SIEMENS

Data sheet

6ES7416-3ES06-0AB0



*********** Replacement part ********* 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 plug-in IFM module (IF1)

Figure similar

General information	
Product type designation	CPU 416-3 PN/DP
HW functional status	01
Firmware version	V6.0
Product function	
 Isochronous mode 	Yes; Via PROFIBUS DP or PROFINET interface
Engineering with	
 Programming package 	STEP 7 V5.5 or higher/iMap V3.0 + iMap STEP 7 Add-on V3.0 SP5 or higher
CiR - Configuration in RUN	
CiR synchronization time, basic load	100 ms
CiR synchronization time, time per I/O byte	10 μs; Time per I/O byte
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.	1.5 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.	7.5 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	

Rackup hattery	
Backup battery	125 uA: up to 40 °C
Backup current, typ. Backup current, max	125 μA; up to 40 °C 450 μA
Backup time, max. Regiven time, 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
PU processing times	
for bit operations, typ.	30 ns
for word operations, typ.	30 ns
for fixed point arithmetic, typ.	30 ns
for floating point arithmetic, typ.	90 ns
PU-blocks	
DB	
Number, max.	10 000; Number range: 1 to 16000
• Size, max.	64 kbyte
FB	
Number, max.	5 000; Number range: 0 to 7999
• Size, max.	64 kbyte
FC	
Number, 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
ounters, 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	V
• present	Yes
• Type	SFB
• Number	Unlimited (limited only by RAM capacity)
S7 times	0.040
• Number	2 048
Retentivity	
— adjustable	Yes
— lower limit	0
— upper limit	2 047
— preset	No times retentive

-	
Time range	10 mg
— lower limit	10 ms
— upper limit IEC timer	9 990 s
	Yes
• present	SFB
• Type	
Number Pate areas and their retantivity	Unlimited (limited only by RAM capacity)
Data areas and their retentivity	Total wedging and load manner (with healths healths)
Retentive data area (incl. timers, counters, flags), max. Flag	Total working and load memory (with backup battery)
• 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	
Integrated power supply	No
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 not suitable for use with CP 443-5 Ext. and CP 443-1 EX4x, EX20, GX20 (in 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	1
• integrated	1 4: No mixed energtion of CD443.1 EV40 and CD443.1 EV 41/EV20/CV20
• via CP	4; No mixed operation of CP443-1 EX40 and CP443-1 EX 41/EX20/GX20,

N	max. 4 in central controller
Number of operable FMs and CPs (recommended)	Limited by mumbar of plate and the second of
► FM◆ CP, PtP	Limited by number of slots or 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	
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	40
Number Number/Number reage	16 0 to 15
Number/Number rangeRange of values	
<u> </u>	SFCs 2, 3 and 4: 0 to 32767 hours SFC 101: 0 to 2^31 - 1 hours
Granularity retentive	1 h Yes
Clock synchronization	165
• 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/bus type	1 x MPI/PROFIBUS DP, 1 x PROFINET (2 ports), 1 x PROFIBUS DP (optionally pluggable)
Number of RS 485 interfaces	1
Number of other interfaces	0
Optical interface	No
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 slave	Yes
MPI	
Number of connections	44; If a diagnostics repeater is used on the line, the number of connection resources on the line is reduced by 1
Transmission rate, max.	12 Mbit/s
Services	
— PG/OP communication	Yes
— Routing	Yes
— Global data communication	Yes
— S7 basic communication	Yes
— S7 communication	Yes
 — S7 communication, as client 	Yes

— S7 communication, as server	Yes
PROFIBUS DP master	
Number of connections, max.	32; If a diagnostics repeater is used on the line, the number of connection resources on the line is reduced by 1
Transmission rate, max.	12 Mbit/s
 Number of DP slaves, max. 	32
Services	
— PG/OP communication	Yes
— Routing	Yes
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 	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 communication) 	No
— 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
	Yes
Autocrossing	
Change of IP address at runtime, supported	Yes; Assignment by higher-level IO-Controller or by the user program with SFB104 "IP_CONF"
·	Yes; Assignment by higher-level IO-Controller or by the user program with

