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
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)	
• 24 V DC	No; Power supply via system power supply
Input current	
from backplane bus 5 V DC, typ.	1.3 A
from backplane bus 5 V DC, max.	1.6 A
from backplane bus 24 V DC, max.	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	16 Mbyte
 integrated (for program) 	8 Mbyte
 integrated (for data) 	8 Mbyte
• expandable	No
Load memory	
expandable FEPROM	Yes; with Memory Card (FLASH)
 expandable FEPROM, max. 	64 Mbyte
 integrated RAM, max. 	1 Mbyte
• expandable RAM	Yes; with Memory Card (RAM)
• expandable RAM, max.	64 Mbyte
Backup	
● present	Yes
• with battery	Yes; all data
• without battery	No
Battery	
Backup battery	180 uA: up to 40 °C
Backup current, typ.	180 μA; up to 40 °C
Backup current, max.	
 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.	12.5 ns
for word operations, typ.	12.5 ns
for fixed point arithmetic, typ.	12.5 ns
for floating point arithmetic, typ.	25 ns
CPU-blocks	
DB	
• Number, max.	10 000; Number range: 1 to 16000
	64 kbyte
• Size, max.	
• Size, max. FB	
	5 000; Number range: 0 to 7999
FB	
FB ● Number, max.	5 000; Number range: 0 to 7999
FB • Number, max. • Size, max.	5 000; 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 	8; OB 10-17
 Number of delay alarm OBs 	4; OB 20-23
 Number of cyclic interrupt OBs 	9; OB 30-38 (shortest cycle that can be set = 500 μ s)
 Number of process alarm OBs 	8; OB 40-47
 Number of DPV1 alarm OBs 	3; OB 55-57
 Number of isochronous mode OBs 	4; OB 61-64
 Number of multicomputing OBs 	1; OB 60
 Number of background OBs 	1; OB 90
 Number of startup OBs 	3; OB 100-102
 Number of asynchronous error OBs 	9; OB 80-88
 Number of synchronous error OBs 	2; OB 121, 122
Nesting depth	
 per priority class 	24
 additional within an error OB 	2
Counters, timers and their retentivity	
S7 counter	
• Number	2 048
Retentivity	
— adjustable	Yes
— lower limit	0
— upper limit	2 047
— preset	Z 0 to Z 7
Counting range	
— lower limit	0
— upper limit	999
IEC counter	
IEC counter • present	Yes
 present Type	SFB
 present Type Number	
 present Type Number S7 times 	SFB Unlimited (limited only by RAM capacity)
 present Type Number S7 times Number 	SFB
 present Type Number S7 times Number Retentivity 	SFB Unlimited (limited only by RAM capacity) 2 048
 present Type Number S7 times Number Retentivity – adjustable 	SFB Unlimited (limited only by RAM capacity) 2 048 Yes
 present Type Number S7 times Number Retentivity adjustable lower limit 	SFB Unlimited (limited only by RAM capacity) 2 048 Yes 0
 present Type Number S7 times Number Retentivity – adjustable 	SFB Unlimited (limited only by RAM capacity) 2 048 Yes

Time range	
— lower limit	10 ms
— upper limit	9 990 s
IEC timer	
• present	Yes
• Туре	SFB
• Number	Unlimited (limited only by RAM capacity)
Data areas and their retentivity	
retentive data area in total	Total working and load memory (with backup battery)
Flag	
• Number, max.	16 kbyte; Size of bit memory address area
Retentivity available	Yes
Retentivity preset	MB 0 to MB 15
 Number of clock memories 	8; in 1 memory byte
Local data	
• adjustable, max.	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
or miler contrai	

