SIEMENS

Data sheet

6ES7312-5BF04-0AB0



SIMATIC S7-300, CPU 312C Compact CPU with MPI, 10 DI/6 DQ, 2 highspeed counters (10 kHz) Integr. power supply 24 V DC, work memory 64 KB, Front connector (1x 40-pole) and Micro Memory Card required

General information	
HW functional status	01
Firmware version	V3.3
Engineering with	
 Programming package 	STEP 7 V5.5 + SP1 or higher or STEP 7 V5.3 + SP2 or higher with HSP 203
Supply voltage	
Rated value (DC)	24 V
permissible range, lower limit (DC)	19.2 V
permissible range, upper limit (DC)	28.8 V
external protection for power supply lines (recommendation)	Miniature circuit breaker, type C; min. 2 A; miniature circuit breaker type B, min. 4 A
Mains buffering	
 Mains/voltage failure stored energy time 	5 ms
Repeat rate, min.	1 s
Load voltage L+	
Digital outputs	
— Rated value (DC)	24 V
 Reverse polarity protection 	No
Input current	
Current consumption (rated value)	570 mA
Current consumption (in no-load operation), typ.	90 mA
Inrush current, typ.	5 A
l²t	0.7 A ² ·s
Digital outputs	
 from load voltage L+, max. 	25 mA
Power loss	
Power loss, typ.	8 W
Memory	
Work memory	
integrated	64 kbyte
• expandable	No
Load memory	
 Plug-in (MMC) 	Yes
 Plug-in (MMC), max. 	8 Mbyte
 Data management on MMC (after last programming), min. 	10 у
Backup	
• present	Yes; Guaranteed by MMC (maintenance-free)
without battery	Yes; Program and data

CPU processing times	
for bit operations, typ.	0.1 µs
for word operations, typ.	0.24 µs
for fixed point arithmetic, typ.	0.32 µs
for floating point arithmetic, typ.	1.1 μs
CPU-blocks	
Number of blocks (total)	1 024; (DBs, FCs, FBs); the maximum number of loadable blocks can
ואמוזוטבו טו טוטנהא (נטנמו)	be reduced by the MMC used.
DB	
Number, max.	1 024; Number range: 1 to 16000
• Size, max.	64 kbyte
FB	
• Number, max.	1 024; Number range: 0 to 7999
• Size, max.	64 kbyte
FC	
• Number, max.	1 024; 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	1; OB 10
 Number of delay alarm OBs 	2; OB 20, 21
Number of cyclic interrupt OBs	4; OB 32, 33, 34, 35
Number of process alarm OBs	1; OB 40
Number of startup OBs	1; OB 100
 Number of asynchronous error OBs 	4; OB 80, 82, 85, 87
Number of synchronous error OBs	2; OB 121, 122
Nesting depth	
per priority class	16
additional within an error OB	4
Counters, timers and their retentivity	
S7 counter	
Number	256
Retentivity	200
— adjustable	Yes
— lower limit	0
— upper limit	255
— preset	Z 0 to Z 7
Counting range	
— lower limit	0
— upper limit	999
IEC counter	
	Vec
present Type	Yes SFB
• Type	
Number	Unlimited (limited only by RAM capacity)
S7 times	256
Number Detentivity	230
Retentivity	Von
— adjustable	Yes
— lower limit	0
— upper limit	255 Na rotantivity
— preset	No retentivity
Time range	10 ma
— lower limit	10 ms
— upper limit	9 990 s
IEC timer	
• present	Yes
•Туре	SFB
Number	Unlimited (limited only by RAM capacity)

Data areas and their retentivity	
Retentive data area (incl. timers, counters, flags), max.	64 kbyte
Flag	
• Size, max.	256 byte
Retentivity available	Yes; MB 0 to MB 255
Retentivity preset	MB 0 to MB 15
Number of clock memories	8; 1 memory byte
Data blocks	
Retentivity adjustable	Yes; via non-retain property on DB
Retentivity preset	Yes
Local data	
 per priority class, max. 	32 kbyte; Max. 2048 bytes per block
Address area	
I/O address area	
Inputs	1 024 byte
Outputs	1 024 byte
of which distributed	
— Inputs	none
— Outputs	none
Process image	
Inputs	1 024 byte
Outputs	1 024 byte
 Inputs, adjustable 	1 024 byte
Outputs, adjustable	1 024 byte
Inputs, default	128 byte
Outputs, default	128 byte
Default addresses of the integrated channels	
— Digital inputs	124.0 to 125.1
— Digital outputs	124.0 to 124.5
Digital channels	
Inputs	266
— of which central	266
Outputs	262
— of which central	262
Analog channels	
Inputs	64
— of which central	64
Outputs	64
— of which central	64
Hardware configuration	
Number of expansion units, max.	0
Number of DP masters	
 integrated 	none
• via CP	4
Number of operable FMs and CPs (recommended)	
• FM	8
• CP, PtP	8
• CP, LAN	4
Rack	
• Racks, max.	1
Modules per rack, max.	8
Time of day	
Clock	
 Software clock 	Yes
 retentive and synchronizable 	No; Buffered: No, Can be synchronized: Yes
• Deviation per day, max.	10 s; Typ.: 2 s
 Behavior of the clock following POWER-ON 	the clock continues at the time of day it had when power was switched
Operating hours counter	off
Operating hours counter	1
Number	1

Number/Number range	0
Range of values	0 0 to 2^31 hours (when using SFC 101)
Granularity	1 h
retentive	Yes; Must be restarted at each restart
Clock synchronization	
supported	Yes
• to MPI, master	Yes
• to MPI, slave	Yes
• in AS, master	Yes
• in AS, slave	No
Digital inputs	
Number of digital inputs	10
of which inputs usable for technological functions	8
integrated channels (DI)	10
Input characteristic curve in accordance with IEC 61131, type 1	Yes
Number of simultaneously controllable inputs	
horizontal installation	
— up to 40 °C, max.	10
— up to 60 °C, max.	5
vertical installation	
— up to 40 °C, max.	5
Input voltage	
Rated value (DC)	24 V
• for signal "0"	-3 to +5V
● for signal "1"	+15 to +30 V
Input current	
• for signal "1", typ.	8 mA
Input delay (for rated value of input voltage)	
for standard inputs	
— parameterizable	Yes; 0.1 / 0.3 / 3 / 15 ms (You can reconfigure the input delay of the standard inputs during program runtime. Please note that under certain circumstances your newly set filter time may not be effective until the next filter cycle.)
