sta	Data areas and their retentivity	
• Reaching variableProvide Reserve Re	Retentive data area (incl. timers, counters, flags), max.	Total working and load memory (with backup battery)
• Renervisy positive Wein • Renervisy positive Bit Do Bit 5 • Auriber of clock memories Bit Nyte • adjustite, max. Bit Myte • function Bit Myte	Flag	
Headmin by preset M80 0 to M8 1 5 Number of clock memories B, in 1 memory byte Address B ktyte Address B ktyte Address B ktyte Outputs Getsuit Outputs Getsuit </td <td></td> <td>8 kbyte; Size of bit memory address area</td>		8 kbyte; Size of bit memory address area
• Rundber of clock memories 8, in 1 memory byte Local data • Ricyte • Individue, max. 16 ktyte • Inputs 8 ktyte Via dofess area • Ricyte • Inputs 8 ktyte • Inputs, adjustable 8 ktyte • Inputs, adjustable 8 ktyte • Outputs, adjustable 8 ktyte • Outputs 6 5 530 • of which central 6 5 536 • Outputs 6 6 536 • Outputs 4 086 • Outputs 4 086 • Outputs 4 086 • Outputs 4 086 • Outputs 10 ktyte	Retentivity available	Yes
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• integrated 1 • 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 1; IF 964-DP • Number of pluggable S5 modules (via adapter capsule in central device), max. 6 Number of IO Controllers 6 • 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) 1 • 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 slots and number of slots and number of slots; CP 441: Limited by number of slots and number of slots and number of slots and number of slots and number of slots; CP 441: Limited by number of slots and number of slots; CP 441: Limited by number of slots and 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		4, IVI 403-2
• via CP10; CP 443-5 Extended• via IM 4674• Mixed mode IM + CP permittedNo; IM 467 cannot be used jointly with CP 443-5 Ext. or CP 443-1 in PROFINET IO mode• via interface module1; IF 964-DP• Number of pluggable S5 modules (via adapter capsule in central device), max.6Number of IO Controllers1• via CP1• via CP1• via CP4; 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)1• FMLimited by number of slots and number of connections• CP, PtPCP 440: Limited by number of slots; CP 441: Limited by number of slots and number of connections• PROFIBUS and Ethernet CPs14; 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		4
• via IM 4674• Mixed mode IM + CP permittedNo; IM 467 cannot be used jointly with CP 443-5 Ext. or CP 443-1 in PROFINET IO mode• via interface module1; IF 964-DP• Number of pluggable S5 modules (via adapter capsule in central device), max.6Number of IO Controllers1• via CP4; Max. 4 in the central controller; no mixed operation of different CP 443-1 types in PROFINET IO mode• via CP4; Max. 4 in the central controller; no mixed operation of different CP 443-1 types in PROFINET IO mode• FM • CP, PtPLimited 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 CPs14; 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		
• Mixed mode IM + CP permittedNo; IM 467 cannot be used jointly with CP 443-5 Ext. or CP 443-1 in PROFINET IO mode• via interface module1; IF 964-DP• Number of pluggable S5 modules (via adapter capsule in central device), max.6Number of IO Controllers1• integrated1• via CP4; Max. 4 in the central controller; no mixed operation of different CP 443-1 types in PROFINET IO modeNumber of operable FMs and CPs (recommended)Limited by number of slots and number of connections• FMLimited by number of slots; CP 441: Limited by number of slots and number of connections• PROFIBUS and Ethernet CPs14; 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		
PROFINET IO mode • via interface module 1; IF 964-DP • Number of pluggable S5 modules (via adapter capsule in central device), max. 6 Number of IO Controllers 1 • integrated 1 • 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) Limited by number of slots and number of connections • FM Limited by number of slots; CP 441: Limited by number of slots and number of connections • CP, PtP 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		