- D I 45 (Fth armst)	Ven
RJ 45 (Ethernet) Number of parts	Yes
Number of ports	2
integrated switch	Yes
Protocols	V
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	
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 	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: $250~\mu s$ 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 communication	Yes
— Isochronous mode	No
— IRT	Yes
Prioritized startup	Yes
— Shared device	Yes
Number of IO Controllers with shared device, max.	2
Transfer memory	
— Inputs, max.	1 440 byte; Per IO Controller with shared device
— Outputs, max.	1 440 byte; Per IO Controller with shared device
— Outputs, max. Submodules	1 770 byte, I et 10 controllet with shared device
	64
— Number, max.	64 1 024 byto
— User data per submodule, max.	1 024 byte
PROFINET CBA	

acyclic transmission	Yes
cyclic transmission	Yes
Open IE communication	100
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 (MLFB: 6ES7964-2AA04-0AB0)
Isolated	Yes
automatic detection of transmission rate	No
Number of connection resources	32
Interface types	
• RS 485	Yes
Output current of the interface, max.	150 mA
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
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	- · y ·-
— 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 No
Address area, max.	32; Virtual slots
Address area, max.User data per address area, max.	32 byte
·	
— of which consistent, max.	32 byte
Services	Voc
— PG/OP communication	Yes
— Routing	Yes; with interface active
Global data communication	No

