SIEMENS

Product data sheet 6ES7315-6TH13-0AB0



SIMATIC S7-300, CPU 315T-2 DP,
CENTRAL PROCESSING UNIT FOR PLC AND TECHNOLOGY 256 KBYTE WORKING MEMORY,
1. INTERFACE MPI/DP 12MBIT/S 2. INTERFACE DP(DRIVE),
INTEGRATED I/O FOR TECHNOLOGY FRONT CONNECTOR (1 X 40PIN) AND MICRO MEMORY CARD MIN. 8 MB NECESSARY

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General information	
Hardware product version	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	
24 V DC	Yes
permissible range, lower limit (DC)	20.4 V
permissible range, upper limit (DC)	28.8 V
External protection for supply cables (recommendation)	2 A min.
Load voltage L+	
Rated value (DC)	24 V
Reverse polarity protection	Yes
Digital outputs	
Load voltage L+	
Rated value (DC)	24 V ; (2L+)
Reverse polarity protection	No ; (2L+)
Input current	

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Current consumption (in no-load operation), typ.	200 mA
Inrush current, typ.	2.5 A
I^2t	1 $A^2 \cdot s$
Power losses	
Power loss, typ.	6 W
Memory	
Work memory	
integrated	256 kbyte
expandable	No
Load memory	
pluggable (MMC)	Yes
pluggable (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.	0.1 µs
for bit operations, max.	0.1 µs
for word operations, typ.	0.2 µs
for fixed point arithmetic, typ.	2 µs
for floating point arithmetic, typ.	3 µs
CPU-blocks	
Number of blocks (total)	1024 ; (DBs, FCs, FBs); the maximum number of loadable blocks can be reduced by the MMC used.
DB	
Number, max.	1023 ; Number band: 1 to 1023
Size, max.	64 kbyte
FB	
Number, max.	1024 ; Number range: 0 to 2047
Size, max.	64 kbyte
FC	
Number, max.	1024 ; Number range: 0 to 2047
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

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Number of delay alarm OBs	1 ; OB 20
Number of time interrupt OBs	1 ; OB 35
Number of process alarm OBs	1 ; OB 40
Number of DPV1 alarm OBs	3 ; OB 55, 56, 57
Number 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	8
additional within an error OB	4
Counters, timers and their retentivity	
S7 counter	
Number	256 ; Number range: 0 to 255
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	256 ; Number range: 0 to 255
of which retentive without battery	
adjustable	Yes ; From Z 0 to Z 7
Retentivity	
adjustable	Yes
preset	No retentivity
Time range	
lower limit	10 ms
upper limit	9990 s
IEC timer	
present	Yes

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Type	SFB
Number	Unlimited (limited only by RAM capacity)
Data areas and their retentivity	
retentive data area, total	All DBs, max. 128 KB
Flag	
Number, max.	2048 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.	1023 ; From DB 1 to DB 1023
Size, max.	64 kbyte
Retentivity adjustable	Yes ; via non-retain property on DB
Retentivity preset	Yes
Local data	
per priority class, max.	1024 byte
Address area	
I/O address area	
Inputs	2048 byte
Outputs	2048 byte
of which, distributed	
Inputs	2048 byte
Outputs	2048 byte
Process image	
Inputs, adjustable	2048 byte
Outputs, adjustable	2048 byte
Inputs, default	128 byte
Outputs, default	128 byte
Default addresses of the integrated channels	
Digital inputs	66
Digital outputs	66
Subprocess images	
Number of subprocess images, max.	1
Digital channels	
Inputs	16384
Outputs	16384
Inputs, of which central	512
Outputs, of which central	512

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Analog channels	
Inputs	1024
Outputs	1024
Inputs, of which central	64
Outputs, of which central	64
Hardware configuration	
Racks, max.	1
Modules per rack, max.	8
Expansion devices, 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, point-to-point	8
CP, LAN	10
Time of day	
Clock	
Hardware clock (real-time clock)	Yes
battery-backed and synchronizable	Yes
Deviation per day, max.	10 s
Backup time	6 wk ; At 40 °C ambient temperature
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
to DP, slave	Yes
in AS, master	Yes
in AS, slave	Yes
Digital inputs	
Number/binary inputs	4

