6ES7315-2AH14-0AB0

Data sheet



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	0.4
HW functional status	01
Firmware version	V3.3
Product function	
Isochronous mode	Yes
Engineering with	
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	
 Mains/voltage failure stored energy time 	5 ms
Repeat rate, min.	1 s
nput current	
Current consumption (rated value)	850 mA
Current consumption (in no-load operation), typ.	150 mA
Inrush current, typ.	3.5 A
l²t	1 A ² ·s
ower loss	
Power loss, typ.	4.5 W
l emory	
Work memory	
• integrated	256 kbyte
expandable	No
Load memory	
• Plug-in (MMC)	Yes
• Plug-in (MMC), max.	8 Mbyte
 Data management on MMC (after last programming), min. 	10 a
Backup	
• present	Yes; Guaranteed by MMC (maintenance-free)
without battery	Yes; Program and data
PU 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
PU-blocks	

Number of blocks (total)	1 024; (DBs, FCs, FBs); the maximum number of loadable blocks can be
22	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	4004 14 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4
Number, max.	1 024; Number range: 0 to 7999
• Size, max.	64 kbyte
OB	and the factor of the factor o
Number, max.	see instruction list
Size, max. Number of free couls OR:	64 kbyte
Number of free cycle OBs Number of time clare 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 Number of process clarge OBs	4; OB 32, 33, 34, 35
Number of process alarm OBs Number of DDV/4 slarm OBs	1; OB 40
Number of DPV1 alarm OBs Number of incoherence mode 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	40
per priority class	16
additional within an error OB	4
Counters, timers and their retentivity	
S7 counter	
Number	256
Retentivity	v
— adjustable	Yes
— lower limit	0
— upper limit	255
— preset	Z 0 to Z 7
Counting range	
— lower limit	0
— upper limit	999
IEC counter	V
• present	Yes
• Type	SFB
Number	Unlimited (limited only by RAM capacity)
S7 times	050
Number Potentialty	256
Retentivity	Von
— adjustable	Yes
— lower limit	0
— upper limit	255
— preset	No retentivity
Time range	40 mg
— lower limit	10 ms
— upper limit	9 990 s
IEC timer	Voc
present	Yes
•	OFP
• Type	SFB
Type Number	SFB Unlimited (limited only by RAM capacity)
TypeNumber Data areas and their retentivity	Unlimited (limited only by RAM capacity)
Type Number Data areas and their retentivity Retentive data area (incl. timers, counters, flags), max.	
Type Number Data areas and their retentivity Retentive data area (incl. timers, counters, flags), max. Flag	Unlimited (limited only by RAM capacity) 128 kbyte
Type Number Data areas and their retentivity Retentive data area (incl. timers, counters, flags), max.	Unlimited (limited only by RAM capacity)

Retentivity preset	MB 0 to MB 15
Number of clock memories	
Data blocks	8; 1 memory byte
Retentivity adjustable	Yes; via non-retain property on DB
Retentivity adjustable Retentivity preset	Yes
Local data	103
per priority class, max.	32 kbyte; Max. 2 KB per block
Address area	or royto, max. 2 no por blook
I/O address area	
• Inputs	2 048 byte
• Outputs	2 048 byte
of which distributed	2 5 10 5 10
— 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; Typ.: 2 s
Behavior of the clock following POWER-ON	Clock continues running after POWER OFF
Behavior of the clock following expiry of backup period	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 h
• retentive	Yes; Must be restarted at each restart
Clock synchronization	

