6ES7416-2FN05-0AB0

Data sheet



************ Replacement part ********* SIMATIC S7-400, CPU 416F-2, Central processing unit with: work memory 5.6 MB, (2.8 MB code, 2.8 MB data), 1st interface MPI/DP 12 Mbit/s, 2nd interface PROFIBUS DP Can be used with software package Distributed Safety as of V5.2+SP2

Figure similar

Product type designation CPU 416F-2		
HW functional status 03 Firmware version V5.3 Formware version V5.	General information	
Firmware version V5.3 Product function I socknonous mode Frogramming package Programming package Frogramming package From backplane bus 5 V DC, typ. from backplane bus 5 V DC, max. from backplane bus 5 V DC, max. From backplane bus 2 V DC, max. From backplane bus 5 V DC, max. From back	Product type designation	CPU 416F-2
Product function Isochronous mode Isochronous mode Ingineering with Programming package STEP 7 V5.3 SP2 or higher with hardware update. Distributed Safety V5.2 SP2 or higher STEP 7 V5.3 SP2 or higher with hardware update. Distributed Safety V5.2 SP2 or higher STEP 7 V5.3 SP2 or higher with hardware update. Distributed Safety V5.2 SP2 or higher STEP 7 V5.3 SP2 or higher with hardware update. Distributed Safety V5.2	HW functional status	03
■ Isochronous mode ■ Yes; For PROFIBUS only Engineering with ■ Programming package ■ STEP 7 V5.3 SP2 or higher with hardware update, Distributed Safety V5.2 SP2 or higher 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. ■ 0.9 A from backplane bus 5 V DC, max. ■ 1.1 A from backplane bus 24 V DC, max. ■ 300 mA; 150 mA per DP interface Fower loss Power loss, typ. ■ 4.5 W Memory Type of memory ■ other Work memory ■ integrated (for program) ■ integrated (for data) ■ integrated (for data) ■ expandable FEPROM ■ expandable FEPROM ■ expandable FEPROM, max. ■ integrated RAM,	Firmware version	V5.3
Engineering with Programming package STEP 7 V5.3 SP2 or higher with hardware update, Distributed Safety V5.2 SP2 or higher CIR synchronization time, basic load 100 ms CIR synchronization time, time per I/O byte 10 µs Supply voltage Rated value (DC) Input current From backplane bus 5 V DC, typ. Power supply via system power supply Input bus 5 V DC, max. In A from backplane bus 5 V DC, max. In Mackplane bus 5 V DC, max. In Mackplane bus 24 V DC, max. In Mackplane bus 24 V DC, max. In Mackplane bus 24 V DC, max. Power loss, typ. Power loss, typ. Integrated SAB, Mackplane Integrated (for program) Integrated (for program) Integrated (for program) Integrated (for fotata) Explandable EPROM Explandable FEPROM Exp	Product function	
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or higher 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. 0.9 A from backplane bus 5 V DC, max. 1.1 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, typ. 4.5 W Memory Type of memory other Work memory • integrated (for program) 2.8 Mbyte • integrated (for data) 2.8 Mbyte • integrated (for data) 2.8 Mbyte • expandable FEPROM Yes; with Memory Card (FLASH) • expandable FEPROM, max. 64 Mbyte • integrated RAM, max. 1 Mbyte • expandable RAM, max. 64 Mbyte • resent Yes • with battery Yes; all data • without battery	Engineering with	
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Rated value (DC) Input current from backplane bus 5 V DC, typ. from backplane bus 5 V DC, max. from backplane bus 24 V DC, max. from backplane bus 24 V DC, max. 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, typ. Memory Type of memory verificate integrated integrated integrated (for program) integrated (for data) integrated (for data) integrated (for data) integrated (for data) integrated (Ferror Max) expandable Load memory expandable FEPROM expandable FEPROM integrated RAM, max. for Mbyte integrated RAM, max. for Mbyte integrated RAM, max. for Mbyte expandable RAM expandable RAM expandable RAM for Mbyte expandable RAM expandable RAM for Mbyte expandable for Mbyte for RAM for Mbyte for RAM for Mbyte for RAM fo	CiR synchronization time, time per I/O byte	10 µs
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from interface 5 V DC, max. Power loss Power loss, typ. 4.5 W Memory Type of memory integrated integrated (for program) integrated (for data) expandable expandable FEPROM expandable FEPROM, max. integrated RAM, max. integrated RAM, max. integrated RAM, max. expandable RAM expandable RAM expandable RAM expandable RAM for the Mbyte fo	from backplane bus 5 V DC, max.	1.1 A
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Type of memory work memory integrated integrated (for program) integrated (for data) integrated (for data) expandable Load memory expandable FEPROM expandable FEPROM, max. integrated RAM, max. integrated RAM, max. expandable RAM expandable RAM expandable RAM expandable RAM, max. full Mbyte expandable RAM expandable RAM, max. full Mbyte expandable RAM expandable RAM, max. full Mbyte expandable RAM expandable RAM, max. full Mbyte expandable RAM expandable RAM, max. full Mbyte expandable RAM, max. full RAM, max. fu	Power loss	
Type of memory work memory integrated integrated (for program) integrated (for data) expandable expandable Load memory expandable FEPROM expandable FEPROM, max. integrated RAM, max. integrated RAM expandable RAM expandable RAM expandable RAM, max. full Mbyte expandable RAM expandable	Power loss, typ.	4.5 W
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 expandable Load memory expandable FEPROM expandable FEPROM, max. integrated RAM, max. expandable RAM expandable RAM expandable RAM, max. for Mbyte expandable RAM expandable RAM, max. expandable RAM, max. for Mbyte Backup present with battery with out battery No Ves; with Memory Card (RAM) 64 Mbyte Backup present with battery No No No 	integrated (for program)	2.8 Mbyte
Load memory	integrated (for data)	2.8 Mbyte
 expandable FEPROM expandable FEPROM, max. integrated RAM, max. expandable RAM expandable RAM expandable RAM, max. for Mbyte expandable RAM, max. expandable RAM, max. for Mbyte Backup present with battery with battery without battery No 	expandable	No
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 integrated RAM, max. expandable RAM expandable RAM, max. 64 Mbyte Backup present with battery without battery No 1 Mbyte Yes; with Memory Card (RAM) 64 Mbyte Find the properties of the properties	 expandable FEPROM 	Yes; with Memory Card (FLASH)
 expandable RAM expandable RAM, max. 64 Mbyte Backup present with battery without battery Yes; all data without battery No	 expandable FEPROM, max. 	64 Mbyte
 expandable RAM, max. Backup present with battery without battery No 	integrated RAM, max.	1 Mbyte
Backup	• expandable RAM	Yes; with Memory Card (RAM)
 present with battery without battery No 	expandable RAM, max.	64 Mbyte
 with battery without battery No 	Backup	
without battery No	• present	Yes
	with battery	Yes; all data
Battery	without battery	No
	Battery	