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. 	6
 Number of connectable IM 463s, max. 	4; IM 463-2
Number of DP masters	
• 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	
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 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 	2
T	
Time of day Clock	
Hardware clock (real-time)	Yes
retentive and synchronizable	Yes
Resolution	1 ms
Resolution Resolution	1 ms
 Deviation per day (buffered), max. Deviation per day (unbuffered), max. 	1.7 s; Power off
Deviation per day (unbuffered), max.	8.6 s; For power On
Operating hours counter	16
Number	16 0 to 15
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; As client
• to IF 964 DP	Yes
Time difference in system when synchronizing via	
• Ethernet, max.	10 ms
• MPI, max.	200 ms
Interfaces	
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	
1. Interface Interface type	Integrated
	Integrated RS 485 / PROFIBUS + MPI
Interface type	
Interface type Physics	RS 485 / PROFIBUS + MPI
Interface type Physics Isolated	RS 485 / PROFIBUS + MPI Yes
Interface type Physics Isolated Power supply to interface (15 to 30 V DC), max.	RS 485 / PROFIBUS + MPI Yes 150 mA
Interface type Physics Isolated Power supply to interface (15 to 30 V DC), max. Number of connection resources	RS 485 / PROFIBUS + MPI Yes 150 mA MPI: 44, DP: 32 Yes
Interface type Physics Isolated Power supply to interface (15 to 30 V DC), max. Number of connection resources Protocols	RS 485 / PROFIBUS + MPI Yes 150 mA MPI: 44, DP: 32 Yes Yes
Interface type Physics Isolated Power supply to interface (15 to 30 V DC), max. Number of connection resources Protocols • MPI • PROFIBUS DP master • PROFIBUS DP slave	RS 485 / PROFIBUS + MPI Yes 150 mA MPI: 44, DP: 32 Yes
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Interface type Physics Isolated Power supply to interface (15 to 30 V DC), max. Number of connection resources Protocols • MPI • PROFIBUS DP master • PROFIBUS DP slave MPI • Number of connections	RS 485 / PROFIBUS + MPI Yes MPI: 44, DP: 32 Yes Yes Yes
Interface type Physics Isolated Power supply to interface (15 to 30 V DC), max. Number of connection resources Protocols • MPI • PROFIBUS DP master • PROFIBUS DP slave MPI • Number of connections • Transmission rate, max.	RS 485 / PROFIBUS + MPI Yes 150 mA MPI: 44, DP: 32 Yes Yes Yes 44; If a diagnostics repeater is used on the line, the number of connection resources on the line is reduced by 1
Interface type Physics Isolated Power supply to interface (15 to 30 V DC), max. Number of connection resources Protocols • MPI • PROFIBUS DP master • PROFIBUS DP slave MPI • Number of connections • Transmission rate, max. Services	RS 485 / PROFIBUS + MPI Yes 150 mA MPI: 44, DP: 32 Yes Yes Yes 44; If a diagnostics repeater is used on the line, the number of connection resources on the line is reduced by 1
Interface type Physics Isolated Power supply to interface (15 to 30 V DC), max. Number of connection resources Protocols • MPI • PROFIBUS DP master • PROFIBUS DP slave MPI • Number of connections • Transmission rate, max. Services — PG/OP communication	RS 485 / PROFIBUS + MPI Yes 150 mA MPI: 44, DP: 32 Yes Yes Yes 44; If a diagnostics repeater is used on the line, the number of connection resources on the line is reduced by 1 12 Mbit/s Yes
Interface type Physics Isolated Power supply to interface (15 to 30 V DC), max. Number of connection resources Protocols • MPI • PROFIBUS DP master • PROFIBUS DP slave MPI • Number of connections • Transmission rate, max. Services - PG/OP communication - Routing	RS 485 / PROFIBUS + MPI Yes 150 mA MPI: 44, DP: 32 Yes Yes Yes 44; If a diagnostics repeater is used on the line, the number of connection resources on the line is reduced by 1 12 Mbit/s
Interface type Physics Isolated Power supply to interface (15 to 30 V DC), max. Number of connection resources Protocols • MPI • PROFIBUS DP master • PROFIBUS DP slave MPI • Number of connections • Transmission rate, max. Services - PG/OP communication - Routing - Global data communication	RS 485 / PROFIBUS + MPI Yes 150 mA MPI: 44, DP: 32 Yes Yes Yes 44; If a diagnostics repeater is used on the line, the number of connection resources on the line is reduced by 1 12 Mbit/s Yes Yes Yes
Interface type Physics Isolated Power supply to interface (15 to 30 V DC), max. Number of connection resources Protocols • MPI • PROFIBUS DP master • PROFIBUS DP slave MPI • Number of connections • Transmission rate, max. Services	RS 485 / PROFIBUS + MPI Yes 150 mA MPI: 44, DP: 32 Yes Yes Yes 44; If a diagnostics repeater is used on the line, the number of connection resources on the line is reduced by 1 12 Mbit/s Yes Yes Yes Yes Yes
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Interface type Physics Isolated Power supply to interface (15 to 30 V DC), max. Number of connection resources Protocols • MPI • PROFIBUS DP master • PROFIBUS DP slave MPI • Number of connections • Transmission rate, max. Services	RS 485 / PROFIBUS + MPI Yes 150 mA MPI: 44, DP: 32 Yes Yes Yes 44; If a diagnostics repeater is used on the line, the number of connection resources on the line is reduced by 1 12 Mbit/s Yes Yes Yes Yes Yes

