SIEMENS

Data sheet

6ES7416-3ES07-0AB0



SIMATIC S7-400, CPU 416-3 PN/DP Central processing unit with: Work memory 16 MB, (8 MB code, 8 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 416-3 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	10 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	16 Mbyte
 integrated (for program) 	8 Mbyte
• integrated (for data)	8 Mbyte
integrated (for data)expandable	8 Mbyte No
• expandable	
expandable Load memory	No
expandable Load memory expandable FEPROM	No Yes; with Memory Card (FLASH)
expandable Load memory expandable FEPROM expandable FEPROM, max.	No Yes; with Memory Card (FLASH) 64 Mbyte
expandable Load memory expandable FEPROM expandable FEPROM, max. integrated RAM, max.	No Yes; with Memory Card (FLASH) 64 Mbyte 1 Mbyte
expandable Load memory expandable FEPROM expandable FEPROM, max. integrated RAM, max. expandable RAM	No Yes; with Memory Card (FLASH) 64 Mbyte 1 Mbyte Yes; with Memory Card (RAM)
expandable Load memory expandable FEPROM expandable FEPROM, max. integrated RAM, max. expandable RAM expandable RAM, max.	No Yes; with Memory Card (FLASH) 64 Mbyte 1 Mbyte Yes; with Memory Card (RAM)
expandable Load memory expandable FEPROM expandable FEPROM, max. integrated RAM, max. expandable RAM expandable RAM, max. Backup	No Yes; with Memory Card (FLASH) 64 Mbyte 1 Mbyte Yes; with Memory Card (RAM) 64 Mbyte
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 expandable Load memory expandable FEPROM expandable FEPROM, max. integrated RAM, max. expandable RAM expandable RAM, max. Backup present with battery without battery without battery 	No Yes; with Memory Card (FLASH) 64 Mbyte 1 Mbyte Yes; with Memory Card (RAM) 64 Mbyte Yes Yes all data