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of which, inputs usable for technological functions	4
Input characteristic curve acc. to 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 +5 V
for signal "1"	15 to 30 V
Input current	
for signal "1", typ.	7 mA
Input delay (for rated value of input voltage)	
for counter/technological functions	
at "0" to "1", max.	10 µs ; typ.
at "1" to "0", max.	10 µs ; typ.
Cable length	
Cable length, shielded, max.	1000 m
Digital outputs	
Number/binary outputs	8
of which high-speed outputs	8
Functions	For technology functions, e.g. high-speed cam switch signals
Functionality/short-circuit strength	Yes
Response threshold, typ.	1.0 A
Limitation of inductive shutdown voltage to	48 V
Lamp load, max.	5 W
Controlling a digital input	No
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

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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 2 outputs	
for increased power	No
for redundant control of a load	No
Switching frequency	
with resistive load, max.	100 Hz
with inductive load, max.	0.2 Hz ; to IEC 947-5-1, DC13
on lamp load, max.	100 Hz
Aggregate current of 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	
Cable length, shielded, max.	1000 m
Encoder	
Connectable encoders	
2-wire sensor	No
1st interface	
Type of interface	Integrated RS 485 interface
Physics	RS 485
Isolated	Yes
Power supply to interface (15 to 30 V DC), max.	200 mA
Functionality	
MPI	Yes
DP master	Yes
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

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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
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 mode support	Yes
Isochronous mode	Yes ; OB 61
SYNC/FREEZE	Yes
Activation/deactivation of DP slaves	Yes
DPV1	Yes
Address area	
Inputs, max.	2048 byte
Outputs, max.	2048 byte
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	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

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DPV1	No
Transfer memory	
Inputs	244 byte
Outputs	244 byte
2nd interface	
Type of interface	Integrated RS 485 interface
Physics	RS 485
Isolated	Yes
Power supply to interface (15 to 30 V DC), max.	200 mA
Functionality	
MPI	No
DP master	Yes ; DP(DRIVE)-Master
DP slave	No
Local Operating Network	No
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 mode support	Yes
Isochronous mode	Yes
SYNC/FREEZE	No
Activation/deactivation of DP slaves	Yes
DPV1	No
Address area	
Inputs, max.	1024 byte
Outputs, max.	1024 byte
User data per DP slave	
Inputs, max.	244 byte
Outputs, max.	244 byte
DP slave	
GSD file	http://www.ad.siemens.de/support in Product Support area
Transmission rate, max.	12 Mbit/s
Communication functions	

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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	16
usable for PG communication	15
reserved for PG communication	1
Adjustable for PG communication, min.	1
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, min.	0
adjustable for S7 basic communication, max.	12
usable for routing	8 ; additional
S7 message functions	
Number of login stations for message functions, max.	16 ; Depending on the configured connections for PG/OP and S7 basic communication

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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	Yes
Force, variables	Inputs, outputs
Number of variables, max.	10
Diagnostic buffer	
present	Yes
Number of entries, max.	100
adjustable	No
Interrupts/diagnostics/status information	
Alarms	
Alarms	No
Diagnostic messages	
Diagnostic functions	No
Diagnostics indication LED	
Status indicator digital output (green)	Yes
Status indicator digital input (green)	Yes
Galvanic isolation	
Galvanic isolation digital inputs	
between the channels and the backplane bus	Yes
Galvanic isolation digital outputs	
between the channels and the backplane bus	Yes
Permissible potential difference	
between different circuits	75 VDC / 60 VAC
Isolation	
Isolation checked with	500 V DC
Ambient conditions	

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Operating temperature	
Min.	0 °C
max.	60 °C
Configuration	
Configuration software	
STEP 7	Yes ; V5.2 SP1 or higher and S7 Technology option package
programming	
Command set	see instruction list
Nesting levels	8
Programming language	
LAD	Yes
FBD	Yes
STL	Yes
SCL	Yes
CFC	Yes
GRAPH	Yes
HiGraph®	Yes
Software libraries	
System functions (SFC)	see instruction list
System function blocks (SFB)	see instruction list
Know-how protection	
User program protection/password protection	Yes
Cycle time monitoring	
lower limit	1 ms
upper limit	6000 ms
adjustable	Yes
preset	150 ms
Dimensions	
Width	160 mm
Height	125 mm
Depth	130 mm
Weight	
Weight, approx.	750 g
Status	Feb 25, 2013

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