071	N
— S7 basic communication	No W
— 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	·
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
	165
Open IE communication	Vacantia interpretad DDOFINET interfero and leadable ED
• 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, supported 	Yes
• 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; 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
	5
Isochronous mode	
Isochronous mode Equidistance	Yes
Equidistance Number of DP masters with isochronous mode	Yes 2
Equidistance Number of DP masters with isochronous mode User data per isochronous slave, max.	Yes 2 244 byte
Equidistance Number of DP masters with isochronous mode User data per isochronous slave, max. shortest clock pulse	Yes 2 244 byte 1 ms; 0.5 ms without use of SFC 126, 127
Equidistance Number of DP masters with isochronous mode User data per isochronous slave, max. shortest clock pulse max. cycle	Yes 2 244 byte
Equidistance Number of DP masters with isochronous mode User data per isochronous slave, max. shortest clock pulse max. cycle communication functions / header	Yes 2 244 byte 1 ms; 0.5 ms without use of SFC 126, 127 32 ms
Equidistance Number of DP masters with isochronous mode User data per isochronous slave, max. shortest clock pulse max. cycle communication functions / header PG/OP communication	Yes 2 244 byte 1 ms; 0.5 ms without use of SFC 126, 127 32 ms Yes
Equidistance Number of DP masters with isochronous mode User data per isochronous slave, max. shortest clock pulse max. cycle communication functions / header PG/OP communication • Number of connectable OPs without message processing	Yes 2 244 byte 1 ms; 0.5 ms without use of SFC 126, 127 32 ms Yes 95
Equidistance Number of DP masters with isochronous mode User data per isochronous slave, max. shortest clock pulse max. cycle communication functions / header PG/OP communication Number of connectable OPs without message processing Number of connectable OPs with message processing	Yes 2 244 byte 1 ms; 0.5 ms without use of SFC 126, 127 32 ms Yes 95 95; When using Alarm_S/SQ and Alarm_D/DQ
Equidistance Number of DP masters with isochronous mode User data per isochronous slave, max. shortest clock pulse max. cycle communication functions / header PG/OP communication Number of connectable OPs without message processing Number of connectable OPs with message processing Data record routing	Yes 2 244 byte 1 ms; 0.5 ms without use of SFC 126, 127 32 ms Yes 95
Equidistance Number of DP masters with isochronous mode User data per isochronous slave, max. shortest clock pulse max. cycle communication functions / header PG/OP communication • Number of connectable OPs without message processing • Number of connectable OPs with message processing Data record routing Global data communication	Yes 2 244 byte 1 ms; 0.5 ms without use of SFC 126, 127 32 ms Yes 95 95; When using Alarm_S/SQ and Alarm_D/DQ Yes
Equidistance Number of DP masters with isochronous mode User data per isochronous slave, max. shortest clock pulse max. cycle communication functions / header PG/OP communication • Number of connectable OPs without message processing • Number of connectable OPs with message processing Data record routing Global data communication • supported	Yes 2 244 byte 1 ms; 0.5 ms without use of SFC 126, 127 32 ms Yes 95 95; When using Alarm_S/SQ and Alarm_D/DQ Yes Yes
Equidistance Number of DP masters with isochronous mode User data per isochronous slave, max. shortest clock pulse max. cycle communication functions / header PG/OP communication Number of connectable OPs without message processing Number of connectable OPs with message processing Data record routing Global data communication supported Number of GD loops, max.	Yes 2 244 byte 1 ms; 0.5 ms without use of SFC 126, 127 32 ms Yes 95 95; When using Alarm_S/SQ and Alarm_D/DQ Yes Yes 16
Equidistance Number of DP masters with isochronous mode User data per isochronous slave, max. shortest clock pulse max. cycle communication functions / header PG/OP communication Number of connectable OPs without message processing Number of connectable OPs with message processing Data record routing Global data communication supported Number of GD loops, max. Number of GD packets, transmitter, max.	Yes 2 244 byte 1 ms; 0.5 ms without use of SFC 126, 127 32 ms Yes 95 95; When using Alarm_S/SQ and Alarm_D/DQ Yes Yes 16 16
Equidistance Number of DP masters with isochronous mode User data per isochronous slave, max. shortest clock pulse max. cycle communication functions / header PG/OP communication Number of connectable OPs without message processing Number of connectable OPs with message processing Data record routing Global data communication supported Number of GD loops, max. Number of GD packets, transmitter, max. Number of GD packets, receiver, max.	Yes 2 244 byte 1 ms; 0.5 ms without use of SFC 126, 127 32 ms Yes 95 95; When using Alarm_S/SQ and Alarm_D/DQ Yes Yes 16 16 32
Equidistance Number of DP masters with isochronous mode User data per isochronous slave, max. shortest clock pulse max. cycle communication functions / header PG/OP communication Number of connectable OPs without message processing Number of connectable OPs with message processing Data record routing Global data communication supported Number of GD loops, max. Number of GD packets, transmitter, max. Number of GD packets, receiver, max. Size of GD packets, max.	Yes 2 244 byte 1 ms; 0.5 ms without use of SFC 126, 127 32 ms Yes 95 95; When using Alarm_S/SQ and Alarm_D/DQ Yes Yes 16 16 32 54 byte
Equidistance Number of DP masters with isochronous mode User data per isochronous slave, max. shortest clock pulse max. cycle communication functions / header PG/OP communication Number of connectable OPs without message processing Number of connectable OPs with message processing Number of connectable OPs with message processing Data record routing Global data communication supported Number of GD loops, max. Number of GD packets, transmitter, max. Number of GD packets, receiver, max. Size of GD packets, max. Size of GD packet (of which consistent), max.	Yes 2 244 byte 1 ms; 0.5 ms without use of SFC 126, 127 32 ms Yes 95 95; When using Alarm_S/SQ and Alarm_D/DQ Yes Yes 16 16 32
Equidistance Number of DP masters with isochronous mode User data per isochronous slave, max. shortest clock pulse max. cycle communication functions / header PG/OP communication Number of connectable OPs without message processing Number of connectable OPs with message processing Data record routing Global data communication supported Number of GD loops, max. Number of GD packets, transmitter, max. Number of GD packets, receiver, max. Size of GD packets, max.	Yes 2 244 byte 1 ms; 0.5 ms without use of SFC 126, 127 32 ms Yes 95 95; When using Alarm_S/SQ and Alarm_D/DQ Yes Yes 16 16 32 54 byte
Equidistance Number of DP masters with isochronous mode User data per isochronous slave, max. shortest clock pulse max. cycle communication functions / header PG/OP communication Number of connectable OPs without message processing Number of connectable OPs with message processing Number of connectable OPs with message processing Data record routing Global data communication supported Number of GD loops, max. Number of GD packets, transmitter, max. Number of GD packets, receiver, max. Size of GD packets, max. Size of GD packet (of which consistent), max.	Yes 2 244 byte 1 ms; 0.5 ms without use of SFC 126, 127 32 ms Yes 95 95; When using Alarm_S/SQ and Alarm_D/DQ Yes Yes 16 16 32 54 byte