Backup battery	
Backup current, typ.	125 μA; up to 40 °C
Backup current, typ. Backup current, max.	550 µA
Backup time, max.	See reference manual, module data, Chapter 3.3
Feeding of external backup voltage to CPU	5 V DC to 15 V DC
CPU processing times	3 V DC 10 13 V DC
	20
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
CPU-blocks	
DB	40.000 11 1 40.000
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 μs)
 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 	2; 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
— preset	Z 0 to Z 7
Counting range	
— lower limit	0
— upper limit	999
IEC counter	
• present	Yes
• Type	SFB
Number	Unlimited (limited only by RAM capacity)
S7 times	
Number	2 048
Retentivity	
— adjustable	Yes
— preset	No times retentive
Time range	
— lower limit	10 ms
— upper limit	9 990 s
IEC timer	
LO MINO	

	V
• present	Yes
• Type	SFB
• Number	Unlimited (limited only by RAM capacity)
Data areas and their retentivity	Tatal warding and load manner (with healtup hetter)
Retentive data area (incl. timers, counters, flags), max.	Total working and load memory (with backup battery)
Flag	16 khyto: Siza of hit momony address area
Size, max. Determining a special place.	16 kbyte; Size of bit memory address area Yes
Retentivity available Retentivity project	MB 0 to MB 15
 Retentivity preset Number of clock memories 	
Local data	8; in 1 memory byte
adjustable, max.	32 kbyte
• preset	16 kbyte
Address area	10 KByte
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	63
Multicomputing Interface modules	Yes; 4 CPUs max. (with UR1 or UR2)
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	1, 111 100 2
• integrated	2
• 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	0
 Number of pluggable S5 modules (via adapter capsule in central device), max. 	6
Number of IO Controllers	
• integrated	0
• via CP	4; No mixed operation of CP443-1 EX40 and CP443-1 EX 41/EX20/GX20, max. 4 in central controller
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 connections
 PROFIBUS and Ethernet CPs 	14; Of which 10 CPs max. or IMs as DP master, 4 PROFINET controller maximum
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Slots	
• required slots	1
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	No; Via CP
• to IF 964 DP	No
Time difference in system when synchronizing via	000
MPI, max.	200 ms
Interfaces	O. O. archite ad M.D.I. / D.D.O.F.D.I.O. D.D D.D.O.F.D.I.O. D.D.
Number of RS 485 interfaces	2; Combined MPI / PROFIBUS DP and PROFIBUS DP
Optical interface	No
1. Interface	MPI/PROFIBUS DP
Interface type	IVIF I/F NOFIDOS DF
Isolated	Yes
Isolated	Yes
Interface types	
Interface types • RS 485	Yes
Interface types RS 485 Output current of the interface, max.	
Interface types • RS 485 • Output current of the interface, max. Protocols	Yes 150 mA
Interface types • RS 485 • Output current of the interface, max. Protocols • MPI	Yes 150 mA
Interface types • RS 485 • Output current of the interface, max. Protocols	Yes 150 mA
Interface types RS 485 Output current of the interface, max. Protocols MPI PROFIBUS DP master	Yes 150 mA Yes Yes
Interface types • RS 485 • Output current of the interface, max. Protocols • MPI • PROFIBUS DP master • PROFIBUS DP device	Yes 150 mA Yes Yes Yes Yes Yes
Interface types • RS 485 • Output current of the interface, max. Protocols • MPI • PROFIBUS DP master • PROFIBUS DP device MPI • Number of connections	Yes 150 mA Yes 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 types • RS 485 • Output current of the interface, max. Protocols • MPI • PROFIBUS DP master • PROFIBUS DP device MPI • Number of connections • Transmission rate, max.	Yes 150 mA Yes Yes Yes Yes Yes
Interface types • RS 485 • Output current of the interface, max. Protocols • MPI • PROFIBUS DP master • PROFIBUS DP device MPI • Number of connections • Transmission rate, max. Services	Yes 150 mA Yes 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 types • RS 485 • Output current of the interface, max. Protocols • MPI • PROFIBUS DP master • PROFIBUS DP device MPI • Number of connections • Transmission rate, max. Services — PG/OP communication	Yes 150 mA Yes 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 types • RS 485 • Output current of the interface, max. Protocols • MPI • PROFIBUS DP master • PROFIBUS DP device MPI • Number of connections • Transmission rate, max. Services — PG/OP communication — Routing	Yes 150 mA Yes 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
Interface types • RS 485 • Output current of the interface, max. Protocols • MPI • PROFIBUS DP master • PROFIBUS DP device MPI • Number of connections • Transmission rate, max. Services — PG/OP communication — Routing — Global data communication	Yes 150 mA 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