— Rated value	3 ms
for technological functions	
— at "0" to "1", max.	48 µs; Minimum pulse width/minimum pause between pulses at maximum counting frequency
Cable length	
 shielded, max. 	1 000 m; 100 m for technological functions
 unshielded, max. 	600 m; for technological functions: No
for technological functions	
— shielded, max.	100 m; at maximum count frequency
— unshielded, max.	not allowed
Digital outputs	
Number of digital outputs	6
 of which high-speed outputs 	2; Notice: You cannot connect the fast outputs of your CPU in parallel
integrated channels (DO)	6
Short-circuit protection	Yes; Clocked electronically
Response threshold, typ.	1 A
Limitation of inductive shutdown voltage to	L+ (-48 V)
Controlling a digital input	Yes
Switching capacity of the outputs	
• on lamp load, max.	5 W
Load resistance range	
lower limit	48 Ω
upper limit	4 kΩ
Output voltage	
• for signal "1", min.	L+ (-0.8 V)
Output current	
 for signal "1" rated value 	500 mA

	5 4
• for signal "1" permissible range, min.	5 mA
• for signal "1" permissible range, max.	0.6 A
for signal "1" minimum load current	5 mA
 for signal "0" residual current, max. 	0.5 mA
Parallel switching of two outputs	
 for uprating 	No
 for redundant control of a load 	Yes
Switching frequency	
 with resistive load, max. 	100 Hz
 with inductive load, max. 	0.5 Hz
 on lamp load, max. 	100 Hz
 of the pulse outputs, with resistive load, max. 	2.5 kHz
Total current of the outputs (per group)	
horizontal installation	
— up to 40 °C, max.	2 A
— up to 60 °C, max.	1.5 A
vertical installation	
— up to 40 °C, max.	1.5 A
Cable length	
• shielded, max.	1 000 m
• unshielded, max.	600 m
	000 m
Analog inputs	
Number of analog inputs	0
integrated channels (AI)	0
Analog outputs	
Number of analog outputs	0
integrated channels (AO)	0
Encoder	
Connectable encoders	
2-wire sensor	Yes
— permissible guiescent current (2-wire sensor),	1.5 mA
 — permissible quiescent current (2-wire sensor), max. 	1.5 mA
	1.5 mA
max.	1.5 mA 0
max. Interfaces	
max. Interfaces Number of industrial Ethernet interfaces	0 0
max. Interfaces Number of industrial Ethernet interfaces Number of PROFINET interfaces Number of RS 485 interfaces	0 0 1; MPI
max. Interfaces Number of industrial Ethernet interfaces Number of PROFINET interfaces Number of RS 485 interfaces Number of RS 422 interfaces	0 0
max. Interfaces Number of industrial Ethernet interfaces Number of PROFINET interfaces Number of RS 485 interfaces Number of RS 422 interfaces 1. Interface	0 0 1; MPI 0
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max. Interfaces Number of industrial Ethernet interfaces Number of PROFINET interfaces Number of RS 485 interfaces Number of RS 422 interfaces Interface Interface Interface type Isolated Interface types • RS 485 • Output current of the interface, max. Protocols	0 0 1; MPI 0 Integrated RS 485 interface No Yes 200 mA
max. Interfaces Number of industrial Ethernet interfaces Number of PROFINET interfaces Number of RS 485 interfaces Number of RS 422 interfaces Interface Interface Interface type Isolated Interface types • RS 485 • Output current of the interface, max. Protocols • MPI	0 0 1; MPI 0 Integrated RS 485 interface No Yes 200 mA Yes
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max. Interfaces Number of industrial Ethernet interfaces Number of PROFINET interfaces Number of RS 485 interfaces Number of RS 422 interfaces Interface Interface Interface type Isolated Interface types	0 0 1; MPI 0 Integrated RS 485 interface No Yes 200 mA Yes No No
max. Interfaces Number of industrial Ethernet interfaces Number of PROFINET interfaces Number of RS 485 interfaces Number of RS 422 interfaces Interface Interface Interface type Isolated Interface types • RS 485 • Output current of the interface, max. Protocols • MPI • PROFIBUS DP master • PROFIBUS DP slave • Point-to-point connection	0 0 1; MPI 0 Integrated RS 485 interface No Yes 200 mA Yes No
max. Interfaces Number of industrial Ethernet interfaces Number of PROFINET interfaces Number of RS 485 interfaces Number of RS 422 interfaces Interface Interface Interface type Isolated Interface types	0 0 1; MPI 0 Integrated RS 485 interface No Yes 200 mA Yes No No
max. Interfaces Number of industrial Ethernet interfaces Number of PROFINET interfaces Number of RS 485 interfaces Number of RS 422 interfaces Interface Interface Interface type Isolated Interface types • RS 485 • Output current of the interface, max. Protocols • MPI • PROFIBUS DP master • PROFIBUS DP slave • Point-to-point connection	0 0 1; MPI 0 Integrated RS 485 interface No Yes 200 mA Yes No No
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max. Interfaces Number of industrial Ethernet interfaces Number of PROFINET interfaces Number of RS 485 interfaces Number of RS 422 interfaces Interface Interface Interface type Isolated Interface types • RS 485 • Output current of the interface, max. Protocols • MPI • PROFIBUS DP master • PROFIBUS DP slave • Point-to-point connection MPI • Transmission rate, max.	0 0 1; MPI 0 Integrated RS 485 interface No Yes 200 mA Yes No No No No
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max. Interfaces Number of industrial Ethernet interfaces Number of PROFINET interfaces Number of RS 485 interfaces Number of RS 422 interfaces Number of RS 422 interfaces Interface Interface type Isolated Interface types • RS 485 • Output current of the interface, max. Protocols • MPI • PROFIBUS DP master • PROFIBUS DP slave • Point-to-point connection MPI • Transmission rate, max. Services - PG/OP communication - Routing - Global data communication	0 0 0 1; MPI 0 0 Integrated RS 485 interface No 1 Yes 200 mA Yes 1 No No No No Yes 187.5 kbit/s Yes No Yes Yes
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PROFIsafe	No
communication functions / header	
PG/OP communication	Yes
Data record routing	No
Global data communication	
