

Siemens 6ES7312-5BE03-0AB0 Manual

Brand	Siemens
Product Series	Siemens
Product Type	C; min. 2 A; miniature circuit

Description

6ES7312-5BE03-0AB0

*** SPARE PART*** SIMATIC S7-300, CPU 312C COMPACT CPU
WITH MPI, 10 DI/6 DO, 2 FAST COUNTERS (10 KHZ),
INTEGRATED 24V DC POWER SUPPLY, 32 KBYTE WORKING
MEMORY, FRONT CONNECTOR (1 X 40PIN) AND MICRO
MEMORY CARD REQUIRED

General information

Hardware product version 01

Firmware version V2.6

Engineering with

- Programming package STEP 7 V5.3 SP2 or higher with HW update

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

external protection for power supply lines
(recommendation)

Miniature circuit breaker, type C; min. 2 A; miniature circuit
breaker type B, min. 4 A

Load voltage L+

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

Digital inputs

Load voltage L+

- Rated value (DC) 24 V
- Reverse polarity protection Yes

Digital outputs

Load voltage L+

- Rated value (DC) 24 V
- Reverse polarity protection No

Input current

Current consumption (rated value) 500 mA

Current consumption (in no-load operation), typ. 60 mA

Inrush current, typ. 11 A

I²t 0.7 A²·s

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Digital outputs

- from load voltage L+, max. 50 mA

Power loss

Power loss, typ. 6 W

Memory

Work memory

- integrated 32 kbyte
- expandable No

Load memory

- Plug-in (MMC) Yes
- Plug-in (MMC), max. 4 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

CPU processing times

for bit operations, typ. 0.2 μ s

for bit operations, max. 0.4 μ s

for word operations, typ. 0.4 μ s

for fixed point arithmetic, typ. 5 μ s

for floating point arithmetic, typ. 6 μ s

CPU-blocks

Number of blocks (total) 1 024; (OBs, FCs, FBs) the maximum number of loadable blocks can be reduced by the MMC used.

DB

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

FB

- Number, max. 1 024; Number range: 0 to 2047
- Size, max. 16 kbyte

FC

- Number, max. 1 024; 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 4; OB 80, 82, 85, 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 128

of which retentive without battery

— can be set Yes

— lower limit 0

— upper limit 127

— preset 8

Retentivity

— adjustable Yes

— lower limit 0

— upper limit 127

— preset 8

Counting range

— lower limit 0

— upper limit 999

IEC counter

- present Yes

- Type SFB

- Number Unlimited (limited only by RAM capacity)

S7 times

- Number 128

f which retentive without battery

— adjustable Yes

— lower limit 0

— upper limit 127

Retentivity

— adjustable Yes

— lower limit 0

— upper limit 127

— 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 in total all

Flag

- Number, max. 128 byte

- Retentivity available Yes; MB 0 to MB 127

- Retentivity preset MB 0 to MB 15

- Number of clock memories 8; 1 memory byte

Data blocks

- Number, max. 511; from DB1 to DB511

- Size, max. 16 kbyte

- Retentivity adjustable Yes; via non-retain property on DB

- Retentivity preset Yes

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Local data

- per priority class, max. 256 byte

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 125.1
- Digital outputs 124.0 to 124.5

- Inputs 266
- of which central 266
- Outputs 262
- of which central 262

Analog channels

- Inputs 64
- of which central 64
- Outputs 64
- of which central 64

Hardware configuration

Number of expansion units, max. 0

Number of DP masters

- integrated none
- via CP 4

Number of operable FMs and CPs (recommended)

- FM 8
- CP, PtP 8
- CP, LAN 4

Rack

- Racks, max. 1
- Modules per rack, max. 8

Time of day**Clock**

- Software clock Yes
- retentive and synchronizable No
- Deviation per day, max. 15 s

Operating hours counter

- Number 1
- Number/Number range 0
- Range of values 0 to 2³¹ 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
- in AS, master Yes

Digital inputs

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Number of digital inputs 10

- of which inputs usable for technological functions 8

integrated channels (DI) 10

Input characteristic curve in accordance with IEC 61131, type 1

Yes

Number of simultaneously controllable inputs

horizontal installation

— up to 40 °C, max. 10

— up to 60 °C, max. 5

vertical installation

— up to 40 °C, max. 5

Input voltage

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

Input current

- for signal "1", typ. 9 mA

Input delay (for rated value of input voltage)

for standard inputs

— parameterizable Yes; 0.1 / 0.3 / 1 / 3 ms

— Rated value 3 ms

for counter/technological functions

— at "0" to "1", max. 48 µs

Cable length

- shielded, max. 1 000 m; 100 m for technological functions
- unshielded, max. 600 m; For technological functions: No

for technological functions

— shielded, max. 100 m

— unshielded, max. not allowed

Digital outputs

Number of digital outputs 6

- of which high-speed outputs 2

integrated channels (DO) 6

Short-circuit protection Yes; Clocked electronically

- Response threshold, typ. 1 A

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

Controlling a digital input Yes

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

Output current

- for signal "1" rated value 500 mA

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- for signal "1" permissible range, min. 5 mA
- for signal "1" permissible range, max. 0.6 A
- for signal "1" minimum load current 5 mA
- for signal "0" residual current, max. 0.5 mA

Parallel switching of two outputs

- for uprating No
- for redundant control of a load Yes

Switching frequency

- with resistive load, max. 100 Hz
- with inductive load, max. 0.5 Hz
- on lamp load, max. 100 Hz
- of the pulse outputs, with resistive load, max. 2.5 kHz

Total current of the outputs (per group)

horizontal installation

- up to 40 °C, max. 2 A
- up to 60 °C, max. 1.5 A

vertical installation

- up to 40 °C, max. 1.5 A

Cable length

- shielded, max. 1 000 m
- unshielded, max. 600 m

Analog inputs

integrated channels (AI) none

Analog outputs

integrated channels (AO) none

Encoder

Connectable encoders

- 2-wire sensor Yes
- permissible quiescent current (2-wire sensor), max. 1.5 mA

Interfaces

Number of industrial Ethernet interfaces 0

Number of RS 485 interfaces 1; MPI

Number of RS 422 interfaces 0

MPI

- Cable length, max. 50 m; without repeater

1. Interface

Interface type Integrated RS 485 interface

Dimensions

Width 80 mm

Height 125 mm

Depth 130 mm

Weights

Weight, approx. 409 g

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