PROFIBUS DP master	
 Number of connections, max. 	32; If a diagnostics repeater is used on the line, the number of connection resources on the line is reduced by 1
• Transmission rate, max.	12 Mbit/s
 Number of DP slaves, max. 	32
Services	
— PG/OP communication	Yes
— Routing	Yes; S7 routing
— Global data communication	No
— S7 basic communication	Yes
— S7 communication	Yes
— S7 communication, as client	Yes
— S7 communication, as server	Yes
— Equidistance	Yes
— Equidistance	Yes
— Isochronous mode	Yes
- SYNC/FREEZE	Yes
— Activation/deactivation of DP slaves	Yes
— Direct data exchange (slave-to-slave	Yes
communication)	
— DPV1	Yes
Address area	
— Inputs, max.	2 kbyte
— Outputs, max.	2 kbyte
User data per DP slave	
— User data per DP slave, max.	244 byte
— Inputs, max.	244 byte
— Outputs, max.	244 byte
— Slots, max.	244
— per slot, max.	128 byte
PROFIBUS DP slave	
 Number of connections 	32
• GSD file	http://support.automation.siemens.com/WW/view/en/113652
• Transmission rate, max.	12 Mbit/s
 automatic baud rate search 	No
 Address area, max. 	32; Virtual slots
 User data per address area, max. 	32 byte
— of which consistent, max.	32 byte
Services	
— PG/OP communication	Yes; with interface active
— S7 routing	Yes; with interface active
— Global data communication	No

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

2. Interface	
Interface type	PROFINET
Physics	Ethernet RJ45
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"
Number of connection resources	96
Interface types	
Number of ports	2
 integrated switch 	Yes
Media redundancy	
• supported	Yes
 Switchover time on line break, typ. 	200 ms
 Number of stations in the ring, max. 	50
Protocols	
 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
PROFINET IO Controller	
• Transmission rate, max.	100 Mbit/s
Services	
— PG/OP communication	Yes
— S7 routing	Yes
— S7 communication	Yes

— Isochronous mode	Yes; Only with IRT and the High Performance option
— Open IE communication	Yes
— Shared device	Yes
— Prioritized startup	Yes
— Number of IO devices with prioritized	32
startup, max.	
— 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 $\mu s,$ 500 $\mu s,$ 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	
— Inputs, max.	8 kbyte
— Outputs, max.	8 kbyte
— User data consistency, max.	1 024 byte
PROFINET IO Device	
Services	
— PG/OP communication	Yes
— S7 routing	Yes
— S7 communication	Yes
— Isochronous mode	No
— Open IE communication	Yes
— IRT	Yes
— Prioritized startup	Yes

— Shared device	Yes
— Number of IO Controllers with shared	2
device, max.	-
Transfer memory	
— 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.	94
	0, 20, 21, 25, 80, 102, 135, 161, 34962, 34963, 34964, 65532,
 Local port numbers used at the system end 	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)
Physics	RS 485 / PROFIBUS
Isolated	Yes
Power supply to interface (15 to 30 V DC), max.	150 mA
automatic detection of transmission rate	No
Number of connection resources	32
Protocols	
● MPI	No
 PROFIBUS DP master 	Yes
PROFIBUS DP slave	Yes
PROFIBUS DP master	
 Number of connections, max. 	32
• Transmission rate, max.	12 Mbit/s
 Number of DP slaves, max. 	125
Services	
— PG/OP communication	Yes
— Routing	Yes; S7 routing
— Global data communication	No
— S7 basic communication	Yes
— S7 communication	Yes
— S7 communication, as client	Yes
— S7 communication, as server	Yes
— Equidistance	Yes
Lyunaistalloc	

