

Siemens 6ES7313-6CE01-0AB0 Manual

Brand	Siemens
Product Series	Siemens
Product Type	SFB

Description

6ES7313-6CE01-0AB0

SIMATIC S7-300, CPU 313C-2DP COMPACT CPU WITH MPI, 16 DI/16 DO, 3 FAST COUNTERS (30 KHZ), INTEGRATED DP INTERFACE, INTEGRATED 24V DC POWER SUPPLY, 32 KBYTE WORKING MEMORY, FRONT CONNECTOR (1 X 40PIN) AND MICRO MEMORY CARD REQUIRED

General information

HW functional status 01

Firmware version V2.0.0

Engineering with

- Programming package STEP 7 V5.2 SP1 or higher (with STEP 7 V5.1 SP3 or higher, please use predecessor CPU)

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

Load voltage L+

- Rated value (DC) 24 V
- permissible range, lower limit (DC) 20.4 V
- permissible range, upper limit (DC) 28.8 V

Input current

Current consumption (rated value) 900 mA

Current consumption (in no-load operation), typ. 100 mA

Inrush current, typ. 11 A

Power loss

Power loss, typ. 10 W

Memory

Work memory

- integrated 32 kbyte; For program and data
- expandable No

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)

www.AutoDCSTech.com

without battery Yes; Program and data

CPU processing times

for bit operations, typ. 0.1 μ s

for bit operations, max. 0.2 μ s

for word operations, typ. 0.2 μ s

for fixed point arithmetic, typ. 2 μ s

for floating point arithmetic, typ. 3 μ s

CPU-blocks

Number of blocks (total) 1 024

DB

- Number, max. 511; Number range: 1 to 511
- Size, max. 16 kbyte

FB

- Number, max. 512; Number range: 0 to 2047
- Size, max. 16 kbyte

FC

- Number, max. 512; Number range: 0 to 2047
- Size, max. 16 kbyte

OB

- Number, max. see instruction list
- Size, max. 16 kbyte
- Number of free cycle OBs 1; OB 1
- Number of time alarm OBs 1; OB 10
- Number of delay alarm OBs 1; OB 20
- Number of cyclic interrupt OBs 1; OB 35
- Number of process alarm OBs 1; OB 40
- Number of startup OBs 1; OB 100
- Number of asynchronous error OBs 1; OB 80
- 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

Retentivity

— adjustable Yes

— lower limit 0

— upper limit 256

Counting range

— lower limit 0

— upper limit 999

IEC counter

- present Yes
- Type SFB

S7 times

- Number 256

Retentivity

— adjustable Yes

www.AutoDCSTech.com

- lower limit 0
- upper limit 256
- preset No retentivity

Time range

- lower limit 10 ms
- upper limit 9 990 s

IEC timer

- present Yes
- Type SFB

Data areas and their retentivity

retentive data area in total all

Flag

- Number, max. 256 byte
- Retentivity preset MB 0 to MB 15
- Number of clock memories 8

Data blocks

- Retentivity adjustable No
- Retentivity preset Yes

Address area

I/O address area

- Inputs 1 kbyte
- Outputs 1 kbyte

Process image

- Inputs 128 byte
- Outputs 128 byte

Default addresses of the integrated channels

- Digital inputs 124.0 to 125.7
- Digital outputs 124.0 to 125.7

Digital channels

- Inputs 8 192
- of which central 992
- Outputs 8 192
- of which central 992

Analog channels

- Inputs 248
- of which central 248
- Outputs 124
- of which central 248

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 6

Rack

- Racks, max. 4
- Modules per rack, max. 8; In rack 3 max. 7

www.AutoDCSTech.com

Time of day

Clock

- Hardware clock (real-time) Yes
- retentive and synchronizable Yes
- Backup time 6 wk
- Deviation per day, max. 10 s

Operating hours counter

- Number 1
- Number/Number range 0
- Range of values 0 to 2³¹ hours (when using SFC 101)
- Granularity 1 h
- retentive Yes

Clock synchronization

- supported Yes
- to MPI, master Yes
- to MPI, slave Yes
- in AS, master Yes

Digital inputs

Number of digital inputs 16

integrated channels (DI) 16

Input voltage

- Rated value (DC) 24 V
- for signal "0" -3 to +5V
- for signal "1" +15 to +30V

www.AutoDCSTech.com

Input current

- for signal "1", typ. 8 mA

Input delay (for rated value of input voltage)

for standard inputs

— parameterizable Yes; 0.1 / 0.3 / 3 / 15 ms

for technological functions

— at "0" to "1", max. 8 µs

Cable length

- shielded, max. 1 000 m; 100 m for technological functions
- unshielded, max. 600 m

Digital outputs

Number of digital outputs 16

integrated channels (DO) 16

Short-circuit protection Yes; Clocked electronically

Limitation of inductive shutdown voltage to L+ (-48 V)

Output voltage

- for signal "1", min. L+ (-0.8 V)

Output current

- for signal "1" permissible range, max. 500 mA
- for signal "1" permissible range for 0 to 60 °C, max.

