

# SIEMENS

## SIMATIC

ET 200S distributed I/O  
Digital electronic module  
2DO DC24V/2A ST  
(6ES7132-4BB31-0AA0)

Manual

Preface

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Properties

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1

Diagnostics

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2

04/2007

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## Safety Guidelines

This manual contains notices you have to observe in order to ensure your personal safety, as well as to prevent damage to property. The notices referring to your personal safety are highlighted in the manual by a safety alert symbol, notices referring only to property damage have no safety alert symbol. These notices shown below are graded according to the degree of danger.

### DANGER

indicates that death or severe personal injury **will** result if proper precautions are not taken.

### WARNING

indicates that death or severe personal injury **may** result if proper precautions are not taken.

### CAUTION

with a safety alert symbol, indicates that minor personal injury can result if proper precautions are not taken.

### CAUTION

without a safety alert symbol, indicates that property damage can result if proper precautions are not taken.

### NOTICE

indicates that an unintended result or situation can occur if the corresponding information is not taken into account.

If more than one degree of danger is present, the warning notice representing the highest degree of danger will be used. A notice warning of injury to persons with a safety alert symbol may also include a warning relating to property damage.

## Qualified Personnel

The device/system may only be set up and used in conjunction with this documentation. Commissioning and operation of a device/system may only be performed by **qualified personnel**. Within the context of the safety notes in this documentation qualified persons are defined as persons who are authorized to commission, ground and label devices, systems and circuits in accordance with established safety practices and standards.

## Prescribed Usage

Note the following:

### WARNING

This device may only be used for the applications described in the catalog or the technical description and only in connection with devices or components from other manufacturers which have been approved or recommended by Siemens. Correct, reliable operation of the product requires proper transport, storage, positioning and assembly as well as careful operation and maintenance.

## Trademarks

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## Disclaimer of Liability

We have reviewed the contents of this publication to ensure consistency with the hardware and software described. Since variance cannot be precluded entirely, we cannot guarantee full consistency. However, the information in this publication is reviewed regularly and any necessary corrections are included in subsequent editions.

# Preface

## Preface

### Purpose of the manual

This manual supplements the *ET 200S Distributed I/O System* Operating Instructions. General functions for the ET 200S are described in the *ET 200S Distributed I/O System* Operating Instructions.

The information in this document along with the operating instructions enables you to commission the ET 200S.

### Basic knowledge requirements

To understand these operating instructions you should have general knowledge of automation engineering.

### Scope of the manual

This manual applies to this ET 200S module. It describes the components that are valid at the time of publication.

### Recycling and disposal

Thanks to the fact that it is low in contaminants, this ET 200S module is recyclable. For environmentally compliant recycling and disposal of your electronic waste, please contact a company certified for the disposal of electronic waste.

### Additional support

If you have any questions relating to the products described in these operating instructions, and do not find the answers in this document, please contact your local Siemens representative.

<http://www.siemens.com/automation/partner>

The portal to our technical documentation for the various SIMATIC products and systems is available at:

<http://www.siemens.com/automation/simatic/portal>

The online catalog and ordering system are available at:

<http://www.siemens.com/automation/mall>

## Training center

We offer courses to help you get started with the ET 200S and the SIMATIC S7 automation system. Please contact your regional training center or the central training center in D - 90327, Nuremberg, Germany.

Phone: +49 (911) 895-3200.

<http://www.siemens.com/sitrain>

## Technical Support

You can reach technical support for all A&D projects

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- Phone: + 49 180 5050 222
- Fax: + 49 180 5050 223

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There you will find:

- Our Newsletter, which constantly provides you with the latest information about your products.
- The right documentation for you using our Service & Support search engine.
- The bulletin board, a worldwide knowledge exchange for users and experts.
- Your local contact for Automation & Drives in our contact database.
- Information about on-site services, repairs, spare parts. Lots more can be found on our "Services" pages.

# Table of contents

- Preface ..... 3**
- 1 Properties ..... 7**
  - 1.1 Digital electronic module 2DO DC24V/2A ST (6ES7132-4BB31-0AA0).....7
- 2 Diagnostics ..... 11**
  - 2.1 Diagnostics using LED display.....11
- Index..... 13**



## Properties

### 1.1 Digital electronic module 2DO DC24V/2A ST (6ES7132-4BB31-0AA0)

#### Properties

- Digital electronic module with two outputs
- Output current 2 A per output
- Rated load voltage 24 VDC
- Short-circuit protection
- Suitable for solenoid valves, DC contactors, and indicator lights
- Extended temperature range from 0 to 55° C with vertical installation

#### Peculiarity

When you connect the 24 VDC rated load voltage to the power module by means of a mechanical contact, depending on the circuit the digital outputs carry the "1" signal for approximately 50 µs. You need to take this into account if you connect the module to fast counters.

