SIEMENS

Product data sheet 6ES7314-6CG03-0AB0

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,
96 KBYTE WORKING MEMORY,
FRONT CONNECTOR (2 X 40PIN) AND MICRO
MEMORY CARD REQUIRED

General information	
Hardware product version	01
Firmware version	V2.6
Engineering with	
Programming package	STEP 7 V5.3 SP2 or higher with HW update
Supply voltage	
24 V DC	Yes
permissible range, lower limit (DC)	20.4 V
permissible range, upper limit (DC)	28.8 V
External protection for supply cables (recommendation)	Miniature circuit breaker, type C; min 2 A; miniature circuit breaker type B, min. 4 A
Load voltage L+	
Rated value (DC)	24 V
permissible range, lower limit (DC)	20.4 V
permissible range, upper limit (DC)	28.8 V
Digital inputs	

Load voltage L+	
Rated value (DC)	24 V
Reverse polarity protection	Yes
Digital outputs	
Load voltage L+	
Rated value (DC)	24 V
Reverse polarity protection	No
Analog outputs	
Load voltage L+	
Rated value (DC)	24 V
Reverse polarity protection	Yes
Input current	
Current consumption (rated value)	1000 mA
Current consumption (in no-load operation), typ.	150 mA
Inrush current, typ.	11 A
I²t	0.7 A²·s
from supply voltage L+, max.	1000 mA
Digital inputs	
from load voltage L+ (without load), max.	70 mA
Digital outputs	
from load voltage L+, max.	100 mA
Power losses	
Power loss, typ.	14 W
Memory	
Work memory	
integrated	96 kbyte
expandable	No
Load memory	
pluggable (MMC)	Yes
pluggable (MMC), max.	8 Mbyte
Data management on MMC (after last programming), min.	10 a
Backup	
present	Yes ; Guaranteed by MMC (maintenance-free)

without battery	Yes ; Program and data
CPU processing times	
for bit operations, min.	0.1 µs
for word operations, min.	0.2 µs
for fixed point arithmetic, min.	2 µs
for floating point arithmetic, min.	3 µs
CPU-blocks	
Number of blocks (total)	1024 ; (DBs, FCs, FBs); the maximum number of loadable blocks can be reduced by the MMC used.
DB	
Number, max.	511 ; Number range: 1 to 511
Size, max.	16 kbyte
FB	
Number, max.	1024 ; Number range: 0 to 2047
Size, max.	16 kbyte
FC	
Number, max.	1024 ; Number range: 0 to 2047
Size, max.	16 kbyte
OB	
Size, max.	16 kbyte
Number of free cycle OBs	1 ; OB 1
Number of time alarm OBs	1 ; OB 10
Number of delay alarm OBs	1 ; OB 20
Number of time interrupt OBs	1 ; OB 35
Number of process alarm OBs	1 ; OB 40
Number of DPV1 alarm OBs	3 ; OB 55, 56, 57
Number of startup OBs	1 ; OB 100
Number of asynchronous error OBs	5 ; OB 80, 82, 85, 86, 87
Number of synchronous error OBs	2 ; OB 121, 122
Nesting depth	
per priority class	8
additional within an error OB	4
Counters, timers and their retentivity	
S7 counter	

Number		256
of which retentive without battery		
	adjustable	Yes
	lower limit	0
	upper limit	255
	preset	8
Retentivity		
	adjustable	Yes
	lower limit	0
	upper limit	255
	preset	8
Counting range		
	lower limit	0
	upper limit	999
IEC counter		
	present	Yes
	Type	SFB
	Number	Unlimited (limited only by RAM capacity)
S7 times		
	Number	256
of which retentive without battery		
	adjustable	Yes
	lower limit	0
	upper limit	255
Retentivity		
	adjustable	Yes
	lower limit	0
	upper limit	255
	preset	No retentivity
Time range		
	lower limit	10 ms
	upper limit	9990 s
IEC timer		

present	Yes
Type	SFB
Number	Unlimited (limited only by RAM capacity)
Data areas and their retentivity	
retentive data area, total	All, max. 64 KB
Flag	
Number, max.	256 byte
Retentivity available	Yes ; MB 0 to MB 255
Retentivity preset	MB 0 to MB 15
Number of clock memories	8 ; 1 memory byte
Data blocks	
Number, max.	511 ; Number range: 1 to 511
Size, max.	16 kbyte
Retentivity adjustable	Yes ; via non-retain property on DB
Retentivity preset	Yes
Local data	
per priority class, max.	510 byte
Address area	
I/O address area	
Inputs	1 kbyte
Outputs	1 kbyte
of which, distributed	
Inputs	979 byte
Outputs	986 byte
Process image	
Inputs	128 byte
Outputs	128 byte
Default addresses of the integrated channels	
Digital inputs	124,0 to 126,7
Digital outputs	124.0 to 125.7
Analog inputs	752 to 761
Analog outputs	752 to 755
Digital channels	

