

SIMATIC S7-300, CPU 313C-2 PTP COMPACT CPU WITH MPI, 16 DI/16 DO, 3 FAST COUNTERS (30 KHZ), INTEGRATED INTERFACE RS485, INTEGRATED 24V DC POWER SUPPLY, 32 KBYTE WORKING MEMORY, MICRO MEMORY CARD REQUIRED

Supply voltage

Rated value (DC)	
<ul style="list-style-type: none"> • 24 V DC 	Yes
permissible range, lower limit (DC)	20.4 V
permissible range, upper limit (DC)	28.8 V
Load voltage L+	
<ul style="list-style-type: none"> • Rated value (DC) 	24 V
<ul style="list-style-type: none"> • permissible range, lower limit (DC) 	20.4 V
<ul style="list-style-type: none"> • permissible range, upper limit (DC) 	28.8 V

Input current

Current consumption (rated value)	700 mA
Inrush current, typ.	11 A

Power loss

Power loss, typ.	10 W
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Memory

Work memory	
<ul style="list-style-type: none"> • integrated 	32 kbyte; For program and data
<ul style="list-style-type: none"> • expandable 	No
Load memory	
<ul style="list-style-type: none"> • expandable FEPRM 	Yes; with Micro Memory Card (MMC)
<ul style="list-style-type: none"> • expandable FEPRM, max. 	4 Mbyte
Backup	
<ul style="list-style-type: none"> • present 	Yes; Guaranteed by MMC (maintenance-free)
<ul style="list-style-type: none"> • without battery 	Yes; Program and data

CPU processing times

for bit operations, typ.	0.1 μ s
for bit operations, max.	0.2 μ s
for word operations, typ.	0.5 μ s
for fixed point arithmetic, typ.	1 μ s
for floating point arithmetic, typ.	15 μ s

CPU-blocks

DB	
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• Number, max.	127; DB 0 reserved
• Size, max.	16 kbyte
FB	
• Number, max.	128
• Size, max.	16 kbyte
FC	
• Number, max.	128
• Size, max.	16 kbyte
OB	
• Size, max.	16 kbyte
• Number of time alarm OBs	1
• Number of delay alarm OBs	1
• Number of cyclic interrupt OBs	1
• Number of process alarm OBs	1
Nesting depth	
• per priority class	8
• additional within an error OB	4

Counters, timers and their retentivity

S7 counter	
• Number	256
Retentivity	
— adjustable	Yes
— lower limit	0
— upper limit	256
Counting range	
— can be set	Yes
— lower limit	1
— upper limit	999
S7 times	
• Number	256
Retentivity	
— adjustable	Yes
— lower limit	0
— upper limit	256
Time range	
— lower limit	10 ms
— upper limit	9 990 s
IEC timer	
• present	Yes
• Type	SFB

Data areas and their retentivity

Flag	
• Number, max.	256 byte
• Retentivity available	Yes; MB 0 to MB 255
Address area	
I/O address area	
• Inputs	1 kbyte
• Outputs	1 kbyte
Process image	
• Inputs	128 byte
• Outputs	128 byte
Digital channels	
• Inputs	992
• Outputs	992
Analog channels	
• Inputs	248
• Outputs	124
Hardware configuration	
Number of expansion units, max.	3
Number of DP masters	
• via CP	1
Number of operable FMs and CPs (recommended)	
• FM	8
• CP, PtP	4
• CP, LAN	2
Rack	
• Modules per rack, max.	31
Time of day	
Clock	
• Hardware clock (real-time)	Yes
• retentive and synchronizable	Yes
Operating hours counter	
• Number	1
Clock synchronization	
• supported	Yes
Digital inputs	
Number of digital inputs	16
Input voltage	
• Rated value (DC)	24 V
• for signal "0"	-3 to +5V
• for signal "1"	+15 to +30V