Interface types • RS 485 • Output current of the interface, max. Protocols • MPI • PROFIBUS DP master • PROFIBUS DP device MPI • Number of connections • Transmission rate, max. Services — PG/OP communication — Routing — Global data communication — S7 basic communication	Yes 150 mA Yes 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 Yes
Interface types • RS 485 • Output current of the interface, max. Protocols • MPI • PROFIBUS DP master • PROFIBUS DP device MPI • Number of connections • Transmission rate, max. Services — PG/OP communication — Routing — Global data communication — S7 basic communication — S7 communication	Yes 150 mA Yes 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 Yes Yes Yes
Interface types • RS 485 • Output current of the interface, max. Protocols • MPI • PROFIBUS DP master • PROFIBUS DP device MPI • Number of connections • Transmission rate, max. Services — PG/OP communication — Routing — Global data communication — S7 basic communication — S7 communication — S7 communication, as client	Yes 150 mA Yes 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 Yes Yes Yes Yes Y
Interface types RS 485 Output current of the interface, max. Protocols MPI PROFIBUS DP master PROFIBUS DP device MPI Number of connections Transmission rate, max. Services PG/OP communication Routing Global data communication S7 basic communication S7 communication S7 communication, as client S7 communication, as server	Yes 150 mA Yes 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 Yes Yes Yes
Interface types RS 485 Output current of the interface, max. Protocols MPI PROFIBUS DP master PROFIBUS DP device MPI Number of connections Transmission rate, max. Services PG/OP communication Routing Global data communication S7 basic communication S7 communication S7 communication S7 communication	Yes 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 Yes Yes Yes Yes Y
Interface types RS 485 Output current of the interface, max. Protocols MPI PROFIBUS DP master PROFIBUS DP device MPI Number of connections Transmission rate, max. Services PG/OP communication Routing Global data communication S7 basic communication S7 communication S7 communication S7 communication S7 communication, as client S7 communication, as server PROFIBUS DP master Number of connections, max.	Yes 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 Yes Yes Yes Yes Y
Interface types RS 485 Output current of the interface, max. Protocols MPI PROFIBUS DP master PROFIBUS DP device MPI Number of connections Transmission rate, max. Services PG/OP communication Routing Global data communication S7 basic communication S7 communication S7 communication S7 communication S7 communication, as client S7 communication, as server PROFIBUS DP master Number of connections, max.	Yes 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 Yes Yes Yes Yes Y
Interface types RS 485 Output current of the interface, max. Protocols MPI PROFIBUS DP master PROFIBUS DP device MPI Number of connections Transmission rate, max. Services PG/OP communication Routing Global data communication S7 basic communication S7 communication S7 communication S7 communication S7 communication S7 communication S7 communication, as client S7 communication, as server PROFIBUS DP master Number of connections, max. Transmission rate, max. max. number of DP devices	Yes 150 mA Yes 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 Yes Yes Yes Yes Y
Interface types RS 485 Output current of the interface, max. Protocols MPI PROFIBUS DP master PROFIBUS DP device MPI Number of connections Transmission rate, max. Services PG/OP communication Routing Global data communication S7 basic communication S7 communication S7 communication S7 communication S7 communication, as client S7 communication, as server PROFIBUS DP master Number of connections, max. Transmission rate, max. max. number of DP devices Services	Yes 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 Yes Yes Yes Yes Y
Interface types RS 485 Output current of the interface, max. Protocols MPI PROFIBUS DP master PROFIBUS DP device MPI Number of connections Transmission rate, max. Services PG/OP communication Routing Global data communication S7 basic communication S7 communication S7 communication S7 communication S7 communication S7 communication, as client S7 communication, as server PROFIBUS DP master Number of connections, max. Transmission rate, max. max. number of DP devices Services PG/OP communication	Yes 150 mA Yes 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 Yes Yes Yes Yes Y
Interface types RS 485 Output current of the interface, max. Protocols MPI PROFIBUS DP master PROFIBUS DP device MPI Number of connections Transmission rate, max. Services PG/OP communication Routing Global data communication S7 basic communication S7 communication S7 communication S7 communication S7 communication, as client S7 communication, as server PROFIBUS DP master Number of connections, max. Transmission rate, max. max. number of DP devices Services	Yes 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 Yes Yes Yes Yes Y

