



Figure similar

SIMATIC S7-300, CPU 312 Central processing unit with MPI, Integr. power supply 24 V DC, Work memory 32 KB, Micro Memory Card required

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)	24 V
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 Repeat rate, min. 	5 ms 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 ² t	1 A ² ·s
Power loss	
Power loss, typ.	4 W
Memory	
Work memory	
<ul style="list-style-type: none"> integrated expandable 	32 kbyte No
Load memory	
<ul style="list-style-type: none"> Plug-in (MMC) Plug-in (MMC), max. Data management on MMC (after last programming), min. 	Yes 8 Mbyte 10 y
Backup	
<ul style="list-style-type: none"> present without battery 	Yes; Guaranteed by MMC (maintenance-free) 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	
• Number, max.	see instruction list
• Size, max.	32 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 (incl. timers, counters, flags), max.	32 kbyte
Flag	
• Size, max.	256 byte

<ul style="list-style-type: none"> • Retentivity available • Retentivity preset • Number of clock memories 	Yes; MB 0 to MB 255 MB 0 to MB 15 8; 1 memory byte
Data blocks	
<ul style="list-style-type: none"> • Retentivity adjustable • Retentivity preset 	Yes; via non-retain property on DB Yes
Local data	
<ul style="list-style-type: none"> • per priority class, max. 	32 kbyte; Max. 2 KB per block
Address area	
I/O address area	
<ul style="list-style-type: none"> • Inputs • Outputs 	1 024 byte 1 024 byte
Process image	
<ul style="list-style-type: none"> • Inputs • Outputs • Inputs, adjustable • Outputs, adjustable • Inputs, default • Outputs, default 	1 024 byte 1 024 byte 1 024 byte 1 024 byte 128 byte 128 byte
Digital channels	
<ul style="list-style-type: none"> • Inputs <ul style="list-style-type: none"> — of which central • Outputs <ul style="list-style-type: none"> — of which central 	256 256 256 256
Analog channels	
<ul style="list-style-type: none"> • Inputs <ul style="list-style-type: none"> — of which central • Outputs <ul style="list-style-type: none"> — of which central 	64 64 64 64
Hardware configuration	
Number of expansion units, max.	0
Number of DP masters	
<ul style="list-style-type: none"> • integrated • via CP 	0 4
Number of operable FMs and CPs (recommended)	
<ul style="list-style-type: none"> • FM • CP, PtP • CP, LAN 	8 8 4
Rack	
<ul style="list-style-type: none"> • Racks, max. • Modules per rack, max. 	1 8
Time of day	
Clock	
<ul style="list-style-type: none"> • Software clock • retentive and synchronizable • Deviation per day, max. • Behavior of the clock following POWER-ON 	Yes No; Buffered: No, Can be synchronized: Yes 10 s; Typ.: 2 s the clock continues at the time of day it had when power was switched off
Operating hours counter	
<ul style="list-style-type: none"> • Number • Number/Number range • Range of values • Granularity • retentive 	1 0 0 to 2 ³¹ hours (when using SFC 101) 1 h Yes; Must be restarted at each restart
Clock synchronization	
<ul style="list-style-type: none"> • supported • to MPI, master • to MPI, slave • in AS, master • in AS, slave 	Yes Yes Yes Yes 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
Isolated	No
Interface types	
<ul style="list-style-type: none"> • RS 485 • Output current of the interface, max. 	<p>Yes</p> <p>200 mA</p>
Protocols	
<ul style="list-style-type: none"> • MPI • PROFIBUS DP master • PROFIBUS DP slave • Point-to-point connection 	<p>Yes</p> <p>No</p> <p>No</p> <p>No</p>
MPI	
<ul style="list-style-type: none"> • Transmission rate, max. 	187.5 kbit/s
Services	
<ul style="list-style-type: none"> — PG/OP communication — Routing — Global data communication — S7 basic communication — S7 communication — S7 communication, as client — S7 communication, as server 	<p>Yes</p> <p>No</p> <p>Yes</p> <p>Yes</p> <p>Yes; Only server, configured on one side</p> <p>No</p> <p>Yes</p>
Protocols	
PROFIsafe	No
communication functions / header	
PG/OP communication	Yes
Data record routing	No
Global data communication	
<ul style="list-style-type: none"> • supported • Number of GD loops, max. • Number of GD packets, max. • Number of GD packets, transmitter, max. • Number of GD packets, receiver, max. • Size of GD packets, max. • Size of GD packet (of which consistent), max. 	<p>Yes</p> <p>8</p> <p>8</p> <p>8</p> <p>8</p> <p>22 byte</p> <p>22 byte</p>
S7 basic communication	
<ul style="list-style-type: none"> • supported • User data per job, max. • User data per job (of which consistent), max. 	<p>Yes</p> <p>76 byte</p> <p>76 byte; 76 bytes (with X_SEND or X_RCV); 64 bytes (with X_PUT or X_GET as server)</p>
S7 communication	
<ul style="list-style-type: none"> • supported • as server • as client • User data per job, max. • User data per job (of which consistent), max. 	<p>Yes</p> <p>Yes</p> <p>Yes; Via CP and loadable FB</p> <p>180 byte; With PUT/GET</p> <p>240 byte; as server</p>
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
• 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 / header	
Configuration software	
• STEP 7	Yes; V5.2 SP1 or higher with HW update
configuration / programming / header	
• 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
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