



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

Product type designation	
General information	
Hardware product version	01
Firmware version	V3.3
Engineering with	
<ul style="list-style-type: none"> Programming package 	STEP 7 V5.5 + SP1 or higher or STEP7 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 supply cables (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^2t	1 A ² ·s
Power losses	
Power loss, typ.	4 W

Memory

Work memory	
<ul style="list-style-type: none"> • Integrated 	32 kbyte
<ul style="list-style-type: none"> • expandable 	No
<ul style="list-style-type: none"> • Size of retentive memory for retentive data blocks 	32 kbyte
Load memory	
<ul style="list-style-type: none"> • pluggable (MMC) 	Yes
<ul style="list-style-type: none"> • pluggable (MMC), max. 	8 Mbyte
<ul style="list-style-type: none"> • Data management on MMC (after last programming), min. 	10 y
Backup	
<ul style="list-style-type: none"> • present 	Yes; Guaranteed by MMC (maintenance-free)
<ul style="list-style-type: none"> • without battery 	Yes; Program and data

CPU processing times

for bit operations, typ.	0.1 μ s
for word operations, typ.	0.24 μ s
for fixed point arithmetic, typ.	0.32 μ s
for floating point arithmetic, typ.	1.1 μ s

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	
<ul style="list-style-type: none"> • Number, max. 	1 024; Number range: 1 to 16000
<ul style="list-style-type: none"> • Size, max. 	32 kbyte
FB	
<ul style="list-style-type: none"> • Number, max. 	1 024; Number range: 0 to 7999
<ul style="list-style-type: none"> • Size, max. 	32 kbyte
FC	
<ul style="list-style-type: none"> • Number, max. 	1 024; Number range: 0 to 7999
<ul style="list-style-type: none"> • Size, max. 	32 kbyte
OB	
<ul style="list-style-type: none"> • Description 	see instruction list
<ul style="list-style-type: none"> • Size, max. 	32 kbyte
<ul style="list-style-type: none"> • Number of free cycle OBs 	1; OB 1
<ul style="list-style-type: none"> • Number of time alarm OBs 	1; OB 10
<ul style="list-style-type: none"> • Number of delay alarm OBs 	2; OB 20, 21
<ul style="list-style-type: none"> • Number of time interrupt OBs 	4; OB 32, 33, 34, 35
<ul style="list-style-type: none"> • Number of process alarm OBs 	1; OB 40
<ul style="list-style-type: none"> • Number of startup OBs 	1; OB 100
<ul style="list-style-type: none"> • 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	
— can be set	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	
— can be set	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	
Total retentive data area	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
• Number of clock memories	8; 1 memory byte
Data blocks	

• Number, max.	1 024; 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	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	256
— Inputs, of which central	256
• Outputs	256
— Outputs, of which central	256
Analog channels	
• Inputs	64
— Inputs, of which central	64
• Outputs	64
— Outputs, of which central	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
Rack	
• Racks, max.	1
• Modules per rack, max.	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	
• 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 USB interfaces	0
Number of 20 mA interfaces (TTY)	0
Number of RS 232 interfaces	0
Number of RS 422 interfaces	0
Number of parallel interfaces	0
Number of other interfaces	0
1st 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

• 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	
• 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, min. 0
 - adjustable for S7 basic communication, max. 2

— 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
— can be set	No
— Of which powerfail-proof	100; Only the last 100 entries are retained
• Number of entries readable in RUN, max.	499
— can be set	Yes; From 10 to 499
— preset	10

Service data	
• Can be read out	Yes

Ambient conditions

Ambient temperature in 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
- 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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