Inputs	7856
Outputs	7904
Inputs, of which central	1016
Outputs, of which central	1008
Analog channels	
Inputs	494
Outputs	495
Inputs, of which central	253
Outputs, of which central	250
Hardware configuration	
Racks, max.	4
Modules per rack, max.	8 ; In rack 3 max. 7
Expansion devices, max.	3
Number of DP masters	
integrated	1
via CP	4
Configuration / Number of FMs and CPs that can be operated (recommendation)	
FM	8
CP, point-to-point	8
CP, LAN	10
Time of day	
Clock	
Hardware clock (real-time clock)	Yes
battery-backed and synchronizable	Yes
Deviation per day, max.	10 s
Backup time	6 wk ; At 40 °C ambient temperature
Operating hours counter	
Number	1
Number/Number range	0
Range of values	0 to 2^31 hours (when using SFC 101)
Granularity	1 hour
retentive	Yes ; Must be restarted at each restart
Clock synchronization	

supported	Yes
to MPI, master	Yes
to MPI, slave	Yes
to DP, master	Yes ; With DP slave only slave clock
to DP, slave	Yes
in AS, master	Yes
Digital inputs	
Number/binary inputs	24
of which, inputs usable for technological functions	16
integrated channels (DI)	24
Input characteristic curve acc. to 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
Technological functions	
shielded, max.	50 m
Unshielded, max.	not allowed
Standard DI	
shielded, max.	1000 m
Unshielded, max.	600 m
Input voltage	
Rated value, DC	24 V
for signal "0"	-3 to +5 V
for signal "1"	15 to 30 V
Input current	
for signal "1", typ.	9 mA
Input delay (for rated value of input voltage)	
for standard inputs	
Parameterizable	Yes ; 0.1 / 0.3 / 3 / 15 ms
Rated value	3 ms

for counter/technological functions	
at "0" to "1", max.	8 µs
Cable length	
Cable length, shielded, max.	1000 m ; 50 m for technological functions
Cable length unshielded, max.	600 m ; For technological functions: No
Digital outputs	
Number/binary outputs	16
of which high-speed outputs	4
integrated channels (DO)	16
Functionality/short-circuit strength	Yes ; Clocked electronically
Response threshold, typ.	1 A
Limitation of inductive shutdown voltage to	L+ (-48 V)
Lamp load, max.	5 W
Controlling a digital input	Yes
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 2 outputs	
for increased power	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

Aggregate current of 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	
Cable length, shielded, max.	1000 m
Cable length unshielded, max.	600 m
Analog inputs	
Integrated channels (AI)	4+1
Number of analog inputs for voltage/current measurement	4
Number of analog inputs for resistance/resistance thermometer measurement	1
permissible input frequency 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
Technical unit for temperature measurement adjustable	Yes ; Degrees Celsius / degrees Fahrenheit / Kelvin
Input ranges	
Current	Yes
Resistance thermometer	Yes ; Pt 100 / 10 MΩ
Resistance	Yes
Input ranges (rated values), voltages	
0 to +10 V	Yes
Input resistance (0 to 10 V)	100 kΩ
Input ranges (rated values), currents	
0 to 20 mA	Yes
Input resistance (0 to 20 mA)	100 Ω

-20 to +20 mA	Yes
Input resistance (-20 to +20 mA)	100 Ω
4 to 20 mA	Yes
Input resistance (4 to 20 mA)	100 Ω
Input ranges (rated values), resistance thermometers	
Pt 100	Yes
Input resistance (Pt 100)	10 MΩ
Input ranges (rated values), resistors	
No-Load voltage, typ.	2.5 V
Measured current, typ.	1.8 to 3.3 mA
0 to 600 ohms	Yes
Input resistance (0 to 600 ohms)	10 MΩ
Thermocouple (TC)	
Temperature compensation	
Parameterizable	No
Resistance thermometer (RTD)	
Characteristic linearization	
for resistance thermometer	Pt 100
Characteristic linearization	
Parameterizable	Yes ; by software
Cable length	
Cable length, shielded, max.	100 m
Analog outputs	
Integrated channels (AO)	2
Number of analog outputs	2
Voltage output, short-circuit protection	Yes
Voltage output, short-circuit current, max.	55 mA
Current output, no-load voltage, max.	17 V
Output ranges, voltage	
0 to 10 V	Yes
-10 to +10 V	Yes
Output ranges, current	
0 to 20 mA	Yes