supported	Yes
Number of GD loops, max.	8
Number of GD packets, max.	8
Number of GD packets, transmitter, max.	8
Number of GD packets, receiver, max.	8
Size of GD packets, max.	22 byte
 Size of GD packet (of which consistent), max. 	22 byte
S7 basic communication	
supported	Yes
• User data per job, max.	76 byte
• User data per job (of which consistent), max.	76 byte; 76 bytes (with X_SEND or X_RCV); 64 bytes (with X_PUT or X_GET as server)
S7 communication	
supported	Yes
• as server	Yes
• as client	Yes; Via CP and loadable FB
 User data per job, max. 	180 byte; (with PUT/GET)
• User data per job (of which consistent), max.	240 byte; as server
S5 compatible communication	
supported	Yes; via CP and loadable FC
Number of connections	
overall	6
 usable for PG communication 	5
 reserved for PG communication 	1
— adjustable for PG communication, min.	1
 adjustable for PG communication, max. 	5
usable for OP communication	5
— reserved for OP communication	1
— adjustable for OP communication, min.	1
— adjustable for OP communication, max.	5
usable for S7 basic communication	2
 reserved for S7 basic communication 	0
— adjustable for S7 basic communication, min.	0
— adjustable for S7 basic communication, max.	2
S7 message functions	
Number of login stations for message functions, max.	6; Depending on the configured connections for PG/OP and S7 basic communication
Process diagnostic messages	Yes
simultaneously active Alarm-S blocks, max.	300
Test commissioning functions	
Status block	Yes; Up to 2 simultaneously
Single step	Yes
Number of breakpoints	4
Status/control	Ver
Status/control variable	Yes
Variables	Inputs, outputs, memory bits, DB, times, counters
Number of variables, max.	30
— of which status variables, max.	30
- of which control variables, max.	14
Forcing	Voc
Forcing Forcing	Yes
Forcing, variablesNumber of variables, max.	Inputs, outputs 10
Diagnostic buffer	
present	Yes
• present	100

Audio of Control	 Number of entries, max. 	500
 Adjustable - preset 10 Service data - preset 10 Service data - on bo read out Yes, From 10 to 499 - on bo read out Yes Interpretation indication LED Status indicator digital input (green) Yes Status indicator digital output (green) Yes Integrated indicator digital output (green) Yes Integrated Functions Prequency measurement Yes Number of frequency meters 2, up to 10 kHz (see "Technological Functions" manual) controlled positioning (bio documents) No Pionomalia Prequency (palse) Z buts indicator digital inputs Potential separation digit		
— preset. 10 Service data		
Service data Yes Interrupts/dignostics/status information Interrupts/dignostics/status information Diagnostics indicator digital input (green) Yes • Status indicator digital input (green) Yes • Integrates Functions 2: up to 10 kHz (see "Technological Functions" manual) • Ontroller positioning No • Number of frequency meters 2: up to 10 kHz (see "Technological Functions" manual) • Ontroller positioning No • Number of pulse outputs 2: Pulse width modulation up to 2.5 kHz (see "Technological Functions" Manual) • Unit frequency (pulse) 2.5 kHz • Potential separation digital inputs No • Potential separation digital outputs Yes • Deleven the channels and backplane bus Yes • Delevent the channels and backplane bus Yes • Delevent the channels and backplane bus Yes	-	
interruption Yes Interruption Ves Interruption Yes Status indicator digital input (green) Yes Integrates indicator digital output (green) Yes Integrates Functions Frequency measurement Yes Integrates Functions No Integrates functions" manual) controller No No integrated function blocks (closed-loop control) No No Pilo controller No No Number of pulse outputs 2: Pulse with modulation up to 2:5 kHz (see "Technological Functions" manual) Unit frequency (usles) 2:5 kHz Yes Potential separation digital nputs Yes No • Potential separation digital outputs Yes Yes • between the channels and backplane bus Yes Yes • between the channels and backplane bus Yes Yes Isolation tested with 600 V DC Ambient conditions Ambient conditions Gord Configuration / Beader • STEP 7 Line No Gor Configuration / Deces <td></td> <td>10</td>		10
Interrupticiliagnostics/industion Diagnostics indication LED • Status indicator digital input (green) Yes • Status indicator digital input (green) Yes Integrated Functions Zi up to 10 kHz (see "Technological Functions" manual) • Number of frequency meters Zi up to 10 kHz (see "Technological Functions" manual) • ontrolled positioning No • Integrated function blocks (closed-loop control) No • Protential separation digital inputs Zi kHz • Potential separation digital inputs Yes • Potential separation digital outputs Yes • Potential separation digital outputs Yes • Determine separation digital outputs Yes		Voo
Diagnostics indication LED • Status indicator digital output (green) Yes • Status indicator digital output (green) Yes • Number of frequency measurement Yes • Controlled positioning No Integrated functions blocks (closed-loop control) No PDC controller No Number of pulse outputs 2; Pulse width modulation up to 2.5 kHz (see "Technological Functions" manual) Controller No Procential separation digital inputs Yes • Detential separation digital inputs Yes • Detential separation digital outputs Yes • Detenetial separation digital outputs </td <td></td> <td>1 es</td>		1 es
• Status indicator digital input (green) Yes • Status indicator digital output (green) Yes Integrated Functions Yes Frequency measurement Yes • Number of frequency meters 2: up to 10 kHz (see "Technological Functions" manual) controlled positioning No Integrated function blocks (closed-loop control) No PID controller No Number of pulse outputs 2; Pulse witht madulation up to 2.5 kHz (see "Technological Functions" Manual) Limit frequency (pulse) 2.5 kHz Potential separation digital inputs Yes • Detential separation digital outputs Yes <t< td=""><td></td><td></td></t<>		