Input current	
• for signal "1", typ.	8 mA; Min. 2 mA
Input delay (for rated value of input voltage)	
for standard inputs	
— parameterizable	Yes; 0.1 / 0.3 / 3 / 15 ms
for counter/technological functions	
— at "0" to "1", max.	8 µs
Cable length	
• shielded, max.	1 000 m; 100 m for technological functions
• unshielded, max.	600 m
Digital outputs	
Number of digital outputs	16
Short-circuit protection	Yes; Clocked electronically
Limitation of inductive shutdown voltage to	L+ (-48 V)
Output voltage	
• for signal "1", min.	L+ (-0.8 V)
Output current	
• for signal "1" permissible range, max.	500 mA
• for signal "1" permissible range for 0 to 60 °C, max.	500 mA
• for signal "1" minimum load current	5 mA
• for signal "0" residual current, max.	0.5 mA
Switching frequency	
• with resistive load, max.	100 Hz
• with inductive load, max.	0.5 Hz
Total current of the outputs (per group)	
all mounting positions	
— up to 40 °C, max.	8 A
— up to 60 °C, max.	4 A
Cable length	
• shielded, max.	1 000 m
• unshielded, max.	600 m
Encoder	
Connectable encoders	
• 2-wire sensor	Yes
— permissible quiescent current (2-wire sensor), max.	1.5 mA
Interfaces	
MPI	
• Cable length, max.	50 m
Point-to-point	

• Cable length, max.	1 200 m
Integrated protocol driver	
— 3964 (R)	Yes
— ASCII	Yes
Transmission rate, RS 422/485	
— with 3964 (R) protocol, max.	19.2 kbit/s
— with ASCII protocol, max.	19.2 kbit/s

1. Interface

Isolated	Yes
Functionality	
• MPI	Yes
• PROFIBUS DP master	No
• PROFIBUS DP slave	No
MPI	
• Number of connections	8
• Transmission rate, max.	187.5 kbit/s
Services	
— PG/OP communication	Yes
— Global data communication	Yes
— S7 basic communication	Yes
— S7 communication	Yes
— S7 communication, as client	No
— S7 communication, as server	Yes

2. Interface

Physics	RS 422/RS 485 (X.27)
Isolated	Yes
Functionality	
• MPI	No
• PROFIBUS DP master	No
• PROFIBUS DP slave	No
• Point-to-point connection	Yes

Communication functions

PG/OP communication	Yes
Global data communication	
• supported	Yes
• Number of GD packets, transmitter, max.	4
• Number of GD packets, receiver, max.	4
• Size of GD packets, max.	22 byte
S7 basic communication	
• supported	Yes

• User data per job, max.	76 byte
S7 communication	
• supported	Yes
• as server	Yes
• as client	No
• User data per job, max.	64 kbyte
Number of connections	
• overall	8
• usable for PG communication	7
— reserved for PG communication	1
— adjustable for PG communication, max.	7
• usable for OP communication	7
— reserved for OP communication	1
— adjustable for OP communication, max.	7
• usable for S7 basic communication	4
— reserved for S7 basic communication	4
— adjustable for S7 basic communication, max.	4

S7 message functions	
Number of login stations for message functions, max.	5

Integrated Functions	
Number of counters	3
Counting frequency (counter) max.	30 kHz
Frequency measurement	Yes
PID controller	Yes
Number of pulse outputs	3
Limit frequency (pulse)	2.5 kHz

Potential separation	
Potential separation digital inputs	
• Potential separation digital inputs	Yes
• between the channels, in groups of	16
• between the channels and backplane bus	Yes
Potential separation digital outputs	
• Potential separation digital outputs	Yes
• between the channels, in groups of	8
• between the channels and backplane bus	Yes

Configuration	
Configuration software	
• STEP 7	Yes; V5.1 SP2
Programming	

• Nesting levels	8
Programming language	
— LAD	Yes
— FBD	Yes
— STL	Yes
— SCL	Yes
— GRAPH	Yes
— HiGraph®	Yes
Know-how protection	
• User program protection/password protection	Yes
Dimensions	
Width	120 mm
Height	125 mm
Depth	130 mm
Weights	
Weight, approx.	570 g
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