 S7 basic communication 	Yes
— S7 basic communication — S7 communication	Yes
— S7 communication, as client	Yes Yes
— S7 communication, as server	
— Equidistance	Yes
— Isochronous mode	Yes
— SYNC/FREEZE	Yes
— activation/deactivation of DP devices	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 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)	
— DPV1	No
Transfer memory	
— Inputs	244 byte
— Outputs	244 byte
2. Interface	
Interface type	PROFIBUS DP
Isolated	Yes
Interface types	
• RS 485	Yes
 Output current of the interface, max. 	150 mA
Protocols	
 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
Ciobai data communication	
— S7 basic communication	Yes

S7 communication, as client	Yes
— S7 communication, as client	Yes
— S7 communication, as server— Equidistance	Yes
Equidistance Isochronous mode	Yes
— SYNC/FREEZE	Yes
activation/deactivation of DP devices	Yes
Direct data exchange (slave-to-slave)	Yes
communication)	163
— 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
2nd 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
 Address area, max. 	32
 User data per address area, max. 	32 byte
— of which consistent, max.	32 byte
Services	
— Routing	Yes; with interface active
Transfer memory	
— Inputs	244 byte
— Outputs	244 byte
Protocols	
SIMATIC communication	
• S7 routing	Yes
Open IE communication	
• ISO-on-TCP (RFC1006)	Via CP 443-1 and loadable FB
— Data length, max.	1 452 bytes via CP 443-1 Adv.
Web server	A)
• supported	No
Isochronous mode	V.
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 communication functions / header	32 ms
	Voc
PG/OP communication • Number of connectable OPs with message processing	Yes 63; When using Alarm_S/SQ and Alarm_D/DQ
Number of connectable OPs with message processing Number of connectable OPs without message processing	63
Data record routing	Yes
Global data communication	, 55
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
	I Valiable
S7 communication	i variable

	v.
• 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
Number of connections	res, via or and loadable re
overall	64
usable for PG communication	63
reserved for PG communication	1
— adjustable for PG communication, max.	0
usable for OP communication	63
reserved for OP communication	1
adjustable for OP communication, max.	0
usable for S7 basic communication	62
reserved for S7 basic communication	0
adjustable for S7 basic communication, max.	0
usable for S7 communication	62
reserved for S7 communication	0
adjustable for S7 communication, max.	0
usable for routing	31
— reserved for routing	0
adjustable for routing, max.	0
S7 message functions	
Number of login stations for message functions, max.	63; Max. 63 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
	100
Number of instances for alarm 8 and S7 communication	4 000
blocks, max.	4 000
blocks, max. ● preset, max.	4 000 600
blocks, max. • preset, max. Process control messages	4 000 600 Yes
blocks, max. ● preset, max.	4 000 600
blocks, max. • preset, max. Process control messages Number of archives that can log on simultaneously (SFB 37	4 000 600 Yes
blocks, max. • preset, max. Process control messages Number of archives that can log on simultaneously (SFB 37 AR_SEND)	4 000 600 Yes
blocks, max. • preset, max. Process control messages Number of archives that can log on simultaneously (SFB 37 AR_SEND) Number of messages	4 000 600 Yes 32
blocks, max. • preset, max. Process control messages Number of archives that can log on simultaneously (SFB 37 AR_SEND) Number of messages • overall, max.	4 000 600 Yes 32
blocks, max. • preset, max. Process control messages Number of archives that can log on simultaneously (SFB 37 AR_SEND) Number of messages • overall, max. • in 100 ms grid, max.	4 000 600 Yes 32 1 024 128
blocks, max. • preset, max. Process control messages Number of archives that can log on simultaneously (SFB 37 AR_SEND) Number of messages • overall, max. • in 100 ms grid, max. • in 500 ms grid, max.	4 000 600 Yes 32 1 024 128 512