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Integrated Functions Yes Frequency measurement Yes Number of frequency meters 2; up to 10 kHz (see "Technological Functions" manual) controlled positioning No Integrated function blocks (closed-loop control) No PiDe controller No Number of puise outputs 2.5 kHz Potential separation digital inputs Yes Potential separation digital inputs Yes Potential separation digital inputs Yes Potential separation digital outputs Yes • between the channels No • contiditons		
Frequency measurement Yes • Number of frequency meters 2; up to 10 kHz (see "Technological Functions" manual) Integrated function blocks (dosed-loop control) No Integrated function blocks (dosed-loop control) No PUD controlled No Number of pulse outputs 2: Pulse width modulation up to 2.5 kHz (see "Technological Functions" manual) Limit frequency (pulse) 2: 5 kHz Potential separation digital inputs Yes • Detween the channels and backplane bus Yes Isolation tested with 600 V DC Ambient conditions 600 V DC Ambient conditions 600 V DC Ambient conditions 600 ° C configuration / header 600 ° C Configuration software STEP 7 V5.5 + SP1 or higher or STEP 7 V5.3 + SP2 or higher with HSP 203 • STEP 7 Life No Configuration / programming / header see instruction list • System function blocks (SFB) see instruction list • Setter 7 Life Yes Programming language Yes -		Yes
• Number of frequency meters 2; up to 10 kHz (see "Technological Functions" manual) controlled positioning No Integrated function blocks (closed-loop control) No PDE controller No Number of pulse outputs 2.5 kHz Manual) 2.5 kHz Potential separation digital inputs Yes • Detential separation digital outputs		
controlled positioning No integrated function blocks (closed-loop control) No PID controller No Number of pulse outputs 2; Pulse width modulation up to 2.5 kHz (see "Technological Functions" Manual) Limit frequency (pulse) 2.5 kHz Potential separation digital inputs Yes • Potential separation digital outputs Yes • between the channels No • Potential separation digital outputs Yes • between the channels No • between the channels No • between the channels No • between the channels and backplane bus Yes • between the channels No • between the channels No • between the channels and backplane bus Yes Isolation tested with 600 V DC Ambient conditions Configuration / header Configuration / header O °C configuration / programming / header See instruction list • STEP 7 Lile No configuration / globage 8 • System functions (SFC) see instru		
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PID controller No Number of pulse outputs 2, Pulse with modulation up to 2,5 kHz (see "Technological Functions" Manual) Limit frequency (pulse) 2,5 kHz Potential separation digital inputs Yes • Potential separation digital inputs Yes • between the channels No • between the channels and backplane bus Yes • between the channels No foldition Conditions Ambient conditions More • other conditions O°C • min. 0°C • STEP 7 Lite No • STEP 7 Lite No • System function blocks (SFE) <td< td=""><td></td><td></td></td<>		
Number of pulse outputs 2: Pulse width modulation up to 2.5 kHz (see "Technological Functions" Manual) Limit frequency (pulse) 2: 5 kHz Potential separation digital inputs Yes • Potential separation digital inputs Yes • Dotential separation digital inputs Yes • Dotential separation digital outputs Yes • Detween the channels No • between the channels No • contiguration / header Configuration / header • Configuration / header O° C • STEP 7 Yes; STEP 7 V5.5 + SP1 or higher or STEP 7 V5.3 + SP2 or higher with HSP 203 • STEP 7 Lite No • Configuration / header See instruction list • System function S(SFC) see instruction list • System function blocks (SFB)		
Manual) Limit frequency (pulse) 2.5 kHz Potential separation digital inputs Yes • Potential separation digital inputs Yes • between the channels • between the channels • between the channels • between the channels • between the channels No • between the channels • between the channels • between the channels No • between the channels • between the channels No • between the channels O °C fordation Configuration operation • inin. 0 °C • oraz. 60 °C configuration / header Solation • STEP 7 Lite No • STEP 7 Lite Se instruction list • System functions (SFC) see instruction list • System function blocks (SFB) <td></td> <td></td>		
Potential separation Potential separation digital inputs • Potential separation digital inputs • between the channels • between the channels • Potential separation digital outputs • Potential separation digital outputs • Detential separation digital outputs • between the channels • ord • between the channels • ord	Number of pulse outputs	
Potential separation digital inputs Yes Potential separation digital inputs No between the channels and backplane bus Yes Potential separation digital outputs Potential separation digital outputs Potential separation digital outputs Yes between the channels No between the channels and backplane bus Yes definition of the command set StEP 7 Ves: STEP 7 V5.5 + SP1 or higher or STEP 7 V5.3 + SP2 or higher with HSP 203 StEP 7 Lite No command set see instruction list see instruction list see instruction list System function blocks (SFB) see instruction list System function blocks (SFE) see instruction list Set instruction list Set instruction list<td>Limit frequency (pulse)</td><td>2.5 kHz</td>	Limit frequency (pulse)	2.5 kHz
• Potential separation digital inputs Yes • between the channels and backplane bus Yes • Potential separation digital outputs Yes • Potential separation digital outputs Yes • between the channels and backplane bus Yes • between the channels No • between the channels and backplane bus Yes Isolation 600 V DC Ambient conditions 600 °C configuration / header 600 °C configuration software 60 °C • STEP 7 Yes; STEP 7 V5.5 + SP1 or higher or STEP 7 V5.3 + SP2 or higher with HSP 203 • STEP 7 Life No configuration / programming / header see instruction list • Command set see instruction list • System functions (SFC) see instruction list • System functi	Potential separation	
