

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	
<ul style="list-style-type: none"> 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)	
<ul style="list-style-type: none"> 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	
<ul style="list-style-type: none"> Mains/voltage failure stored energy time 	5 ms
<ul style="list-style-type: none"> 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 ·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	
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• Plug-in (MMC)	Yes
• Plug-in (MMC), max.	8 Mbyte
• Data management on MMC (after last programming), min.	10 y

Backup	
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• present	Yes; Guaranteed by MMC (maintenance-free)
• without battery	Yes; Program and data

CPU processing times	
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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	
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Number of blocks (total)	1 024; (DBs, FCs, FBs); the maximum number of loadable blocks can be reduced by the MMC used.
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DB	
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• Number, max.	1 024; Number range: 1 to 16000
• Size, max.	64 kbyte

FB	
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• Number, max.	1 024; Number range: 0 to 7999
• Size, max.	64 kbyte

FC	
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• Number, max.	1 024; Number range: 0 to 7999
• Size, max.	64 kbyte

OB	
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• 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)

Data areas and their retentivity

retentive data area in total	All, max. 64 KB
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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	

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

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 period Clock continues to run with the time at which the power failure occurred

Operating hours counter

- Number 1
- Number/Number range 0
- Range of values 0 to 2³¹ 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

Isolated	No
Power supply to interface (15 to 30 V DC), max.	200 mA
Protocols	
• 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	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, min.	0
— adjustable for S7 basic communication, max.	8

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

— 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
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