SIEMENS

Data sheet

6ES7416-2FP07-0AB0



SIMATIC S7-400, CPU 416F-2, Central processing unit with: Work memory 8 MB, (4 MB code, 4 MB data), 1st interface MPI/DP 12 Mbit/s, 2nd interface PROFIBUS DP,

General information	
Product type designation	CPU 416F-2
HW functional status	01
Firmware version	V7.0
Product function	
 Isochronous mode 	Yes; For PROFIBUS only
Engineering with	
 Programming package 	STEP 7 V5.4 or higher with HSP 261
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	
Power loss, typ.	4.5 W
Memory	
Type of memory	RAM
Work memory	
• integrated	8 Mbyte
integrated (for program)	4 Mbyte
integrated (for data)	4 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	
	V
• present	Yes
presentwith battery	Yes; all data
with battery without battery	
with battery	Yes; all data
with battery without battery	Yes; all data

• Backup current, max. • Backup time, max. • Backup time, max. • Feeding of external backup voltage to CPU FOU processing times for bit operations, typ. for word operations, typ. for fived point arithmetic, typ. 12.5 ns for frized point arithmetic, typ. 25 ns FOU-blocks BB • Number, max. • Size, siz
Feeding of external backup voltage to CPU 5 ∨ DC to 15 ∨ DC
Feeding of external backup voltage to CPU CPU processing times for bit operations, typ. for local operations, typ. for fixed point arithmetic, typ. 12.5 ns for floading point arithmetic, typ. 25 ns CPU-blocks DB Number, max. Size, max. 10 000; Number range: 1 to 16000 Size, max. 64 kbyte FB Number, max. Size, max. 5 000; Number range: 0 to 7999 Size, max. 64 kbyte FC Number, max. Size, max. 5 000; Number range: 0 to 7999 Size, max. 65 kbyte Number, max. Size, max. 64 kbyte FC Number, max. Size, max. 65 000; Number range: 0 to 7999 Size, max. 66 kbyte Number of Size, max. 95 ize, max. 96 kbyte Number of free cycle OBs Number of free cycle OBs Number of free cycle OBs Number of special part of Size, max. 98 ize, max. 98 ize, max. 98 ize, max. 99 ize alarm OBs Number of free oyle OBs Number of free oyle OBs Number of free oyle OBs Number of special part or Size, max. 99 ize alarm OBs Number of free oyle or Size, max. 90 ize alarm OBs Number of oyle interrupt OBs Number of oyle interrupt OBs Number of oyle interrupt OBs Number of formulticomputing OBs Number of sochronous mode OBs Number of sochronous error OBs Number of process alarm obs Number of process alarm obs Number of process alarm obs Number of sochronous error OBs Number of process alarm obs Number of process alarm obs Number of process alarm obs Number of sochronous error OBs Nu
CPU processing times 12.5 ns for bit 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 • Size, max. 64 kbyte FB • Number, max. 5 000; Number range: 0 to 7999 • Size, max. 5 000; Number range: 0 to 7999 • Size, max. 5 000; Number range: 0 to 7999 • Size, max. 64 kbyte OB 8 • Number, max. see instruction list • Size, max. 64 kbyte • Number of free cycle OBs 1; OB 1 • Number of firme alarm OBs 8; OB 10-17 • Number of edulary alarm OBs 4; OB 20-23 • Number of opcices alarm OBs 4; OB 20-23 • Number of process alarm OBs 8; OB 40-47 • Number of DePV1 alarm OBs 3; OB 55-57 • Number of multicomputing OBs 1; OB 60 • Number of synchronous error OBs 2; OB 100, 102 <
for bit operations, typ. 12.5 ns 12.5 n
for word operations, typ. for fixed point arithmetic, typ. for fixed point arithmetic, typ. 25 ns GPU-blocks DB Number, max. Size, max. Size, max. Size, max. FC Number, max. Size, max. Size, max. Size, max. FC Number, max. Size, max. Size, ma
for fixed point arithmetic, typ. for floating point arithmetic, typ. CPU-blocks DB Number, max. 5ize, max. 10 000; Number range: 1 to 16000 64 kbyte FB Number, max. 5 000; Number range: 0 to 7999 64 kbyte FC Number, max. 5 000; Number range: 0 to 7999 64 kbyte FC Number, max. 5 000; Number range: 0 to 7999 64 kbyte FC Number, max. 5 000; Number range: 0 to 7999 64 kbyte FC Number, max. 5 000; Number range: 0 to 7999 64 kbyte FC Number of range: 0 to 7999 65 kbyte Number of range: 0 to 7999 66 kbyte Number of recycle OBs 1; OB 1 Number of time alarm OBs 1; OB 1 Number of time alarm OBs 1; OB 10-17 Number of delay alarm OBs Number of cyclic interrupt OBs 9; OB 30-38 (shortest cycle that can be set = 500 μs) Number of DPV1 alarm OBs Number of DPV1 alarm OBs Number of process alarm OBs Number of pschronous mode OBs Number of sockpronous mode OBs Number of startup OBs Numbe
for floating point arithmetic, typ. 25 ns CPU-blocks DB • Number, max. 10 000; Number range: 1 to 16000 • Size, max. 64 kbyte FB • Number, max. 64 kbyte • FC • Number, max. 64 kbyte • 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 ocyclic 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 suchronous mode OBs 4; OB 61-64 • Number of suchronous mode OBs 1; OB 80 • Number of synchronous error OBs 2; OB 100, 102 • Number of synchronous error OBs 9; OB 80-88 • Number of synchronous error OBs 2; OB 121, 122 Nesting depth • per priority class 24