• between the channels and backplane bus Yes Potential separation digital outputs Yes • Potential separation digital outputs Yes • between the channels No • between the channels and backplane bus Yes Isolation Yes Isolation tested with 600 V DC Ambient conditions 0°C Ambient conditions 0°C • nax. 60°C Configuration / hader 0°C Configuration / hader 0°C • STEP 7 Yes; STEP 7 V5.5 + SP1 or higher or STEP 7 V5.3 + SP2 or higher with HSP 203 • STEP 7 Lite No • Configuration / programming / header 500 mm • Octommand set see instruction list • Nesting levels 8 • System function blocks (SFB) see instruction list • System function lost(s (SFC) see instruction list • System function lost(s (SFB) see instruction list • System function blocks (SFB) yes - SCL Yes - SCL Yes - SRAPH Yes - HGraph® Yes - Moder indexing levels Yes - Block encryption Yes - SKI Yes - SKI Yes	Potential separation digital inputs	
• between the channels and backplane bus Yes Potential separation digital outputs Yes • Potential separation digital outputs Yes • between the channels No • between the channels and backplane bus Yes Isolation Yes Isolation tested with 600 V DC Ambient temperature during operation 0 °C • max. 60 °C configuration / header 60 °C configuration software Yes; STEP 7 V5.5 + SP1 or higher or STEP 7 V5.3 + SP2 or higher with HSP 203 • STEP 7 Lite No • Command set see instruction list • Nesting levels 8 • System functions (SFC) see instruction list • System function blocks (SFB) see instruction list • System function blocks (SFC) see instruction list • System function blocks (SFB) see instruction list • System function blocks (SFB) see instruction list • FBD Yes - SCL Yes - SCL Yes - HiGraph® Yes Know-how protection/password protection Yes Width 40 mm Height 125 mm	 Potential separation digital inputs 	Yes
Potential separation digital outputs Yes Potential separation digital outputs No between the channels and backplane bus Yes Isolation Solation tested with 600 V DC Ambient conditions Ambient conditions or °C max. 60 °C configuration / header 0 °C Configuration software • STEP 7 V5.5 + SP1 or higher or STEP 7 V5.3 + SP2 or higher with HSP 203 • STEP 7 Lite No configuration / programming / header • See instruction list • Command set see instruction list • System functions (SFC) see instruction list • System function blocks (SFB) see instruction list Programming language — — LAD Yes — FBD Yes — SCL Yes — GRAPH Yes — HGraph% Yes Know-how protection Yes Know-how protection Yes Width 80 mm Height 125 mm	between the channels	No
• Potential separation digital outputs Yes • between the channels and backplane bus Yes Isolation Yes Isolation tested with 600 V DC Ambient conditions 600 V DC Ambient temperature during operation • min. • max. 60 °C configuration / header Configuration software • STEP 7 Yes; STEP 7 V5.5 + SP1 or higher or STEP 7 V5.3 + SP2 or higher with HSP 203 • STEP 7 Lite No • Command set see instruction list • System functions (SFC) see instruction list • System function (SFC) see instruction list • System function bocks (SFB) see instruction list • System function bocks (SFB) see instruction list • System function programming language Yes - FBD Yes - SCL Yes - GRAPH Yes - HiGraph© Yes - HiGraph© Yes - HiGraph© Yes - Width 80 mm - Height 125 mm	 between the channels and backplane bus 	Yes
• between the channels and backplane bus Yes Isolation Isolation tested with 600 V DC Ambient conditions Ambient temperature during operation 0 °C • max. 60 °C configuration / header Configuration software Yes; STEP 7 V5.5 + SP1 or higher or STEP 7 V5.3 + SP2 or higher with HSP 203 • STEP 7 Yes; STEP 7 V5.5 + SP1 or higher or STEP 7 V5.3 + SP2 or higher with HSP 203 • STEP 7 Lite No configuration / programming / header see instruction list • Nesting levels 8 • System functions (SFC) see instruction list • System function locks (SFB) see instruction list • Programming language Yes - LAD Yes - FBD Yes - SCL Yes - SCL Yes - GRAPH Yes - HiGraph® Yes - User program protection/password protection Yes • User program protection/password protection Yes • User program protection/password protection Yes Width 80 mm	Potential separation digital outputs	
• between the channels and backplane bus Yes Isolation Isolation tested with Ambient conditions Ambient temperature during operation • min. 0 °C • max. 60 °C configuration / header Configuration / header Configuration / header Configuration / header Configuration / programming / header • STEP 7 Lite No • Command set see instruction list • Nesting levels 8 • System functions (SFC) see instruction list • System function blocks (SFB) see instruction list Programming language - - LAD Yes - SRD Yes - SCL Yes - SCL Yes - HiGraph® Yes - HiGraph® Yes - HiGraph® Yes - Width 80 mm + Height 125 mm	 Potential separation digital outputs 	Yes
Isolation Isolation tested with 600 V DC Ambient conditions Ambient temperature during operation • min. 0 °C • max. 60 °C configuration / header Configuration software • STEP 7 Yes; STEP 7 V5.5 + SP1 or higher or STEP 7 V5.3 + SP2 or higher with HSP 203 • STEP 7 Lite No configuration / programming / header see instruction list • Command set see instruction list • Nesting levels 8 • System function blocks (SFB) see instruction list • System function blocks (SFB) see instruction list • System function blocks (SFB) see instruction list - SQL Yes - FBD Yes - SCL Yes - GRAPH Yes - HiGraph® Yes - HiGraph® Yes - Block encryption Yes • User program protection/password protection Yes • Block encryption Yes • User program protection/password protection Yes • Block encryption Yes <	 between the channels 	No
