



SIMATIC S7-300, CPU 314C-2 DP Compact CPU with MPI, 24 DI/16 DO, 4 AI, 2 AO, 1 Pt100, 4 high-speed counters (60 kHz), integrated DP interface, Integr. power supply 24 V DC, work memory 192 KB, Front connector (2x 40-pole) and Micro Memory Card required

General information	
HW functional status	01
Firmware version	V3.3
Engineering with	
<ul style="list-style-type: none"> 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	
<ul style="list-style-type: none"> Mains/voltage failure stored energy time 	5 ms
<ul style="list-style-type: none"> Repeat rate, min. 	1 s
Load voltage L+	
Digital inputs	
— load voltage / at digital input / at DC / rated value	24 V
— Reverse polarity protection	Yes
Digital outputs	
— Rated value (DC)	24 V
— Reverse polarity protection	No
Input current	
Current consumption (rated value)	880 mA
Current consumption (in no-load operation), typ.	150 mA
Inrush current, typ.	5 A
I^2t	0.7 A ² ·s
Digital inputs	
<ul style="list-style-type: none"> from load voltage L+ (without load), max. 	80 mA
Digital outputs	
<ul style="list-style-type: none"> from load voltage L+, max. 	50 mA
Power loss	
Power loss, typ.	13 W
Memory	
Work memory	
<ul style="list-style-type: none"> integrated 	192 kbyte
<ul style="list-style-type: none"> expandable 	No
Load memory	
<ul style="list-style-type: none"> Plug-in (MMC) 	Yes
<ul style="list-style-type: none"> Plug-in (MMC), max. 	8 Mbyte
<ul style="list-style-type: none"> Data management on MMC (after last programming), min. 	10 a

Backup	
<ul style="list-style-type: none"> • present • without battery 	<p>Yes; Guaranteed by MMC (maintenance-free)</p> <p>Yes; Program and data</p>
CPU processing times	
for bit operations, typ.	0.06 µs
for word operations, typ.	0.12 µs
for fixed point arithmetic, typ.	0.16 µs
for floating point arithmetic, typ.	0.59 µs
CPU-blocks	
Number of blocks (total)	1 024; (DBs, FCs, FBs); the maximum number of loadable blocks can be reduced by the MMC used.
DB	
<ul style="list-style-type: none"> • Number, max. • Size, max. 	<p>1 024; Number range: 1 to 16000</p> <p>64 kbyte</p>
FB	
<ul style="list-style-type: none"> • Number, max. • Size, max. 	<p>1 024; Number range: 0 to 7999</p> <p>64 kbyte</p>
FC	
<ul style="list-style-type: none"> • Number, max. • Size, max. 	<p>1 024; Number range: 0 to 7999</p> <p>64 kbyte</p>
OB	
<ul style="list-style-type: none"> • Number, max. • Size, max. • Number of free cycle OBs • Number of time alarm OBs • Number of delay alarm OBs • Number of cyclic interrupt OBs • Number of process alarm OBs • Number of DPV1 alarm OBs • Number of startup OBs • Number of asynchronous error OBs • Number of synchronous error OBs 	<p>see instruction list</p> <p>64 kbyte</p> <p>1; OB 1</p> <p>1; OB 10</p> <p>2; OB 20, 21</p> <p>4; OB 32, 33, 34, 35</p> <p>1; OB 40</p> <p>3; OB 55, 56, 57</p> <p>1; OB 100</p> <p>5; OB 80, 82, 85, 86, 87</p> <p>2; OB 121, 122</p>
Nesting depth	
<ul style="list-style-type: none"> • per priority class • additional within an error OB 	<p>16</p> <p>4</p>
Counters, timers and their retentivity	
S7 counter	
<ul style="list-style-type: none"> • Number 	256
Retentivity	
<ul style="list-style-type: none"> — adjustable — preset 	<p>Yes</p> <p>Z 0 to Z 7</p>
Counting range	
<ul style="list-style-type: none"> — lower limit — upper limit 	<p>0</p> <p>999</p>
IEC counter	
<ul style="list-style-type: none"> • present • Type • Number 	<p>Yes</p> <p>SFB</p> <p>Unlimited (limited only by RAM capacity)</p>
S7 times	
<ul style="list-style-type: none"> • Number 	256
Retentivity	
<ul style="list-style-type: none"> — adjustable — preset 	<p>Yes</p> <p>No retentivity</p>
Time range	
<ul style="list-style-type: none"> — lower limit — upper limit 	<p>10 ms</p> <p>9 990 s</p>
IEC timer	
<ul style="list-style-type: none"> • present • Type • Number 	<p>Yes</p> <p>SFB</p> <p>Unlimited (limited only by RAM capacity)</p>
Data areas and their retentivity	