500 mA

- for signal "1" minimum load current 5 mA
- for signal "0" residual current, max. 0.5 mA

Switching frequency

- with resistive load, max. 100 Hz

- with inductive load, max. 0.5 Hz

Total current of the outputs (per group)

all mounting positions

— up to 40 °C, max. 8 A

— up to 60 °C, max. 4 A

Cable length

- shielded, max. 1 000 m

- unshielded, max. 600 m

Encoder

Connectable encoders

- 2-wire sensor Yes

— permissible quiescent current (2-wire sensor), max.

1.5 mA

Interfaces

MPI

- Cable length, max. 50 m; without repeater

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

Protocols

- MPI Yes
- PROFIBUS DP master No
- PROFIBUS DP slave No
- Point-to-point connection No

MPI

- Number of connections 8
- 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

Number of connection resources 8

Protocols

- MPI No
- PROFIBUS DP master Yes
- PROFIBUS DP slave Yes
- Point-to-point connection No

PROFIBUS DP master

www.AutoDCSTech.com

- Number of connections, max. 8; For PG/OP communication
- Transmission rate, max. 12 Mbit/s
- Number of DP slaves, max. 32

Services

— PG/OP communication Yes

— Routing Yes

— Global data communication No

— S7 basic communication Yes

— S7 communication Yes

— S7 communication, as client No

— S7 communication, as server Yes

— Equidistance Yes

— SYNC/FREEZE Yes

— Activation/deactivation of DP slaves Yes

— Direct data exchange (slave-to-slave communication)

Yes

— DPV1 Yes

Address area

— Inputs, max. 1 kbyte

— Outputs, max. 1 kbyte

User data per DP slave

— Inputs, max. 244 byte

— Outputs, max. 244 byte

PROFIBUS DP slave

- Number of connections 8

- Transmission rate, max. 12 kbit/s

- automatic baud rate search Yes

- Address area, max. 32

- User data per address area, max. 32 byte

Services

— PG/OP communication Yes

— Routing Yes

— Global data communication No

— S7 basic communication Yes

— 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. 4

www.AutoDCSTech.com

- Number of GD packets, max. 4
- Number of GD packets, transmitter, max. 4
- Number of GD packets, receiver, max. 4
- 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

S7 communication

- supported Yes
- as server Yes
- as client Yes; Via CP and loadable FB
- User data per job, max. 180 kbyte
- User data per job (of which consistent), max. 64 byte

S5 compatible communication

- supported Yes; via CP and loadable FC

Number of connections

- overall 8
- usable for PG communication 7
- reserved for PG communication 1
- adjustable for PG communication, min. 1
- adjustable for PG communication, max. 7
- usable for OP communication 7
- reserved for OP communication 1
- adjustable for OP communication, min. 1
- adjustable for OP communication, max. 7
- usable for S7 basic communication 4
- reserved for S7 basic communication 4
- adjustable for S7 basic communication, min.

0

— adjustable for S7 basic communication, max.

4

- usable for routing 4

S7 message functions

Number of login stations for message functions, max. 8

Process diagnostic messages Yes

simultaneously active Alarm-S blocks, max. 20

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

www.AutoDCSTech.com

Forcing

- Forcing Yes
- Forcing, variables Inputs, outputs
- Number of variables, max. 10

Integrated Functions

Number of counters 3

Counting frequency (counter) max. 30 kHz

Frequency measurement Yes

Number of frequency meters 3

controlled positioning No

PID controller Yes

Number of pulse outputs 3

Limit frequency (pulse) 2.5 kHz

Potential separation

Potential separation digital inputs

- Potential separation digital inputs Yes
- between the channels, in groups of 16
- between the channels and backplane bus Yes

Potential separation digital outputs

- Potential separation digital outputs Yes
- between the channels, in groups of 8
- between the channels and backplane bus Yes

Configuration

Configuration software

- STEP 7 Yes; V5.1 SP2

www.AutoDCSTech.com

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

— GRAPH Yes

— HiGraph® Yes

Know-how protection

- User program protection/password protection Yes

Dimensions

Width 120 mm

Height 125 mm

Depth 130 mm

Weights

Weight, approx. 566 g