



Figure similar

SIPLUS S7-300 CPU 313C-2DP based on 6ES7313-6CG04-0AB0 with conformal coating, -25...+70 °C, compact CPU with MPI, 16 DI/16 DQ, 3 high-speed counters (30 kHz), integrated DP interface, integrated power supply 24 V DC, work memory 128 KB, front connector (1x 40-pole) and Micro Memory Card required

General information	
Product type designation	CPU 313C-2 DP
based on	6ES7313-6CG04-0AB0
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 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)	650 mA
Current consumption (in no-load operation), typ.	150 mA
Inrush current, typ.	5 A
I ² t	0.7 A ² ·s
Digital inputs	
• from load voltage L+ (without load), max.	80 mA
Digital outputs	
• from load voltage L+, max.	50 mA
Power loss	
Power loss, typ.	12 W
Memory	
Work memory	
• integrated	128 kbyte
• expandable	No
Load memory	
• Plug-in (MMC)	Yes
• 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 	Yes; Guaranteed by MMC (maintenance-free) Yes; Program and data
CPU processing times	
for bit operations, typ.	0.07 μ s
for word operations, typ.	0.15 μ s
for fixed point arithmetic, typ.	0.2 μ s
for floating point arithmetic, typ.	0.72 μ s
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. 	1 024; Number range: 1 to 16000 64 kbyte
FB	
<ul style="list-style-type: none"> • Number, max. • Size, max. 	1 024; Number range: 0 to 7999 64 kbyte
FC	
<ul style="list-style-type: none"> • Number, max. • Size, max. 	1 024; Number range: 0 to 7999 64 kbyte
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 startup OBs • Number of asynchronous error OBs • Number of synchronous error OBs 	see instruction list 64 kbyte 1; OB 1 1; OB 10 2; OB 20, 21 4; OB 32, 33, 34, 35 1; OB 40 1; OB 100 4; OB 80, 82, 85, 87 2; OB 121, 122
Nesting depth	
<ul style="list-style-type: none"> • per priority class • additional within an error OB 	16 4
Counters, timers and their retentivity	
S7 counter	
<ul style="list-style-type: none"> • Number 	256
Retentivity	
— adjustable	Yes
— preset	Z 0 to Z 7
Counting range	
— lower limit	0
— upper limit	999
IEC counter	
<ul style="list-style-type: none"> • present • Type • Number 	Yes SFB Unlimited (limited only by RAM capacity)
S7 times	
<ul style="list-style-type: none"> • Number 	256
Retentivity	
— adjustable	Yes
— preset	No retentivity
Time range	
— lower limit	10 ms
— upper limit	9 990 s
IEC timer	
<ul style="list-style-type: none"> • present • Type • Number 	Yes SFB Unlimited (limited only by RAM capacity)

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 	1 024 byte 1 024 byte
of which distributed	
<ul style="list-style-type: none"> — Inputs — Outputs 	2 030 byte 2 030 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 	124.0 to 125.7 124.0 to 125.7
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 	1 016 1 016 1 008 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 	253 253 250 250
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 6
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	16
• of which inputs usable for technological functions	12
integrated channels (DI)	16
Input characteristic curve in accordance with IEC 61131, type 1	Yes
Number of simultaneously controllable inputs	
horizontal installation	
— up to 40 °C, max.	16
— up to 60 °C, max.	8; up to 70 °C
vertical installation	
— up to 40 °C, max.	8
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.	16 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	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	
• Response threshold, typ.	1 A
Limitation of inductive shutdown voltage to	
Controlling a digital input	L+ (-48 V)
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	

<ul style="list-style-type: none"> • for signal "1" rated value 	500 mA
<ul style="list-style-type: none"> • for signal "1" permissible range, min. 	5 mA
<ul style="list-style-type: none"> • for signal "1" permissible range, max. 	0.6 A
<ul style="list-style-type: none"> • for signal "1" minimum load current 	5 mA
<ul style="list-style-type: none"> • for signal "0" residual current, max. 	0.5 mA
Parallel switching of two outputs	
<ul style="list-style-type: none"> • for uprating 	No
<ul style="list-style-type: none"> • for redundant control of a load 	Yes
Switching frequency	
<ul style="list-style-type: none"> • with resistive load, max. 	100 Hz
<ul style="list-style-type: none"> • with inductive load, max. 	0.5 Hz
<ul style="list-style-type: none"> • on lamp load, max. 	100 Hz
<ul style="list-style-type: none"> • 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; 1.5 A @ > 60 °C
vertical installation	
— up to 40 °C, max.	2 A
Cable length	
<ul style="list-style-type: none"> • shielded, max. 	1 000 m
<ul style="list-style-type: none"> • unshielded, max. 	600 m
Analog inputs	
Number of analog inputs	0
integrated channels (AI)	0
Input ranges (rated values), voltages	
<ul style="list-style-type: none"> • 0 to +10 V 	Yes
— Input resistance (0 to 10 V)	100 kΩ
Analog outputs	
integrated channels (AO)	0
Encoder	
Connectable encoders	
<ul style="list-style-type: none"> • 2-wire sensor 	Yes
— permissible quiescent current (2-wire sensor), max.	1.5 mA
Interfaces	
Number of PROFINET interfaces	0
Number of RS 485 interfaces	2; MPI and PROFIBUS DP
Number of RS 422 interfaces	0
1. Interface	
Interface type	Integrated RS 485 interface
Isolated	No
Interface types	
<ul style="list-style-type: none"> • RS 485 	Yes
<ul style="list-style-type: none"> • Output current of the interface, max. 	200 mA
Protocols	
<ul style="list-style-type: none"> • MPI 	Yes
<ul style="list-style-type: none"> • PROFIBUS DP master 	No
<ul style="list-style-type: none"> • PROFIBUS DP device 	No
<ul style="list-style-type: none"> • Point-to-point connection 	No
MPI	
<ul style="list-style-type: none"> • Transmission rate, max. 	187.5 kbit/s
Services	
— PG/OP communication	Yes
— Routing	No
— Global data communication	Yes
— S7 basic communication	Yes
— S7 communication	Yes; Only server, configured on one side
— S7 communication, as client	No; but via CP and loadable FB
— S7 communication, as server	Yes
2. Interface	