Isolation tested with 600 V DC Ambient temperature during operation 0 °C • min. 0 °C • max. 60 °C configuration / header 60 °C Configuration software • C • STEP 7 Yes; STEP 7 V5.5 + SP1 or higher or STEP 7 V5.3 + SP2 or higher with HSP 203 • STEP 7 Lite No configuration / programming / header • Command set • Command set see instruction list • Nesting levels 8 • System functions (SFC) see instruction list • System function blocks (SFB) see instruction list Programming language - - LAD Yes - STL Yes - SCL Yes - GRAPH Yes - HGraph® Yes Know-how protection Yes • User program protection/password protection Yes; With S7 block Privacy Dimensions Width 80 mm Height 125 mm	 between the channels and backplane bus 	Yes
Ambient conditions Ambient temperature during operation • min. 0 °C • max. 60 °C configuration / header Configuration software • STEP 7 Yes; STEP 7 V5.5 + SP1 or higher or STEP 7 V5.3 + SP2 or higher with HSP 203 • STEP 7 Lite No configuration / programming / header . • Command set see instruction list • Nesting levels 8 • System functions (SFC) see instruction list • System functions (SFC) see instruction list • System functions (SFC) see instruction list • System functions (SFB) see instruction list - LAD Yes - FBD Yes - SCL Yes - SCL Yes - HiGraph® Yes - HiGraph® Yes - HiGraph® Yes; With S7 block Privacy Dimensions 80 mm Width 80 mm		
Ambient temperature during operation 0 °C • max. 60 °C configuration / header 60 °C Configuration software • • STEP 7 Yes; STEP 7 V5.5 + SP1 or higher or STEP 7 V5.3 + SP2 or higher with HSP 203 • STEP 7 Lite No configuration / programming / header • • Command set see instruction list • Nesting levels 8 • System functions (SFC) see instruction list • System function blocks (SFB) see instruction list Programming language - - LAD Yes - SFL Yes - SCL Yes - SCL Yes - GRAPH Yes - HiGraph® Yes Width 80 mm • Block encryption Yes Width 80 mm	Isolation	
• min.0 °C• max.60 °Cconfiguration offware• STEP 7Yes; STEP 7 V5.5 + SP1 or higher or STEP 7 V5.3 + SP2 or higher with HSP 203• STEP 7 LiteNoconfiguration / programming / headersee instruction list• Command setsee instruction list• Nesting levels8• System functions (SFC)see instruction list• System function blocks (SFB)see instruction list• STLYes- LADYes- FBDYes- SCLYes- GRAPHYes- HiGraph®Yes• Hisrpapl®Yes• User program protection/password protectionYes• Block encryptionYes; With S7 block PrivacyDimensionsWidth80 mmWidth80 mmHeight125 mm		600 V DC
• min.0 °C• max.60 °Cconfiguration offware• STEP 7Yes; STEP 7 V5.5 + SP1 or higher or STEP 7 V5.3 + SP2 or higher with HSP 203• STEP 7 LiteNoconfiguration / programming / headersee instruction list• Command setsee instruction list• Nesting levels8• System functions (SFC)see instruction list• System function blocks (SFB)see instruction list• STLYes- LADYes- FBDYes- SCLYes- GRAPHYes- HiGraph®Yes• Hisrpapl®Yes• User program protection/password protectionYes• Block encryptionYes; With S7 block PrivacyDimensionsWidth80 mmWidth80 mmHeight125 mm	Isolation tested with	600 V DC
configuration / header Configuration software Yes; STEP 7 V5.5 + SP1 or higher or STEP 7 V5.3 + SP2 or higher with HSP 203 • STEP 7 Lite No configuration / programming / header No configuration / programming / header see instruction list • Command set see instruction list • Nesting levels 8 • System function blocks (SFC) see instruction list • System function blocks (SFB) see instruction list Programming language Yes - LAD Yes - STL Yes - SCL Yes - SCL Yes - GRAPH Yes - HiGraph® Yes Know-how protection Yes; With S7 block Privacy Dimensions 80 mm Width 80 mm Height 125 mm	Isolation tested with Ambient conditions	600 V DC
Configuration software • STEP 7 Yes; STEP 7 V5.5 + SP1 or higher or STEP 7 V5.3 + SP2 or higher with HSP 203 • STEP 7 Lite No configuration / programming / header No • Command set see instruction list • Nesting levels 8 • System function blocks (SFC) see instruction list • System function blocks (SFB) see instruction list Programming language - - LAD Yes - STL Yes - SCL Yes - SCL Yes - GRAPH Yes - HiGraph® Yes Block encryption Yes; With S7 block Privacy Dimensions 80 mm Width 80 mm Height 125 mm	Isolation tested with Ambient conditions Ambient temperature during operation	
• STEP 7Yes; STEP 7 V5.5 + SP1 or higher or STEP 7 V5.3 + SP2 or higher with HSP 203• STEP 7 LiteNoconfiguration / programming / headersee instruction list• Command setsee instruction list• Nesting levels8• System functions (SFC)see instruction list• System function blocks (SFB)see instruction list• Programming languageYes- LADYes- FBDYes- STLYes- SCLYes- GRAPHYes- HiGraph®YesWidth80 mmHeight125 mm	Isolation tested with Ambient conditions Ambient temperature during operation • min.	0 °C
• STEP 7Yes; STEP 7 V5.5 + SP1 or higher or STEP 7 V5.3 + SP2 or higher with HSP 203• STEP 7 LiteNoconfiguration / programming / headersee instruction list• Command setsee instruction list• Nesting levels8• System functions (SFC)see instruction list• System function blocks (SFB)see instruction list• Programming languageYes- LADYes- FBDYes- STLYes- SCLYes- GRAPHYes- HiGraph®YesWidth80 mmHeight125 mm	Isolation tested with Ambient conditions Ambient temperature during operation • min. • max.	0 °C
HSP 203 • STEP 7 Lite No configuration / programming / header see instruction list • Command set see instruction list • Nesting levels 8 • System functions (SFC) see instruction list • System function blocks (SFB) see instruction list • System function blocks (SFB) see instruction list • System function blocks (SFB) see instruction list • Programming language Yes - LAD Yes - STL Yes - STL Yes - SCL Yes - GRAPH Yes - HiGraph® Yes Know-how protection Yes • User program protection/password protection Yes (With S7 block Privacy Dimensions 80 mm Width 80 mm Height 125 mm	Isolation tested with Ambient conditions Ambient temperature during operation • min. • max. configuration / header	0 °C