	Backup current max	850 110
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CPUEDocks OB 000, Number range: 1 to 16000 • Size, max. 64 kbyte FB 5000, Number range: 0 to 7999 • Size, max. 64 kbyte FC 5000, Number range: 0 to 7999 • Number, max. 64 kbyte FC 5000, Number range: 0 to 7999 • Number, max. 64 kbyte FC 5000, Number range: 0 to 7999 • Number, max. 64 kbyte OB 528, max. • Number, max. 64 kbyte • Number, max. 56 kbyte • Number of time along OBs 1, 08 10-17 • Number of time along OBs 8, 08 10-17 • Number of odelay alarn OBs 8, 08 20-23 • Number of odelay alarn OBs 9, 08 30-36 (bortest cycle that can be set = 500 µs) • Number of odelay alarn OBs 3, 08 55-57 • Number of abstrago OBs 1, 08 80 • Number of background OBs 1, 08 80 • Number of background OBs 1, 08 80 • Number of abstrago OBs 2, 08 10-102 • Number of abstrago OBs		
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• Number, max. 96 Kbyte FI 6 FI 5000, Number range: 0 to 7999 • Size, max. 66 Kbyte FO 5000, Number range: 0 to 7999 • Size, max. 66 Kbyte FO 5000, Number range: 0 to 7999 • Size, max. 66 Kbyte FO 5000, Number range: 0 to 7999 • Size, max. 66 Kbyte OB 5000, Number range: 0 to 7999 • Number, max. 56 kbyte • Number of free cycle OBS 1.0 B 1 • Number of free cycle OBS 1.0 B 1 • Number of olgcin Interupt OBS 9.0 B 3-03 (shortest cycle that can be set = 500 µs) • Number of process alarm OBS 8.0 B 4-47 • Number of pocks alarm OBS 8.0 B 4-47 • Number of pocks alarm OBS 1.0 B 80 • Number of bockronous mode OBS 1.0 B 80 • Number of bockronous error OBS 2.0 B 124 • Additional writin an error OB 2.0 B 124 • Additional writin an error OB 2.0 Is 27 Counting range 10 - preset 2.0 Is 27		
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• Number of free cycle OBs1, OB 1• Number of time alarn OBs8, OB 10-17• Number of delay alarn OBs4, OB 20-23• Number of cycle interrupt OBs9, OB 30-38 (shortest cycle that can be set = 500 µs)• Number of DPV1 alarn OBs3, OB 5557• Number of DPV1 alarn OBs3, OB 5557• Number of background OBs4, OB 60• Number of background OBs1, OB 60• Number of background OBs1, OB 90• Number of background OBs3, OB 100-102• Number of asynchronous erro OBs2, OB 121, 122Number of synchronous erro OBs2• Number of synchronous erro OBs2• Quatable2• Quatable2• Counters, timers and their retontivity2S7 counter2 0 to 2 7• Number2 0 to 2 7Counting range0- opter limit999IEC counterYes• Number2 048RetentivityST Inse• Number2 048• Number- opter limit• opter limit999• DesentYes• opter limit999• Number- opter limit• opter limit999• Durber limit0 ms• opter limit990 os• Diver limit10 ms• opter limit990 os• liec timer<		
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• Number of cyclic interrupt OBs9; OB 30-38 (shortest cycle that can be set = 500 μs)• Number of power alam OBs8; OB 40-47• Number of DPV 1 alam OBs3; OB 55-57• Number of sinchronous mode OBs4; OB 61-64• Number of sinchronous mode OBs1; OB 80• Number of startup OBs1; OB 80• Number of startup OBs3; OB 100-102• Number of synchronous error OBs9; OB 80-88• Number of synchronous error OBs2; OB 121, 122Number of synchronous error OBs2; OB 121, 122Number of synchronous error OBs2• Per priority class24• additional within an error OB22 Countors, timers and their retentivity2S7 counter2 048- adjustable2 048• number2 048• Retentivity		
• Number of process alarn OBs 8; 0B 40-47 • Number of process alarn OBs 3; 0B 55-57 • Number of shorthonous mode OBs 4; 0B 61-64 • Number of background OBs 1; 0B 60 • Number of startup OBs 1; 0B 80 • Number of startup OBs 3; 0B 100-102 • Number of startup OBs 9; 0B 80-88 • Number of synchronous error OBs 9; 0B 80-88 • Number of synchronous error OBs 24 • additional within an error OB 2 Counters, timers and their retontivity 24 • additional within an error OB 2 Counters, timers and their retontivity 24 • additional within an error OB 2 Counters, timers and their retontivity 24 • adjustable 2048 • Retentivity - - adjustable 20 to 27 Counting range - - lower limit 99 IEC counter - • present Yes • number 2048 Retentivity - - adjustable	-	
• Number of DPV1 alarm OBs3; OB 55-57• Number of sochronous mode OBs4; OB 81-84• Number of multicomputing OBs1; OB 90• Number of background OBs1; OB 90• Number of astrup OBs3; OB 100-102• Number of asynchronous error OBs9; OB 80-88• Number of asynchronous error OBs2; OB 121, 122Nesting depth2• er priority class24• additional within an error OB2Counters, liners and their retentivity2S7 counter2- adjustable2 04/8- negre priority class2 0 to Z 7Counting range0- ower limit0- upper limit999IEC counterYes• Number2 04/8IEC limer and their retentivityS7 B- negre limit0- upper limit999IEC counterYes- nower limit2 04/8- nower limit0- upper limit999IEC limer angeYes- nower limit10 ms- nover limit999IEC limerYes- nover limit990 sIEC limerIec Retentivity- nover limit990 sIEC limerYes- nover limit990 sIEC limerYes- nover limit990 s- nover limit990 s- nover limit990 s- nover limit990 s- nover limit990 s		
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• 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 2 • per priority class 24 • additional within an error OB 2 Counters, finens and their rotentivity 2 S7 counter 2 • Alumber of synchronous error OBs 2 Counters, finens and their rotentivity 2 S7 counter 2 • Number 2 048 Retentivity - - adjustable Yes - preset Z0 to Z 7 Counter 0 - upper limit 999 IEC counter - • present Yes • Number STB • Number 2 048 Retentivity - - adjustable Yes • Number 2 048 Retentivity - - adjustable No times retentiv		
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• Number of asynchronous error OBs 9; OB 80-88 • Number of synchronous error OBs 2; OB 121, 122 Nesting depth 24 • additional within an error OB 2 Counters, timers and their retentivity 2 S7 counter 2048 • Aumber of asynchronous error OBs 2 Counters, timers and their retentivity 2 S7 counter 2048 • Augustable Yes - adjustable Yes - preset Z 0 to Z 7 Counter 0 - upper limit 999 IEC counter • present Yes • Type SFB • Number 2048 Retentivity - adjustable Yes • Number 2048 Retentivity - adjustable Yes - preset No times retentive Time range Yes - preset No times retentive Time range - u	-	
• Number of synchronous error OBs2; OB 121, 122Nesting depth24• per priority class24• additional within an error OB2Counters, timers and their retentivityS7 counter2 048• Number2 048Retentivity adjustableYes- preset2 0 to 2 7Counting range0- lower limit999IEC counter• presentYes• presentSFB• Number2048Retentivity= adjustableYes- lower limit999IEC counter• presentYes• presentYes• nymeUnlimited (limited only by RAM capacity)S7 times- nore limit10 ms- presetNo times retentiveTime range lower limit10 ms- upper limit990 osIEC counter-	-	
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• per priority class 24 • additional within an error OB 2 Counters, timers and their retentivity 2 S7 counter 2 • Number 2 adjustable 2 - adjustable Yes - preset Z Z0 to Z 7 Counting range 0 - lower limit 0 - upper limit 999 IEC counter • present Yes • Type SFB • Number United (limited only by RAM capacity) S7 times 2 - adjustable Yes • preset 2 0		2; OB 121, 122
• additional within an error OB 2 Counters, timers and their retentivity \$7 counter 2 048 • Number 2 048 Retentivity		
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• Number 2 048 Retentivity - adjustable - adjustable Yes - preset No times retentive Time range - - lower limit 10 ms - upper limit 9 990 s IEC timer - • present Yes		Unlimited (limited only by RAM capacity)
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- adjustable Yes - preset No times retentive Time range - - lower limit 10 ms - upper limit 9 990 s IEC timer - • present Yes		2 048
Image No times retentive Time range 10 ms - lower limit 10 ms - upper limit 9 990 s IEC timer Yes		
Time range — lower limit 10 ms — upper limit 9 990 s IEC timer • present Yes	— adjustable	Yes
- lower limit 10 ms - upper limit 9 990 s IEC timer Yes	— preset	No times retentive
- upper limit 9 990 s IEC timer Yes	Time range	
IEC timer • present Yes	— lower limit	10 ms
• present Yes	— upper limit	9 990 s
	IEC timer	
• Type SFB	present	Yes
	• Туре	SFB