Retentive data area (incl. timers, counters, flags), max.	64 kbyte
Flag	
<ul style="list-style-type: none"> • Size, max. • Retentivity available • Retentivity preset • Number of clock memories 	256 byte Yes; MB 0 to MB 255 MB 0 to MB 15 8; 1 memory byte
Data blocks	
<ul style="list-style-type: none"> • Retentivity adjustable • Retentivity preset 	Yes; via non-retain property on DB Yes
Local data	
<ul style="list-style-type: none"> • per priority class, max. 	32 kbyte; Max. 2048 bytes per block
Address area	
I/O address area	
<ul style="list-style-type: none"> • Inputs • Outputs 	2 048 byte 2 048 byte
of which distributed	
<ul style="list-style-type: none"> — Inputs — Outputs 	2 003 byte 2 010 byte
Process image	
<ul style="list-style-type: none"> • Inputs • Outputs • Inputs, adjustable • Outputs, adjustable • Inputs, default • Outputs, default 	2 048 byte 2 048 byte 2 048 byte 2 048 byte 128 byte 128 byte
Default addresses of the integrated channels	
<ul style="list-style-type: none"> — Digital inputs — Digital outputs — Analog inputs — Analog outputs 	124.0 to 126.7 124.0 to 125.7 752 to 761 752 to 755
Digital channels	
<ul style="list-style-type: none"> • Inputs <ul style="list-style-type: none"> — of which central • Outputs <ul style="list-style-type: none"> — of which central 	16 048 1 016 16 096 1 008
Analog channels	
<ul style="list-style-type: none"> • Inputs <ul style="list-style-type: none"> — of which central • Outputs <ul style="list-style-type: none"> — of which central 	1 006 253 1 007 250
Hardware configuration	
Number of expansion units, max.	3
Number of DP masters	
<ul style="list-style-type: none"> • integrated • via CP 	1 4
Number of operable FMs and CPs (recommended)	
<ul style="list-style-type: none"> • FM • CP, PtP • CP, LAN 	8 8 10
Rack	
<ul style="list-style-type: none"> • Racks, max. • Modules per rack, max. 	4 8; In rack 3 max. 7
Time of day	
Clock	
<ul style="list-style-type: none"> • Hardware clock (real-time) • retentive and synchronizable • Backup time • Deviation per day, max. • Behavior of the clock following POWER-ON • Behavior of the clock following expiry of backup period 	Yes Yes 6 wk; At 40 °C ambient temperature 10 s; Typ.: 2 s Clock continues running after POWER OFF the clock continues at the time of day it had when power was switched off

Operating hours counter	
• Number	1
• Number/Number range	0
• Range of values	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
• on MPI, device	Yes
• to DP, master	Yes; With DP slave only slave clock
• on DP, device	Yes
• in AS, master	Yes
• in AS, device	No
Digital inputs	
Number of digital inputs	24
• of which inputs usable for technological functions	16
integrated channels (DI)	24
Input characteristic curve in accordance with IEC 61131, type 1	Yes
Number of simultaneously controllable inputs	
horizontal installation	
— up to 40 °C, max.	24
— up to 60 °C, max.	12
vertical installation	
— up to 40 °C, max.	12
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.	8 µs; Minimum pulse width/minimum pause between pulses at maximum counting frequency
Cable length	
• shielded, max.	1 000 m; 50 m for technological functions
• unshielded, max.	600 m; for technological functions: No
for technological functions	
— shielded, max.	50 m; at maximum count frequency
— unshielded, max.	not allowed
Digital outputs	
Number of digital outputs	16
• of which high-speed outputs	4; Notice: You cannot connect the fast outputs of your CPU in parallel
integrated channels (DO)	16
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
• 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.	3 A
— up to 60 °C, max.	2 A
vertical installation	
— up to 40 °C, max.	2 A
Cable length	
• shielded, max.	1 000 m
• unshielded, max.	600 m
Analog inputs	
Number of analog inputs	5
• For voltage/current measurement	4
• For resistance/resistance thermometer measurement	1
integrated channels (AI)	5; 4x current/voltage, 1x resistance
permissible input voltage for current input (destruction limit), max.	5 V; Permanent
permissible input voltage for voltage input (destruction limit), max.	30 V; Permanent
permissible input current for voltage input (destruction limit), max.	0.5 mA; Permanent
permissible input current for current input (destruction limit), max.	50 mA; Permanent
Electrical input frequency, max.	400 Hz
No-load voltage for resistance-type transmitter, typ.	3.3 V
Constant measurement current for resistance-type transmitter, typ.	1.25 mA
Technical unit for temperature measurement adjustable	Yes; Degrees Celsius / degrees Fahrenheit / Kelvin
Input ranges	
• Voltage	Yes; ± 10 V / 100 k Ω ; 0 V to 10 V / 100 k Ω
• Current	Yes; ± 20 mA / 100 Ω ; 0 mA to 20 mA / 100 Ω ; 4 mA to 20 mA / 100 Ω
• Resistance thermometer	Yes; Pt 100 / 10 M Ω
• Resistance	Yes; 0 Ω to 600 Ω / 10 M Ω
Input ranges (rated values), voltages	
• 0 to +10 V	Yes
— Input resistance (0 to 10 V)	100 k Ω
Input ranges (rated values), currents	
• 0 to 20 mA	Yes
— Input resistance (0 to 20 mA)	100 Ω
• -20 mA to +20 mA	Yes
— Input resistance (-20 mA to +20 mA)	100 Ω
• 4 mA to 20 mA	Yes
— Input resistance (4 mA to 20 mA)	100 Ω
Input ranges (rated values), resistance thermometer	
• Pt 100	Yes
— Input resistance (Pt 100)	10 M Ω
Input ranges (rated values), resistors	
• 0 to 600 ohms	Yes
— Input resistance (0 to 600 ohms)	10 M Ω