

SIMATIC S7-300, CPU 314C-2DP COMPACT CPU WITH MPI, 24 DI/16 DO, 4AI, 2AO, 1 PT100, 4 FAST COUNTERS (60 KHZ), INTEGRATED DP INTERFACE, INTEGRATED 24V DC POWER SUPPLY, 48 KBYTE WORKING MEMORY, MICRO MEMORY CARD REQUIRED

Supply voltage	
Rated value (DC)	24 V
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)	1 000 mA
Inrush current, typ.	11 A
Power loss	
Power loss, typ.	14 W
Memory	
Work memory	
<ul style="list-style-type: none"> integrated 	48 kbyte; For program and data
<ul style="list-style-type: none"> expandable 	No
Load memory	
<ul style="list-style-type: none"> expandable FEPR0M 	Yes; with Micro Memory Card (MMC)
<ul style="list-style-type: none"> expandable FEPR0M, 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 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	
<ul style="list-style-type: none"> 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; Z 0 to Z 255
— lower limit	0
— upper limit	256
Counting range	
— lower limit	1
— upper limit	999
S7 times	
• Number	256
Retentivity	
— adjustable	Yes; T 0 to T 255
— 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

- Racks, max. 4
- Modules per rack, max. 8; In rack 3 max. 7

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 24

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
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 μ s
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 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
Analog inputs	
Number of analog inputs	4
• For voltage/current measurement	4
• For resistance/resistance thermometer measurement	1
Input ranges	
• Voltage	Yes
• Current	Yes
• Resistance thermometer	Yes
• Resistance	Yes

Input ranges (rated values), voltages	
• 0 to +10 V	Yes
Input ranges (rated values), currents	
• 0 to 20 mA	Yes
• -20 mA to +20 mA	Yes
• 4 mA to 20 mA	Yes
Input ranges (rated values), resistance thermometer	
• Pt 100	Yes
Input ranges (rated values), resistors	
• 0 to 600 ohms	Yes
Analog outputs	
Number of analog outputs	2
Output ranges, voltage	
• 0 to 10 V	Yes
• -10 V to +10 V	Yes
Output ranges, current	
• 0 to 20 mA	Yes
• -20 mA to +20 mA	Yes
• 4 mA to 20 mA	Yes
Analog value generation for the inputs	
Integration and conversion time/resolution per channel	
• Resolution with overrange (bit including sign), max.	12 bit
• Integration time, parameterizable	Yes; 2,5 / 16,6 / 20 ms
Analog value generation for the outputs	
Integration and conversion time/resolution per channel	
• Resolution with overrange (bit including sign), max.	12 bit
• Conversion time (per channel)	1 ms
Encoder	
Connectable encoders	
• 2-wire sensor	Yes
— permissible quiescent current (2-wire sensor), max.	1.5 mA
Errors/accuracies	
Basic error limit (operational limit at 25 °C)	
• Voltage, relative to input range, (+/-)	0.7 %
• Current, relative to input range, (+/-)	0.7 %
• Resistance thermometer, relative to input range, (+/-)	3 %
• Voltage, relative to output range, (+/-)	0.7 %

- Current, relative to output range, (+/-) 0.7 %

Interfaces

MPI	
• Cable length, max.	50 m; without repeater

1. Interface

Interface type	Integrated RS 485 interface
Physics	RS 485
Isolated	No
Power supply to interface (15 to 30 V DC), max.	200 mA

Functionality

• MPI	Yes
• PROFIBUS DP master	No
• PROFIBUS DP slave	No
• Point-to-point connection	No

MPI

• Number of connections	12
• 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

Interface type	Integrated RS 485 interface
Physics	RS 485
Isolated	Yes
Power supply to interface (15 to 30 V DC), max.	200 mA

Functionality

• MPI	No
• PROFIBUS DP master	Yes
• PROFIBUS DP slave	Yes
• Point-to-point connection	No

DP master

• Number of connections, max.	12; 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
— DPV1	No

Address area

— Inputs, max.	1 kbyte
— Outputs, max.	1 kbyte

User data per DP slave

— Inputs, max.	244 byte
— Outputs, max.	244 byte

Communication functions

PG/OP communication	Yes
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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

• User data per job, max.	64 kbyte
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Number of connections

• overall	12
• usable for PG communication	11
— reserved for PG communication	1
— adjustable for PG communication, max.	11
• usable for OP communication	11
— reserved for OP communication	1
— adjustable for OP communication, max.	11
• usable for S7 basic communication	8
— reserved for S7 basic communication	8
— adjustable for S7 basic communication, max.	8
• usable for routing	4

S7 message functions

Number of login stations for message functions, max.	7
Integrated Functions	
Number of counters	4
Counting frequency (counter) max.	60 kHz
Frequency measurement	Yes
controlled positioning	Yes
PID controller	Yes
Number of pulse outputs	4
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
Potential separation analog inputs	
• Potential separation analog inputs	Yes; common for analog I/O
Potential separation analog outputs	
• Potential separation analog outputs	Yes; common for analog I/O
Configuration	
Configuration software	
• STEP 7	Yes; V5.1 SP2
Programming	
• Nesting levels	8
Programming language	
— LAD	Yes
— FBD	Yes
— STL	Yes
— SCL	Yes
— CFC	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.

680 g

last modified:

03/16/2018