



SIMATIC S7-300, CPU 315-2DP Central processing unit with MPI Integr. power supply 24 V DC Work memory 256 KB 2nd interface DP master/slave Micro Memory Card required

General information	
Product function	
<ul style="list-style-type: none"> • Isochronous mode 	Yes
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)	850 mA
Current consumption (in no-load operation), typ.	150 mA
Inrush current, typ.	3.5 A
I^2t	1 A ² ·s
Power loss	
Power loss, typ.	4.5 W
Memory	
Work memory	
<ul style="list-style-type: none"> • integrated • expandable • Size of retentive memory for retentive data blocks 	256 kbyte No 128 kbyte
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
CPU processing times	
for bit operations, typ.	0.05 μs
for word operations, typ.	0.09 μs

for fixed point arithmetic, typ.	0.12 µs
for floating point arithmetic, typ.	0.45 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 DPV1 alarm OBs	3; OB 55, 56, 57
• Number of isochronous mode OBs	1; OB 61
• Number of startup OBs	1; OB 100
• Number of asynchronous error OBs	5; OB 80, 82, 85, 86, 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, 128 KB max.
Flag	
• Number, max.	2 048 byte
• Retentivity available	Yes
• Retentivity preset	MB 0 to MB 15
• Number of clock memories	8
Data blocks	
• Retentivity adjustable	Yes
• Retentivity preset	Yes
Local data	
• per priority class, max.	32 kbyte
Address area	
I/O address area	
• Inputs	2 048 byte
• Outputs	2 048 byte
of which distributed	
— Inputs	2 048 byte
— Outputs	2 048 byte
Process image	
• Inputs	2 048 byte
• Outputs	2 048 byte
• Inputs, adjustable	2 048 byte
• Outputs, adjustable	2 048 byte
• 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
• Behavior of the clock following POWER-ON	Clock continues running after POWER OFF

<ul style="list-style-type: none"> • 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	
<ul style="list-style-type: none"> • Number • Range of values • Granularity • retentive 	<p>1</p> <p>0 to 2³¹ hours (when using SFC 101)</p> <p>1 h</p> <p>Yes; Must be restarted at each restart</p>
Clock synchronization	
<ul style="list-style-type: none"> • supported • to MPI, master • to MPI, slave • to DP, master • to DP, slave • in AS, master • in AS, slave 	<p>Yes</p> <p>Yes</p> <p>Yes</p> <p>Yes</p> <p>Yes</p> <p>Yes</p> <p>No</p>
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	2; MPI and PROFIBUS DP
Number of RS 422 interfaces	0
1. Interface	
Interface type	Integrated RS 485 interface
Isolated	No
Power supply to interface (15 to 30 V DC), max.	200 mA
Interface types	
<ul style="list-style-type: none"> • RS 485 	Yes
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>Yes</p> <p>Yes</p> <p>Yes</p> <p>Yes; Only server, configured on one side</p> <p>No</p> <p>Yes</p>
2. Interface	
Interface type	Integrated RS 485 interface
Isolated	Yes
Power supply to interface (15 to 30 V DC), max.	200 mA
Interface types	
<ul style="list-style-type: none"> • RS 485 	Yes
Protocols	
<ul style="list-style-type: none"> • MPI • PROFIBUS DP master 	<p>No</p> <p>Yes</p>

• PROFIBUS DP slave	Yes
• Point-to-point connection	No
PROFIBUS DP master	
• Transmission rate, max.	12 Mbit/s
• Number of DP slaves, max.	124; Per station
Services	
— PG/OP communication	Yes
— Routing	Yes
— Global data communication	No
— S7 basic communication	Yes; I blocks only
— S7 communication	Yes; Only server, configured on one side
— 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
— Number of DP slaves that can be simultaneously activated/deactivated, max.	8
— DPV1	Yes
Address area	
— Inputs, max.	2 048 byte
— Outputs, max.	2 048 byte
User data per DP slave	
— Inputs, max.	244 byte
— Outputs, max.	244 byte
PROFIBUS DP slave	
• GSD file	The latest GSD file is available at: http://www.siemens.com/profibus-gsd
• Transmission rate, max.	12 Mbit/s
• automatic baud rate search	Yes
• Address area, max.	32
• User data per address area, max.	32 byte
Services	
— PG/OP communication	Yes
— Routing	Yes; Only with active interface
— Global data communication	No
— S7 basic communication	No
— S7 communication	Yes; Only server, configured on one side
— 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
Communication functions	
PG/OP communication	Yes
Data record routing	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

<ul style="list-style-type: none"> • User data per job, max. • User data per job (of which consistent), max. 	76 byte 76 byte; 76 bytes (with X_SEND or X_RCV); 64 bytes (with X_PUT or X_GET as server)
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. 	Yes Yes Yes; Via CP and loadable FB 180 byte; With PUT/GET 240 byte; as server
S5 compatible communication	
<ul style="list-style-type: none"> • supported 	Yes; via CP and loadable FC
Number of connections	
<ul style="list-style-type: none"> • overall • usable for PG communication <ul style="list-style-type: none"> — reserved for PG communication — adjustable for PG communication, min. — adjustable for PG communication, max. • usable for OP communication <ul style="list-style-type: none"> — reserved for OP communication — adjustable for OP communication, min. — adjustable for OP communication, max. • usable for S7 basic communication <ul style="list-style-type: none"> — reserved for S7 basic communication — adjustable for S7 basic communication, min. — adjustable for S7 basic communication, max. 	16 15 1 1 15 15 1 1 15 12 0 0 12
S7 message functions	
Number of login stations for message functions, max.	16
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	
<ul style="list-style-type: none"> • Status/control variable • Variables • Number of variables, max. <ul style="list-style-type: none"> — of which status variables, max. — of which control variables, max. 	Yes Inputs, outputs, memory bits, DB, times, counters 30 30 14
Forcing	
<ul style="list-style-type: none"> • Forcing • Forcing, variables • Number of variables, max. 	Yes Inputs, outputs 10
Diagnostic buffer	
<ul style="list-style-type: none"> • present • Number of entries, max. <ul style="list-style-type: none"> — adjustable — of which powerfail-proof • Number of entries readable in RUN, max. <ul style="list-style-type: none"> — adjustable — preset 	Yes 500 No 100; Only the last 100 entries are retained Yes 10
Service data	
<ul style="list-style-type: none"> • can be read out 	Yes
Ambient conditions	
Ambient temperature during operation	
<ul style="list-style-type: none"> • min. • max. 	0 °C 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
Dimensions	
Width	40 mm
Height	125 mm
Depth	130 mm
Weights	
Weight, approx.	290 g

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