Data sheet



*** SPARE PART*** SIMATIC S7-300, CPU 315-2DP CPU WITH MPI INTERFACE INTEGRATED 24 V DC POWER SUPPLY 128 KBYTE WORKING MEMORY 2. INTERFACE DP-MASTER/SLAVE MICRO MEMORY CARD NECESSARY

General information	
Hardware product version	01
Firmware version	V2.6
Engineering with	
Programming package	STEP 7 V5.2 + SP1 or higher with HW update
Supply voltage	
Rated value (DC)	
• 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	2 A min.
(recommendation)	
Input current	
Current consumption (rated value)	0.8 A
Current consumption (in no-load operation), typ.	60 mA
Inrush current, typ.	2.5 A
l²t	0.5 A ² ·s
Power loss	

Work memory ● integrated 128 kbyte; For program and data ● expandable No Load memory Yes ● Plug-in (MMC) Yes ● Plug-in (MMC), max. 8 Mbyte ● Data management on MMC (after last programming), min. 10 y Backup Yes; Guaranteed by MMC (maintenance-free) ● without battery Yes; Program and data	Power loss, typ.	2.5 W
integrated expandable No Load memory Plug-in (MMC), max. Data management on MMC (after last programming), min. Backup integration (MMC)	Memory	
expandable No Load memory Plug-in (MMC), max. Plug-in (MMC), max. Obat management on MMC (after last programming), min. Backup Present	Work memory	
Load memory Plug-in (MMC), max. 8 Mbyte Plug-in (MMC), max. 8 Mbyte Data management on MMC (after last programming), min. Backup Present Yes; Guaranteed by MMC (maintenance-free) without battery Yes; Program and data PULY processing times for bit operations, typ. 0.1 µs for word operations, typ. 0.2 µs for floating point arithmetic, typ. 2 µs for floating point arithmetic, typ. 3 µs PUL/Blocks Number of blocks (total) 1024; (DBs, FCs, FBs OBs, SDBs); the maximum number of loadable blocks can be reduced by the MMC being used. DB Number, max. 1 023; Number band: 1 to 1023 Size, max. 1 024; Number range: 0 to 2047 Size, max. 1 024; Number range: 0 to 2047 Size, max. 1 024; Number range: 0 to 2047 Size, max. 1 024; Number range: 0 to 2047 Size, max. 1 024; Number range: 0 to 2047 Number of free cycle OBs Number of free cycle OBs Number of delay alarm OBs Number of cyclic interrupt OBs Number of operations alarm OBs Number of process alarm OBs Number of satup OBs Number of satup OBs Number of satup OBs Number of satup OBs	• integrated	128 kbyte; For program and data
Plug-in (MMC) Yes Plug-in (MMC), max. 8 Mbyte Data management on MMC (after last programming), min. Backup present	• expandable	No
Plug-in (MMC), max. Data management on MMC (after last programming), min. Backup present vitiout battery Ves; Guaranteed by MMC (maintenance-free) vitihout battery Processing times for bit operations, typ. O.1 µs for word operations, typ. O.2 µs for floating point arithmetic, typ. 2 µs for floating point arithmetic, typ. 3 µs PU-blocks Number of blocks (total) 1 024; (DBs, FCs, FBs OBs, SDBs); the maximum number of loadable blocks can be reduced by the MMC being used. DB Number, max. 1 023; Number band: 1 to 1023 1 6 kbyte FB Number, max. 1 024; Number range: 0 to 2047 1 6 kbyte FC Number, max. 1 024; Number range: 0 to 2047 1 6 kbyte FC Number, max. 1 024; Number range: 0 to 2047 1 6 kbyte FC Number of time alarm OBs Number of time alarm OBs Number of delay alarm OBs Number of delay alarm OBs Number of process alarm OBs Number of startup OBs	Load memory	
Data management on MMC (after last programming), min. Backup present	• Plug-in (MMC)	Yes
Programming), min. Backup Present Present Present Pesting Ves; Guaranteed by MMC (maintenance-free) Purpocessing times for bit operations, typ. O.1 µs for word operations, typ. O.2 µs for floating point arithmetic, typ. 3 µs PU-blocks Number of blocks (total) Number of blocks (total) Number, max. Size, max. Number, max. Size, max. 1 024; Number range: 0 to 2047 Size, max. 1 024; Number range: 0 to 2	Plug-in (MMC), max.	8 Mbyte
• present • without battery Yes; Program and data PU processing times for bit operations, typ. for word operations, typ. for floating point arithmetic, typ. 2 μs for floating point arithmetic, typ. 3 μs PU-blocks Number of blocks (total) • Number, max. • Size, max. • Number, max. • Size, max. 1 024; Number range: 0 to 2047 • Number, max. • Size, max. 1 024; Number range: 0 to 2047 • Size, max. • Size, max. 1 024; Number range: 0 to 2047 • Size, max. 1 024; Number range: 0 to 2047 • Size, max. 1 0 to 4 kbyte FC • Number, max. • Size, max. 1 0 to 4 kbyte FC • Number, max. • Size, max. 1 0 to 4 kbyte FC • Number of free cycle OBs • Number of free cycle OBs • Number of free cycle OBs • Number of delay alarm OBs • Number of cyclic interrupt OBs • Number of process alarm OBs • Number of startup OBs		10 y
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CPU processing times for bit operations, typ. for word operations, typ. for fixed point arithmetic, typ. 2	• present	Yes; Guaranteed by MMC (maintenance-free)
for bit operations, typ. for word operations, typ. for word operations, typ. for fixed point arithmetic, typ. 2 μs for floating point arithmetic, typ. 3 μs CPU-blocks Number of blocks (total) 1 024; (DBs, FCs, FBs OBs, SDBs); the maximum number of loadable blocks can be reduced by the MMC being used. DB • Number, max. • Size, max. 1 023; Number band: 1 to 1023 • Size, max. 1 024; Number range: 0 to 2047 • Size, max. 1 024; Number range: 0 to 2047 • Size, max. 1 024; Number range: 0 to 2047 • Size, max. 1 024; Number range: 0 to 2047 • Size, max. 1 024; Number range: 0 to 2047 • Size, max. 1 024; Number range: 0 to 2047 • Size, max. 1 024; Number range: 0 to 2047 • Size, max. 1 084; Number range: 0 to 2047 • Size, max. 1 085; Number of free cycle OBs 1; OB 1 • Number of free cycle OBs 1; OB 10 • Number of delay alarm OBs • Number of delay alarm OBs • Number of process alarm OBs • Number of process alarm OBs • Number of startup OBs • Number of asynchronous error OBs	• without battery	Yes; Program and data
