Data sheet

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)	
• 24 V DC	No; 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

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from interface 5 V DC, max.	90 mA; At each DP interface
Power loss	
Power loss, typ.	4.5 W
Power loss, max.	5.5 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	
• present	Yes
• with battery	Yes; all data
• without battery	No
Battery	
Backup battery	
Backup current, typ.	180 μA; up to 40 °C
Backup current, max.	850 μA
Backup time, max.	Dealt with in the module data manual with the secondary conditions and the factors of influence
 Feeding of external backup voltage to CPU 	5 V DC to 15 V DC
CPU processing times	
for bit operations, typ.	12.5 ns
for word operations, typ.	12.5 ns
for fixed point arithmetic, typ.	12.5 ns
for floating point arithmetic, typ.	25 ns
CPU-blocks	
DB	
Number, max.	10 000; Number range: 1 to 16000
• Size, max.	64 kbyte
FB	
Number, max.	5 000; Number range: 0 to 7999
● Size, max.	64 kbyte



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FC	
Number, max.	5 000; Number range: 0 to 7999
• Size, max.	64 kbyte
ОВ	
• 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
— lower limit	0
— upper limit	2 047
— 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
— lower limit	0



— upper limit	2 047
— 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 in total	Total working and load memory (with backup battery)
Flag	
Number, max.	16 kbyte; Size of bit memory address area
Retentivity available	Yes
 Retentivity preset 	MB 0 to MB 15
 Number of clock memories 	8; in 1 memory byte
Local data	
adjustable, max.	32 kbyte
• preset	16 kbyte
Address area	
I/O address area	
• Inputs	16 kbyte
Outputs	16 kbyte
Process image	
Inputs, adjustable	16 kbyte
Outputs, adjustable	16 kbyte
Inputs, default	512 byte
Outputs, default	512 byte
• consistent data, max.	244 byte
 Access to consistent data in process image 	Yes
Subprocess images	
Number of subprocess images, max.	15
Digital channels	
• Inputs	131 072
— of which central	131 072

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Outputs

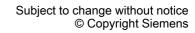
Analog channels

• Inputs

Outputs

- of which central

— of which central



131 072

131 072

8 192

— of which central	8 192
ware configuration	

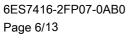
Hardware configuration	21
Number of expansion units, max.	
connectable OPs	95
Multicomputing	Yes; 4 CPUs max. (with UR1 or UR2)
Interface modules	
 Number of connectable IMs (total), max. 	6
 Number of connectable IM 460s, max. 	6
 Number of connectable IM 463s, max. 	4; IM 463-2
Number of DP masters	
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 central device), max. 	6
Number of IO Controllers	
• integrated	0
• via CP	4; Max. 4 in the central controller; no mixed operation of different CP 443-1 types in PROFINET IO mode
Number of operable FMs and CPs (recommended)	
• FM	Limited by number of slots 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; 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	

Deviation per day (unbuffered), max.	8.6 s; For power On
erating 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
● to MPI, slave	Yes
● to DP, master	Yes
● to DP, slave	Yes
● in AS, master	Yes
• in AS, slave	Yes
• on Ethernet via NTP	No; Via CP
• to IF 964 DP	No
Time difference in system when synchronizing via	
• MPI, max.	200 ms
Interferen	
Interfaces 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
Named of the 100 interfaces	2, combined wit 1/1 Not ibee by and their ibee by
1. Interface	
Interface type	Integrated
Physics	RS 485 / PROFIBUS + MPI
Isolated	Yes
Power supply to interface (15 to 30 V DC), max.	150 mA
Protocols	V
• 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
• Township in out on the	connection resources on the line is reduced by 1
Transmission rate, max.	12 Mbit/s
Services	W
— 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.