configuration / programming / header• Command setsee instruction list• Nesting levels8• System functions (SFC)see instruction list• System function blocks (SFB)see instruction listProgramming language LADYes- FBDYes- STLYes- SCLYes- GRAPHYes- HiGraph®YesVes program protection/password protectionYesBlock encryptionYes; With S7 block PrivacyDimensions80 mmHeight125 mm	Isolation tested with Ambient conditions Ambient temperature during operation • min. • max. configuration / header Configuration software	0 °C 60 °C
• Command set see instruction list • Nesting levels 8 • System functions (SFC) see instruction list • System function blocks (SFB) see instruction list Programming language - - LAD Yes - FBD Yes - STL Yes - SCL Yes - GRAPH Yes - HiGraph® Yes Ves Yes - Block encryption Yes Width 80 mm Height 125 mm	Isolation tested with Ambient conditions Ambient temperature during operation • min. • max. configuration / header Configuration software	0 °C 60 °C Yes; STEP 7 V5.5 + SP1 or higher or STEP 7 V5.3 + SP2 or higher with
• Nesting levels8• System functions (SFC)see instruction list• System function blocks (SFB)see instruction listProgramming language LADYes- FBDYes- STLYes- SCLYes- GRAPHYes- HiGraph®Yes- User program protection/password protectionYes; With S7 block Privacy• Width80 mmHeight125 mm	Isolation tested with Ambient conditions Ambient temperature during operation • min. • max. configuration / header Configuration software • STEP 7	0 °C 60 °C Yes; STEP 7 V5.5 + SP1 or higher or STEP 7 V5.3 + SP2 or higher with HSP 203
• System functions (SFC) see instruction list • System function blocks (SFB) see instruction list Programming language - - LAD Yes - FBD Yes - STL Yes - SCL Yes - GRAPH Yes - HiGraph® Yes Ves program protection/password protection Yes; With S7 block Privacy Dimensions 80 mm Width 80 mm Height 125 mm	Isolation tested with Ambient conditions Ambient temperature during operation • min. • max. configuration / header Configuration software • STEP 7 • STEP 7 Lite	0 °C 60 °C Yes; STEP 7 V5.5 + SP1 or higher or STEP 7 V5.3 + SP2 or higher with HSP 203
• System function blocks (SFB)see instruction listProgramming language LADYes- FBDYes- STLYes- SCLYes- GRAPHYes- HiGraph®YesKnow-how protectionYes• User program protection/password protectionYes; With S7 block PrivacyDimensionsYes; With S7 block PrivacyWidth80 mmHeight125 mm	Isolation tested with Ambient conditions Ambient temperature during operation	0 °C 60 °C Yes; STEP 7 V5.5 + SP1 or higher or STEP 7 V5.3 + SP2 or higher with HSP 203 No
Programming language- LADYes- FBDYes- STLYes- SCLYes- GRAPHYes- HiGraph®YesKnow-how protectionYes• User program protection/password protectionYes; With S7 block PrivacyDimensionsYes; With S7 block PrivacyWidth80 mmHeight125 mm	Isolation tested with Ambient conditions Ambient temperature during operation min. max. configuration / header Configuration software STEP 7 STEP 7 Lite configuration / programming / header Command set 	0 °C 60 °C Yes; STEP 7 V5.5 + SP1 or higher or STEP 7 V5.3 + SP2 or higher with HSP 203 No
- LADYes- FBDYes- STLYes- SCLYes- GRAPHYes- HiGraph®YesKnow-how protectionYes• User program protection/password protectionYes; With S7 block PrivacyDimensionsYes; With S7 block PrivacyWidth80 mmHeight125 mm	Isolation tested with Ambient conditions Ambient temperature during operation min. max. configuration / header Configuration software STEP 7 STEP 7 Lite configuration / programming / header Command set Nesting levels 	0 °C 60 °C 7 Ves; STEP 7 V5.5 + SP1 or higher or STEP 7 V5.3 + SP2 or higher with HSP 203 No see instruction list 8
FBDYes STLYes SCLYes GRAPHYes HiGraph®YesMow-how protectionYes• User program protection/password protectionYes• Block encryptionYes; With S7 block PrivacyDimensions80 mmHeight125 mm	Isolation tested with Ambient conditions Ambient temperature during operation min. max. configuration / header Configuration software STEP 7 STEP 7 STEP 7 Lite configuration / programming / header Command set Nesting levels System functions (SFC) 	0 °C 60 °C Yes; STEP 7 V5.5 + SP1 or higher or STEP 7 V5.3 + SP2 or higher with HSP 203 No see instruction list 8 see instruction list
STLYes SCLYes GRAPHYes HiGraph®YesMow-how protectionYes• User program protection/password protectionYes• Block encryptionYes; With S7 block PrivacyDimensions80 mmHeight125 mm	Isolation tested with Ambient conditions Ambient temperature during operation min. max. configuration / header Configuration software STEP 7 STEP 7 Lite configuration / programming / header Command set Nesting levels System functions (SFC) System function blocks (SFB) 	0 °C 60 °C Yes; STEP 7 V5.5 + SP1 or higher or STEP 7 V5.3 + SP2 or higher with HSP 203 No see instruction list 8 see instruction list
- SCLYes- GRAPHYes- HiGraph®YesKnow-how protectionYes• User program protection/password protectionYes; With S7 block Privacy• Block encryptionYes; With S7 block PrivacyDimensions80 mmHeight125 mm	Isolation tested with Ambient conditions Ambient temperature during operation min. max. configuration / header Configuration software STEP 7 STEP 7 Lite configuration / programming / header Command set Nesting levels System functions (SFC) System function blocks (SFB) Programming language	0 °C 60 °C Yes; STEP 7 V5.5 + SP1 or higher or STEP 7 V5.3 + SP2 or higher with HSP 203 No see instruction list 8 see instruction list 9