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

— Number of connections, max.	94
— Data length, max.	32 kbyte
- several passive connections per port,	Yes
supported	
 ISO-on-TCP (RFC1006) 	Yes; Via integrated PROFINET interface or CP 443-1 and loadable FBs
- Number of connections, max.	94
— Data length, max.	32 kbyte; 1452 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	
Isochronous operation (application synchronized up to terminal)	Yes; Via PROFIBUS DP or PROFINET interface
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 	95
 Number of connectable OPs with message 	95; When using Alarm_S/SQ and Alarm_D/DQ
processing	
Data record routing	Yes
Global data communication	
• supported	Yes
 Number of GD loops, max. 	16
 Number of GD packets, transmitter, max. 	16
 Number of GD packets, receiver, max. 	32
 Size of GD packets, max. 	54 byte
 Size of GD packet (of which consistent), max. 	1 variable
S7 basic communication	
• supported	Yes
• User data per job, max.	76 byte
• User data per job (of which consistent), max.	1 variable
S7 communication	

• supported	Yes
• as server	Yes
• as client	Yes
 User data per job, max. 	64 kbyte
 User data per job (of which consistent), max. 	462 byte; 1 variable
S5 compatible communication	
• supported	Yes; Via FC AG_SEND and AG_RECV, max. via 10 CP 443-1 or 443-5
• User data per job, max.	8 kbyte
 User data per job (of which consistent), max. 	240 byte
 Number of simultaneous AG-SEND/AG-RECV orders per CPU, max. 	64/64
Standard communication (FMS)	
• supported	Yes; Via CP and loadable FB
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 	6 000
 Data length of all incoming connections master/slave, max. 	65 000 byte
 Data length of all outgoing connections master/slave, 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
Remote interconnections with acyclic transmission	
— Sampling frequency: Sampling time, 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
Remote interconnections with cyclic transmission	
— Transmission frequency: Transmission	1 ms; Depending on preset communication load, number of
interval, min.	interconnections and data length used
— Number of incoming interconnections	300
 — Number of outgoing interconnections 	300

Dete leveth of all incoming	4 800 byte
 — Data length of all incoming interconnections, max. 	
— Data length of all outgoing	4 800 byte
interconnections, max.	
— 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	1 500
— Data length of all HMI variables, max.	48 000 byte
PROFIBUS proxy functionality	
— supported	Yes; 32 PROFIBUS slaves max. connectable
— Data length per connection, max.	240 byte; Slave-dependent
Number of connections	
• overall	96
 usable for PG communication 	95
— reserved for PG communication	1
— adjustable for PG communication, max.	0
 usable for OP communication 	95
— reserved for OP communication	1
— adjustable for OP communication, max.	0
 usable for S7 basic communication 	94
- reserved for S7 basic communication	0
 — adjustable for S7 basic communication, max. 	0
 usable for S7 communication 	94
— reserved for S7 communication	0
— adjustable for S7 communication, max.	0
 usable for routing 	47
— reserved for routing	0
— adjustable for routing, max.	0
S7 message functions	
Number of login stations for message functions, max.	95; Max. 95 with Alarm_S/SQ and Alarm_D/DQ (OPs); max. 16
	with Alarm, Alarm_8, Alarm_8P, Notify and Notify_8 (e.g. WinCC)
Symbol-related messages	Yes
SCAN procedure	Yes
Program alarms	Yes
Process diagnostic messages	Yes
simultaneously active Alarm-S blocks, max.	1 000; Simultaneously active alarm_S/SQ blocks or alarm_D/DQ blocks
Alarm 8-blocks	Yes

 Number of instances for alarm 8 and S7 communication blocks, max. 	4 000
• preset, max.	600
Process control messages	Yes
Number of archives that can log on simultaneously	32
(SFB 37 AR_SEND)	
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	
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	103
• ATEX	ATEX II 3G Ex nA IIC T4 Gc
Ambient conditions	
Ambient temperature during operation	
• min.	0° 0
• max.	60 °C
Configuration	
Configuration software	
• STEP 7	Yes
Programming	
Command set	see instruction list
Nesting levels	7
 Access to consistent data in process image 	Yes
 System functions (SFC) 	see instruction list
 System function blocks (SFB) 	see instruction list
Programming language	
— LAD	Yes
— FBD	Yes
— STL	Yes
— SCL	Yes
— CFC	Yes
— GRAPH	Yes
— HiGraph®	Yes
Number of simultaneously active SFCs	
— DPSYC_FR	2; SFC 11; per interface
— D_ACT_DP	8; SFC 12; per interface
- 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 interfaces
Know-how protection	

 User program protection/password protection Block encryption 	Yes Yes; With S7 block Privacy
Dimensions	
Width	50 mm
Height	290 mm
Depth	219 mm
Weights	
Weight, approx.	900 g
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