• via interface module1; IF 964-DP• Number of pluggable S5 modules (via adapter capsule in central device), max.6Number of IO Controllers1• integrated1• via CP4; Max. 4 in the central controller; no mixed operation of different CP 443-1 types in PROFINET IO modeNumber of operable FMs and CPs (recommended)Limited by number of slots and number of connections• FMLimited by number of slots and number of connections• CP, PtPCP 440: Limited by number of slots; CP 441: Limited by number of slots and number of slots; and number of slots 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	 Mixed mode IM + CP permitted 	
 Number of pluggable S5 modules (via adapter capsule in central device), max. Number of IO Controllers integrated via CP Mumber of operable FMs and CPs (recommended) FM CP, PtP CP 440: Limited by number of slots and number of slots; CP 441: Limited by number of slots and number of slots; CP 441: Limited by number of slots and number of slots and number of slots and number of slots; CP 441: Limited by number of slots and 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 	• via interface module	
central device), max. Number of IO Controllers • integrated 1 • 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) Example • 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 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		
• integrated 1 • 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 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		
• 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) • EM • 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 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	Number of IO Controllers	
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 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	• integrated	1
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 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	• via CP	
 FM CP, PtP CP 440: 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 		types in PROFINET IO mode
 CP, PtP 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 		
PROFIBUS and Ethernet CPs 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		-
• 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	• CP, PtP	
to 10 IMs or CPs as DP master and up to 4 CPs as PROFINET controller	• DECEIDING and Ethernet CDa	
	• FRUFIDUS and Ethemet UPS	
SIOIS	Slots	

• 1	required	slots
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required slots	2
Time of day	
Clock	
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; 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
• on MPI, device	Yes
• to DP, master	Yes
• on DP, device	Yes
• in AS, master	Yes
• in AS, device	Yes
on Ethernet via NTP	Yes; As client
• to IF 964 DP	Yes
Time difference in system when synchronizing via	100
Ethernet, max.	10 ms
• MPI, max.	200 ms
Interfaces	200 m3
Interfaces/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-
	OABO)
1. Interface	
Interface type	MPI/PROFIBUS DP
Isolated	Yes
Interface types	
• RS 485	Yes
 Output current of the interface, max. 	150 mA
Protocols	
• MPI	Yes
PROFIBUS DP master	Yes
PROFIBUS DP device	Yes
MPI	
Number of connections	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
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.	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
max. number of DP devices	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 devices 	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 device	
— user data per DP device, max.	244 byte
— Inputs, max.	244 byte
— Outputs, max.	244 byte
— Slots, max.	244
— per slot, max.	128 byte
1st interface / PROFIBUS DP device / header	
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
	Yes
— S7 communication	
— 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	
	DOCINET
Interface type	PROFINET
Isolated	Yes
automatic detection of transmission rate	Yes; Autosensing
Autonegotiation	Yes
Autocrossing	Yes
Change of IP address at runtime, supported	Yes; Assignment by higher-level IO-Controller or by the user program with SFB104 "IP_CONF"
Interface types	
RJ 45 (Ethernet)	Yes
Number of ports	2
integrated switch	Yes
Protocols	
PROFINET IO Controller	Yes
PROFINET IO Device	Yes
PROFINET CBA	Yes
PROFIBUS DP master	No
PROFIBUS DP device	No

Open IE communication	Yes
Web server	Yes
Point-to-point connection	No
Media redundancy	Yes
PROFINET IO Controller	
Transmission rate, max.	100 Mbit/s
Services	
— 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, max. 	32