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32; If a diagnostics repeater is used on the line, the number of

connection resources on the line is reduced by 1

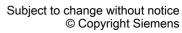
• Transmission rate, max.	12 Mbit/s
 Number of DP slaves, max. 	32
Services	
— PG/OP communication	Yes
— Routing	Yes; S7 routing
 Global data communication 	No
— S7 basic communication	Yes
— S7 communication	Yes
— S7 communication, as client	Yes
— S7 communication, as server	Yes
— Equidistance	Yes
— 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

nterface type	Integrated
Physics	RS 485 / PROFIBUS
solated	Yes
Power supply to interface (15 to 30 V DC), max.	150 mA
Number of connection resources	32
Protocols	
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 communication) 	Yes
— DPV1	Yes
Address area	
— Inputs, max.	8 kbyte
— Outputs, max.	8 kbyte
User data per DP slave	
— User data per DP slave, max.	244 byte
— Inputs, max.	244 byte





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— 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
 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
Datasat	
Protocols Open IE communication	
• ISO-on-TCP (RFC1006)	Via CP 443-1 and loadable FB
·	1 452 bytes via CP 443-1 Adv.
— Data length, max. Web server	1 402 bytes via OI 440-1 Adv.
	No
• supported	
Isochronous mode	
Isochronous mode Equidistance	Yes
Isochronous mode	
Isochronous mode Equidistance	Yes
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
Isochronous mode Equidistance Number of DP masters with isochronous mode User data per isochronous slave, max.	Yes 2 244 byte
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
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
Isochronous mode Equidistance Number of DP masters with isochronous mode User data per isochronous slave, max. shortest clock pulse max. cycle Communication functions	Yes 2 244 byte 1 ms; 0.5 ms without use of SFC 126, 127 32 ms
Isochronous mode Equidistance Number of DP masters with isochronous mode User data per isochronous slave, max. shortest clock pulse max. cycle Communication functions PG/OP communication	Yes 2 244 byte 1 ms; 0.5 ms without use of SFC 126, 127 32 ms Yes
Isochronous mode Equidistance Number of DP masters with isochronous mode User data per isochronous slave, max. shortest clock pulse max. cycle Communication functions PG/OP communication • Number of connectable OPs without message	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 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 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 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 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
Isochronous mode Equidistance Number of DP masters with isochronous mode User data per isochronous slave, max. shortest clock pulse max. cycle Communication functions 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 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



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• Size of GD packets, max.

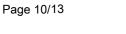
• Size of GD packet (of which consistent), max.



54 byte

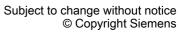
1 variable

S7 basic communication	
	Yes
• supported	76 byte
User data per job, max. User data per job (of which consistent), max.	1 variable
 User data per job (of which consistent), max. S7 communication 	i valiable
	Yes
• supported	Yes
• as server	Yes
• as client	
User data per job, max.	64 kbyte
User data per job (of which consistent), max.	462 byte; 1 variable
S5 compatible communication	VV
• 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	
• overall	96
 usable for PG communication 	95
 reserved for PG communication 	1
 adjustable for PG communication, max. 	0
 usable for OP communication 	95
 reserved for OP communication 	1
 adjustable for OP communication, max. 	0
 usable for S7 basic communication 	94
 reserved for S7 basic communication 	0
 adjustable for S7 basic communication, max. 	0
• usable for S7 communication	94
 reserved for S7 communication 	0
 adjustable for S7 communication, max. 	0
usable for routing	47
— reserved for routing	0
— adjustable for routing, max.	0
S7 message functions	
Number of login stations for message functions, max.	95; Max. 95 with Alarm_S/SQ and Alarm_D/DQ (OPs); max. 16 with Alarm, Alarm_8, Alarm_8P, Notify and Notify_8 (e.g. WinCC)
Symbol-related messages	Yes