• usported		
to In MPI, stave to DP, master to DP, stave to In AS, master ves in AS, stave No Cligital inputs Number of digital inputs O Cligital control in Number of digital inputs O Analog inputs Number of digital inputs O Analog inputs Number of analog inputs Number of analog outputs Number of analog outputs Number of Industrial Ethernet interfaces Number of Industrial Ethernet		
• 10 DP, slave • 10 DP, slave • 10 AS, slave • 10 Associated slave		
In DP, slave In AS, slave In I	to MPI, slave	Yes
• in AS, master	• to DP, master	Yes; With DP slave only slave clock
No No No No	• to DP, slave	Yes
Digital Imputs Digital outputs Digital out	• in AS, master	Yes
Number of digital outputs 0	• in AS, slave	No
Digital outputs Number of digital outputs Number of analog inputs Number of analog outputs Number of analog outputs Number of analog outputs Number of analog outputs Number of industrial Ethernet Interfaces Number of PROFINET interfaces Number of PROFINET interfaces 0 Number of RS 488 interface No Interface output output output of the interface, max. 200 mA Protocois • MPI • PROFIBUS DP master • PROFIBUS DP slave • Protocois - MPI • Transmission rate, max. 187.5 kbit/s Services - PGIOP communication - S7 communication - S8 485 • RS	Digital inputs	
Number of digital outputs	Number of digital inputs	0
Number of analog inputs O	Digital outputs	
Number of analog inputs	Number of digital outputs	0
Number of analog inputs	Analog inputs	
Analog outputs Number of analog outputs Interfaces		0
Number of industrial Ethernet interfaces		
Interfaces		0
Number of Industrial Ethernet Interfaces		
Number of RROFINET interfaces 0		0
Number of RS 485 interfaces 2; MPI and PROFIBUS DP Number of RS 422 interfaces 0		
Number of RS 422 interfaces 0		
Interface type		·
Interface type		U
Interface type		Interested DO 405 interfere
Interface types	·	
		NO .
Output current of the interface, max. Protocols • MPI • PROFIBUS DP master • PROFIBUS DP slave • Point-to-point connection MPI • Transmission rate, max. Services - PG/OP communication - S7 basic communication - S7 basic communication - S7 communication - S7 communication - S7 communication - S7 communication, as slient - S7 communication, as server 2. Interface Interface type • RS 485 • Output current of the interface, max. Protocols • MPI • No • PROFIBUS DP master • PROFIBUS DP master • PROFIBUS DP slave • Point-to-point connection No PROFIBUS DP master • Transmission rate, max. • Number of DP slaves, max. Services - PG/OP communication Yes • Number of DP slaves, max. Services - PG/OP communication Yes No • Number of DP slaves, max. Services - PG/OP communication Yes ON • MPI • Transmission rate, max. • Number of DP slaves, max. Services - PG/OP communication Yes		
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		200 mA
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PROFIBUS DP slave Point-to-point connection MPI Transmission rate, max. Services - PG/OP communication Robbit Space - Routing - Global data communication - S7 basic communication - S7 communication, as client - S7 communication, as server Interface Interface type Interface type Interface types RS 485 - Output current of the interface, max. Protocols MPI - PROFIBUS DP master - PROFIBUS DP slave - PROFIBUS DP slave - Point-to-point connection - No PROFIBUS DP master - Transmission rate, max Number of DP slaves, max Services - PG/OP communication - No - PG/OP communication - Yes		
● Point-to-point connection MPI ● Transmission rate, max. Services	 PROFIBUS DP master 	No
● 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 Yes, only server, configured on one side - S7 communication, as client No - S7 communication, as server Yes 2. Interface Interface type Interface type Interface type Interface type Soluted Yes Interface type ● RS 485 Yes - Output current of the interface, max. 200 mA Protocols ● MPI No - PROFIBUS DP master Yes - PROFIBUS DP slave Yes - 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	PROFIBUS DP slave	No
