

Spare part SIMATIC S7-300 CPU 315-2 PN/DP, Central processing unit with 256 KB work memory, 1st interface MPI/DP 12 Mbit/s, 2nd interface Ethernet PROFINET, Micro Memory Card required



Figure similar

General information	
HW functional status	01
Firmware version	V2.6
Engineering with	
• Programming package	STEP 7 V5.4 SP2
Supply voltage	
Rated value (DC)	24 V
• 24 V DC	Yes
permissible range, lower limit (DC)	20.4 V
permissible range, upper limit (DC)	28.8 V
external protection for power supply lines (recommendation)	2 A min.
Input current	
Current consumption (rated value)	650 mA
Current consumption (in no-load operation), typ.	100 mA
Inrush current, typ.	2.5 A
I ² t	1 A ² ·s

Power loss	
Power loss, typ.	3.5 W
Memory	
Work memory	
<ul style="list-style-type: none"> integrated 	256 kbyte; For program and data
<ul style="list-style-type: none"> expandable 	No
Load memory	
<ul style="list-style-type: none"> Plug-in (MMC) 	Yes
<ul style="list-style-type: none"> Plug-in (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.	0.2 μ s
for fixed point arithmetic, typ.	2 μ s
for floating point arithmetic, typ.	3 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. 	1 023; Number band: 1 to 1023
<ul style="list-style-type: none"> Size, max. 	16 kbyte
FB	
<ul style="list-style-type: none"> Number, max. 	1 024; Number range: 0 to 2047
<ul style="list-style-type: none"> Size, max. 	16 kbyte
FC	
<ul style="list-style-type: none"> Number, max. 	1 024; Number range: 0 to 2047
<ul style="list-style-type: none"> Size, max. 	16 kbyte
OB	
<ul style="list-style-type: none"> Size, max. 	16 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 	1; OB 20
<ul style="list-style-type: none"> Number of cyclic interrupt OBs 	1; OB 35
<ul style="list-style-type: none"> Number of process alarm OBs 	1; OB 40
<ul style="list-style-type: none"> Number of DPV1 alarm OBs 	3; OB 55, 56, 57
<ul style="list-style-type: none"> Number of isochronous mode OBs 	1; OB 61
<ul style="list-style-type: none"> Number of startup OBs 	1; OB 100

• Number of asynchronous error OBs	6; OB 80, 82, 83, 85, 86, 87
• Number of synchronous error OBs	2; OB 121, 122
Nesting depth	
• per priority class	8
• 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	8
Counting range	
— can be set	Yes
— lower limit	0
— upper limit	999
IEC counter	
• 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, 128 KB max.
Flag	
• Number, max.	2 048 byte
• Retentivity available	Yes; MB 0 to MB 2047
• 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.	1 024 byte; per block max. 510
Address area	
I/O address area	
• Inputs	2 kbyte
• Outputs	2 kbyte
of which distributed	
— Inputs	2 kbyte
— Outputs	2 kbyte
Process image	
• Inputs	2 048 byte
• Outputs	2 048 byte
• Inputs, adjustable	2 kbyte
• Outputs, adjustable	2 kbyte
• Inputs, default	128 byte
• Outputs, default	128 byte
Subprocess images	
• Number of subprocess images, max.	1
Digital channels	
• Inputs	16 384
— of which central	1 024
• Outputs	16 384
— of which central	1 024
Analog channels	
• Inputs	1 024
— of which central	256
• Outputs	1 024
— of which central	256
Hardware configuration	
Number of expansion units, max.	3
Number of DP masters	
• integrated	1
• 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

Operating hours counter

- Number 1
- Number/Number range 0
- Range of values 0 to 2³¹ hours (when using SFC 101)
- retentive Yes; Must be restarted at each restart

Clock synchronization

- supported Yes
- to MPI, master Yes
- to MPI, slave Yes
- to DP, master Yes; With DP slave only slave clock
- to DP, slave Yes
- in AS, master Yes
- in AS, slave Yes
- on Ethernet via NTP Yes; As client

Digital inputs

integrated channels (DI)

0

Digital outputs

integrated channels (DO)

0

Analog inputs

integrated channels (AI)

0

Analog outputs

integrated channels (AO)

0

Interfaces

Number of industrial Ethernet interfaces

1

Number of PROFINET interfaces

1

Number of RS 485 interfaces

1

Number of RS 422 interfaces

0

1. Interface

Interface type

Integrated RS 485 interface

Physics

RS 485

Isolated

Yes

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

200 mA

Functionality	
• MPI	Yes
• PROFIBUS DP master	Yes
• PROFIBUS DP slave	Yes
• Point-to-point connection	No
MPI	
• Number of connections	16
• Transmission rate, max.	12 Mbit/s
Services	
— PG/OP communication	Yes
— Routing	Yes
— Global data communication	Yes
— S7 basic communication	Yes
— S7 communication	Yes
— S7 communication, as client	No
— S7 communication, as server	Yes
DP master	
• Transmission rate, max.	12 Mbit/s
• Number of DP slaves, max.	124
Services	
— PG/OP communication	Yes
— Routing	Yes
— Global data communication	No
— S7 basic communication	Yes; I blocks only
— S7 communication	Yes
— S7 communication, as client	No
— S7 communication, as server	Yes
— Equidistance	Yes
— Isochronous mode	Yes; OB 61
— SYNC/FREEZE	Yes
— Activation/deactivation of DP slaves	Yes
— DPV1	Yes
Address area	
— Inputs, max.	2 kbyte
— Outputs, max.	2 kbyte
User data per DP slave	
— Inputs, max.	244 byte
— Outputs, max.	244 byte
DP slave	
• Transmission rate, max.	12 Mbit/s
• automatic baud rate search	Yes; only with passive interface

• Address area, max.	32; With max. 32 bytes each
Services	
— PG/OP communication	Yes
— Routing	Yes; Only with active interface
— Global data communication	No
— S7 basic communication	No
— S7 communication	Yes
— S7 communication, as client	No
— S7 communication, as server	Yes
— Direct data exchange (slave-to-slave communication)	Yes
— DPV1	No
Transfer memory	
— Inputs	244 byte
— Outputs	244 byte
2. Interface	
Interface type	PROFINET
Physics	Ethernet RJ45
Isolated	Yes
automatic detection of transmission rate	Yes; 10/100 Mbit/s
Functionality	
• MPI	No
• PROFINET IO Controller	Yes
• PROFINET IO Device	No
• PROFINET CBA	Yes
• PROFIBUS DP master	No
• PROFIBUS DP slave	No
• Open IE communication	Yes
• Web server	Yes
• Point-to-point connection	No
PROFINET IO Controller	
• Transmission rate, max.	100 Mbit/s
Services	
— PG/OP communication	Yes
— Routing	Yes
— S7 communication	Yes; With loadable FBs, max. configurable connections: 14, max. number of instances: 32
— Open IE communication	Yes; Via TCP/IP, ISO on TCP, and UDP
— Number of connectable IO Devices, max.	128
— Send cycles	1 ms

— Updating time	1 to 512 ms (minimum value depends on communication share set for PROFINET I/O, on the number of I/O devices, and on the volume of configured user data)
Address area	
— Inputs, max.	2 kbyte
— Outputs, max.	2 kbyte
— User data consistency, max.	254 byte
PROFINET CBA	
• acyclic transmission	Yes
• cyclic transmission	Yes
Protocols	
Open IE communication	
• TCP/IP	Yes; via integrated PROFINET interface and loadable FBs
— Data length, max.	1 460 byte; with connection type 01H; 8192 bytes with connection type 11H
• ISO-on-TCP (RFC1006)	Yes; via integrated PROFINET interface and loadable FBs
— Data length, max.	8 192 byte
• UDP	Yes; via integrated PROFINET interface and loadable FBs
— Number of connections, max.	8
— Data length, max.	1 472 byte
Communication functions	
PG/OP communication	Yes
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 integrated PROFINET interface and loadable FB or via CP and loadable FB
• User data per job, max.	See online help of STEP 7 (shared parameters of the SFBs/FBs and of the SFCs/FCs of S7 Communication)

S5 compatible communication	
• supported	Yes; via CP and loadable FC
PROFINET CBA (at set setpoint communication load)	
• Setpoint for the CPU communication load	50 %
• Number of remote interconnection partners	32
• Number of functions, master/slave	30
• Total of all master/slave connections	1 000
• Data length of all incoming connections master/slave, max.	4 000 byte
• Data length of all outgoing connections master/slave, max.	4 000 byte
• Number of device-internal and PROFIBUS interconnections	500
• Data length of device-internal und PROFIBUS interconnections, max.	4 000 byte
• Data length per connection, max.	1 400 byte
Remote interconnections with acyclic transmission	
— Sampling frequency: Sampling time, min.	500 ms
— Number of incoming interconnections	100
— Number of outgoing interconnections	100
— Data length of all incoming interconnections, max.	2 000 byte
— Data length of all outgoing interconnections, max.	2 000 byte
— Data length per connection, max.	1 400 byte
Remote interconnections with cyclic transmission	
— Transmission frequency: Transmission interval, min.	10 ms
— Number of incoming interconnections	200
— Number of outgoing interconnections	200
— Data length of all incoming interconnections, max.	2 000 byte
— Data length of all outgoing interconnections, max.	2 000 byte
— Data length per connection, max.	450 byte
HMI variables via PROFINET (acyclic)	
— Number of stations that can log on for HMI variables (PN OPC/iMap)	3; 2x PN OPC/1x iMap
— HMI variable updating	500 ms
— Number of HMI variables	200
— Data length of all HMI variables, max.	2 000 byte
PROFIBUS proxy functionality	
— supported	Yes

— Number of linked PROFIBUS devices	16
— Data length per connection, max.	240 byte; Slave-dependent
Number of connections	
• overall	16
• usable for PG communication	15; max.
— reserved for PG communication	1
— adjustable for PG communication, min.	1
— adjustable for PG communication, max.	15; 1 to 15
• usable for OP communication	15
— reserved for OP communication	1
— adjustable for OP communication, min.	1
— adjustable for OP communication, max.	15; 1 to 15
• usable for S7 basic communication	14
— reserved for S7 basic communication	0
— adjustable for S7 basic communication, min.	0
— adjustable for S7 basic communication, max.	14; 0 to 14
• usable for routing	X1 as MPI: max. 10; X1 as DP master: max. 24; X1 as DP slave (active): max. 14; X2 as PROFINET: 24 max.

S7 message functions	
Number of login stations for message functions, max.	16; Depending on the configured connections for PG/OP and S7 basic communication
Process diagnostic messages	Yes
simultaneously active Alarm-S blocks, max.	40

Test commissioning functions	
Status block	Yes
Single step	Yes
Number of breakpoints	2

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
- of which powerfail-proof

No
100

Configuration

Configuration software

- STEP 7 Yes; V5.4 SP2 or higher

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

Dimensions

Width	80 mm
Height	125 mm
Depth	130 mm

Weights

Weight, approx. 460 g

last modified: 04/19/2018