SCAN procedure

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Yes

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Frocess diagnostic messages simultaneously active Alarm-S blocks, max. 1 000; Simultaneously active alarm S/SQ blocks or alarm D/DQ blocks Alarm 8-blocks • Number of instances for alarm 8 and S7 communication blocks, max. • preset, max. 600 Process control messages Number of archives that can log on simultaneously (SFB 37 AR SEMD) Number of messages • overall, max. • in 100 ms grid, 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. • with 500, 1000 ms grid, max. 10 est commissioning functions Status block Yes; Up to 16 simultaneously Single step Yes Number of breakpoints 16 Status/control • Status/control variable • Variables • Number of variables, max. • Number of variables, max. • Number of variables, max. 512 Diagnostic buffer • present • Number of variables, max. 512 Diagnostic buffer • present • Number of preset • Capus Alarm Siblock • Ves • Number of variables, max. 512 Diagnostic buffer • present • Number of preset • Capus Alarm Siblock • Ves • Capus Alarm S	Program alarms	Yes
simultaneously active Alarm-S blocks, max. Alarm 8-blocks Number of instances for alarm 8 and S7 communication blocks, max. Process control messages Number of archives that can log on simultaneously (SFB 37 AR, SEND) Number of archives that can log on simultaneously (SFB 37 AR, SEND) Number of messages Overall, max. In 100 ms grid, max. In 1		Yes
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 archives that can log on simultaneously (SFB 37 AR_SEND) Number of messages overall, max. in 1000 ms grid, max. in 1000 ms grid, max. in 1000 ms grid, max. with 100 ms grid, max. in 1000 ms grid, m		
communication blocks, max. • preset, max. • preset, max. • preset, max. • preset, max. Process control messages Ves Number of archives that can log on simultaneously (SFB 37 AR, SEND) 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. • in 1000 ms grid, max. • with 100 ms grid, max. • with 100 ms grid, max. 10 Pest commissioning functions Status block Yes; Up to 16 simultaneously Single step Number of breakpoints 16 Status/control • Status/control variable • Variables • Number of variables, max. Porcing • Forcing • Forcing • Forcing, variables • Number of variables, max. Diagnostic buffer • present • variables max. — adjustable — preset • can be read out Yes Ves Ves Ves Ves Ves Ves Ves	Alarm 8-blocks	Yes
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. • with 100 ms grid, max. • with 500, 1000 ms grid, max. • with 500, 1000 ms grid, max. • with 500, 1000 ms grid, max. • with 500, 1000 ms grid, max. • with 500 though grid, max. • with 500, 1000 ms grid, max. • with 500, 1000 ms grid, max. • satus source of additional values • vest commissioning functions Status block Status block Yes; Up to 16 simultaneously For status/control • Status/control • Status/control variable • Variables • Variables • Number of variables, max. • Number of variables, max. • Forcing • Forcing • Forcing • Forcing, variables • Number of variables, max. 512 Diagnostic buffer • present • Number of entries, max. — adjustable — preset • Can be read out Yes Standards, approvals, certificates CE mark Yes		4 000
Number of archives that can log on simultaneously (SFB 37 AR SEND) Number of messages • overall, max.	• preset, max.	600
(SFB 37 AR_SEND) Number of messages • overall, max.	Process control messages	Yes
overall, max. in 100 ms grid, max. in 500 ms grid, max. in 500 ms grid, max. in 1000 ms grid, max.	-	32
in 100 ms grid, max. in 500 ms grid, max. in 1000 ms grid, max. in	Number of messages	
in 500 ms grid, max. in 1000 ms grid, max. 1024 Number of additional values with 100 ms grid, max. with 500, 1000 ms grid, max. 10 Test commissioning functions Status block Yes; Up to 16 simultaneously Single step Number of breakpoints 16 Status/control Status/control variable Variables Number of variables, max. Number of variables, max. Number of variables, max. Number of variables, max. Forcing Forcing Forcing Forcing Forcing, variables, max. 100 Yes Number of variables, max. Yes Number of variables, max. Number of variables, max. Number of variables, max. 100 Yes Number of variables, max. Number of variables, max. 100 Yes Service data 100 Yes Standards, approvals, certificates CE mark Yes	• overall, max.	1 024
In 1000 ms grid, max. 1024	• in 100 ms grid, max.	128
Number of additional values • with 100 ms grid, max. • with 500, 1000 ms grid, max. 10 Fest commissioning functions Status block Single step Number of breakpoints • Status/control • Status/control • Status/control variable • Variables • Number of variables, max. Forcing • Forcing • Forcing, variables • Number of variables, max. 512 Diagnostic buffer • present • Number of entries, max. — adjustable — preset Status/control Yes Status/control Yes Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters 70; Status/control Forcing • Forcing • Forcing, variables • Inputs, outputs, bit memories, peripheral inputs, peripheral outputs • Number of variables, max. 512 Diagnostic buffer • present • present • preset • Number of entries, max. — adjustable — preset 120 Service data • can be read out Yes Standards, approvals, certificates CE mark Yes	• in 500 ms grid, max.	512
Number of additional values • with 100 ms grid, max. • with 500, 1000 ms grid, max. 10 Vest commissioning functions Status block Yes; Up to 16 simultaneously Single step Yes Number of breakpoints 16 Status/control • Status/control variable • Variables • Variables • Number of variables, max. Forcing • Forcing • Forcing, variables • Number of variables, max. Diagnostic buffer • present • Number of entries, max. — adjustable — preset Status/control Yes • Can be read out Yes Standards, approvals, certificates CE mark Yes		1 024
with 500, 1000 ms grid, max. Status block Yes; Up to 16 simultaneously Single step Yes Number of breakpoints 16 Status/control Status/control variable Variables Variables Number of variables, max. Forcing Forcing Forcing, variables Number of variables, max. Status/control Forcing Forcing, variables Number of variables, max. To; Status/control Yes Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters 70; Status/control Forcing Forcing Forcing, variables Inputs, outputs, bit memories, peripheral inputs, peripheral outputs Number of variables, max. Status/control Forcing Forcing Forcing Forcing Forcing Forcing, variables Number of variables, max. Status/control Forcing Forci	Number of additional values	
Status block Single step Yes Number of breakpoints • Status/control • Status/control variable • Variables • Number of variables, max. Forcing • Forcing, variables • Number of variables, max. • Number of variables, max. • Number of variables, max. • Forcing Yes • Forcing, variables • Number of variables, max. • Number of variables, max. • Number of variables, max. • Status/control Status/control Forcing • Forcing • Forcing • Forcing, variables • Number of variables, max. • Number of variables, max. • Number of variables, max. • present • present • present • present • preset • Number of entries, max. - adjustable - preset Standards, approvals, certificates CE mark Yes Standards, approvals, certificates	• with 100 ms grid, max.	1
Status block Yes; Up to 16 simultaneously Single step Yes Number of breakpoints 16 Status/control Status/control variable Variables Number of variables, max. Number of variables, max. Forcing Forcing Forcing Forcing, variables Number of variables, max. To; Status/control Forcing Forcin	● with 500, 1000 ms grid, max.	10
Status block Yes; Up to 16 simultaneously Yes Number of breakpoints 16 Status/control Status/control variable Yes; Up to 16 variable tables Yes; Up to 16 variable tables Variables Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters Number of variables, max. Forcing Forcing Forcing Forcing, variables Number of variables, max. Status/control Yes Inputs, outputs, bit memories, peripheral inputs, peripheral outputs Number of variables, max. Status/control Forcing Forcing Yes Inputs, outputs, bit memories, peripheral inputs, peripheral outputs Number of variables, max. Status/control Forcing Yes Inputs, outputs, bit memories, peripheral inputs, peripheral outputs Yes Number of entries, max. -adjustable -preset Yes 120 Service data • can be read out Yes Standards, approvals, certificates CE mark Yes		
Single step Number of breakpoints 16 Status/control Status/control variable Ves; Up to 16 variable tables Variables Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters Number of variables, max. Forcing Forcing Forcing, variables Number of variables, max. 10 Yes Inputs, outputs, bit memories, peripheral inputs, peripheral outputs Number of variables, max. 11 Diagnostic buffer Present Number of entries, max. adjustable preset 120 Service data can be read out Yes Standards, approvals, certificates CE mark Yes		Very life to 40 circultana contr
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Standards, approvals, certificates CE mark Yes	Service data	
CE mark Yes	• can be read out	Yes
	Standards, approvals, certificates	
CSA approval Yes	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 conditions	

Ambient conditions	
Ambient temperature during operation	
• min.	0°C
• max.	60 °C

Configuration		
Configuration software		
• STEP 7	Yes	
Programming		
Command set	see instruction list	
 Nesting levels 	7	
 Access to consistent data in process image 	Yes	
 System functions (SFC) 	see instruction list	
 System function blocks (SFB) 	see instruction list	
Programming language		
— LAD	Yes	
— FBD	Yes	
— STL	Yes	
— SCL	Yes	
— CFC	Yes	
— GRAPH	Yes	
— HiGraph®	Yes	
Number of simultaneously active SFCs		
— DPSYC_FR	2; SFC 11; per interface	
— D_ACT_DP	8; SFC 12; per interface	
— RD_REC	8; SFC 59; per interface	
— WR_REC	8; SFC 58; per interface	
— WR_PARM	8; SFC 55; per interface	
— PARM_MOD	1; SFC 57; per interface	
— WR_DPARM	2; SFC 56; per interface	
— DPNRM_DG	8; SFC 13; per interface	
— RDSYSST	8; SFC 51	
— DP_TOPOL	1; SFC 103; per interface	
Number of simultaneously active SFBs		





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— 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

last modified: 10/09/2020

