SIEMENS

Data sheet 6ES7317-6TK13-0AB0

Spare part SIMATIC S7-300, CPU 317T-2 DP, Central processing unit for PLC and Technology tasks, 1024 KB work memory, 1st interface MPI/DP 12 Mbit/s, 2nd interface DP (drive), Integr. I/O for technology Front connector (1x 40-pole) and Micro Memory Card min. 8 MB required

General information	
HW functional status	01
Firmware version	CPU: V2.7, integrated technology: V4.1.5
Engineering with	
● Programming package	STEP 7 V5.4 + SP5 (and higher) and Optional package S7-Technology V4.2
Supply voltage	
Rated value (DC)	24 V
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.
Load voltage L+	
● Rated value (DC)	24 V
● Reverse polarity protection	Yes
Digital outputs	
— Rated value (DC)	24 V; (2L+)
— Reverse polarity protection	No; (2L+)
Input current	
Current consumption (in no-load operation), typ.	200 mA
Inrush current, typ.	2.5 A
I^2t	1 $A^2 \cdot s$
Power loss	
Power loss, typ.	6 W
Memory	
Work memory	
● integrated	1 024 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
CPU processing times	
for bit operations, typ.	0.05 µs
for bit operations, max.	0.05 µs
for word operations, typ.	0.2 µs
for fixed point arithmetic, typ.	0.2 µs
for floating point arithmetic, typ.	1 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.	2 047; Number band: 1 to 2047
● Size, max.	64 kbyte
FB	
● Number, max.	2 048; Number range: 0 to 2047
● Size, max.	64 kbyte
FC	
● Number, max.	2 048; Number range: 0 to 2047
● Size, max.	64 kbyte
OB	
● Number, max.	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 technology synchronous alarm OBs	1; OB 65
● 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	512; Number range: 0 to 511
Retentivity	
— adjustable	Yes
— preset	8
Counting range	
— adjustable	Yes
— lower limit	0
— upper limit	999
IEC counter	
● present	Yes
● Type	SFB
● Number	Unlimited (limited only by RAM capacity)
S7 times	
● Number	512; Number range: 0 to 511
Retentivity	
— adjustable	Yes
— 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 (incl. timers, counters, flags), max.	256 kbyte
Flag	
● Size, max.	4 096 byte
● Retentivity available	Yes; From MB 0 to MB 4 095
● 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
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, adjustable	2 048 byte
● Outputs, adjustable	2 048 byte
● Inputs, default	256 byte
● Outputs, default	256 byte
Default addresses of the integrated channels	
— Digital inputs	66
— Digital outputs	66
Subprocess images	
● Number of subprocess images, max.	1
Digital channels	
● Inputs	65 536
— of which central	512
● Outputs	65 536
— of which central	512
Analog channels	
● Inputs	4 096
— of which central	64
● Outputs	4 096
— of which central	64
Hardware configuration	
Number of expansion units, max.	0
Number of DP masters	
● integrated	2; 1 DP and 1 DP (drive)
● via CP	2; for DP
Number of operable FMs and CPs (recommended)	
● FM	8
● CP, PtP	8
● CP, LAN	10
Rack	
● Racks, max.	1
● 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	4
● Number/Number range	0 to 3
● 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	
● supported	Yes
● to MPI, master	Yes

● to MPI, slave	Yes
● to DP, master	Yes
● to DP, slave	Yes
● in AS, master	Yes
● in AS, slave	Yes
Digital inputs	
Number of digital inputs	4
● of which inputs usable for technological functions	4
Input characteristic curve in accordance with IEC 61131, type 1	Yes
Number of simultaneously controllable inputs	
horizontal installation	
— up to 40 °C, max.	4
— up to 60 °C, max.	4
vertical installation	
— up to 40 °C, max.	4
Input voltage	
● Rated value (DC)	24 V
● for signal "0"	-3 to +5V
● for signal "1"	+15 to +30 V
Input current	
● for signal "1", typ.	7 mA
Input delay (for rated value of input voltage)	
for technological functions	
— at "0" to "1", max.	10 µs; Typical
— at "1" to "0", max.	10 µs; Typical
Cable length	
● shielded, max.	1 000 m
Digital outputs	
Number of digital outputs	8
● of which high-speed outputs	8
Functions	for technology functions, e.g. high-speed cam switch signals
Short-circuit protection	Yes
● Response threshold, typ.	1 A
Limitation of inductive shutdown voltage to	48 V
Controlling a digital input	No
Switching capacity of the outputs	
● on lamp load, max.	5 W
Load resistance range	
● lower limit	48 Ω
● upper limit	4 kΩ
Output voltage	
● for signal "0", max.	3 V; (2L+)
● for signal "1", min.	Rated voltage -2.5 V
Output current	
● for signal "1" rated value	0.5 A
● for signal "1" permissible range for 0 to 60 °C, min.	5 mA
● for signal "1" permissible range for 0 to 60 °C, max.	0.6 A
● for signal "0" residual current, max.	0.3 mA
Parallel switching of two outputs	
● for uprating	No
● for redundant control of a load	No
Switching frequency	
● with resistive load, max.	100 Hz
● with inductive load, max.	0.2 Hz; According to IEC 60947-5-1, DC-13
● on lamp load, max.	100 Hz
Total current of the outputs (per group)	
horizontal installation	
— up to 40 °C, max.	4 A
— up to 60 °C, max.	3 A
all other mounting positions	
— up to 40 °C, max.	3 A