GRAPHYes HiGraph®YesKnow-how protectionYes• User program protection/password protectionYes; With S7 block Privacy• Block encryptionYes; With S7 block PrivacyDimensions80 mmHeight125 mm	Isolation tested with Ambient conditions Ambient temperature during operation min. max. configuration / header Configuration software STEP 7 STEP 7 Lite configuration / programming / header Command set Nesting levels System functions (SFC) System function blocks (SFB) Programming language — LAD	0 °C 60 °C 7 Ves; STEP 7 V5.5 + SP1 or higher or STEP 7 V5.3 + SP2 or higher with HSP 203 No see instruction list 8 see instruction list 9 see instruction list 9 See instruction list 9 See instruction list 9 See instruction list 9 See instruction list
HiGraph® Yes Know-how protection Yes • User program protection/password protection Yes; With S7 block Privacy • Block encryption Yes; With S7 block Privacy Dimensions 80 mm Height 125 mm	Isolation tested with Ambient conditions Ambient temperature during operation min. max. configuration / header Configuration software STEP 7 STEP 7 STEP 7 Lite configuration / programming / header Command set Nesting levels System functions (SFC) System function blocks (SFB) Programming language LAD FBD 	0 °C 60 °C 7 Ves; STEP 7 V5.5 + SP1 or higher or STEP 7 V5.3 + SP2 or higher with HSP 203 No see instruction list 8 see instruction list see instruction list 9 Yes Yes
Know-how protection Yes • User program protection/password protection Yes; With S7 block Privacy • Block encryption Yes; With S7 block Privacy Dimensions 80 mm Height 125 mm	Isolation tested with Ambient conditions Ambient temperature during operation	0 °C 60 °C 7 Ves; STEP 7 V5.5 + SP1 or higher or STEP 7 V5.3 + SP2 or higher with HSP 203 No see instruction list 8 see instruction list see instruction list see instruction list rese instruction list
• User program protection/password protection Yes • Block encryption Yes; With S7 block Privacy Dimensions 80 mm Width 80 mm Height 125 mm	Isolation tested with Ambient conditions Ambient temperature during operation • min. • max. configuration / header Configuration software • STEP 7 • STEP 7 Lite configuration / programming / header • Command set • Nesting levels • System functions (SFC) • System function blocks (SFB) Programming language - LAD - FBD - STL - SCL - GRAPH	0 °C 60 °C Yes; STEP 7 V5.5 + SP1 or higher or STEP 7 V5.3 + SP2 or higher with HSP 203 No see instruction list 8 see instruction list see instruction list yes Yes Yes Yes
• Block encryption Yes; With S7 block Privacy Dimensions Width 80 mm Height 125 mm	Isolation tested with Ambient conditions Ambient temperature during operation • min. • max. configuration / header Configuration software • STEP 7 • STEP 7 Lite configuration / programming / header • Command set • Nesting levels • System functions (SFC) • System function blocks (SFB) Programming language - LAD - FBD - STL - SCL - GRAPH	0 °C 60 °C 74 Yes; STEP 7 V5.5 + SP1 or higher or STEP 7 V5.3 + SP2 or higher with HSP 203 No see instruction list 8 see instruction list see instruction list see instruction list Yes Yes Yes Yes Yes
Dimensions Width 80 mm Height 125 mm	Isolation tested with Ambient conditions Ambient temperature during operation	0 °C 60 °C 74 Yes; STEP 7 V5.5 + SP1 or higher or STEP 7 V5.3 + SP2 or higher with HSP 203 No see instruction list 8 see instruction list see instruction list see instruction list Yes Yes Yes Yes Yes
Width 80 mm Height 125 mm	Isolation tested with Ambient conditions Ambient temperature during operation	0 °C 60 °C Yes; STEP 7 V5.5 + SP1 or higher or STEP 7 V5.3 + SP2 or higher with HSP 203 No see instruction list 8 see instruction list 9 Yes Yes Yes Yes Yes Yes
Height 125 mm	Isolation tested with Ambient conditions Ambient temperature during operation min. max. configuration / header Configuration software STEP 7 STEP 7 Lite configuration / programming / header Command set Nesting levels System functions (SFC) System function blocks (SFB) Programming language - LAD - FBD - STL - SCL - GRAPH - HiGraph® Know-how protection User program protection/password protection	0°C 60°C Yes; STEP 7 V5.5 + SP1 or higher or STEP 7 V5.3 + SP2 or higher with HSP 203 No see instruction list 8 see instruction list see instruction list Yes Yes Yes Yes Yes Yes Yes
	Isolation tested with Ambient conditions Ambient temperature during operation min. max. configuration / header Configuration software STEP 7 STEP 7 Lite configuration / programming / header Command set Nesting levels System functions (SFC) System function blocks (SFB) Programming language - LAD - FBD - STL - SCL - GRAPH - HiGraph® Know-how protection User program protection/password protection Block encryption	0°C 60°C Yes; STEP 7 V5.5 + SP1 or higher or STEP 7 V5.3 + SP2 or higher with HSP 203 No see instruction list 8 see instruction list see instruction list Yes Yes Yes Yes Yes Yes Yes
	Isolation tested with Ambient conditions Ambient temperature during operation imin. imax. configuration / header Configuration software STEP 7 STEP 7 Lite Configuration / programming / header Command set Nesting levels System functions (SFC) System function blocks (SFB) Programming language - LAD - FBD - STL - SCL - GRAPH - HiGraph® Know-how protection User program protection/password protection Block encryption Dimensions	0 °C 60 °C Yes; STEP 7 V5.5 + SP1 or higher or STEP 7 V5.3 + SP2 or higher with HSP 203 No see instruction list 8 see instruction list see instruction list 4 Yes Yes Yes Yes Yes Yes Yes Yes
	Isolation tested with Ambient conditions Ambient temperature during operation • min. • max. configuration / header Configuration software • STEP 7 • STEP 7 Lite configuration / programming / header • Command set • Nesting levels • System functions (SFC) • System function blocks (SFB) Programming language - LAD - FBD - STL - SCL - GRAPH - HiGraph® Know-how protection • User program protection/password protection • Block encryption Dimensions Width	0 °C 60 °C Yes; STEP 7 V5.5 + SP1 or higher or STEP 7 V5.3 + SP2 or higher with HSP 203 No see instruction list 8 see instruction list 9 Yes Yes Yes Yes Yes Yes Yes Yes

Weights	
Weight, approx.	410 g
last modified:	7/28/2021 🖸

last modified: