SIEMENS

Product data sheet 6ES7313-6CF03-0AB0

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,
64 KBYTE WORKING MEMORY,
FRONT CONNECTOR (1 X 40PIN) AND MICRO MEMORY CARD REQUIRED

Product version	
Hardware product version	01
Firmware version	V2.6
General information	
associated programming package	STEP 7 V5.3 SP2 or higher with HW update
Supply voltage	
Input 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

subject to modifications
© Copyright Siemens AG 2011

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
Input current	
Current consumption (rated value)	900 mA
Current consumption (in no-load operation), typ.	100 mA
Inrush current, typ.	11 A
I^2t	0.7 $A^2 \cdot s$
from supply voltage L+, max.	900 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.	10 W
Memory	
Work memory	
integrated	64 Kibyte ; For program and data
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-blocks	

subject to modifications
© Copyright Siemens AG 2011

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 Kibyte
FB	
Number, max.	1024 ; Sequence of numbers: 0 to 2047
Size, max.	16 Kibyte
FC	
Number, max.	1024 ; Sequence of numbers: 0 to 2047
Size, max.	16 Kibyte
OB	
Size, max.	16 Kibyte
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 alarm 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
CPU processing times	
for bit operations, min.	0.1 µs
for bit operations, max.	0.2 µs
for word operations, min.	0.2 µs
for fixed point arithmetic, min.	2 µs
for floating point arithmetic, min.	3 µs
Counters, timers and their retentivity	
S7 counter	
Number	256

subject to modifications
© Copyright Siemens AG 2011

of which retentive without battery	
can be set	Yes
lower limit	0
upper limit	255
preset	8
Retentivity	
can be set	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	
can be set	Yes
lower limit	0
upper limit	255
Retentivity	
can be set	Yes
lower limit	0
upper limit	255
preset	no retentivity
Time range	
lower limit	10 ms
upper limit	9990 s
IEC timer	
present	Yes

subject to modifications
© Copyright Siemens AG 2011

Type	SFB
Number	unlimited (limited only by RAM capacity)
Data areas and their retentivity	
retentive data area, total	All
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 Kibyte
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 Kibyte
Outputs	1 Kibyte
of which, distributed	
Inputs	1006 byte ; max.
Outputs	1006 byte ; max.
Process image	
Inputs	128 byte
Outputs	128 byte
Default addresses of the integrated channels	
Digital inputs	124.0 to 125.7
Digital outputs	124.0 to 125.7
Digital channels	
integrated channels (DI)	16
integrated channels (DO)	16
Inputs	8064

subject to modifications
© Copyright Siemens AG 2011

Outputs	8064
Inputs, of which central	1008
Outputs, of which central	1008
Analog channels	
Integrated channels (AI)	0
Integrated channels (AO)	0
Inputs	503
Outputs	503
Inputs, of which central	248
Outputs, of which central	248
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
Number of operable FMs and CPs (recommended)	
FM	8
CP, point-to-point	8
CP, LAN	6
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
Runtime meter	
Number	1
Number/Number range	0
Range of values	0 to 2^31 hours (when using SFC 101)
Granularity	1 hour
retentive	Yes

subject to modifications
© Copyright Siemens AG 2011

Clock synchronization	
supported	Yes
to MPI, master	Yes
to MPI, slave	Yes
to DP, master	Yes ; on DP slave only time-of-day slave
to DP, slave	Yes
in AS, master	Yes
Digital inputs	
Number of digital inputs	16
of which, inputs usable for technological functions	12
Number of simultaneously controllable inputs	
horizontal installation	
up to 40 °C, max.	16
up to 60 °C, max.	8
vertical installation	
up to 40 °C, max.	8
Technological functions	
shielded, max.	100 m
unshielded, max.	not allowed
Standard DI	
shielded, max.	1000 m
unshielded, max.	600 m
Input characteristic curve acc. to IEC 1131, Type 1	Yes
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

subject to modifications
© Copyright Siemens AG 2011

for counter/technological functions	
at "0" to "1", max.	16 µs
Cable length	
Cable length, shielded, max.	1000 m ; 100 m for technological functions
Cable length unshielded, max.	600 m ; For technological functions: No
Digital outputs	
Number of digital outputs	16
of which high-speed outputs	4
Short-circuit protection	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
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

subject to modifications
© Copyright Siemens AG 2011

vertical installation	
up to 40 °C, max.	2 A
Load resistance range	
lower limit	48 Ω
upper limit	4 kΩ
Cable length	
Cable length, shielded, max.	1000 m
Cable length unshielded, max.	600 m
Encoder	
Connectable encoders	
2-wire BEROS	Yes
permissible quiescent current (2-wire BEROS), max.	1.5 mA
Interfaces	
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 hardware interfaces	0
MPI	
Cable length, max.	50 m ; without repeater
1st 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
Functionality	
MPI	Yes
DP master	No
DP slave	No
Point-to-point connection	No
MPI	
Number of connections	8
Services	

subject to modifications
© Copyright Siemens AG 2011

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	8
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.	8 ; 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

subject to modifications
© Copyright Siemens AG 2011

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 Kibyte
Outputs, max.	1 Kibyte
User data per DP slave	
Inputs, max.	244 byte
Outputs, max.	244 byte
DP slave	
Number of connections	8
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 current GSD file can be obtained from: 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

subject to modifications
© Copyright Siemens AG 2011

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 Kibyte ; 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	8
usable for PG communication	7
reserved for PG communication	1
Adjustable for PG communication, min.	1
Adjustable for PG communication, max.	7
usable for OP communication	7
reserved for OP communication	1
adjustable for OP communication, min.	1

subject to modifications
© Copyright Siemens AG 2011

adjustable for OP communication, max.	7
usable for S7 basic communication	4
Reserved for S7 basic communication	0
adjustable for S7 basic communication, min.	0
adjustable for S7 basic communication, max.	4
usable for routing	4 ; max.
S7 message functions	
Number of login stations for message functions, max.	8
Process diagnostic messages	Yes
simultaneously active Alarm-S blocks, max.	20
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
can be set	No
Interrupts/diagnostics/status information	
Diagnostics indication LED	
Status indicator digital output (green)	Yes
Status indicator digital input (green)	Yes
Integrated Functions	

subject to modifications
© Copyright Siemens AG 2011

Number of counters	3 ; 3 channels (see "Technological Functions" manual)
Counter frequency (counter) max.	30 kHz
Frequency measurement	Yes
Number of frequency meters	3 ; 3 channels up to max. 30 kHz (see "Technological Functions" manual)
controlled positioning	No
integrated function blocks (closed-loop control)	PID controller (see "Technological Functions" manual)
PID controller	Yes
Number of pulse outputs	3 ; 3 channels pulse width modulation up to max. 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
Permissible potential difference	
between different circuits	75 VDC / 60 VAC
Isolation	
Isolation checked with	600 VDC
Configuration	
Configuration software	
STEP 7	Yes ; V5.3 SP2 with HW update
programming	
Programming language	
LAD	Yes
FBD	Yes
STL	Yes
SCL	Yes

subject to modifications
© Copyright Siemens AG 2011

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 and weight	
Dimensions	
Width	120 mm
Height	125 mm
Depth	130 mm
Weight	
Weight, approx.	566 g
Status	May 23, 2011

subject to modifications
© Copyright Siemens AG 2011