Interface type	Integrated RS 485 interface
Isolated	Yes
Interface types	
• RS 485	Yes
• Output current of the interface, max.	200 mA
Protocols	
• MPI	No
• PROFINET IO Controller	No
• PROFINET IO Device	No
• PROFINET CBA	No
• PROFIBUS DP master	Yes
• PROFIBUS DP device	Yes
PROFIBUS DP master	
• Transmission rate, max.	12 Mbit/s
Services	
— PG/OP communication	Yes
— Routing	Yes
— Global data communication	No
— S7 basic communication	Yes; 1 blocks only
— S7 communication	Yes; Yes (only server; connection configured at one end)
— S7 communication, as client	No
— S7 communication, as server	Yes
— Equidistance	Yes
— Isochronous mode	No
— SYNC/FREEZE	Yes
— activation/deactivation of DP devices	Yes
— max. number of DP devices that can be activated/deactivated at the same time	8
— Direct data exchange (slave-to-slave communication)	Yes; as subscriber
Address area	
— Inputs, max.	2 kbyte
— Outputs, max.	2 kbyte
User data per DP device	
— Inputs, max.	244 byte
— Outputs, max.	244 byte
2nd interface / PROFIBUS DP device / header	
• GSD file	The latest GSD file is available on the Internet (http://www.siemens.com/profibus-gsd)
• Transmission rate, max.	12 Mbit/s
• automatic baud rate search	Yes; only with passive interface
• Address area, max.	32
• User data per address area, max.	32 byte
Services	
— PG/OP communication	Yes
— Routing	Yes; Only with active interface
— Global data communication	No
— S7 basic communication	No
— S7 communication	Yes; Yes (only server; connection configured at one end)
— S7 communication, as client	No
— S7 communication, as server	Yes
— Direct data exchange (slave-to-slave communication)	Yes
— DPV1	No
Transfer memory	
— Inputs	244 byte
— Outputs	244 byte
Protocols	
PROFIsafe	No
communication functions / header	
PG/OP communication	Yes
Data record routing	No

Global data communication	
<ul style="list-style-type: none"> supported 	Yes
<ul style="list-style-type: none"> Number of GD loops, max. 	8
<ul style="list-style-type: none"> Number of GD packets, max. 	8
<ul style="list-style-type: none"> Number of GD packets, transmitter, max. 	8
<ul style="list-style-type: none"> Number of GD packets, receiver, max. 	8
<ul style="list-style-type: none"> Size of GD packets, max. 	22 byte
<ul style="list-style-type: none"> Size of GD packet (of which consistent), max. 	22 byte
S7 basic communication	
<ul style="list-style-type: none"> supported 	Yes
<ul style="list-style-type: none"> User data per job, max. 	76 byte
<ul style="list-style-type: none"> 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	
<ul style="list-style-type: none"> supported 	Yes
<ul style="list-style-type: none"> as server 	Yes
<ul style="list-style-type: none"> as client 	Yes; Via CP and loadable FB
<ul style="list-style-type: none"> User data per job, max. 	180 byte; With PUT/GET
<ul style="list-style-type: none"> User data per job (of which consistent), max. 	240 byte; as server
S5 compatible communication	
<ul style="list-style-type: none"> supported 	Yes; via CP and loadable FC
Number of connections	
<ul style="list-style-type: none"> overall 	8
<ul style="list-style-type: none"> usable for PG communication <ul style="list-style-type: none"> reserved for PG communication adjustable for PG communication, min. adjustable for PG communication, max. 	7 1 1 7
<ul style="list-style-type: none"> usable for OP communication <ul style="list-style-type: none"> reserved for OP communication adjustable for OP communication, min. adjustable for OP communication, max. 	7 1 1 7
<ul style="list-style-type: none"> usable for S7 basic communication <ul style="list-style-type: none"> reserved for S7 basic communication adjustable for S7 basic communication, min. adjustable for S7 basic communication, max. 	4 0 0 4
<ul style="list-style-type: none"> usable for routing 	4; max.
S7 message functions	
Number of login stations for message functions, max.	8; 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	
<ul style="list-style-type: none"> Status/control variable 	Yes
<ul style="list-style-type: none"> Variables 	Inputs, outputs, memory bits, DB, times, counters
<ul style="list-style-type: none"> Number of variables, max. 	30
<ul style="list-style-type: none"> of which status variables, max. 	30
<ul style="list-style-type: none"> of which control variables, max. 	14
Forcing	
<ul style="list-style-type: none"> Forcing 	Yes
<ul style="list-style-type: none"> Forcing, variables 	Inputs, outputs
<ul style="list-style-type: none"> Number of variables, max. 	10
Diagnostic buffer	
<ul style="list-style-type: none"> present 	Yes
<ul style="list-style-type: none"> Number of entries, max. 	500
<ul style="list-style-type: none"> adjustable 	No
<ul style="list-style-type: none"> of which powerfail-proof 	100; Only the last 100 entries are retained
<ul style="list-style-type: none"> Number of entries readable in RUN, max. 	499