PB
Number, max. 10 000; Number range: 1 to 16000
 Number, max. Size, max. Number range: 1 to 16000 64 kbyte Number, max. Size, max. Size, max. 64 kbyte Number, max. Size, max. 64 kbyte Number, max. Size, max. 64 kbyte Number, max. Size, max. Number of free cycle OBs Number of free cycle OBs Number of fine alarm OBs Number of delay alarm OBs Number of process alarm OBs Number of postornous mode OBs Number of multicomputing OBs Number of background OBs Number of sartup OBs Number of synchronous error OBs OB 12, OB 101, 102 Nesting depth per priority class additional within an error OB additional within an error OB Number 2048
Size, max. 64 kbyte
FB • Number, max. • Size, max. FC • Number, max. • Size, max. 6 4 kbyte FC • Number, max. • Size, max. 6 4 kbyte OB • Number, max. • Size, max. 6 4 kbyte OB • Number, max. • Size, max. 6 4 kbyte OB • Number of free cycle OBs • Number of free cycle OBs • Number of time alarm OBs • Number of delay alarm OBs • Number of cyclic interrupt OBs • Number of process alarm OBs • Number of process alarm OBs • Number of process alarm OBs • Number of DPV1 alarm OBs • Number of DPV1 alarm OBs • Number of multicomputing OBs • Number of multicomputing OBs • Number of sackground OBs • Number of saxpround OBs • Number of saxpround OBs • Number of saxpround OBs • Number of saxpronous error OBs • Number of synchronous error OBs • OB 121, 122 Nesting depth • per priority class • additional within an error OB • Number • \$2048
 Number, max. Size, max. 64 kbyte FC Number, max. Size, max. 64 kbyte Size, max. 64 kbyte OB Number, max. Size, max. 64 kbyte Number of tee cycle OBs Number of free cycle OBs Number of time alarm OBs Number of delay alarm OBs Number of cyclic interrupt OBs Number of process alarm OBs Number of process alarm OBs Number of DPV1 alarm OBs Number of DPV1 alarm OBs Number of isochronous mode OBs Number of multicomputing OBs Number of background OBs Number of savprobroous error OBs Number of saynchronous error OBs Number of saynchronous error OBs Number of synchronous error OBs OB 80-88 Number of synchronous error OBs OB 10, 102 OB 80-88 Number of synchronous error OBs OB 80-88 Number of synchronous error OBs OB 20 OB 121, 122 Nesting depth Per priority class additional within an error OB Counters, timers and their retentivity S7 counter Number
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 Number of time alarm OBs Number of delay alarm OBs Number of cyclic interrupt OBs Number of process alarm OBs Number of DPV1 alarm OBs Number of isochronous mode OBs Number of multicomputing OBs Number of background OBs Number of startup OBs Number of startup OBs Number of asynchronous error OBs Number of synchronous error OBs OB 80-88 Number of synchronous error OBs OB 121, 122 Nesting depth per priority class additional within an error OB Counters, timers and their retentivity S7 counter Number 2048
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 Number of multicomputing OBs Number of background OBs Number of startup OBs Number of asynchronous error OBs Number of synchronous error OBs OB 90 9; OB 100, 102 9; OB 80-88 Number of synchronous error OBs 2; OB 121, 122 Nesting depth per priority class additional within an error OB Counters, timers and their retentivity S7 counter Number 2 048
 Number of background OBs Number of startup OBs Number of asynchronous error OBs Number of synchronous error OBs Number of synchronous error OBs Nesting depth per priority class additional within an error OB Counters, timers and their retentivity S7 counter Number Number 1; OB 90 2; OB 100, 102 9; OB 80-88 2; OB 121, 122 Nesting depth per priority class additional within an error OB 2 Counters, timers and their retentivity S7 counter Number 2 048
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 Number of asynchronous error OBs Number of synchronous error OBs Number of synchronous error OBs OB 121, 122 Nesting depth per priority class additional within an error OB Counters, timers and their retentivity S7 counter Number 2048
 Number of synchronous error OBs Nesting depth per priority class additional within an error OB Counters, timers and their retentivity S7 counter Number 2 048
Nesting depth • per priority class • additional within an error OB Counters, timers and their retentivity S7 counter • Number 2 048
 per priority class additional within an error OB Counters, timers and their retentivity S7 counter Number 2 048
 additional within an error OB Counters, timers and their retentivity S7 counter Number 2 048
Counters, timers and their retentivity S7 counter Number 2 048
S7 counter • Number 2 048
• 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
• present Yes
• Type SFB