• Number	Unlimited (limited only by RAM capacity)
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; 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. 	32 kbyte
• preset	16 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	512 byte
Outputs, default	512 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	95
Multicomputing	Yes; 4 CPUs max. (with UR1 or UR2)
Interface modules	
Number of connectable IMs (total), max.	6
Number of connectable IM 460s, max.	
Number of connectable IM 463s, max. Number of DP masters	4; IM 463-2
integrated	1
integrated id CP	1 10; CP 443-5 Extended
• via CP • via IM 467	4
Mixed mode IM + CP permitted	4 No; IM 467 cannot be used jointly with CP 443-5 Ext. or CP 443-1 in
• Mixed mode in + or permitted	PROFINET IO mode
• via interface module	1; IF 964-DP
Number of pluggable S5 modules (via adapter capsule in	6
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)	
FM	Limited by number of slots or number of connections
• CP, PtP	CP 440: Limited by number of slots; CP 441: Limited by number of slots and
- 01,10	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	

•	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	1h
retentive	Yes
Clock synchronization	
• supported	Yes
• to MPI, master	Yes
• on MPI, device	Yes
	Yes
• to DP, master	
• 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	
 Ethernet, max. 	10 ms
• MPI, max.	200 ms
Interfaces	
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- 0AB0)
1. Interface	· · · ,
Interface type	MPI/PROFIBUS DP
Isolated	Yes
Interface types	
• RS 485	Yes
Output current of the interface, max.	150 mA
Protocols	130 114
MPI	Yes
	Yes
PROFIBUS DP master	
PROFIBUS DP device	Yes
MPI • Number of connections	44; If a diagnostics repeater is used on the line, the number of connection
• Transmission rate, max.	resources on the line is reduced by 1 12 Mbit/s
Services	Van
- 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
• max. number of DP devices	32
Services	
— PG/OP communication	Yes
. c.c. communication	