blocks, max. • preset, max. Process control messages Number of archives that can log on simultaneously (SFB 37 AR_SEND) Number of messages • overall, max. • in 100 ms grid, max. • in 500 ms grid, max. • in 1000 ms grid, max.	4 000 600 Yes 32 1 024 128 512
blocks, max. • preset, max. Process control messages Number of archives that can log on simultaneously (SFB 37 AR_SEND) Number of messages • overall, max. • in 100 ms grid, max. • in 500 ms grid, max. • in 1000 ms grid, max. Number of additional values	4 000 600 Yes 32 1 024 128 512 1 024
blocks, max. • preset, max. Process control messages Number of archives that can log on simultaneously (SFB 37 AR_SEND) Number of messages • overall, max. • in 100 ms grid, max. • in 500 ms grid, max. • in 1000 ms grid, max. Number of additional values • with 100 ms grid, max.	4 000 600 Yes 32 1 024 128 512 1 024
blocks, max. • preset, max. Process control messages Number of archives that can log on simultaneously (SFB 37 AR_SEND) Number of messages • overall, max. • in 100 ms grid, max. • in 500 ms grid, max. • in 1000 ms grid, max. Number of additional values • with 100 ms grid, max. • with 500, 1000 ms grid, max.	4 000 600 Yes 32 1 024 128 512 1 024
blocks, max. • preset, max. Process control messages Number of archives that can log on simultaneously (SFB 37 AR_SEND) Number of messages • overall, max. • in 100 ms grid, max. • in 500 ms grid, max. • in 1000 ms grid, max. Number of additional values • with 100 ms grid, max. • with 500, 1000 ms grid, max. Test commissioning functions	4 000 600 Yes 32 1 024 128 512 1 024
blocks, max. • preset, max. Process control messages Number of archives that can log on simultaneously (SFB 37 AR_SEND) Number of messages • overall, max. • in 100 ms grid, max. • in 500 ms grid, max. • in 1000 ms grid, max. Number of additional values • with 100 ms grid, max. • with 500, 1000 ms grid, max. Test commissioning functions Status block	4 000 600 Yes 32 1 024 128 512 1 024 1 100 Yes; Up to 2 simultaneously
blocks, max. • preset, max. Process control messages Number of archives that can log on simultaneously (SFB 37 AR_SEND) Number of messages • overall, max. • in 100 ms grid, max. • in 500 ms grid, max. • in 1000 ms grid, max. Number of additional values • with 100 ms grid, max. • with 500, 1000 ms grid, max. Test commissioning functions Status block Single step	4 000 600 Yes 32 1 024 128 512 1 024 1 100 Yes; Up to 2 simultaneously Yes
blocks, max. • preset, max. Process control messages Number of archives that can log on simultaneously (SFB 37 AR_SEND) Number of messages • overall, max. • in 100 ms grid, max. • in 500 ms grid, max. • in 1000 ms grid, max. Number of additional values • with 100 ms grid, max. • with 500, 1000 ms grid, max. Test commissioning functions Status block Single step Number of breakpoints	4 000 600 Yes 32 1 024 128 512 1 024 1 100 Yes; Up to 2 simultaneously Yes
blocks, max. • preset, max. Process control messages Number of archives that can log on simultaneously (SFB 37 AR_SEND) Number of messages • overall, max. • in 100 ms grid, max. • in 500 ms grid, max. • in 1000 ms grid, max. Number of additional values • with 100 ms grid, max. • with 500, 1000 ms grid, max. Test commissioning functions Status block Single step Number of breakpoints Status/control	4 000 600 Yes 32 1 024 128 512 1 024 1 100 Yes; Up to 2 simultaneously Yes 4 Yes; Up to 16 variable tables
blocks, max. • preset, max. Process control messages Number of archives that can log on simultaneously (SFB 37 AR_SEND) Number of messages • overall, max. • in 100 ms grid, max. • in 500 ms grid, max. • in 1000 ms grid, max. Number of additional values • with 100 ms grid, max. • with 500, 1000 ms grid, max. Test commissioning functions Status block Single step Number of breakpoints Status/control • Status/control variable	4 000 600 Yes 32 1 024 128 512 1 024 1 100 Yes; Up to 2 simultaneously Yes 4