Equidistance Number of DP masters with isochronous mode User data per isochronous slave, max. shortest clock pulse max. cycle communication functions / header PG/OP communication Number of connectable OPs without message processing Number of connectable OPs with message processing Data record routing Global data communication supported Number of GD loops, max. Number of GD packets, transmitter, max. Number of GD packets, receiver, max. Size of GD packet (of which consistent), max.	Yes 2 244 byte 1 ms; 0.5 ms without use of SFC 126, 127 32 ms Yes 95 95; When using Alarm_S/SQ and Alarm_D/DQ Yes Yes 16 16 16 32 54 byte 1 variable
Equidistance Number of DP masters with isochronous mode User data per isochronous slave, max. shortest clock pulse max. cycle communication functions / header PG/OP communication Number of connectable OPs without message processing Number of connectable OPs with message processing Data record routing Global data communication supported Number of GD loops, max. Number of GD packets, transmitter, max. Number of GD packets, receiver, max. Size of GD packets, max. Size of GD packet (of which consistent), max. S7 basic communication supported	Yes 2 244 byte 1 ms; 0.5 ms without use of SFC 126, 127 32 ms Yes 95 95; When using Alarm_S/SQ and Alarm_D/DQ Yes Yes 16 16 32 54 byte 1 variable Yes
Equidistance Number of DP masters with isochronous mode User data per isochronous slave, max. shortest clock pulse max. cycle communication functions / header PG/OP communication Number of connectable OPs without message processing Number of connectable OPs with message processing Number of connectable OPs with message processing Data record routing Global data communication supported Number of GD loops, max. Number of GD packets, transmitter, max. Number of GD packets, receiver, max. Size of GD packets, max. Size of GD packet (of which consistent), max. S7 basic communication supported User data per job, max.	Yes 2 244 byte 1 ms; 0.5 ms without use of SFC 126, 127 32 ms Yes 95 95; When using Alarm_S/SQ and Alarm_D/DQ Yes Yes 16 16 32 54 byte 1 variable Yes 76 byte
Equidistance Number of DP masters with isochronous mode User data per isochronous slave, max. shortest clock pulse max. cycle communication functions / header PG/OP communication Number of connectable OPs without message processing Number of connectable OPs with message processing Number of connectable OPs with message processing Data record routing Global data communication supported Number of GD loops, max. Number of GD packets, transmitter, max. Number of GD packets, receiver, max. Size of GD packets, max. Size of GD packet (of which consistent), max. S7 basic communication supported User data per job, max. User data per job (of which consistent), max.	Yes 2 244 byte 1 ms; 0.5 ms without use of SFC 126, 127 32 ms Yes 95 95; When using Alarm_S/SQ and Alarm_D/DQ Yes Yes 16 16 32 54 byte 1 variable Yes 76 byte
Equidistance Number of DP masters with isochronous mode User data per isochronous slave, max. shortest clock pulse max. cycle communication functions / header PG/OP communication • Number of connectable OPs without message processing • Number of connectable OPs with message processing Olata record routing Global data communication • supported • Number of GD loops, max. • Number of GD packets, transmitter, max. • Number of GD packets, receiver, max. • Size of GD packets, max. • Size of GD packet (of which consistent), max. S7 basic communication • supported • User data per job, max. • User data per job (of which consistent), max. S7 communication	Yes 2 244 byte 1 ms; 0.5 ms without use of SFC 126, 127 32 ms Yes 95 95; When using Alarm_S/SQ and Alarm_D/DQ Yes Yes 16 16 32 54 byte 1 variable Yes 76 byte 1 variable
Equidistance Number of DP masters with isochronous mode User data per isochronous slave, max. shortest clock pulse max. cycle communication functions / header PG/OP communication Number of connectable OPs without message processing Number of connectable OPs with message processing Number of connectable OPs with message processing Data record routing Global data communication supported Number of GD loops, max. Number of GD packets, transmitter, max. Number of GD packets, receiver, max. Size of GD packets, max. Size of GD packet (of which consistent), max. S7 basic communication supported User data per job, max. User data per job (of which consistent), max. S7 communication supported	Yes 2 244 byte 1 ms; 0.5 ms without use of SFC 126, 127 32 ms Yes 95 95; When using Alarm_S/SQ and Alarm_D/DQ Yes Yes 16 16 32 54 byte 1 variable Yes 76 byte 1 variable
Equidistance Number of DP masters with isochronous mode User data per isochronous slave, max. shortest clock pulse max. cycle communication functions / header PG/OP communication Number of connectable OPs without message processing Number of connectable OPs with message processing Number of connectable OPs with message processing Data record routing Global data communication supported Number of GD loops, max. Number of GD packets, transmitter, max. Number of GD packets, receiver, max. Size of GD packets, max. Size of GD packet (of which consistent), max. S7 basic communication supported User data per job, max. User data per job (of which consistent), max. S7 communication supported as server as client	Yes 2 244 byte 1 ms; 0.5 ms without use of SFC 126, 127 32 ms Yes 95 95; When using Alarm_S/SQ and Alarm_D/DQ Yes Yes 16 16 32 54 byte 1 variable Yes 76 byte 1 variable Yes Yes Yes Yes Yes
Equidistance Number of DP masters with isochronous mode User data per isochronous slave, max. shortest clock pulse max. cycle communication functions / header PG/OP communication Number of connectable OPs without message processing Number of connectable OPs with message processing Number of connectable OPs with message processing Bata record routing Global data communication supported Number of GD loops, max. Number of GD packets, transmitter, max. Number of GD packets, receiver, max. Size of GD packets, max. Size of GD packet (of which consistent), max. S7 basic communication supported User data per job, max. User data per job (of which consistent), max. S7 communication supported as server as client User data per job, max.	Yes 2 244 byte 1 ms; 0.5 ms without use of SFC 126, 127 32 ms Yes 95 95; When using Alarm_S/SQ and Alarm_D/DQ Yes Yes 16 16 32 54 byte 1 variable Yes 76 byte 1 variable Yes Yes Yes Yes Yes Yes Yes Yes Yes Y
Equidistance Number of DP masters with isochronous mode User data per isochronous slave, max. shortest clock pulse max. cycle communication functions / header PG/OP communication Number of connectable OPs without message processing Number of connectable OPs with message processing Number of connectable OPs with message processing Data record routing Global data communication supported Number of GD loops, max. Number of GD packets, transmitter, max. Number of GD packets, receiver, max. Size of GD packets, max. Size of GD packet (of which consistent), max. S7 basic communication supported User data per job, max. User data per job (of which consistent), max. S7 communication supported as server as client	Yes 2 244 byte 1 ms; 0.5 ms without use of SFC 126, 127 32 ms Yes 95 95; When using Alarm_S/SQ and Alarm_D/DQ Yes Yes 16 16 32 54 byte 1 variable Yes 76 byte 1 variable Yes Yes Yes Yes Yes

