

SIEMENS

Product data sheet

6ES7313-6BF03-0AB0

SIMATIC S7-300, CPU 313C-2 PTP COMPACT CPU WITH MPI, 16 DI/16 DO, 3 FAST COUNTERS (30 KHZ), INTEGRATED INTERFACE RS485, 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
associated programming package	STEP 7 V5.3 SP2 or higher with HW update

Supply voltages

Rated value

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

Current consumption

Current consumption (rated value)	700 mA
Current consumption (in no-load operation), typ.	100 mA
Inrush current, typ.	11 A
I^2t	0.7 A ² ·s
from supply voltage L+, max.	700 mA

Power losses

Power loss, typ.	10 W
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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	
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 startup OBs	1 ; OB 100
Number of asynchronous error OBs	4 ; OB 80, 82, 85, 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 μ s
for floating point arithmetic, min.	3 μ s
Counters, timers and their retentivity	
S7 counter	
Number	256
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
Type	SFB
Number	unlimited (limited only by RAM capacity)
Data areas and their retentivity	
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	none
Outputs	none
Process image	
Inputs	128 byte
Outputs	128 byte
Digital channels	
Inputs	1008
Outputs	1008
Inputs, of which central	1008
Outputs, of which central	1008
Analog channels	
Inputs	248

Outputs	248
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
Number of DP masters	
integrated	No
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
Backup time	6 wk ; at 40°C ambient temperature
Deviation per day, max.	10 s
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 ; Must be restarted at each restart
Clock synchronization	
supported	Yes
to MPI, master	Yes
to MPI, slave	Yes
in AS, master	Yes
S7 message functions	
Number of login stations for message functions, max.	8 ; Depending on the connections configured for PG/OP and S7 basic communication
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
Status block	Yes
Single step	Yes
Number of breakpoints	2
Diagnostic buffer	
present	Yes
Number of entries, max.	100
Communication functions	
PG/OP communication	Yes
Routing	No
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 ; Server
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 byte ; 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, max.	7
usable for OP communication	7
reserved for OP communication	1
adjustable for OP communication, max.	7
usable for S7 basic communication	4
Reserved for S7 basic communication	0
adjustable for S7 basic communication, max.	4
usable for routing	No
Connection method required front connector	1x 40-pin
MPI	
Cable length, max.	50 m ; without repeater
Point-to-point	
Cable length, max.	1200 m
Integrated protocol driver	
3964 (R)	Yes
ASCII	Yes
RK512	No
Transmission speed, RS 422/485	
with 3964 (R) protocol, max.	38.4 kBit/s half duplex; 19.2 kBit/s full duplex
with ASCII protocol, max.	38.4 kBit/s half duplex; 19.2 kBit/s full duplex
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	8
Services	
PG/OP communication	Yes
Routing	No
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 422/ 485 interface
Physics	RS 422/RS 485 (X.27)
Isolated	Yes
Power supply to interface (15 to 30 V DC), max.	No
Number of connection resources	none
Functionality	
MPI	No
DP master	No
DP slave	No
PROFINET IO Controller	No
PROFINET CBA	No
Point-to-point connection	Yes
programming	
Programming language	
STEP 7	Yes ; V5.2 SP1 with HW update
LAD	Yes
FBD	Yes
STL	Yes
SCL	Yes

GRAPH	Yes
HiGraph®	Yes
Command set	see instruction list
Nesting levels	8
Know-how protection	
User program protection/password protection	Yes
System functions (SFC)	see instruction list
System function blocks (SFB)	see instruction list
Digital inputs	
Number of 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
for counter/technological functions	

at "0" to "1", max.	16 μ s
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 of the output	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
vertical installation	
up to 40 °C, max.	2 A
Load resistance range	

lower limit	48 Ω
upper limit	4 k Ω
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
Integrated Functions	
Number of counters	3 ; 3 channels (see "Technological Functions" manual)
Counter frequency (counter) max.	30 kHz
Frequency measurement	Yes
controlled positioning	No
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
Interrupts/diagnostics/status information	
Diagnostics indication LED	
Status indicator digital output (green)	Yes
Status indicator digital input (green)	Yes
Isolation	
Isolation checked with	600 VDC
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
Dimensions and weight	
Dimensions	
Width	120 mm
Height	125 mm
Depth	130 mm
Weight	
Weight, approx.	566 g
Status	Jan 17, 2011