-20 to +20 mA	Yes
4 to 20 mA	Yes
Connection of actuators	
for voltage output 2-conductor connection	Yes ; Without compensation of the line resistances
for voltage output 4-conductor connection	No
for current output 2-conductor connection	Yes
Load impedance (in rated range of output)	
with voltage outputs, min.	1 kΩ
with voltage outputs, capacitive load, max.	0.1 µF
with current outputs, max.	300 Ω
with current outputs, inductive load, max.	0.1 mH
Destruction limits against externally applied voltages and currents	
Voltages at the outputs towards MANA	16 V ; Permanent
Current, max.	50 mA ; Permanent
Cable length	
Cable length, shielded, max.	200 m
Analog value creation	
Measurement principle	Actual value encryption (successive approximation)
Integrations 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
permissible input frequency, max.	400 Hz
Interference voltage suppression for interference frequency f1 in Hz	400 / 60 / 50 Hz
Conversion time (per channel)	1 ms
Time constant of the input filter	0.38 ms
Basic execution time of the module (all channels released)	1 ms
Settling time	
for resistive load	0.6 ms
for capacitive load	1 ms
for inductive load	0.5 ms
Encoder	

Connection of signal encoders	
for voltage measurement	Yes
for current measurement as 2-wire transducer	Yes ; with external supply
for current measurement as 4-wire transducer	Yes
for resistance measurement with 2-conductor connection	Yes ; Without compensation of the line resistances
for resistance measurement with 3-conductor connection	No
for resistance measurement with 4-conductor connection	No
Connectable encoders	
2-wire sensor	Yes
Permissible quiescent current (2-wire sensor), max.	1.5 mA
Errors/accuracies	
Temperature error (relative to input area)	+/- 0,006 %/K
Crosstalk between the inputs, min.	60 dB
Repeat accuracy in settled status at 25 °C (relative to input area)	+/- 0,06 %
Output ripple (based on output area, bandwidth 0 to 50 kHz)	+/- 0,1 %
Linearity error (relative to output area)	+/- 0,15 %
Temperature error (relative to output area)	+/- 0,01 %/K
Crosstalk between the outputs, min.	60 dB
Repeat accuracy in settled status at 25 °C (relative to output area)	+/- 0,06 %
Operational limit in overall temperature range	
Voltage, relative to input area	+/- 1 %
Current, relative to input area	+/- 1 %
Impedance, relative to input area	+/- 5 %
Voltage, relative to output area	+/- 1 %
Current, relative to output area	+/- 1 %
Basic error limit (operational limit at 25 °C)	
Voltage, relative to input area	+/- 0,7 % ; Linearity error +/- 0.06 %
Current, relative to input area	+/- 0,7 % ; Linearity error +/- 0.06 %

Impedance, relative to input area	+/- 3 % ; Linearity error +/- 0.2%
Resistance-type thermometer, relative to input area	+/- 3 %
Voltage, relative to output area	+/- 0,7 %
Current, relative to output area	+/- 0,7 %
Interference voltage suppression for f = n x (fl +/- 1%), fl = interference frequency	
Series mode interference (peak value of interference < rated value of input range), min.	30 dB
Common mode interference, min.	40 dB
Interfaces	
Number of USB interfaces	0
Number of parallel interfaces	0
Number of 20 mA interfaces (TTY)	0
Number of RS 232 interfaces	0
Number of RS 422 interfaces	0
Number of other interfaces	0
MPI	
Cable length, max.	50 m ; without repeater
1st interface	
Type of interface	Integrated RS 485 interface
Physics	RS 485
Isolated	No
Power supply to interface (15 to 30 V DC), max.	200 mA
Functionality	
MPI	Yes
DP master	No
DP slave	No
Point-to-point connection	No
MPI	
Number of connections	12
Services	
PG/OP communication	Yes
Routing	Yes
Global data communication	Yes

S7 basic communication	Yes
S7 communication	Yes
S7 communication, as client	No
S7 communication, as server	Yes
Transmission rate, max.	187.5 kbit/s
2nd interface	
Type of interface	Integrated RS 485 interface
Physics	RS 485
Isolated	Yes
Power supply to interface (15 to 30 V DC), max.	200 mA
Media redundancy	
Number of connection resources	12
Functionality	
MPI	No
DP master	Yes
DP slave	Yes
PROFINET IO Controller	No
PROFINET CBA	No
Local Operating Network	No
DP master	
Number of connections, max.	12 ; For PG/OP communication
Services	
PG/OP communication	Yes
Routing	Yes
Global data communication	No
S7 basic communication	Yes ; I blocks only
S7 communication	Yes
S7 communication, as client	No
S7 communication, as server	Yes
Equidistance mode support	Yes
Isochronous mode	No
SYNC/FREEZE	Yes
Activation/deactivation of DP slaves	Yes