Cable length	
● shielded, max.	1 000 m
Analog inputs	
Number of analog inputs	0
Analog outputs	
Number of analog outputs	0
Encoder	
Connectable encoders	
● 2-wire sensor	No
Interfaces	
Number of industrial Ethernet interfaces	0
Number of PROFINET interfaces	0
Number of RS 485 interfaces	2
Number of RS 422 interfaces	0
1. Interface	
Interface type	Integrated RS 485 interface
Isolated	Yes
Interface types	
● RS 485	Yes
● Output current of the interface, max.	200 mA
Protocols	
● MPI	Yes
● PROFIBUS DP master	Yes
● PROFIBUS DP slave	Yes
● Point-to-point connection	No
MPI	
● Number of connections	32
● 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; but via CP and loadable FB
— S7 communication, as server	Yes; Connection configured on one side only
PROFIBUS 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; but via CP and loadable FB
— S7 communication, as server	Yes; Connection configured on one side only
— Equidistance	Yes
— Isochronous mode	Yes; OB 61
— SYNC/FREEZE	Yes
— Activation/deactivation of DP slaves	Yes
— 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
PROFIBUS DP slave	
● Transmission rate, max.	12 Mbit/s

● automatic baud rate search	No
● 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
— S7 communication, as client	No; but via CP and loadable FB
— 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
Isolated	Yes
Interface types	
● RS 485	Yes
● Output current of the interface, max.	200 mA
Protocols	
● MPI	No
● PROFIBUS DP master	Yes; DP(DRIVE)-Master
● PROFIBUS DP slave	No
● Point-to-point connection	No
PROFIBUS DP master	
● Transmission rate, max.	12 Mbit/s
● Number of DP slaves, max.	64
Services	
— PG/OP communication	No
— Routing	No
— Global data communication	No
— S7 basic communication	No
— S7 communication	No
— Equidistance	Yes
— Isochronous mode	Yes
— SYNC/FREEZE	No
— Activation/deactivation of DP slaves	Yes
— DPV1	No
Address area	
— Inputs, max.	1 024 byte
— Outputs, max.	1 024 byte
User data per DP slave	
— Inputs, max.	244 byte
— Outputs, max.	244 byte
PROFIBUS DP slave	
● GSD file	http://support.automation.siemens.com in Product Support area
● Transmission rate, max.	12 Mbit/s
Protocols	
PROFIsafe	No
communication functions / header	
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), 76 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.	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	32
● usable for PG communication	31
— reserved for PG communication	1
— adjustable for PG communication, min.	1
— adjustable for PG communication, max.	31
● usable for OP communication	31
— reserved for OP communication	1
— adjustable for OP communication, min.	1
— adjustable for OP communication, max.	31
● usable for S7 basic communication	30
— reserved for S7 basic communication	0
— adjustable for S7 basic communication, min.	0
— adjustable for S7 basic communication, max.	30
● usable for routing	8; additional
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.	60
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.	100
— adjustable	No
Interrupts/diagnostics/status information	
Alarms	No
Diagnostics function	No
Diagnostics indication LED	
● Status indicator digital input (green)	Yes
● Status indicator digital output (green)	Yes
Potential separation	
Potential separation digital inputs	

● between the channels and backplane bus	Yes
Potential separation digital outputs	
● between the channels and backplane bus	Yes
Isolation	
Isolation tested with	500 V DC
Ambient conditions	
Ambient temperature during operation	
● min.	0 °C
● max.	60 °C
configuration / header	
Configuration software	
● STEP 7	Yes
configuration / programming / header	
● 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
programming / cycle time monitoring / header	
● lower limit	1 ms
● upper limit	6 000 ms
● adjustable	Yes
● cycle monitoring time / preset	150 ms
Dimensions	
Width	160 mm
Height	125 mm
Depth	130 mm
Weights	
Weight, approx.	750 g

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