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) Yes; Via CP and loadable FB supported communication functions / PROFINET CBA (with set target communication load) / header · Setpoint for the CPU communication load 20 % • number of remote connection partners / with PROFINET 32 **CBA** • number of technological functions / with PROFINET CBA 150 / for master or slave • number of connections / with PROFINET CBA / for 6 000 master or slave / total • data volume / of the input variables / with PROFINET 65 000 byte CBA / for master or slave • data volume / of the output variables / with PROFINET 65 000 byte CBA / for master or slave number of internal and PROFIBUS interconnections / with 1 000 PROFINET CBA / maximum • data volume / of internal and PROFIBUS interconnections 16 000 byte / with PROFINET CBA / for master or slave • data volume / with PROFINET CBA / per connection / 2 000 byte performance data / PROFINET CBA / remote interconnection / with acyclic transfer / header 200 ms; Depending on preset communication load, number of interconnections — update time / of the remote interconnections / in the case of acyclic transmission / with PROFINET CBA and data length used - number of remote connections to input variables / in 500 the case of acyclic transmission / with PROFINET CBA / maximum — number of remote connections to output variables / 500 in the case of acyclic transmission / with PROFINET CBA / maximum - data volume / as user data for remote 16 000 byte interconnections with input variables / in the case of acyclic transmission / with PROFINET CBA data volume / as user data for remote 16 000 byte interconnections with output variables / in the case of acyclic transmission / with PROFINET CBA - data volume / as user data for remote 2 000 byte interconnections / in the case of acyclic transmission / with PROFINET CBA / per connection / maximum performance data / PROFINET CBA / remote interconnection / with cyclic transfer / header - update time / of the remote interconnections / with 1 ms; Depending on preset communication load, number of interconnections cyclical transfer / with PROFINET CBA and data length used number of remote connections to input variables / 300 with PROFINET CBA / with cyclic transfer / maximum - number of remote connections to output variables / 300 with cyclical transfer / with PROFINET CBA / maximum data volume / as user data for remote 4 800 byte interconnections with input variables / with cyclical transfer / with PROFINET CBA / maximum data volume / as user data for remote 4 800 byte interconnections with output variables / with cyclical transfer / with PROFINET CBA / maximum - data volume / as user data for remote 450 byte interconnections / with cyclical transfer / with PROFINET CBA / per connection / maximum performance data / PROFINET CBA / HMI variables via PROFINET / acyclic / header - number of connectable HMI stations / for HMI 2x PN OPC/1x iMap variables / in the case of acyclic transmission / with PROFINET CBA - update time / of the HMI variables / in the case of 500 ms acyclic transmission / with PROFINET CBA number of HMI variables / in the case of acyclic 1 500 transmission / with PROFINET CBA / maximum - data volume / as user data for HMI variables / in the 48 000 byte case of acyclic transmission / with PROFINET CBA / maximum performance data / PROFINET CBA / PROFIBUS proxy functionality / header

