

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

Supply voltage	
Rated value (DC)	
• 24 V DC	Yes
permissible range, lower limit (DC)	20.4 V
permissible range, upper limit (DC)	28.8 V
Load voltage L+	
• Rated value (DC)	24 V
• permissible range, lower limit (DC)	20.4 V
• permissible range, upper limit (DC)	28.8 V
Input current	
Current consumption (rated value)	900 mA
Inrush current, typ.	11 A
Power loss	
Power loss, typ.	10 W
Memory	
Work memory	
• integrated	32 kbyte; For program and data
• expandable	No
Load memory	
• expandable FEPR0M	Yes; with Micro Memory Card (MMC)
• expandable FEPR0M, max.	4 Mbyte
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 bit operations, max.	0.2 µs
for word operations, typ.	0.5 µs
for fixed point arithmetic, typ.	1 µs
for floating point arithmetic, typ.	15 µs
CPU-blocks	
DB	

• 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	
— lower limit	1
— upper limit	999
IEC counter	
• present	Yes
• Type	SFB
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	
• integrated	1
• 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) • for signal "0" • for signal "1"	24 V -3 to +5V +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 technological functions	
— at "0" to "1", max.	8 µs
Cable length	
• shielded, max. • unshielded, max.	1 000 m; 100 m for technological functions 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. • for signal "1" permissible range for 0 to 60 °C, max. • for signal "1" minimum load current • for signal "0" residual current, max.	500 mA 500 mA 5 mA 0.5 mA
Switching frequency	
• with resistive load, max. • with inductive load, max.	100 Hz 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. • unshielded, max.	1 000 m 600 m
Encoder	
Connectable encoders	
• 2-wire sensor — permissible quiescent current (2-wire sensor), max.	Yes 1.5 mA
Interfaces	

MPI	
• Cable length, max.	50 m; without repeater
1. Interface	
Isolated	No
Protocols	
• 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
PROFIBUS DP master	
• Number of connections, max.	8; For PG/OP communication
• Transmission rate, max.	12 kbit/s
• Number of DP slaves, max.	32
Services	
— PG/OP communication	Yes
— Global data communication	No
— S7 basic communication	No
— S7 communication, as client	No
— S7 communication, as server	No
— Equidistance	Yes
— SYNC/FREEZE	Yes
— Direct data exchange (slave-to-slave communication)	Yes
Address area	
— Inputs, max.	1 kbyte
— Outputs, max.	1 kbyte
User data per DP slave	
— User data per DP slave, max.	244 byte
2. Interface	
Isolated	Yes
Protocols	
• MPI	No

• PROFIBUS DP master	Yes
• PROFIBUS DP slave	Yes
• Point-to-point connection	No
PROFIBUS DP master	
• Number of connections, max.	8; For PG/OP communication
• Transmission rate, max.	12 Mbit/s
• Number of DP slaves, max.	32
Services	
— PG/OP communication	Yes
— Global data communication	No
— S7 basic communication	No
— S7 communication	No
— S7 communication, as client	No
— S7 communication, as server	No
— Equidistance	Yes
— SYNC/FREEZE	Yes
— Direct data exchange (slave-to-slave communication)	Yes
Address area	
— Inputs, max.	1 024 byte
— Outputs, max.	1 024 byte
User data per DP slave	
— User data per DP slave, max.	244 byte; 244 byte / 244 byte
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
- adjustable for PG communication, max.
- usable for OP communication
 - reserved for OP communication
 - adjustable for OP communication, max.
- usable for S7 basic communication
 - reserved for S7 basic communication
 - adjustable for S7 basic communication, max.
- usable for routing

1
7
7
1
7
4
4
4
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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