Direct data exchange (slave-to-slave communication)	Yes
DPV1	Yes
Transmission rate, max.	12 Mbit/s
Number of DP slaves, max.	32
Address area	
Inputs, max.	1 kbyte
Outputs, max.	1 kbyte
User data per DP slave	
Inputs, max.	244 byte
Outputs, max.	244 byte
DP slave	
Number of connections	12
Services	
PG/OP communication	Yes
Routing	Yes ; Only with active interface
Global data communication	No
S7 basic communication	No
S7 communication	Yes
S7 communication, as client	No
S7 communication, as server	Yes
Direct data exchange (slave-to-slave communication)	Yes
DPV1	No
GSD file	The latest GSD file is available at: http://www.siemens.de/profibus-gsd
Transmission rate, max.	12 Mbit/s
Automatic baud rate search	Yes ; only with passive interface
Transfer memory	
Inputs	244 byte
Outputs	244 byte
Address area, max.	32
User data per address area, max.	32 byte
Communication functions	

PG/OP communication	Yes
Global data communication	
supported	Yes
Number of GD loops, max.	4
Number of GD packets, max.	4
Number of GD packets, transmitter, max.	4
Number of GD packets, receiver, max.	4
Size of GD packets, max.	22 byte
Size of GD packet (of which consistent), max.	22 byte
S7 basic communication	
supported	Yes
User data per job, max.	76 byte
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	
supported	Yes
as server	Yes
as client	Yes ; Via CP and loadable FB
User data per job, max.	180 kbyte ; With PUT/GET
User data per job (of which consistent), max.	64 byte
S5-compatible communication	
supported	Yes ; via CP and loadable FC
Number of connections	
overall	12
usable for PG communication	11
reserved for PG communication	1
Adjustable for PG communication, min.	1
Adjustable for PG communication, max.	11
usable for OP communication	11
reserved for OP communication	1
adjustable for OP communication, min.	1
adjustable for OP communication, max.	11
usable for S7 basic communication	8
Reserved for S7 basic communication	0

adjustable for S7 basic communication, min.	0
adjustable for S7 basic communication, max.	8
usable for routing	4 ; max.
S7 message functions	
Number of login stations for message functions, max.	12 ; Depending on the configured connections for PG/OP and S7 basic communication
Process diagnostic messages	Yes
simultaneously active Alarm-S blocks, max.	40
Test commissioning functions	
Status/control	
Status/control variable	Yes
Variables	Inputs, outputs, memory bits, DB, times, counters
Number of variables, max.	30
of which status variables, max.	30
of which control variables, max.	14
Forcing	
Forcing	Yes
Force, variables	Inputs, outputs
Number of variables, max.	10
Status block	Yes
Single step	Yes
Number of breakpoints	2
Diagnostic buffer	
present	Yes
Number of entries, max.	100
Interrupts/diagnostics/status information	
Diagnostics indication LED	
Status indicator digital output (green)	Yes
Status indicator digital input (green)	Yes
Integrated Functions	
Number of counters	4 ; See "Technological Functions" manual
Counter frequency (counter) max.	60 kHz
Frequency measurement	Yes

Number of frequency meters	4 ; up to 60 kHz (see "Technological Functions" manual)
controlled positioning	Yes
Integrated function blocks (closed-loop control)	PID controller (see "Technological Functions" manual)
PID controller	Yes
Number of pulse outputs	4 ; Pulse width modulation up to 2.5 kHz (see "Technological Functions" Manual)
Limit frequency (pulse)	2.5 kHz
Galvanic isolation	
Galvanic isolation digital inputs	
Galvanic isolation digital inputs	Yes
between the channels	No
between the channels and the backplane bus	Yes
Galvanic isolation digital outputs	
Galvanic isolation digital outputs	Yes
between the channels	Yes
between the channels, in groups of	8
between the channels and the backplane bus	Yes
Galvanic isolation analog inputs	
Galvanic isolation analog inputs	Yes ; common for analog I/O
between the channels	No
between the channels and the backplane bus	Yes
Galvanic isolation analog outputs	
Galvanic isolation analog outputs	Yes ; common for analog I/O
between the channels	No
between the channels and the backplane bus	Yes
Permissible potential difference	
between different circuits	75 VDC / 60 VAC
between inputs and MANA (UCM)	8.0 V DC
between MANA and M internally (UISO)	75 VDC / 60 VAC
Isolation	
Isolation checked with	600 V DC
Configuration	
Configuration software	

STEP 7	Yes ; V5.3 SP2 with HW update
programming	
Programming language	
LAD	Yes
FBD	Yes
STL	Yes
SCL	Yes
CFC	Yes
GRAPH	Yes
HiGraph®	Yes
Command set	see instruction list
Nesting levels	8
Software libraries	
System functions (SFC)	see instruction list
System function blocks (SFB)	see instruction list
Know-how protection	
User program protection/password protection	Yes
Dimensions	
Width	120 mm
Height	125 mm
Depth	130 mm
Weight	
Weight, approx.	676 g
Status	Jul 13, 2012