- 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. of which in line, may 	256 256
 — of which in line, max. — Activation/deactivation of IO Devices 	256 Yes
— Activation/deactivation of IO Devices — Number of IO Devices that can be simultaneously	Yes 8
 – Number of 10 Devices that can be simultaneously activated/deactivated, max. – IO Devices changing during operation (partner 	Yes
 — No Devices changing during operation (particle ports), supported — Number of IO Devices per tool, max. 	8; 8 parallel calls of the SFC 12 "D ACT DP" possible per line. Max. 32 IO
— Device replacement without swap medium	Devices changing during operation (partner ports) are supported Yes
	250 μs, 500 μs, 1 ms, 2 ms, 4 ms additionally with IRT with high performance:
— Send cycles	$250 \ \mu\text{s}, 500 \ \mu\text{s}, 1 \ \text{ms}, 2 \ \text{ms}, 4 \ \text{ms}$ additionally with RT with high performance. 250 \ \mu s to 4 ms in 125 \ \mu s 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	
— 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, max.	2
Transfer memory	1 440 byte: Por IO Controller with abared douise
— Inputs, max. — Outputs, max.	1 440 byte; Per IO Controller with shared device 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)
Plug-in interface modules Isolated	Yes
automatic detection of transmission rate	No
	NO
Interface types	Vaa
RS 485	Yes
Output current of the interface, max.	150 mA
Protocols	Na
• MPI	No
PROFIBUS DP master	Yes
PROFIBUS DP device	Yes
PROFIBUS DP master	40
Number of connections, max.	16 40 MFW
Transmission rate, max.	12 Mbit/s
max. number of DP devices	96
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 devices 	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 device	
— user data per DP device, max.	244 byte
— Inputs, max.	244 byte
— Outputs, max.	244 byte
— Slots, max.	244
— per slot, max.	128 byte
3rd interface / PROFIBUS DP device / header	
 Number of connections 	16
• GSD file	http://support.automation.siemens.com/WW/view/en/113652
 transfer rate / at the 3rd interface / as DP slave / maximum 	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
— 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
— Data length, max. — 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. ● UDP 	32 kbyte; 1 452 bytes via CP 443-1 Adv.
	Yes; via integrated PROFINET interface and loadable FBs 62
- Number of connections, max.	
— Data length, max.	1 472 byte
Web server	Vac
 supported User-defined websites 	Yes
	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 / header	
PG/OP communication	Yes
 Number of connectable OPs with message processing 	63; When using Alarm_S/SQ and Alarm_D/DQ
 Number of connectable OPs without message processing 	63
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
Number of simultaneous AG-SEND/AG-RECV orders per CPU, max.	24/24
Standard communication (FMS)	
• supported	Yes; Via CP and loadable FB
communication functions / PROFINET CBA (with set target commu	inication load) / header
Setpoint for the CPU communication load	20 %
Number of remote interconnection partners	32

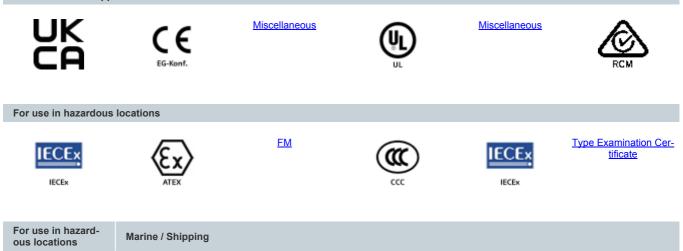
	450
number of master/device functions	150
total of all master/device connections	4 500
 data length of all incoming master/device connections, max. 	45 000 byte
 data length of all outgoing master/device connections, max. 	45 000 byte
 Number of device-internal and PROFIBUS interconnections 	1 000
 Data length of device-internal und PROFIBUS interconnections, max. 	16 000 byte
 Data length per connection, max. 	2 000 byte
performance data / PROFINET CBA / remote interconnection /	/ with acyclic transfer / header
— 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
performance data / PROFINET CBA / remote interconnection /	/ with cyclic transfer / header
— 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
performance data / PROFINET CBA / HMI variables via PROF	FINET / acyclic / header
 — 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
performance data / PROFINET CBA / PROFIBUS proxy function	onality / header
— supported	Yes; 32 PROFIBUS slaves max. connectable
 — supported — Data length per connection, max. 	Yes; 32 PROFIBUS slaves max. connectable 240 byte; Slave-dependent
— Data length per connection, max.	