Number	Unlimited (limited only by RAM capacity)
Data areas and their retentivity	
Retentive data area (incl. timers, counters, flags), max.	Total working and load memory (with backup battery)
Flag	, , , , , , , , , , , , , , , , , , , ,
• Size, max.	16 kbyte; Size of bit memory address area
Retentivity available	Yes
Retentivity preset	MB 0 to MB 15
Number of clock memories	8; in 1 memory byte
Local data	
adjustable, max.	32 kbyte
• preset	16 kbyte
Address area	
I/O address area	
• Inputs	16 kbyte
Outputs	16 kbyte
Process image	
 Inputs, adjustable 	16 kbyte
Outputs, adjustable	16 kbyte
• Inputs, default	512 byte
 Outputs, default 	512 byte
• consistent data, max.	244 byte
Access to consistent data in process image	Yes
Subprocess images	
 Number of subprocess images, max. 	15
Digital channels	
Inputs	131 072
— of which central	131 072
 Outputs 	131 072
— of which central	131 072
Analog channels	
• Inputs	8 192
— of which central	8 192
Outputs	8 192
— of which central	8 192
Hardware configuration	
Number of expansion units, max.	21
connectable OPs	95
Multicomputing	Yes; 4 CPUs max. (with UR1 or UR2)
Interface modules	
Number of connectable IMs (total), max.	6
Number of connectable IM 460s, max.	6
Number of connectable IM 463s, max.	4; IM 463-2
Number of DP masters	
• integrated	2
• 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	0
Number of pluggable S5 modules (via adapter capsule in	6
central device), max.	
Number of IO Controllers	
• integrated	0
• via CP	4; Max. 4 in the central controller; no mixed operation of different CP 443-1
Never has a formand to EAS 100 (types in PROFINET IO mode
Number of operable FMs and CPs (recommended)	Limited by a web as a false as I a large at the control of the con
• FM	Limited by number of slots and number of connections
CP, PtP PROFIBILITY AND A STANDARD COMMENT PROFIT AND	CP 440: Limited by number of slots; CP 441: limited by 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	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	1h
• 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	
MPI, max.	200 ms
Interfaces	200 1110
Interfaces/bus type	1 x MPI/PROFIBUS DP, 1 x PROFIBUS DP
Number of RS 485 interfaces	2; Combined MPI / PROFIBUS DP and PROFIBUS DP
Interface	2, Combined WF17 PROFIBOS DE AND PROFIBOS DE
	MPI/PROFIBUS DP
Interface type	
Isolated	Yes
Interface types • RS 485	Yes
	150 mA
Output current of the interface, may	
Output current of the interface, max. Protocols	100 IIIA
Protocols	
Protocols • MPI	Yes
Protocols • MPI • PROFIBUS DP master	Yes Yes
Protocols • MPI • PROFIBUS DP master • PROFIBUS DP device	Yes
Protocols • MPI • PROFIBUS DP master • PROFIBUS DP device MPI	Yes Yes Yes
Protocols • MPI • PROFIBUS DP master • PROFIBUS DP device	Yes Yes Yes 44; If a diagnostics repeater is used on the line, the number of connection
Protocols • MPI • PROFIBUS DP master • PROFIBUS DP device MPI • Number of connections	Yes Yes Yes
Protocols • MPI • PROFIBUS DP master • PROFIBUS DP device MPI	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
Protocols • MPI • PROFIBUS DP master • PROFIBUS DP device MPI • Number of connections • Transmission rate, max.	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
Protocols • MPI • PROFIBUS DP master • PROFIBUS DP device MPI • Number of connections • Transmission rate, max. Services — PG/OP communication	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
Protocols • MPI • PROFIBUS DP master • PROFIBUS DP device MPI • Number of connections • Transmission rate, max. Services	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
Protocols • MPI • PROFIBUS DP master • PROFIBUS DP device MPI • Number of connections • Transmission rate, max. Services — PG/OP communication — Routing — Global data communication	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
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 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
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 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
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	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
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, as client — S7 communication, as server	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
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, as client	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
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 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
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, as client — S7 communication, as server PROFIBUS DP master	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
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 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
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 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
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 PG/OP 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
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, 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 — Routing	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
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, 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 — Routing — Global data 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
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, 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 — Routing	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 communication, as alient	Yes
— S7 communication, as client— S7 communication, as server	Yes
— Equidistance	Yes
Lydidistance Isochronous mode	Yes
— SYNC/FREEZE	Yes
activation/deactivation of DP devices	Yes
Direct data exchange (slave-to-slave)	Yes
communication)	165
— DPV1	Yes
Address area	
— Inputs, max.	2 kbyte
— Outputs, max.	2 kbyte
1st interface / DP master / payload data per DP Device / heade	er en
— 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 communication)	No
— DPV1	No
Transfer memory	
— Inputs	244 byte
— Outputs	244 byte
2. Interface	2115,10
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
S7 basic communication	Yes
— S7 communication	Yes
— S7 communication — S7 communication, as client	Yes
— S7 communication, as client — S7 communication, as server	Yes
— or communication, as server	160

