SIEMENS

Data sheet

6ES7317-2AK14-0AB0

SIMATIC S7-300, CPU317-2 DP, CENTRAL PROCESSING UNIT WITH 1 MBYTE WORKING MEMORY, 1. INTERFACE MPI/DP 12MBIT/S, 2. INTERFACE DP-MASTER/SLAVE, MICRO MEMORY CARD NECESSARY



General information	
Hardware product version	01
Firmware version	V3.3
Engineering with	
Programming package	STEP 7 as of V5.5 + SP1 or STEP 7 V5.2 + SP1 or higher with HSP 202
Supply voltage	
Rated value (DC)	
• 24 V DC	Yes
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
Input current	
Current consumption (rated value)	870 mA

Owner to a constitution (in the least of the	400 4
Current consumption (in no-load operation), typ.	120 mA
Inrush current, typ.	4 A 1 A ² ·s
rt	I A ··s
Power loss	
Power loss, typ.	4.5 W
Memory	
Work memory	
• integrated	1 024 kbyte
• expandable	No
 Size of retentive memory for retentive data blocks 	256 kbyte
Load memory	
• Plug-in (MMC)	Yes
• Plug-in (MMC), max.	8 Mbyte
 Data management on MMC (after last programming), min. 	10 y
Backup	
• present	Yes; Guaranteed by MMC (maintenance-free)
without battery	Yes; Program and data
Willout Buttory	
CPU processing times	
for bit operations, typ.	0.025 μs
for word operations, typ.	0.03 µs
for fixed point arithmetic, typ.	0.04 µs
for floating point arithmetic, typ.	0.16 μs
CPU-blocks	
Number of blocks (total)	2 048; (DBs, FCs, FBs); the maximum number of loadable blocks can be reduced by the MMC used.
DB	
Number, max.	2 048; Number range: 1 to 16000
• Size, max.	64 kbyte
FB	
Number, max.	2 048; Number range: 0 to 7999
• Size, max.	64 kbyte
FC	
Number, max.	2 048; 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
ounters, timers and their retentivity	

Counters, timers and their retentivity	
S7 counter	
Number	512
Retentivity	
— adjustable	Yes
— lower limit	0
— upper limit	511
— 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	512
Retentivity	
— adjustable	Yes
— lower limit	0
— upper limit	511
— 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)

retentive data area in total	All, max. 256 KB
Flag	
Number, max.	4 096 byte
Retentivity available	Yes; From MB 0 to MB 4095
 Retentivity preset 	MB 0 to MB 15
 Number of clock memories 	8; 1 memory byte
Data blocks	
Number, max.	2 048; Number range: 1 to 16000
• Size, max.	64 kbyte
 Retentivity adjustable 	Yes; via non-retain property on DB
Retentivity preset	Yes
Local data	
• per priority class, max.	32 768 byte; Max. 2048 bytes per block
Address area	
I/O address area	
• Inputs	8 192 byte
Outputs	8 192 byte
of which distributed	
— Inputs	8 192 byte
— Outputs	8 192 byte
Process image	
• Inputs	8 192 byte
Outputs	8 192 byte
• Inputs, adjustable	8 192 byte
Outputs, adjustable	8 192 byte
• Inputs, default	256 byte
Outputs, default	256 byte
Subprocess images	
 Number of subprocess images, max. 	1
Digital channels	
• Inputs	65 536
— of which central	1 024
Outputs	65 536
— of which central	1 024
Analog channels	
• Inputs	4 096
— of which central	256
Outputs	4 096
— of which central	256
Hardware configuration	
Number of expansion units, max.	3

Number of DP masters	
• integrated	2
• 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	
	Yes
Hardware clock (real-time) retentive and synchronizable	Yes
retentive and synchronizable Regular time	6 wk; At 40 °C ambient temperature
Backup time Dovietion per day, may	10 s; Typ.: 2 s
Deviation per day, max. Deviation of the clock following POWED ON.	
Behavior of the clock following POWER-ON	Clock continues running after POWER OFF
 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	
Number	4
Number/Number range	0 to 3
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	Yes
● on Ethernet via NTP	No
Digital inputs	0
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 RS 485 interfaces	2; Combined MPI / PROFIBUS DP and PROFIBUS DP
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; A DP slave at both interfaces simultaneously is not possible
 Point-to-point connection 	No
MPI	
• Transmission rate, max.	12 Mbit/s
Services	
— PG/OP communication	Yes
— Routing	Yes
 Global data communication 	Yes
 S7 basic communication 	Yes
— S7 communication	Yes; Only server, configured on one side
 — S7 communication, as client 	No; but via CP and loadable FB
— 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; Only server, configured on one side
 S7 communication, as client 	No
— S7 communication, as server	Yes
— Equidistance	Yes
— Isochronous mode	No
— SYNC/FREEZE	Yes
Activation/deactivation of DP slaves	Yes
/ total attorn a captivation of Dr. Slaves	

Number of DP slaves that can be	8
simultaneously activated/deactivated, max. — Direct data exchange (slave-to-slave	Yes; As subscriber
communication)	
— DPV1	Yes
Address area	
— Inputs, max.	8 kbyte
— Outputs, max.	8 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
 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; Connection configured on one side only
 Direct data exchange (slave-to-slave communication) 	Yes
— DPV1	No
Transfer memory	
— Inputs	244 byte
— Outputs	244 byte
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; A DP slave at both interfaces simultaneously is not possible
 Point-to-point connection 	No
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; Only server, configured on one side
 S7 communication, as client 	No; but via CP and loadable FB
 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 	8
simultaneously activated/deactivated, max.	
 — Direct data exchange (slave-to-slave communication) 	Yes; As subscriber
— DPV1	Yes
Address area	
— Inputs, max.	8 192 byte
— Outputs, max.	8 192 byte
User data per DP slave	
— Inputs, max.	244 byte
— Outputs, max.	244 byte
DP slave	
• GSD file	The latest GSD file is available on the Internet (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; 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; but via CP and loadable FB
 S7 communication, as server 	Yes
 Direct data exchange (slave-to-slave communication) 	Yes
— DPV1	No

Inputs Outputs -	Transfer memory	
Communication functions PG/OP communication Pata record routing Ves Global data communication * supported * Number of GD loops, max. * Number of GD packets, max. * Number of GD packets, transmitter, max. * Number of GD packets, transmitter, max. * Number of GD packets, receiver, max. * Size of GD packets, max. * Size of GD packet (of which consistent), max. * Size of GD packet (of which consistent), max. * Size of GD packet (of which consistent), max. * Size of GD packet (of which consistent), max. * Size of GD packet (of which consistent), max. * Size of GD packet (of which consistent), max. * Size of GD packet (of which consistent), max. * Size of GD packet (of which consistent), max. * Size of GD packet (of which consistent), max. * User data per job, max. * User data per job, max. * Size of GD packet (of which consistent), max. * Size of GD packet (of which consistent), max. * Size of GD packet (of which consistent), max. * Size of GD packet (of which consistent), max. * Size of GD packets, max. * Size of GD packet (of which consistent), max. * Size of GD packet (of which consistent), max. * Size of GD packet (of which consistent), max. * Size of GD packet (of which consistent), max. * Size of GD packet (of which consistent), max. * Size of GD packet (of which consistent), max. * Size of GD packet (of which consistent), max. * Size of GD packet (of which consistent), max. * Size of GD packet (of which consistent), max. * Size of GD packet (of which consistent), max. * Size of GD packet (of which consistent), max. * Size of GD packet (of which consistent), max. * Size of GD packets, max.	— Inputs	244 byte
PG/OP communication Pata record routing Global data communication * supported Number of GD loops, max. Number of GD packets, max. Number of GD packets, transmitter, max. Number of GD packets, receiver, max. Size of GD packets, max. Yes Size of GD packets, max. Size o	— Outputs	244 byte
PG/OP communication Pata record routing Global data communication Supported Number of GD loops, max. Number of GD packets, max. Number of GD packets, transmitter, max. Number of GD packets, transmitter, max. Number of GD packets, max. Size of GD packets, max. Paramax. Size of GD packets, max. Size of GD packets, max.	Communication functions	
Data record routing Global data communication • supported • Number of GD loops, max. • Number of GD packets, max. • Number of GD packets, transmitter, max. • Number of GD packets, transmitter, max. • Number of GD packets, receiver, max. • Size of GD packets, receiver, max. • Size of GD packet (of which consistent), max. S7 basic communication • supported • User data per job, max. • User data per job (of which consistent), max. 76 byte • As server • as client • User data per job, max. • Socompatible communication • supported • As server • as client • User data per job, max. S5 compatible communication • supported • Syevia CP and loadable FB 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 Number of connections • overall • usable for PG communication — reserved for PG communication — adjustable for PG communication — adjustable for PG communication — reserved for PG communication — reserved for OP communication — adjustable for PG communication — adjustable for PG communication — adjustable for PG communication — reserved for PS basic communication — reserved for S7 basic communication		Yes
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X_PUT or X_GET as server) S7 communication • supported • as server • as client • 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) • supported • supported Yes; Via CP and loadable FB See online help of STEP 7 (shared parameters of the SFBs/FBs and of the SFCs/FCs of S7 Communication) • supported Yes; via CP and loadable FC Number of connections • overall • usable for PG communication — reserved for PG communication — adjustable for PG communication, min. — adjustable for PG communication — reserved for OP communication — adjustable for OP communication, min. — adjustable for OP communication, min. — adjustable for OP communication, max. • usable for S7 basic communication — reserved for S7 basic communication	• •	76 byte
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— reserved for S7 basic communication 0	— adjustable for OP communication, max.	31
Tools for or basic communication	 usable for S7 basic communication 	30
— adjustable for S7 basic communication, 0	— reserved for S7 basic communication	0
min.		0

 adjustable for S7 basic communication, 	30
max. ● usable for routing	X1 as a MPI, max. 10; X1 as DP Master max. 24; X1 as DP Slave (active) max. 14; X2 as DP Master max. 24; X2 as DP Slave (active) max. 14
S7 message functions	
Number of login stations for message functions, max.	32; 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
• Forcing, variables	Inputs, outputs
Number of variables, max.	10
Diagnostic buffer	
• present	Yes
Number of entries, max.	500
— adjustable	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 during operation	
• min.	0 °C
• max.	60 °C
Configuration	
Configuration software	

STEP 7 Lite Programming Command set See instruction list Nesting levels System functions (SFC) System function blocks (SFB) See instruction list Programming language LAD FBD Yes STL SCL SCL Yes CFC GRAPH HiGraph® Yes Know-how protection User program protection/password protection Block encryption STE Weights System function list See instruction list See instruction list See instruction list See instruction list	• STEP 7	Yes; STEP 7 V5.5 + SP1 or higher or STEP 7 V5.3 + SP2 or higher with HSP 203
Command set Nesting levels System functions (SFC) System function blocks (SFB) Programming language LAD FBD STL SCL SCL GRAPH HiGraph® Know-how protection Block encryption Dimensions Width Height Depth System function (SFC) see instruction list 8 8 8 8 8 8 8 8 8 8 8 8 8	• STEP 7 Lite	No
Nesting levels System functions (SFC) See instruction list System function blocks (SFB) Programming language LAD Yes FBD Yes STL Yes SCL Yes CFC GRAPH HiGraph® Know-how protection User program protection/password protection Block encryption Pimensions Width 40 mm Height Depth 130 mm Weights	Programming	
System functions (SFC) System function blocks (SFB) See instruction list Programming language — LAD — FBD — FBD — STL — SCL — CFC — GRAPH — HiGraph® Know-how protection • User program protection/password protection • Block encryption Pimensions Width Height Depth See instruction list	Command set	see instruction list
System function blocks (SFB) Programming language — LAD — FBD — FBD — STL — SCL — SCL — CFC — GRAPH — HiGraph® Know-how protection • User program protection/password protection • Block encryption Pimensions Width Height Depth Syes see instruction list Yes Yes Yes Yes Yes Yes Yes Y	Nesting levels	8
Programming language — LAD — FBD — FBD — STL — SCL — SCL — CFC — GRAPH — HiGraph® Yes Know-how protection • User program protection/password protection • Block encryption Pimensions Width Height Depth Pyes Yes 40 mm 130 mm Yes Weights	 System functions (SFC) 	see instruction list
LAD Yes FBD Yes STL Yes SCL Yes CFC Yes GRAPH Yes HiGraph® Yes Know-how protection User program protection/password protection Block encryption Yes; With S7 block Privacy Dimensions Width 40 mm Height 125 mm Depth 130 mm Weights	 System function blocks (SFB) 	see instruction list
- FBD Yes - STL Yes - SCL Yes - CFC Yes - GRAPH Yes - HiGraph® Yes Know-how protection • User program protection/password protection • Block encryption Yes; With S7 block Privacy Dimensions Width 40 mm Height 125 mm Depth 130 mm Weights	Programming language	
— STL Yes — SCL Yes — CFC Yes — HiGraph® Yes Know-how protection Yes • User program protection/password protection Yes • Block encryption Yes; With S7 block Privacy Dimensions Width Height 125 mm Depth 130 mm	— LAD	Yes
- SCL Yes - CFC Yes - GRAPH Yes - HiGraph® Yes Know-how protection • User program protection/password protection • Block encryption Yes; With S7 block Privacy Dimensions Width 40 mm Height 125 mm Depth 130 mm Weights	— FBD	Yes
- CFC - GRAPH - HiGraph® Yes Know-how protection • User program protection/password protection • Block encryption Pimensions Width 40 mm Height 125 mm Depth 130 mm	— STL	Yes
— GRAPH — HiGraph® Yes Know-how protection • User program protection/password protection • Block encryption Pimensions Width 40 mm Height Depth 130 mm Weights	— SCL	Yes
— HiGraph® Know-how protection ■ User program protection/password protection ■ Block encryption Pimensions Width Height Depth 130 mm	— CFC	Yes
Know-how protection User program protection/password protection Block encryption Yes; With S7 block Privacy Dimensions Width 40 mm Height 125 mm Depth 130 mm	— GRAPH	Yes
 User program protection/password protection Block encryption Yes; With S7 block Privacy Dimensions Width Height Depth 125 mm Depth Weights 	— HiGraph®	Yes
Block encryption Yes; With S7 block Privacy Dimensions Width	Know-how protection	
Dimensions Width 40 mm Height 125 mm Depth 130 mm Weights	User program protection/password protection	Yes
Width 40 mm Height 125 mm Depth 130 mm Weights	Block encryption	Yes; With S7 block Privacy
Height 125 mm Depth 130 mm Weights	Dimensions	
Depth 130 mm Weights	Width	40 mm
Weights	Height	125 mm
	Depth	130 mm
Weight approx 360 c	Weights	
Weight, approx.	Weight, approx.	360 g

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