Data length per connection, max. Number of connections	240 byte; Slave-dependent
 — Data length per connection, max. Number of connections overall 	240 byte; Slave-dependent 64
 — Data length per connection, max. Number of connections overall usable for PG communication 	240 byte; Slave-dependent 64 63
 Data length per connection, max. Number of connections overall usable for PG communication reserved for PG communication 	240 byte; Slave-dependent 64 63 1
 Data length per connection, max. Number of connections overall usable for PG communication reserved for PG communication adjustable for PG communication, max. 	240 byte; Slave-dependent 64 63 1 0
 Data length per connection, max. Number of connections overall usable for PG communication reserved for PG communication adjustable for PG communication, max. usable for OP communication 	240 byte; Slave-dependent 64 63 1 0 63
 Data length per connection, max. Number of connections overall usable for PG communication reserved for PG communication adjustable for PG communication, max. usable for OP communication reserved for OP communication reserved for OP communication 	240 byte; Slave-dependent 64 63 1 0 63 1
 Data length per connection, max. Number of connections overall usable for PG communication reserved for PG communication adjustable for PG communication, max. usable for OP communication reserved for OP communication reserved for OP communication adjustable for OP communication adjustable for OP communication 	240 byte; Slave-dependent 64 63 1 0 63 1 1 0
 Data length per connection, max. Number of connections overall usable for PG communication reserved for PG communication adjustable for PG communication, max. usable for OP communication reserved for OP communication reserved for OP communication adjustable for OP communication usable for OP communication usable for S7 basic communication 	240 byte; Slave-dependent 64 63 1 0 63 1 1 0 63 2
 Data length per connection, max. Number of connections overall usable for PG communication reserved for PG communication adjustable for PG communication, max. usable for OP communication reserved for OP communication adjustable for OP communication adjustable for OP communication magination reserved for OP communication magination reserved for OP communication magination magination magination magination magination 	240 byte; Slave-dependent 64 63 1 0 63 1 1 0 63 63 1 0
 Data length per connection, max. Number of connections overall usable for PG communication reserved for PG communication adjustable for PG communication, max. usable for OP communication reserved for OP communication adjustable for OP communication reserved for OP communication adjustable for OP communication adjustable for S7 basic communication reserved for S7 basic communication adjustable for S7 basic communication 	240 byte; Slave-dependent 64 63 1 0 63 1 0 62 0 0 0
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 Data length per connection, max. Number of connections overall usable for PG communication reserved for PG communication adjustable for PG communication, max. usable for OP communication reserved for OP communication adjustable for OP communication adjustable for OP communication max. usable for S7 basic communication adjustable for S7 basic communication adjustable for S7 basic communication max. usable for S7 communication reserved for S7 communication adjustable for S7 communication adjustable for S7 communication adjustable for S7 communication 	240 byte; Slave-dependent 64 63 1 0 63 1 0 63 1 0 62 0 0 62 0 0 0 0 0 0 0
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 Data length per connection, max. Number of connections overall usable for PG communication reserved for PG communication adjustable for PG communication, max. usable for OP communication reserved for OP communication adjustable for OP communication, max. usable for S7 basic communication reserved for S7 basic communication adjustable for S7 basic communication adjustable for S7 basic communication reserved for S7 basic communication adjustable for S7 communication adjustable for S7 communication adjustable for S7 communication reserved for S7 communication 	240 byte; Slave-dependent 64 63 1 0 63 1 0 63 1 0 62 0 0 62 0 0 0 31 0
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blocks, max.	
• preset, max.	300
Process control messages	Yes
Number of archives that can log on simultaneously (SFB 37 AR_SEND)	16
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	
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	
• 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
CSA approval	Yes
UL approval	Yes
cULus	Yes
FM approval	Yes
RCM (formerly C-TICK)	Yes
KC approval	Yes
EAC (formerly Gost-R)	Yes
Use in hazardous areas	
• ATEX	ATEX II 3G Ex nA IIC T4 Gc
Ambient conditions	
Ambient temperature during operation	
• min.	0° 0
• max.	60 °C
configuration / header	
Configuration software	
• STEP 7	Yes
configuration / programming / header	
Command set	see instruction list
Nesting levels	7
 Access to consistent data in process image 	Yes
System functions (SFC)	see instruction list
System function blocks (SFB)	see instruction list
Programming language	
— LAD	Yes
— FBD	Yes
— STL	Yes
— SCL	Yes

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Approvals	/ Certificates	

General Product Approval



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