SIEMENS

Product data sheet 6ES7312-1AE14-0AB0



SIMATIC S7-300,
CPU 312 CPU WITH MPI INTERFACE,
INTEGRATED 24 V DC POWER SUPPLY 32 KBYTE WORKING MEMORY,
MICRO MEMORY CARD NECESSARY

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General information	
Hardware product version	01
Firmware version	V3.3
Supply voltage	
24 V DC	Yes
permissible range, lower limit (DC)	19.2 V
permissible range, upper limit (DC)	28.8 V
Mains buffering	
Mains/voltage failure stored energy time	5 ms
Repeat rate, min.	1 s
Input current	
Current consumption (rated value)	650 mA
Current consumption (in no-load operation), typ.	140 mA
Inrush current, typ.	3.5 A
I^2t	1 $A^2 \cdot s$
Power losses	
Power loss, typ.	4 W
Memory	
Type of memory	other

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Work memory	
integrated	32 kbyte
expandable	No
Size of retentive memory for retentive data blocks	32 kbyte
Load memory	
pluggable (MMC)	Yes
pluggable (MMC), max.	8 Mbyte
Data management on MMC (after last programming), min.	10 a
Backup	
	Yes
without battery	Yes ; Program and data
CPU processing times	
for bit operations, typ.	0.1 µs
for word operations, typ.	0.24 µs
for fixed point arithmetic, typ.	0.32 µs
for floating point arithmetic, typ.	1.1 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	
	1024
	32 kbyte
FB	
	1024
	32 kbyte
FC	
Number, max.	1024 ; Number range: 0 to 7999
Size, max.	32 kbyte
OB	
Description	see instruction list
	32 kbyte
	1
	1
	2
	4
	1
	1
	4
	2

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Nesting depth	
per priority class	16
additional within an error OB	4
Counters, timers and their retentivity	
S7 counter	
Number	256
Retentivity	
adjustable	Yes
lower limit	0
upper limit	255
preset	Z 0 to Z 7
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
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 (incl. memory bits, times, counters)
Flag	
Number, max.	256 byte
Retentivity available	Yes ; MB 0 to MB 255
Retentivity preset	MB 0 to MB 15

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Number of clock memories	8 ; 1 memory byte
Data blocks	
Number, max.	1024 ; Number range: 1 to 16000
Size, max.	32 kbyte
Retentivity adjustable	Yes ; via non-retain property on DB
Retentivity preset	Yes
Local data	
per priority class, max.	32 kbyte ; Max. 2 KB per block
Address area	
I/O address area	
Inputs	1024 byte
Outputs	1024 byte
Process image	
Inputs	1024 byte
Outputs	1024 byte
Inputs, adjustable	1024 byte
Outputs, adjustable	1024 byte
Inputs, default	128 byte
Outputs, default	128 byte
Digital channels	
Inputs	256
Outputs	256
	256
	256
Analog channels	
Inputs	64
Outputs	64
	64
	64
Hardware configuration	
Expansion devices, max.	0
Number of DP masters	
integrated	0
via CP	4
Number of operable FMs and CPs (recommended)	
FM	8
CP, point-to-point	8
CP, LAN	4

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Rack	
Racks, max.	1
Number of units / per module subrack / maximum	8
Time of day	
Clock	
Software clock	Yes
battery-backed and synchronizable	No ; Buffered: No, Can be synchronized: Yes
Deviation per day, max.	10 s ; Typ.: 2 s
Behavior of the clock following POWER-ON	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 hour
retentive	Yes ; Must be restarted at each restart
Clock synchronization	
	Yes
to MPI, master	Yes
to MPI, slave	Yes
in AS, master	Yes
in AS, slave	No
Digital inputs	
Number of digital inputs	0
Digital outputs	
Number of digital outputs	0
Analog inputs	
Number of analog inputs	0
Analog outputs	
Number of analog outputs	0
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
1st interface	
Interface type	Integrated RS 485 interface

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Physics	RS 485
	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	
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
S7 communication, as server	Yes
Communication functions	
PG/OP communication	Yes
Data record routing	No
Global data communication	
supported	Yes
Number of GD loops, max.	8
Number of GD packets, max.	8
Number of GD packets, transmitter, max.	8
Number of GD packets, receiver, max.	8
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	
	Yes
	Yes
	Yes
User data per job, max.	180 byte ; With PUT/GET

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User data per job (of which consistent), max.	240 byte ; as server
S5-compatible communication	
supported	Yes ; via CP and loadable FC
Number of connections	
overall	6
usable for PG communication	5
reserved for PG communication	1
Adjustable for PG communication, min.	1
Adjustable for PG communication, max.	5
usable for OP communication	5
reserved for OP communication	1
adjustable for OP communication, min.	1
adjustable for OP communication, max.	5
usable for S7 basic communication	2
Reserved for S7 basic communication	0
adjustable for S7 basic communication, min.	0
adjustable for S7 basic communication, max.	2
S7 message functions	
Number of login stations for message functions, max.	6 ; 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	
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
Diagnostic buffer	
present	Yes
Number of entries, max.	500

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adjustable	No
Of which powerfail-proof	100 ; Only the last 100 entries are retained
Number of entries readable in RUN, max.	499
adjustable	Yes ; From 10 to 499
preset	10
Service data	
Can be read out	Yes
Ambient conditions	
Operating temperature	
Min.	0 °C
max.	60 °C
Configuration	
Configuration software	
STEP 7	Yes ; V5.2 SP1 or higher with HW update
programming	
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
GRAPH	Yes
HiGraph®	Yes
Know-how protection	
User program protection/password protection	Yes
Block encryption	Yes ; With S7 block Privacy
Dimensions	
Width	40 mm
Height	125 mm
Depth	130 mm
Weights	
Weight, approx.	270 g
Status	May 13, 2014

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Siemens SIMATIC S7-300 CPU 312 product data sheet

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