SIEMENS

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



Figure similar

General information	
Hardware product version	01
Firmware version	V3.3
Engineering with	
 Programming package 	STEP 7 V5.5 + SP1 or higher or STEP 7 V5.2 + SP1 or higher with HSP 218
Supply voltage	
Rated value (DC)	
• 24 V DC	Yes
permissible range, lower limit (DC)	19.2 V
permissible range, upper limit (DC)	28.8 V
external protection for power supply lines (recommendation)	2 A min.
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
l ² t	1 A ^{2.} s
Power loss	
Power loss, typ.	4 W
Memory	
Work memory	
• integrated	32 kbyte
• expandable	No
 Size of retentive memory for retentive data 	32 kbyte
blocks	
Load memory	
• Plug-in (MMC)	Yes
 Plug-in (MMC), max. 	8 Mbyte
 Data management on MMC (after last 	10 у
programming), min.	
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 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)	1 024; (DBs, FCs, FBs); the maximum number of loadable blocks
	can be reduced by the MMC used.
DB	
• Number, max.	1 024; Number range: 1 to 16000
• Size, max.	32 kbyte
FB	
• Number, max.	1 024; Number range: 0 to 7999
• Size, max.	32 kbyte
FC	
• Number, max.	1 024; Number range: 0 to 7999
• Size, max.	32 kbyte
OB	
Description	see instruction list
• Size, max.	32 kbyte
Number of free cycle OBs	1; OB 1

Data areas and their retentivity	
• Number	Unlimited (limited only by RAM capacity)
• Туре	SFB
● present	Yes
IEC timer	
— upper limit	9 990 s
— lower limit	10 ms
Time range	
— preset	No retentivity
— upper limit	255
— lower limit	0
— adjustable	Yes
Retentivity	
• Number	256
S7 times	
• Number	Unlimited (limited only by RAM capacity)
• Type	SFB
• present	Yes
IEC counter	
— upper limit	999
— lower limit	0
Counting range	
— preset	Z 0 to Z 7
— upper limit	255
— lower limit	0
— adjustable	Yes
Retentivity	
Number	256
Counters, timers and their retentivity S7 counter	
Countara timora and their retentivity	
 additional within an error OB 	4
per priority class	16
Nesting depth	
 Number of synchronous error OBs 	2; OB 121, 122
 Number of asynchronous error OBs 	4; OB 80, 82, 85, 87
Number of startup OBs	1; OB 100
Number of process alarm OBs	1; OB 40
Number of cyclic interrupt OBs	4; OB 32, 33, 34, 35
Number of delay alarm OBs	2; OB 20, 21
 Number of time alarm OBs 	1; OB 10

• Number, max. 258 byte • Retentivity available Yes; MB 0 to MB 255 • Retentivity preset MB 0 to MB 255 • Number of clock memories 8:1 memory byte Data blocks 1024; Number range: 1 to 16000 • Size, max. 32 kbyte • Retentivity adjustable Yes; via non-retain property on DB • Retentivity adjustable Yes; via non-retain property on DB • Retentivity adjustable Yes; via non-retain property on DB • Retentivity adjustable Yes; via non-retain property on DB • Retentivity adjustable Yes; via non-retain property on DB • Retentivity adjustable Yes; via non-retain property on DB • Retentivity class, max. 32 kbyte; Max. 2 KB per block Address area 1024 byte • Inputs 1 024 byte • Inputs 1 024 byte • Outputs 1 024 byte • Outputs, adjustable 1 024 byte • Outputs 256 </th <th>Flag</th> <th></th>	Flag	
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• via CP 4 Number of operable FMs and CPs (recommended) 8	Number of DP masters	
Number of operable FMs and CPs (recommended) • FM 8	• integrated	0
• FM 8	● via CP	4
	Number of operable FMs and CPs (recommended)	
• CP, PtP 8	• FM	8
	• CP, PtP	8

• CP, LAN	4
Rack	
• Racks, max.	1
 Modules per rack, max. 	8
Time of day Clock	
Software clock	Yes
retentive and synchronizable	No; Buffered: No, Can be synchronized: Yes
	10 s; Typ.: 2 s
 Deviation per day, max. Reparties of the cleak following DOWER ON 	The clock continues at the time of day it had when power was
 Behavior of the clock following POWER-ON 	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	
• supported	Yes
• to MPI, master	Yes
● to MPI, slave	Yes
● in AS, master	Yes
● in AS, slave	No
Digital inputs Number of digital inputs	0
	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 industrial Ethernet interfaces	0
Number of RS 485 interfaces	1; MPI
Number of RS 422 interfaces	0
1. Interface	
Interface type	Integrated RS 485 interface
Physics	RS 485
Isolated	No

Power supply to interface (15 to 30 V DC), max.

200 mA

Functionality	
● MPI	Yes
PROFIBUS DP master	No
PROFIBUS 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	
• 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. 	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,	0
min.	
 adjustable for S7 basic communication, 	2
max.	
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
Single step Number of breakpoints	Yes 4
Number of breakpoints	
Number of breakpoints Status/control	4
Number of breakpoints Status/control • Status/control variable	4 Yes
Number of breakpoints Status/control • Status/control variable • Variables	4 Yes Inputs, outputs, memory bits, DB, times, counters
Number of breakpoints Status/control • Status/control variable • Variables • Number of variables, max.	4 Yes Inputs, outputs, memory bits, DB, times, counters 30
Number of breakpoints Status/control • Status/control variable • Variables • Number of variables, max. — of which status variables, max.	4 Yes Inputs, outputs, memory bits, DB, times, counters 30 30
Number of breakpoints Status/control • Status/control variable • Variables • Number of variables, max. — of which status variables, max. — of which control variables, max.	4 Yes Inputs, outputs, memory bits, DB, times, counters 30 30
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Number of breakpoints Status/control • Status/control variable • Variables • Number of variables, max. of which status variables, max. of which control variables, max. of which control variables, max. Forcing • Forcing, variables • Number of variables, max. Diagnostic buffer • present • Number of entries, max. adjustable of which powerfail-proof	4 Yes Inputs, outputs, memory bits, DB, times, counters 30 30 30 14 Yes Inputs, outputs 10 Yes 500 No
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Number of breakpoints Status/control • Status/control variable • Variables • Variables • Number of variables, max. - of which status variables, max. - of which control variables, max. - of which control variables, max. - of which control variables, max. Forcing • Forcing, variables • Number of variables, max. Diagnostic buffer • present • Number of entries, max. - adjustable - of which powerfail-proof • Number of entries readable in RUN, max.	4 Yes Inputs, outputs, memory bits, DB, times, counters 30 30 30 14 Yes Inputs, outputs 10 Yes 500 No 100; Only the last 100 entries are retained 499

Service data	
● can be read out	Yes
Angle and a second the sec	
Ambient conditions Ambient temperature during operation	
• min.	0 °C
	60 °C
• max.	
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
last modified:	03/23/2017