Transmission rate, max. Terrores - PG/OP communication - Routing - Routing - Global data communication - S7 basic communication - S7 communication - S7 communication - S7 communication, as client - S7 communication, as server - Interface type Interface type Interface type Interface type - RS 485 - Output current of the interface, max. - PROFIBUS DP master - PROFIBUS DP master - Transmission rate, max Number of DP slaves, max PG/OP communication - Yes - Transmission rate, max PG/OP communication - Yes - PG/OP communication - Yes - PG/OP communication - Yes - Yes - Yes - PG/OP communication - Yes - Yes - PG/OP communication - Yes - Yes - Yes - PG/OP communication - Yes - Yes - Yes - PG/OP communication - Yes -	Point-to-point connection	No
Services - PG/OP communication Yes - Routing Yes - Global data communication Yes - S7 basic communication Yes - S7 basic communication Yes; Only server, configured on one side - S7 communication, as client No - S7 communication, as server Yes 2. Interface Interface type Integrated RS 485 interface Isolated Yes Interface types - RS 485 - Output current of the interface, max. Protocols - MPI - PROFIBUS DP master - PROFIBUS DP master - PROFIBUS DP master - Transmission rate, max Number of DP slaves, max Services - PG/OP communication - Yes - PG/OP co	MPI	
PG/OP communication Yes Routing Yes Global data communication Yes ST basic communication Yes, Only server, configured on one side ST communication, as client No ST communication, as server Yes 2. Interface Interface type Interface type Interface type Interface type Interface types RS 485 Output current of the interface, max. Protocols MPI PROFIBUS DP master PROFIBUS DP master Transmission rate, max Number of DP slaves, max PG/OP communication ST communication Yes PG/OP communication Yes ST communication Yes Yes PG/OP communication Yes ST communication Yes PG/OP communication Yes PG/OP communication Yes Transmission rate, max PG/OP communication Yes PG/OP communication Yes PG/OP communication Yes Transmission rate, max PG/OP communication Yes PG/OP communication Yes PG/OP communication Yes Yes PG/OP communication Yes Yes PG/OP communication Yes Yes PG/OP communication Yes Yes Yes PG/OP communication Yes	Transmission rate, max.	187.5 kbit/s
- Routing Yes - 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 2. Interface Interface type Integrated RS 485 interface Isolated Yes Interface types - RS 485 Yes - Output current of the interface, max. 200 mA Protocols - MPI No - PROFIBUS DP master Yes - 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	Services	
- Global data communication Yes - S7 basic communication Yes; Only server, configured on one side - S7 communication, as client No - S7 communication, as server Yes 2. Interface Interface type Integrated RS 485 interface Isolated Yes Interface types • RS 485 Yes • Output current of the interface, max. 200 mA Protocols • MPI No - PROFIBUS DP master Yes • 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	— PG/OP communication	Yes
- S7 basic communication - S7 communication - S7 communication, as client - S7 communication, as server - S7 communication, as server - Yes 2. Interface Interface type Interface type Interface type Interface type Interface type Interface type Interface type Interface type Interface type Interface type Interface type Interface type Interface type Interface type Interface type Interface type Interface type Interface type Interface In	— Routing	Yes
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- S7 communication, as client - S7 communication, as server 2. Interface Interface type Interface type Isolated Yes Interface types • RS 485 • Output current of the interface, max. Protocols • MPI • PROFIBUS DP master • PROFIBUS DP slave • Point-to-point connection PROFIBUS DP master • Transmission rate, max. • Number of DP slaves, max. • Number of DP slaves, max. Services - PG/OP communication No Yes	 S7 basic communication 	Yes
	— S7 communication	Yes; Only server, configured on one side
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 Transmission rate, max. Number of DP slaves, max. Services PG/OP communication 12 Mbit/s 124; Per station Yes 		INU
 Number of DP slaves, max. Services PG/OP communication Yes 		12 Mhit/e
Services — PG/OP communication Yes		
— PG/OP communication Yes		124, Per Station
		W
— Routing Yes		
— Global data communication No		
— S7 basic communication Yes; I blocks only	 S7 basic communication 	Yes; I blocks only