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DB Number, max. Size, max. Number, max. Size, max. 1 023; Number band: 1 to 1023 16 kbyte FB Number, max. Size, max. 1 024; Number range: 0 to 2047 Size, max. 1 024; Number range: 0 to 2047 Size, max. 1 024; Number range: 0 to 2047 Size, max. 1 024; Number range: 0 to 2047 Size, max. 1 024; Number range: 0 to 2047 Size, max. 16 kbyte Bize, max. 16 kbyte Size, max. 16 kbyte 17 OB 1 Number of free cycle OBs 17 OB 1 Number of time alarm OBs 17 OB 10 Number of delay alarm OBs 17 OB 20 Number of cyclic interrupt OBs Number of process alarm OBs Number of process alarm OBs Number of DPV1 alarm OBs Number of startup OBs Number of startup OBs Number of startup OBs Number of asynchronous error OBs 17 OB 100 Number of asynchronous error OBs		
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 Number, max. Size, max. 1 024; Number range: 0 to 2047 6 kbyte Number, max. 1 024; Number range: 0 to 2047 Size, max. Size, max. Size, max. Number of free cycle OBs Number of time alarm OBs Number of delay alarm OBs Number of cyclic interrupt OBs Number of process alarm OBs Number of process alarm OBs OB 40 Number of DPV1 alarm OBs Number of startup OBs Number of asynchronous error OBs 1; OB 80 	• Size, max.	16 kbyte
 Size, max. Number, max. Size, max. Size, max. Size, max. Size, max. Number of free cycle OBs Number of time alarm OBs Number of delay alarm OBs Number of cyclic interrupt OBs Number of process alarm OBs Number of DPV1 alarm OBs Number of startup OBs Number of saynchronous error OBs 1; OB 100 Number of asynchronous error OBs 	FB	
PC ● Number, max. ● Size, max. 1 024; Number range: 0 to 2047 16 kbyte OB ● Size, max. 16 kbyte ● Number of free cycle OBs ● Number of time alarm OBs ● Number of delay alarm OBs ● Number of cyclic interrupt OBs ● Number of process alarm OBs ● Number of DPV1 alarm OBs ● Number of startup OBs ● Number of startup OBs ● Number of startup OBs ● Number of asynchronous error OBs 1; OB 10 1; OB 40 1; OB 40 • Number of startup OBs ● Number of startup OBs 1; OB 100 1; OB 80	Number, max.	1 024; Number range: 0 to 2047
 Number, max. Size, max. Size, max. Size, max. Size, max. Number of free cycle OBs Number of time alarm OBs Number of delay alarm OBs Number of cyclic interrupt OBs Number of process alarm OBs Number of DPV1 alarm OBs Number of startup OBs Number of asynchronous error OBs OB 10 OB 20 Number of process alarm OBs OB 40 Number of DPV1 alarm OBs OB 55, 56, 57 Number of startup OBs OB 100 Number of asynchronous error OBs 	• Size, max.	16 kbyte
 Size, max. Size, max. Number of free cycle OBs Number of time alarm OBs Number of delay alarm OBs Number of cyclic interrupt OBs Number of process alarm OBs Number of DPV1 alarm OBs Number of startup OBs Number of asynchronous error OBs 16 kbyte 	FC	
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 Size, max. Number of free cycle OBs Number of time alarm OBs Number of delay alarm OBs Number of cyclic interrupt OBs Number of process alarm OBs Number of DPV1 alarm OBs Number of startup OBs Number of startup OBs Number of asynchronous error OBs 16 kbyte 17 OB 1 18 OB 20 19 OB 35 19 OB 40 19 OB 40 19 OB 100 19 OB 100 19 OB 80 	• Size, max.	16 kbyte
 Number of free cycle OBs Number of time alarm OBs Number of delay alarm OBs Number of cyclic interrupt OBs Number of process alarm OBs Number of DPV1 alarm OBs Number of startup OBs Number of asynchronous error OBs 1; OB 10 1; OB 40 Number of startup OBs Number of startup OBs 1; OB 100 1; OB 80 	ОВ	
 Number of time alarm OBs Number of delay alarm OBs Number of cyclic interrupt OBs Number of process alarm OBs Number of DPV1 alarm OBs Number of startup OBs Number of asynchronous error OBs 1; OB 100 Number of asynchronous error OBs 	• Size, max.	
 Number of delay alarm OBs Number of cyclic interrupt OBs Number of process alarm OBs Number of DPV1 alarm OBs Number of startup OBs Number of asynchronous error OBs 1; OB 20 1; OB 35 3; OB 40 1; OB 55, 56, 57 1; OB 100 1; OB 80 	 Number of free cycle OBs 	1; OB 1
 Number of cyclic interrupt OBs Number of process alarm OBs Number of DPV1 alarm OBs Number of startup OBs Number of asynchronous error OBs 1; OB 35 1; OB 40 1; OB 55, 56, 57 1; OB 100 1; OB 80 	 Number of time alarm OBs 	1; OB 10
 Number of process alarm OBs Number of DPV1 alarm OBs Number of startup OBs Number of asynchronous error OBs 1; OB 40 3; OB 55, 56, 57 1; OB 100 1; OB 80 	Number of delay alarm OBs	1; OB 20
 Number of DPV1 alarm OBs Number of startup OBs Number of asynchronous error OBs 3; OB 55, 56, 57 1; OB 100 1; OB 80 	 Number of cyclic interrupt OBs 	1; OB 35
 Number of startup OBs Number of asynchronous error OBs 1; OB 100 1; OB 80 	 Number of process alarm OBs 	1; OB 40
Number of asynchronous error OBs 1; OB 80	Number of DPV1 alarm OBs	3; OB 55, 56, 57
·	Number of startup OBs	1; OB 100
	 Number of asynchronous error OBs 	1; OB 80
	•	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	
• 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
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	