— Equidistance	Yes
Ligardistance Isochronous mode	Yes
— SYNC/FREEZE	Yes
activation/deactivation of DP devices	Yes
Direct data exchange (slave-to-slave)	Yes
communication)	
— DPV1	Yes
Address area	
— Inputs, max.	8 kbyte
— Outputs, max.	8 kbyte
2nd interface / DP master / payload data per DP Device / head	
— user data per DP device, max.	244 byte
— Inputs, max.	244 byte
— Outputs, max.	244 byte
— Slots, max.	244
— per slot, max. 2nd interface / PROFIBUS DP device / header	128 byte
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	
	No
• supported	No
supported Isochronous mode	
supported Isochronous mode Equidistance	Yes
supported Isochronous mode Equidistance Number of DP masters with isochronous mode	Yes 2
supported Isochronous mode Equidistance Number of DP masters with isochronous mode User data per isochronous slave, max.	Yes 2 244 byte
supported Isochronous mode Equidistance Number of DP masters with isochronous mode	Yes 2
supported Isochronous mode 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
supported Isochronous mode Equidistance Number of DP masters with isochronous mode User data per isochronous slave, max. shortest clock pulse max. cycle	Yes 2 244 byte 1 ms; 0.5 ms without use of SFC 126, 127
supported Isochronous mode 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
supported Isochronous mode 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
supported Isochronous mode 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
supported Isochronous mode 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
supported Isochronous mode 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 95; When using Alarm_S/SQ and Alarm_D/DQ
supported Isochronous mode 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
supported Isochronous mode 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
Supported Isochronous mode 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
Supported Isochronous mode 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 16 32 54 byte
Supported Isochronous mode 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.	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
Supported Isochronous mode 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. 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
Supported Isochronous mode 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
Supported Isochronous mode 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 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
 supported Isochronous mode 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 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
Supported Isochronous mode 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 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 1 variable
 supported Isochronous mode 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 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