O-	V 01
— 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; only with passive interface
Address area, max.	32
User data per address area, max.	32 byte
Services	02 by 10
— 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
Protocols	
PROFIsafe	No
communication functions / header	
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	
communication function / S7 basic communication	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
	180 byte; With PUT/GET
User data per job, max. User data per job (of which consistent) max.	
User data per job (of which consistent), max. S5 compatible communication.	240 byte; as server
S5 compatible communication	

* supported Ves; via CP and loadable FC Number of connections * overall • usable for PG communication — reserved for PG communication, min. — adjustable for PG communication, max. • usable for PG communication — reserved for PG communication — reserved for PG communication — adjustable for QP communication, min. — adjustable for SP basic communication — reserved for SP basic communication — adjustable for SP basic communication, min. — basic provident for space functions, max. 12 15 resease functions 16 Depending on the configured connections for PG/OP and SP basic communication Process diagnostic message functions, max. 300 Prest commissioning functions 15 for the configured connections for PG/OP and SP basic communication 16 Depending on the configured connections for PG/OP and SP basic communication 17 yes; Up to 2 simultaneously Single step Yes Shitublock Yes Shitublock Yes Shitublock Yes Shitublock Yes Shitublock Yes Shitublock 10 to 2 simultaneously Shitublock 10 to 2 simultaneously 11 to 2 simultaneously 12 to 2 simultaneously 13 to 2 simultaneously 14 to 2 simultaneously 15 to 2 simultaneously 16 to 2 simultane
overall
usable for PG communication reserved for PG communication adjustable for PG communication, min. adjustable for PG communication, max. usable for OP communication reserved for OP communication adjustable for OP communication, min. adjustable for OP communication, min. adjustable for OP communication, min. adjustable for OP communication, max. 15 usable for S7 basic communication reserved for S7 basic communication adjustable for S7 basic communication adjustable for S7 basic communication adjustable for S7 basic communication, min. adjustable for S7 basic communication, min. adjustable for S7 basic communication, min. 37 message functions Number of login stations for message functions, max. 18: Depending on the configured connections for PG/OP and S7 basic communication Process diagnostic messages Yes simultaneously active Alarm-S blocks, max. Process diagnostic messages Yes simultaneously active Alarm-S blocks, max. 300 Test commissioning functions Status block Yes; Up to 2 simultaneously Signile step Yes Number of breakpoints 4 Status/control variable Ves Number of variables, max. of which status variables, max. of which status variables, max. of which status variables, max. of which control variables, max. 10 Diagnostic buffer Percent Present Present Present Number of variables, max. adjustable Present Number of variables, max. adjustable Present Number of variables, max. adjustable Present Number of entries, max. adjustable Present Number of entries readable in RUN, max. - adjustable Present Number of entries readable in RUN, max. - adjustable Present Number of entries readable in RUN, max. - adjustable Present Number of entries readable in RUN, max. - adjustable Present Number of entries readable in RUN, max. - adjustable Present Number of entries readable in RUN, max. - adjustable Present Number of entries readable in RUN, max. - adjustable Present Number of entries readable in RUN, max. - adjustable Present Number of entr
- reserved for PG communication 1 - adjustable for PG communication, min adjustable for PG communication, max. • usable for OP communication 15 - reserved for OP communication 15 - adjustable for PG communication 11 - adjustable for OP communication, max. 15 - adjustable for OP communication 12 - reserved for OP communication 12 - reserved for ST basic communication 10 - adjustable for ST basic communication 10 - adjustable for ST basic communication, min. 12 - reserved for PG communication, min. 12 - reserved for ST basic communication, min. 10 - adjustable for ST basic communication, min. 12 - reserved for PG communication for PG/OP and ST basic communication f
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usable for OP communication reserved for OP communication adjustable for OP communication, min. adjustable for OP communication, min. adjustable for SP basic communication, max. usable for ST basic communication reserved for ST basic communication adjustable for ST basic communication, min. adjustable for ST basic communication, min. adjustable for ST basic communication, min. adjustable for ST basic communication, max. 16: Depending on the configured connections for PG/OP and ST basic communication. Process diagnostic messages Yes simultaneously active Alarm S blocks, max. 16: Depending on the configured connections for PG/OP and ST basic communication. Process diagnostic messages Yes Sinultaneously active Alarm S blocks, max. 3000 Test commissioning functions Sistats block Yes; Up to 2 simultaneously Single step Yes Number of breakpoints 4 Status/control variable Variables Number of variables, max. of which status variables, max. of which status variables, max. of which status variables, max. 14 Forcing Forcing Forcing, variables, max. 10 Diagnostic buffer Present Number of variables, max. adjustable No No Diagnostic buffer Present Number of entries, max. adjustable No No No No No No No No No N
- reserved for OP communication, min. 1 - adjustable for OP communication, max. 15 - adjustable for SP communication, max. 15 - usable for S7 basic communication 12 - reserved for S7 basic communication 0 - adjustable for S7 basic communication 10 - adjustable for S7 basic communication, min. 0 - adjustable for S7 basic communication, max. 12 S7 message functions Number of login stations for message functions, max. 16; Depending on the configured connections for PG/OP and S7 basic communication or version of the configured connections for PG/OP and S7 basic communication or version of the configured connections for PG/OP and S7 basic communication or version of the configured connections for PG/OP and S7 basic communication or version of the configured connections for PG/OP and S7 basic communication or version of the configured connections for PG/OP and S7 basic communication or version
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■ usable for S7 basic communication — reserved for S7 basic communication — adjustable for S7 basic communication, min. — adjustable for S7 basic communication, max. 16
- reserved for S7 basic communication - adjustable for S7 basic communication, min. - adjustable for S7 basic communication, min. - adjustable for S7 basic communication, max. Number of login stations for message functions, max. Process diagnostic messages \$\frac{\text{Yes}}{\text{simultaneously active Alarm-S blocks, max.}} \text{ 300} \text{ Test commissioning functions} \text{ Status block}
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Ambient conditions Ambient temperature during operation • min. 0 °C • max. 60 °C
Ambient temperature during operation
 min. o °C max. 60 °C
• max. 60 °C
Configuration software
• STEP 7 Yes; V5.2 SP1 or higher with HW update
configuration / programming / header
Command set see instruction list
Nesting levels
• System functions (SFC) see instruction list
System function blocks (SFB) see instruction list
Programming language
— LAD Yes
— FBD Yes
— STL Yes
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— CFC	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.	290 g

last modified: 9/7/2023 🖸