Number, max.	1 023; Number band: 1 to 1023
• Size, max.	16 kbyte
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	128 byte
Outputs	128 byte
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	3
• integrated	1
• via CP	4
Number of operable FMs and CPs (recommended)	•
FM	8
	8
• CP, PtP	
• CP, LAN	10
Rack	4
• 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 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
• to DP, master	Yes; With DP slave only slave clock
• to DP, slave	Yes
• in AS, master	Yes
• in AS, slave	No
• on Ethernet via NTP	No
Digital inputs	
integrated channels (DI)	0
Digital outputs	
integrated channels (DO)	0
Analog inputs	
integrated channels (AI)	0
Analog outputs integrated channels (AO)	0
integrated charmers (AO)	U
Interfaces	
Number of industrial Ethernet interfaces	0
Number of RS 485 interfaces	1
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
Functionality	
• MPI	Yes
 PROFIBUS DP master 	No
PROFIBUS DP slave	No

Point-to-point connection	No
MPI	
Number of connections	16
• Transmission rate, max.	187.5 kbit/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
2. 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	No
PROFIBUS DP master	Yes
PROFIBUS DP slave	Yes
Point-to-point connection	No
DP master	
 Number of connections, max. 	16
• 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
— S7 communication, as client	No
— S7 communication, as server	Yes
— Equidistance	Yes
— Isochronous mode	No
— SYNC/FREEZE	Yes
— 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
DP slave	
Number of connections	16
• 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; only with passive interface
 Address area, max. 	32
 User data per address area, max. 	32 byte
Services	
— PG/OP communication	Yes
— Routing	Yes; with interface active
 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
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 CP and loadable FB
User data per job, max.	180 byte; With PUT/GET
	64 byte; as server
 User data per job (of which consistent), max. S5 compatible communication 	04 byte, as server
supported	Yes; via CP and loadable FC
Number of connections	res, via Ci and loadable i C
• overall	16
usable for PG communication	15
reserved for PG communication	1
	1
— adjustable for PG communication, min.	
— adjustable for PG communication, max.	15
usable for OP communication	15
— reserved for OP communication	1
— adjustable for OP communication, min.	1
 adjustable for OP communication, max. 	15
 usable for S7 basic communication 	12
 reserved for S7 basic communication 	0
 adjustable for S7 basic communication, 	0
min.	
adjustable for S7 basic communication,	12
max.	
usable for routing	4
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, variables

Forcing

Yes

Inputs, outputs

 Number of variables, max. 	10
Diagnostic buffer	
• present	Yes
 Number of entries, max. 	100
— adjustable	No
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
Dimensions	
Width	40 mm
Height	125 mm
Depth	130 mm
Weights	
Weight, approx.	290 g
last modified:	03/23/2017