SIEMENS

Data sheet 6ES7313-5BE00-0AB0

SIMATIC S7-300, CPU 313C COMPACT CPU WITH MPI, 24 DI/16 DO, 4AI, 2AO 1 PT100, 3 FAST COUNTERS (30 KHZ), INTEGRATED 24V DC POWER SUPPLY, 32 KBYTE WORKING MEMORY, MICRO MEMORY CARD REQUIRED

Supply voltage	
Rated value (DC)	24 V
permissible range, lower limit (DC)	20.4 V
permissible range, upper limit (DC)	28.8 V
Load voltage L+	
• Rated value (DC)	24 V
• permissible range, lower limit (DC)	20.4 V
• permissible range, upper limit (DC)	28.8 V
Input current	
Current consumption (rated value)	700 mA
Inrush current, typ.	11 A
Power loss	
Power loss, typ.	14 W
Memory	
Work memory	
• integrated	32 kbyte; For program and data
• expandable	No
Load memory	
• expandable FEPROM	Yes; with Micro Memory Card (MMC)
• expandable FEPROM, max.	4 Mbyte
Backup	
• present	Yes; Guaranteed by MMC (maintenance-free)
• without battery	Yes; Program and data
CPU processing times	
for bit operations, typ.	0.1 µs
for bit operations, max.	0.2 µs
for word operations, typ.	0.5 µs
for fixed point arithmetic, typ.	1 µs
for floating point arithmetic, typ.	15 µs
CPU-blocks	
DB	
• Number, max.	127; DB 0 reserved

• Size, max.	16 kbyte
FB	
• Number, max.	128
• Size, max.	16 kbyte
FC	
• Number, max.	128
• Size, max.	16 kbyte
OB	
• Size, max.	16 kbyte
• Number of time alarm OBs	1
• Number of delay alarm OBs	1
• Number of cyclic interrupt OBs	1
• Number of process alarm OBs	1
Nesting depth	
• per priority class	8
• additional within an error OB	4

Counters, timers and their retentivity	
S7 counter	
• Number	256
Retentivity	
— adjustable	Yes
— lower limit	0
— upper limit	256
Counting range	
— lower limit	1
— upper limit	999
IEC counter	
• present	Yes
• Type	SFB
S7 times	
• Number	256
Retentivity	
— adjustable	Yes
— lower limit	0
— upper limit	256
Time range	
— lower limit	10 ms
— upper limit	9 990 s
IEC timer	
• present	Yes
• Type	SFB

Data areas and their retentivity	
Flag	
• Number, max.	256 byte
• Retentivity available	Yes; MB 0 to MB 255
Address area	
I/O address area	
• Inputs	1 kbyte
• Outputs	1 kbyte
Process image	
• Inputs	128 byte
• Outputs	128 byte
Digital channels	
• Inputs	992
• Outputs	992
Analog channels	
• Inputs	248
• Outputs	124
Hardware configuration	
Number of expansion units, max.	3
Number of DP masters	
• via CP	1
Number of operable FMs and CPs (recommended)	
• FM	8
• CP, PtP	4
• CP, LAN	2
Rack	
• Modules per rack, max.	31
Time of day	
Clock	
• Hardware clock (real-time)	Yes
• retentive and synchronizable	Yes
Operating hours counter	
• Number	1
Clock synchronization	
• supported	Yes
Digital inputs	
Number of digital inputs	24
Input voltage	
• Rated value (DC)	24 V
• for signal "0"	-3 to +5V

• for signal "1"	+15 to +30V
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
— at "0" to "1", max.	15 ms
for technological functions	
— at "0" to "1", max.	16 µs
Cable length	
• shielded, max.	1 000 m; 100 m for technological functions
• unshielded, max.	600 m

Digital outputs	
Number of digital outputs	16
Short-circuit protection	Yes; Clocked electronically
Limitation of inductive shutdown voltage to	L+ (-48 V)
Output voltage	
• for signal "1", min.	L+ (-0.8 V)
Output current	
• for signal "1" permissible range for 0 to 60 °C, max.	500 mA
• for signal "1" minimum load current	5 mA
• for signal "0" residual current, max.	0.5 mA
Switching frequency	
• with resistive load, max.	100 Hz
• with inductive load, max.	0.5 Hz
Total current of the outputs (per group)	
all mounting positions	
— up to 40 °C, max.	8 A
— up to 60 °C, max.	4 A
Cable length	
• shielded, max.	1 000 m
• unshielded, max.	600 m

Analog inputs	
Number of analog inputs	4
• For voltage/current measurement	4
• For resistance/resistance thermometer measurement	1
Input ranges	
• Voltage	Yes
• Current	Yes

• Resistance thermometer	Yes
• Resistance	Yes
Input ranges (rated values), voltages	
• 0 to +10 V	Yes
Input ranges (rated values), currents	
• 0 to 20 mA	Yes
• -20 mA to +20 mA	Yes
• 4 mA to 20 mA	Yes
Input ranges (rated values), resistance thermometer	
• Pt 100	Yes
Input ranges (rated values), resistors	
• 0 to 600 ohms	Yes
Analog outputs	
Number of analog outputs	2
Output ranges, voltage	
• 0 to 10 V	Yes
• -10 V to +10 V	Yes
Output ranges, current	
• 0 to 20 mA	Yes
• -20 mA to +20 mA	Yes
• 4 mA to 20 mA	Yes
Analog value generation for the inputs	
Integration 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
Analog value generation for the outputs	
Integration and conversion time/resolution per channel	
• Resolution with overrange (bit including sign), max.	12 bit
• Conversion time (per channel)	1 ms
Encoder	
Connectable encoders	
• 2-wire sensor	Yes
— permissible quiescent current (2-wire sensor), max.	1.5 mA
Errors/accuracies	
Basic error limit (operational limit at 25 °C)	
• Voltage, relative to input range, (+/-)	0.7 %
• Current, relative to input range, (+/-)	0.7 %

• Resistance, relative to input range, (+/-)	3 %
• Resistance thermometer, relative to input range, (+/-)	3 %
• Voltage, relative to output range, (+/-)	0.7 %
• Current, relative to output range, (+/-)	0.7 %

Interfaces	
MPI	
• Cable length, max.	50 m; without repeater

1. Interface	
Isolated	No
Protocols	
• MPI	Yes
• PROFIBUS DP master	No
• PROFIBUS DP slave	No
MPI	
• Number of connections	8
• Transmission rate, max.	187.5 kbit/s
Services	
— PG/OP communication	Yes
— Global data communication	Yes
— S7 communication	Yes
— S7 communication, as client	No
— S7 communication, as server	Yes

Communication functions	
PG/OP communication	Yes
Global data communication	
• Number of GD packets, transmitter, max.	4
• Number of GD packets, receiver, max.	4
• Size of GD packets, max.	22 byte
S7 basic communication	
• supported	Yes
• User data per job, max.	76 byte
S7 communication	
• supported	Yes
• as server	Yes
• as client	No
• User data per job, max.	64 kbyte
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	4
— adjustable for S7 basic communication, max.	4

S7 message functions	
Number of login stations for message functions, max.	5

Integrated Functions	
Number of counters	3
Counting frequency (counter) max.	30 kHz
Frequency measurement	Yes
PID controller	Yes
Number of pulse outputs	3
Limit frequency (pulse)	2.5 kHz

Potential separation	
Potential separation digital inputs	
• Potential separation digital inputs	Yes
• between the channels, in groups of	16; 16 and 8
• between the channels and backplane bus	Yes
Potential separation digital outputs	
• between the channels, in groups of	8
• between the channels and backplane bus	Yes
Potential separation analog inputs	
• Potential separation analog inputs	Yes; common for analog I/O
• between the channels and backplane bus	Yes
Potential separation analog outputs	
• Potential separation analog outputs	Yes

Configuration	
Configuration software	
• STEP 7	Yes; V5.1 SP2
Programming	
• Nesting levels	8
Programming language	
— LAD	Yes
— FBD	Yes
— STL	Yes
— SCL	Yes

— GRAPH	Yes
— HiGraph®	Yes
Know-how protection	
• User program protection/password protection	Yes
Dimensions	
Width	120 mm
Height	125 mm
Depth	130 mm
Weights	
Weight, approx.	660 g

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