— product function / with PROFINET CBA /	Yes; 32 PROFIBUS slaves max. connectable
PROFIBUS proxy functionality — data volume / with PROFIBUS proxy functionality /	240 byte; Slave-dependent
with PROFINET CBA / per connection / maximum	240 byte, clave dependent
Number of connections	
• overall	96
 usable for PG communication 	
 reserved for PG communication 	1
 adjustable for PG communication, max. 	0
 usable for OP communication 	
 reserved for OP communication 	1
 adjustable for OP communication, max. 	0
 usable for S7 basic communication 	
 reserved for S7 basic communication 	0
 adjustable for S7 basic communication, max. 	0
 usable for S7 communication 	
 reserved for S7 communication 	0
 adjustable for S7 communication, max. 	0
usable for routing	
— 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. 8 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 	4 000
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
presentNumber of entries, max.	Yes 3 200
•	
Number of entries, max.	3 200

• can be read out	Yes
EMC	
Emission of radio interference acc. to EN 55 011	
 Limit class A, for use in industrial areas 	Yes
 Limit class B, for use in residential areas 	No
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
— CFC	Yes
— GRAPH	Yes
— HiGraph®	Yes
configuration / programming / number of simultaneously active	SFC / header
— number of simultaneously active system functions (SFC) / with DPSYC_FR	2
number of simultaneously active system functions (SFC) / with D_ACT_DP	8
— RD_REC	8
— WR_REC	8
— WR_PARM	8
— PARM_MOD	1
— WR_DPARM	2
— DPNRM_DG	8
— RDSYSST	8
— DP_TOPOL	1
configuration / programming / number of simultaneously active	SFB / header
— RDREC	8
— WRREC	8
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: 4/1/2022 🖸