— adjustable	Yes; From 10 to 499
— preset	10
Service data	
• can be read out	Yes
Interrupts/diagnostics/status information	
Diagnostics indication LED	
• Status indicator digital input (green)	Yes
• Status indicator digital output (green)	Yes
Integrated Functions	
Counter	
• Number of counters	3; See "Technological Functions" manual
• Counting frequency, max.	30 kHz
Frequency measurement	
• Number of frequency meters	3; up to 30 kHz (see "Technological Functions" manual)
controlled positioning	
	No
integrated function blocks (closed-loop control)	
	Yes; PID controller (see "Technological Functions" manual)
PID controller	
	Yes
Number of pulse outputs	
	3; Pulse width modulation up to 2.5 kHz (see "Technological Functions" Manual)
Limit frequency (pulse)	
	2.5 kHz
Potential separation	
Potential separation digital inputs	
• Potential separation digital inputs	Yes
• between the channels	No
• between the channels and backplane bus	Yes
Potential separation digital outputs	
• Potential separation digital outputs	Yes
• between the channels	Yes
• between the channels, in groups of	8
• between the channels and backplane bus	Yes
Isolation	
Isolation tested with	600 V DC
Standards, approvals, certificates	
CE mark	Yes
UL approval	Yes
RCM (formerly C-TICK)	Yes
KC approval	Yes
EAC (formerly Gost-R)	Yes
Use in hazardous areas	
• ATEX	Yes
Ambient conditions	
Ambient temperature during operation	
• min.	-25 °C; = Tmin
• max.	70 °C; = Tmax; 60 °C @ UL/cUL, ATEX and FM use
Ambient temperature during storage/transportation	
• min.	-40 °C
• max.	70 °C
Altitude during operation relating to sea level	
• Installation altitude above sea level, max.	5 000 m
• Ambient air temperature-barometric pressure-altitude	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)
Relative humidity	
• With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
Resistance	
Use in stationary industrial systems	
— to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
— to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
— to mechanically active substances according to EN	Yes; Class 3S4 incl. sand, dust, *

60721-3-3	
Use on ships/at sea	
— to biologically active substances according to EN 60721-3-6	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request
— to chemically active substances according to EN 60721-3-6	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
— to mechanically active substances according to EN 60721-3-6	Yes; Class 6S3 incl. sand, dust; *
Usage in industrial process technology	
— Against chemically active substances acc. to EN 60654-4	Yes; Class 3 (excluding trichlorethylene)
— Environmental conditions for process, measuring and control systems acc. to ANSI/ISA-71.04	Yes; Level GX group A/B (excluding trichlorethylene; harmful gas concentrations up to the limits of EN 60721-3-3 class 3C4 permissible); level LC3 (salt spray) and level LB3 (oil)
Remark	
— Note regarding classification of environmental conditions acc. to EN 60721, EN 60654-4 and ANSI/ISA-71.04	* The supplied plug covers must remain in place over the unused interfaces during operation!

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 function blocks (SFB)	see instruction list

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
• Block encryption	Yes; With S7 block Privacy

Dimensions

Width	80 mm
Height	125 mm
Depth	130 mm

Weights

Weight, approx.	500 g
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Classifications

	Version	Classification
eClass	14	27-24-22-07
eClass	12	27-24-22-07
eClass	9.1	27-24-22-07
eClass	9	27-24-22-07
eClass	8	27-24-22-07
eClass	7.1	27-24-22-07
eClass	6	27-24-22-07
ETIM	9	EC000236
ETIM	8	EC000236
ETIM	7	EC000236
IDEA	4	3565
UNSPSC	15	32-15-17-05

Approvals / Certificates

[Miscellaneous](#)



[Manufacturer Declaration](#)



[KC](#)

EMV

For use in hazardous locations



[CCC-Ex](#)

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