Forcing Forcing, variables Number of variables, max. Diagnostic buffer present Number of entries, max. adjustable preset Service data can be read out Standards, approvals, certificates CE mark CSA approval	Yes Inputs, outputs, bit memories, peripheral inputs, peripheral outputs 512 Yes 3 200 Yes 120 Yes
Number of variables, max. Diagnostic buffer present Number of entries, max. adjustable preset Service data can be read out Standards, approvals, certificates CE mark	Yes 3 200 Yes 120
Diagnostic buffer • present • Number of entries, max. — adjustable — preset Service data • can be read out Standards, approvals, certificates CE mark	Yes 3 200 Yes 120
present Number of entries, max. — adjustable — preset Service data can be read out Standards, approvals, certificates CE mark	3 200 Yes 120
Number of entries, max. — adjustable — preset Service data • can be read out Standards, approvals, certificates CE mark	3 200 Yes 120
— adjustable — preset Service data	Yes 120
— preset Service data • can be read out Standards, approvals, certificates CE mark	120
Service data • can be read out Standards, approvals, certificates CE mark	
can be read out Standards, approvals, certificates CE mark	Yes
Standards, approvals, certificates CE mark	Yes
CE mark	
CSA approval	Yes
ουν αμβιοναί	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.	60 °C
configuration / header	
Configuration software	
• STEP 7	Yes
	1 65
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)	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 act	ive 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
— DP_TOPOL	1; SFC 103; per interface
configuration / programming / number of simultaneously act	
— RDREC	8; SFB 52; per interface, but not more than 32 across all external interfaces
— KDREC — WRREC	
	8; SFB 53; per interface, but not more than 32 across all external interfaces
Know-how protection	Von
User program protection/password protection	Yes
Dimensions	
Width	25 mm

Height	290 mm
Depth	219 mm
Weights	
Weight, approx.	700 g

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