— 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 	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
- 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)	INU
— DPV1	No
Transfer memory	
— Inputs	244 byte
— Outputs	244 byte
2. Interface	
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	Yes
Protocols PROFINET IO Controller 	Yes
Protocols • PROFINET IO Controller • PROFINET IO Device	Yes
Protocols • PROFINET IO Controller • PROFINET IO Device • PROFINET CBA	Yes Yes
Protocols • PROFINET IO Controller • PROFINET IO Device	Yes

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.	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 	
— 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 μ s, 500 μ s, 1 ms, 2 ms, 4 ms additionally with IRT with high performance: 250 μ s to 4 ms in 125 μ 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 byta: Par IO Controllor with abarad davias
— Inputs, max.	1 440 byte; Per IO Controller with shared device
— Outputs, max. Submodules	1 440 byte; Per IO Controller with shared device
— 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.	94
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 (MI FR: 6FS7064 20004 00P0)
Plug-in interface modules	IF 964-DP (MLFB: 6ES7964-2AA04-0AB0)
Isolated automatic detection of transmission rate	Yes No
	NO
Interface types	N
• RS 485	Yes
Output current of the interface, max.	150 mA
Protocols	
• MPI	No
PROFIBUS DP master	Yes
PROFIBUS DP device	Yes
PROFIBUS DP master	
Number of connections, max.	32
Transmission rate, max.	12 Mbit/s
max. number of DP devices	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 devices 	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 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	32
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	Yes
— S7 communication, as server	Yes
 — Direct data exchange (slave-to-slave communication) 	No
— DPV1	No
Transfer memory	
— Inputs	244 byte
— Outputs	244 byte
Outputo	2++5,10

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.	94
— Data length, max.	32 kbyte Yes
— several passive connections per port, supported	
ISO-on-TCP (RFC1006)	Yes; Via integrated PROFINET interface or CP 443-1 and loadable FBs
— Number of connections, max.	94 20 kh ta 4 450 k ta si 00 440 4 A ta
— 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.	94
— 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 / header	
PG/OP communication	Yes
 Number of connectable OPs with message processing 	95; When using Alarm_S/SQ and Alarm_D/DQ
 Number of connectable OPs without message processing 	95
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	64/64
CPU, max.	
Standard communication (FMS)	
• supported	Yes; Via CP and loadable FB
communication functions / PROFINET CBA (with set target commu	unication load) / header
Setpoint for the CPU communication load	20 %
 Number of remote interconnection partners 	32
h e e e e	

number of master/device functions	150
total of all master/device connections	6 000
 data length of all incoming master/device connections, max. 	65 000 byte
 data length of all outgoing master/device connections, max. 	65 000 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 	500
 — Number of outgoing interconnections 	500
 Data length of all incoming interconnections, max. 	16 000 byte
 — Data length of all outgoing interconnections, max. 	16 000 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 	1 500
 — Data length of all HMI variables, max. 	48 000 byte
performance data / PROFINET CBA / PROFIBUS proxy functi	onality / header
— supported	Yes; 32 PROFIBUS slaves max. connectable
 — Data length per connection, max. 	240 byte; Slave-dependent
Number of connections	
Number of connections overall	96
	96 95
• overall	
overallusable for PG communication	95
 overall usable for PG communication — reserved for PG communication 	95 1
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 overall usable for PG communication reserved for PG communication adjustable for PG communication, max. usable for OP communication 	95 1 0 95
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blocks, max.	
• preset, max.	600
Process control messages	Yes
Number of archives that can log on simultaneously (SFB 37 AR_SEND)	32
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, distributed I/Os
 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
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 °C
• max.	0° C
configuration / header	
Configuration software	Va
• STEP 7	Yes
configuration / programming / header	and instruction list
Command set	see instruction list
Nesting levels	7
Access to consistent data in process image	Yes
System functions (SFC) System function blocks (SER)	see instruction list
System function blocks (SFB)	see instruction list
Programming language	Voc
- LAD	Yes
— FBD — STL	Yes Yes
- 311	
— SCL	Yes

— CFC	Yes	
— GRAPH	Yes	
— HiGraph®	Yes	
configuration / programming / number of simultaneously ac	tive SFC / header	
— 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	
configuration / programming / number of simultaneously ac	tive SFB / header	
- 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:	12/8/2024	

last modified:

12/8/2024 🕐