• 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 CRU	64/64
CPU, max. Standard communication (FMS)	
• supported	Yes; Via CP and loadable FB
Number of connections	res, via or and loadable rb
overall	96
usable for PG communication	95
reserved for PG communication	1
	0
— adjustable for PG communication, max.	
usable for OP communication recorded 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
	1 000; Simultaneously active alarm_S/SQ blocks or alarm_D/DQ blocks
simultaneously active Alarm-S blocks, max.	. eee, emiliane eee, active alami_e/ee a blocke or alami_e/ee
simultaneously active Alarm-S blocks, max. Alarm 8-blocks	Yes
Alarm 8-blocks • Number of instances for alarm 8 and S7 communication	Yes
Alarm 8-blocks • Number of instances for alarm 8 and S7 communication blocks, max.	Yes 4 000
Alarm 8-blocks Number of instances for alarm 8 and S7 communication blocks, max. preset, max.	Yes 4 000 600
Alarm 8-blocks Number of instances for alarm 8 and S7 communication blocks, max. preset, max. Process control messages Number of archives that can log on simultaneously (SFB 37	Yes 4 000 600 Yes
Alarm 8-blocks Number of instances for alarm 8 and S7 communication blocks, max. preset, max. Process control messages Number of archives that can log on simultaneously (SFB 37 AR_SEND)	Yes 4 000 600 Yes
Alarm 8-blocks Number of instances for alarm 8 and S7 communication blocks, max. preset, max. Process control messages Number of archives that can log on simultaneously (SFB 37 AR_SEND) Number of messages	Yes 4 000 600 Yes 32
Alarm 8-blocks Number of instances for alarm 8 and S7 communication blocks, max. preset, max. Process control messages Number of archives that can log on simultaneously (SFB 37 AR_SEND) Number of messages overall, max.	Yes 4 000 600 Yes 32
Alarm 8-blocks Number of instances for alarm 8 and S7 communication 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.	Yes 4 000 600 Yes 32 1 024 128
Alarm 8-blocks Number of instances for alarm 8 and S7 communication 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.	Yes 4 000 600 Yes 32 1 024 128 512
Alarm 8-blocks Number of instances for alarm 8 and S7 communication 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.	Yes 4 000 600 Yes 32 1 024 128 512
Alarm 8-blocks Number of instances for alarm 8 and S7 communication 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. with 1000 ms grid, max. Number of additional values with 100 ms grid, max.	Yes 4 000 600 Yes 32 1 024 128 512 1 024
Alarm 8-blocks Number of instances for alarm 8 and S7 communication 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	Yes 4 000 600 Yes 32 1 024 128 512 1 024
Alarm 8-blocks Number of instances for alarm 8 and S7 communication 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. with 100 ms grid, max. Number of additional values with 100 ms grid, max. with 500, 1000 ms grid, max. Test commissioning functions	Yes 4 000 600 Yes 32 1 024 128 512 1 024
Alarm 8-blocks Number of instances for alarm 8 and S7 communication 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 1000 ms grid, max. in 1000 ms grid, max. with 100 ms grid, max. with 100 ms grid, max. with 500, 1000 ms grid, max. Status block	Yes 4 000 600 Yes 32 1 024 128 512 1 024 1 100 Yes; Up to 16 simultaneously
Alarm 8-blocks Number of instances for alarm 8 and S7 communication 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 1000 ms grid, max. in 1000 ms grid, max. with 100 ms grid, max. with 500, 1000 ms grid, max. Test commissioning functions Status block Single step	Yes 4 000 600 Yes 32 1 024 128 512 1 024 1 100 Yes; Up to 16 simultaneously Yes
Alarm 8-blocks Number of instances for alarm 8 and S7 communication 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. with 100 ms grid, max. with 500, 1000 ms grid, max. with 500, 1000 ms grid, max. Test commissioning functions Status block Single step Number of breakpoints	Yes 4 000 600 Yes 32 1 024 128 512 1 024 1 100 Yes; Up to 16 simultaneously
Alarm 8-blocks Number of instances for alarm 8 and S7 communication 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. with 100 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	Yes 4 000 600 Yes 32 1 024 128 512 1 024 1 100 Yes; Up to 16 simultaneously Yes 16
Alarm 8-blocks Number of instances for alarm 8 and S7 communication 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. with 100 ms grid, max. 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	Yes 4 000 600 Yes 32 1 024 128 512 1 024 1 100 Yes; Up to 16 simultaneously Yes 16 Yes; Up to 16 variable tables
Alarm 8-blocks Number of instances for alarm 8 and S7 communication 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 100 ms grid, max. in 1000 ms grid, max. with 100 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 Variables	Yes 4 000 600 Yes 32 1 024 128 512 1 024 1 100 Yes; Up to 16 simultaneously Yes 16 Yes; Up to 16 variable tables Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters
Alarm 8-blocks Number of instances for alarm 8 and S7 communication 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 100 ms grid, max. in 1000 ms grid, max. with 100 ms grid, max. 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 Variables Number of variables, max.	Yes 4 000 600 Yes 32 1 024 128 512 1 024 1 100 Yes; Up to 16 simultaneously Yes 16 Yes; Up to 16 variable tables
Alarm 8-blocks Number of instances for alarm 8 and S7 communication 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 1000 ms grid, max. in 1000 ms grid, max. with 100 ms grid, max. with 500, 1000 ms grid, max. with 500, 1000 ms grid, max. Test commissioning functions Status block Single step Number of breakpoints Status/control Status/control variable Variables Number of variables, max. Forcing	Yes 4 000 600 Yes 32 1 024 128 512 1 024 1 10 Yes; Up to 16 simultaneously Yes 16 Yes; Up to 16 variable tables Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters 70; Status/control
Alarm 8-blocks Number of instances for alarm 8 and S7 communication 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 1000 ms grid, max. in 1000 ms grid, max. with 100 ms grid, max. 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 Variables Number of variables, max.	Yes 4 000 600 Yes 32 1 024 128 512 1 024 1 100 Yes; Up to 16 simultaneously Yes 16 Yes; Up to 16 variable tables Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters

North and Social Landers	540
Number of variables, max.	512
Diagnostic buffer	
• present	Yes
 Number of entries, max. 	3 200
— adjustable	Yes
— preset	120
Service data	
can be read out	Yes
Standards, approvals, certificates	
CE mark	Yes
CSA approval	Yes
UL approval	Yes
cULus	Yes
FM approval	Yes
RCM (formerly C-TICK)	Yes
KC approval	Yes
EAC (formerly Gost-R)	Yes
Use in hazardous areas	
• ATEX	ATEX II 3G Ex nA IIC T4 Gc
Ambient conditions	
Ambient temperature during operation	
• min.	0 °C
• max.	60 °C
configuration / header	
Configuration software	
• STEP 7	Yes
configuration / programming / header	
Command set	see instruction list
Nesting levels	7
Access to consistent data in process image	Yes
System functions (SFC)	see instruction list
System function blocks (SFB)	see instruction list
Programming language	See mondelon not
— LAD	Yes
— FBD	Yes
— STL	Yes
— SCL	
— CFC	Yes Yes
— GRAPH	Yes
— HiGraph®	Yes
configuration / programming / number of simultaneously active	
— DPSYC_FR	2; SFC 11; per interface
— D_ACT_DP	8; SFC 12; per interface
— RD_REC	8; SFC 59; per interface
— WR_REC	8; SFC 58; per interface
— WR_PARM	8; SFC 55; per interface
— PARM_MOD	1; SFC 57; per interface
— WR_DPARM	2; SFC 56; per interface
— DPNRM_DG	8; SFC 13; per interface
— RDSYSST	8; SFC 51
— DP_TOPOL	1; SFC 103; per interface
configuration / programming / number of simultaneously active	
— RDREC	8; SFB 52; per interface, but not more than 32 across all external interfaces
— WRREC	8; SFB 53; per interface, but not more than 32 across all external interfaces
Know-how protection	
 User program protection/password protection 	Yes
Block encryption	Yes; With S7 block Privacy
Dimensions	
Width	25 mm
Height	290 mm
-	

Depth	219 mm
Weights	
Weight, approx.	700 g

4/25/2024

last modified: