Data sheet

SIMATIC S7-300, CPU 314 Central processing unit with MPI, Integr. power supply 24 V DC, work memory 128 KB, Micro Memory Card required



Figure similar

General information	
HW functional status	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	128 kbyte
• expandable	No
 Size of retentive memory for retentive data blocks 	64 kbyte
Load memory	
• Plug-in (MMC)	Yes
• Plug-in (MMC), max.	8 Mbyte
 Data management on MMC (after last programming), min. 	10 y
Backup	
• present	Yes; Guaranteed by MMC (maintenance-free)
• without battery	Yes; Program and data
CPU processing times	
for bit operations, typ.	0.06 µs
for word operations, typ.	0.12 μs
for fixed point arithmetic, typ.	0.16 μs
for floating point arithmetic, typ.	0.59 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.	64 kbyte
FB	
Number, max.	1 024; Number range: 0 to 7999
• Size, max.	64 kbyte
FC	
• Number, max.	1 024; Number range: 0 to 7999
• Size, max.	64 kbyte
OB	
Description	see instruction list
• Size, max.	64 kbyte
Number of free cycle OBs	1; OB 1



 Number of time alarm OBs 	1; OB 10
 Number of delay alarm OBs 	2; OB 20, 21
 Number of cyclic interrupt OBs 	4; OB 32, 33, 34, 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	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	9 990 s
IEC timer	
• present	Yes
• Type	SFB
Number	Unlimited (limited only by RAM capacity)

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retentive data area in total all, max. 64 KB



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		
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	1 024 byte	
 Outputs 	1 024 byte	
Process image		
• Inputs	1 024 byte	
Outputs	1 024 byte	
Inputs, adjustable	1 024 byte	
Outputs, adjustable	1 024 byte	
 Inputs, default 	128 byte	
Outputs, default	128 byte	
Digital channels		
• Inputs	1 024	
— of which central	1 024	
Outputs	1 024	
— of which central	1 024	
Analog channels		
• Inputs	256	
— of which central	256	
Outputs	256	
— of which central	256	
Hardware configuration		
Number of expansion units, max.	3	
Number of DP masters		
• integrated	0	
• via CP	4	
Number of operable FMs and CPs (recommended)		
• FM	8	
• CP, PtP	8	
• CP, LAN	10	
Rack		

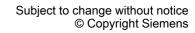


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• Racks, max.	4
Modules per rack, max.	8

Woddies per rack, max.			
Time of day			
Clock			
Hardware clock (real-time)	Yes		
 retentive and synchronizable 	Yes		
Backup time	6 wk; At 40 °C ambient temperature		
 Deviation per day, max. 	10 s; Typ.: 2 s		
 Behavior of the clock following POWER-ON 	Clock continues running after POWER OFF		
 Behavior of the clock following expiry of backup 	Clock continues to run with the time at which the power failure		
period	occurred		
Operating hours counter			
• Number	1		
Number/Number range	0		
Range of values	0 to 2^31 hours (when using SFC 101)		
Granularity	1 h		
• 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		
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 PROFINET 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		





Protection Protection MPI PROFIBUS DP master PROFIBUS DP slave PROFIBUS DP slave Profinit-to-point connection No No Profinit-to-point connection No MPI Transmission rate, max. 187.5 kbit/s Services PG/DP communication Routing Global data communication S7 communication S7 communication S7 communication S7 communication, as selent S7 communication, as server PG/DP communication PG/DP	Isolated	No
Protocols • MPI • PROFIBUS DP master • PROFIBUS DP slave • Point-to-point connection MPI • Transmission rate, max. Services - PG/OP communication - Routing - Routing - S7 basic communication - S7 communication - S8 compatible communication - S9 compatible communicatio		200 mA
PROFIBUS DP master PROFIBUS DP slave Point-to-point connection No MPI Transmission rate, max. 187.5 kbit/s Services PGOP communication Pes Sorb basic communication Soromunication So		
PROFIBUS DP slave Point-to-point connection No MPI I a Transmission rate, max. Services PG/OP communication Routing	• MPI	Yes
Point-to-point connection MPI Transmission rate, max. Services	PROFIBUS DP master	No
Transmission rate, max. 187.5 kbit/s	PROFIBUS DP slave	No
■ Transmission rate, max. ■ PG/OP communication ■ Routing ■ Global data communication ■ S7 basic communication ■ S7 communication ■ S8 communic	Point-to-point connection	No
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 Communication functions PG/OP communication Data record routing No Global data communication • supported Yes • Number of GD loops, max. 8 • Number of GD packets, transmitter, max. 8 • Number of GD packets, receiver, max. 8 • Niumber of GD packets, receiver, 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. 27 byte; as server • as client Yes; Via CP and loadable FB • User data per job, max. 180 byte; With PUT/GET • Supported • User data per job, max. 240 byte; as server • supported • Super data per job, max. 180 byte; With PUT/GET • User data per job (of which consistent), max. 240 byte; as server • supported • User data per job (of which consistent), max. 240 byte; as server • supported • Super data per job (of which consistent), max. 240 byte; as server • supported • Suppo	·	
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Routing No Global data communication Yes Stasic communication Yes, Only server, configured on one side S7 communication, as client No S7 communication, as client No S7 communication, as server Yes SSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSS	Services	
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	— Routing	No
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	 — S7 basic communication 	Yes
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Communication functions PG/OP communication Data record routing Supported Supported Number of GD loops, max. Number of GD packets, max. Number of GD packets, transmitter, max. Number of GD packets, receiver, max. Number of GD packets, receiver, max. Size of GD packets, max. Size of GD packet (of which consistent), max. Size of GD packet (of which consistent), max. Size of GD packet, (of which consistent), max. Puser data per job, max. User data per job (of which consistent), max. Size of GD packet, wax. Size of GD packet, wax. Size of GD packet (of which consistent), max. Size of GD packet (of which consistent), max. Size of GD packet, wax. S	 — S7 communication, as client 	No
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 User data per job (of which consistent), max. S5 compatible communication supported Yes; via CP and loadable FC 	● as client	Yes; Via CP and loadable FB
S5 compatible communication • supported Yes; via CP and loadable FC	 User data per job, max. 	180 byte; With PUT/GET
• supported Yes; via CP and loadable FC	• User data per job (of which consistent), max.	240 byte; as server
	S5 compatible communication	
Number of connections	• supported	Yes; via CP and loadable FC
	Number of connections	



• overall	12
 usable for PG communication 	11
 reserved for PG communication 	1
 adjustable for PG communication, min. 	1
— adjustable for PG communication, max.	11
 usable for OP communication 	11
 reserved for OP communication 	1
— adjustable for OP communication, min.	1
— adjustable for OP communication, max.	11
 usable for S7 basic communication 	8
 reserved for S7 basic communication 	0
 adjustable for S7 basic communication, 	0
min.	
 adjustable for S7 basic communication, 	8
max.	

S7 message functions	
Number of login stations for message functions, max.	12; 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	
• Forcing, variables	Inputs, outputs	
 Number of variables, max. 	10	
Diagnostic buffer		
• present	Yes	
 Number of entries, max. 	500	
— 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	



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— preset	10
Service data	
• can be read out	Yes
Ambient conditions	
Ambient temperature during operation	
• 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
— CFC	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.	280 g

6ES7314-1AG14-0AB0
0201011 1/1011 0/120

last modified:

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10/09/2020