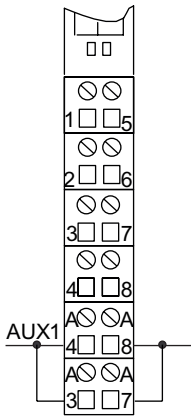
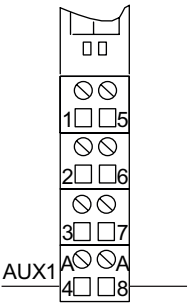
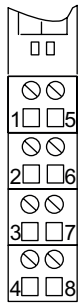
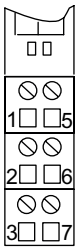
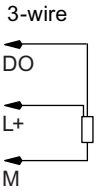
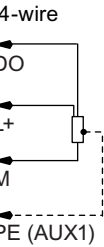
#### General terminal assignment

##### Note

Terminals 4, 8, A4, A8, A3 and A7 are only available at specified terminal modules.

| Terminal assignment for 2DO DC24V/2A ST (6ES7132-4BB31-0AA0) |                 |          |                 |                                                                                                                                                                                                                                                                                                                                 |
|--------------------------------------------------------------|-----------------|----------|-----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Terminal                                                     | Assignment      | Terminal | Assignment      | Notes                                                                                                                                                                                                                                                                                                                           |
| 1                                                            | DO <sub>0</sub> | 5        | DO <sub>1</sub> | <ul style="list-style-type: none"> <li>• DO<sub>n</sub>: Output signal, Channel n</li> <li>• L+: Rated load voltage 24 VDC</li> <li>• M: Chassis ground</li> <li>• n.c.: Not connected (max. 30 V DC can be connected)</li> <li>• AUX1: Protective-conductor terminal or potential bus (freely usable up to 230 VAC)</li> </ul> |
| 2                                                            | L+              | 6        | L+              |                                                                                                                                                                                                                                                                                                                                 |
| 3                                                            | M               | 7        | M               |                                                                                                                                                                                                                                                                                                                                 |
| 4                                                            | n.c.            | 8        | n.c.            |                                                                                                                                                                                                                                                                                                                                 |
| A4                                                           | AUX1            | A8       | AUX1            |                                                                                                                                                                                                                                                                                                                                 |
| A3                                                           | AUX1            | A7       | AUX1            |                                                                                                                                                                                                                                                                                                                                 |

## Usable terminal modules

| Usable terminal modules for 2DO DC24V/2A ST (6ES7132-4BB31-0AA0)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                      |                                      |                                      |                       |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|--------------------------------------|--------------------------------------|-----------------------|
| TM-E15C26-A1<br>(6ES7193-4CA50-0AA0)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | TM-E15C24-A1<br>(6ES7193-4CA30-0AA0) | TM-E15C24-01<br>(6ES7193-4CB30-0AA0) | TM-E15C23-01<br>(6ES7193-4CB10-0AA0) | ← Spring terminal     |
| TM-E15S26-A1<br>(6ES7193-4CA40-0AA0)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | TM-E15S24-A1<br>(6ES7193-4CA20-0AA0) | TM-E15S24-01<br>(6ES7193-4CB20-0AA0) | TM-E15S23-01<br>(6ES7193-4CB00-0AA0) | ← Screw-type terminal |
| TM-E15N26-A1<br>(6ES7193-4CA80-0AA0)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | TM-E15N24-A1<br>(6ES7193-4CA70-0AA0) | TM-E15N24-01<br>(6ES7193-4CB70-0AA0) | TM-E15N23-01<br>(6ES7193-4CB60-0AA0) | ← Fast Connect        |
| <div style="display: flex; justify-content: space-around; align-items: flex-start;"> <div style="text-align: center;">  </div> <div style="text-align: center;">  </div> <div style="text-align: center;">  </div> <div style="text-align: center;">  </div> <div style="text-align: center;"> <p>Wiring examples</p> <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <p>2-wire</p>  </div> <div style="text-align: center;"> <p>3-wire</p>  </div> <div style="text-align: center;"> <p>4-wire</p>  </div> </div> </div> </div> |                                      |                                      |                                      |                       |

## Block diagram

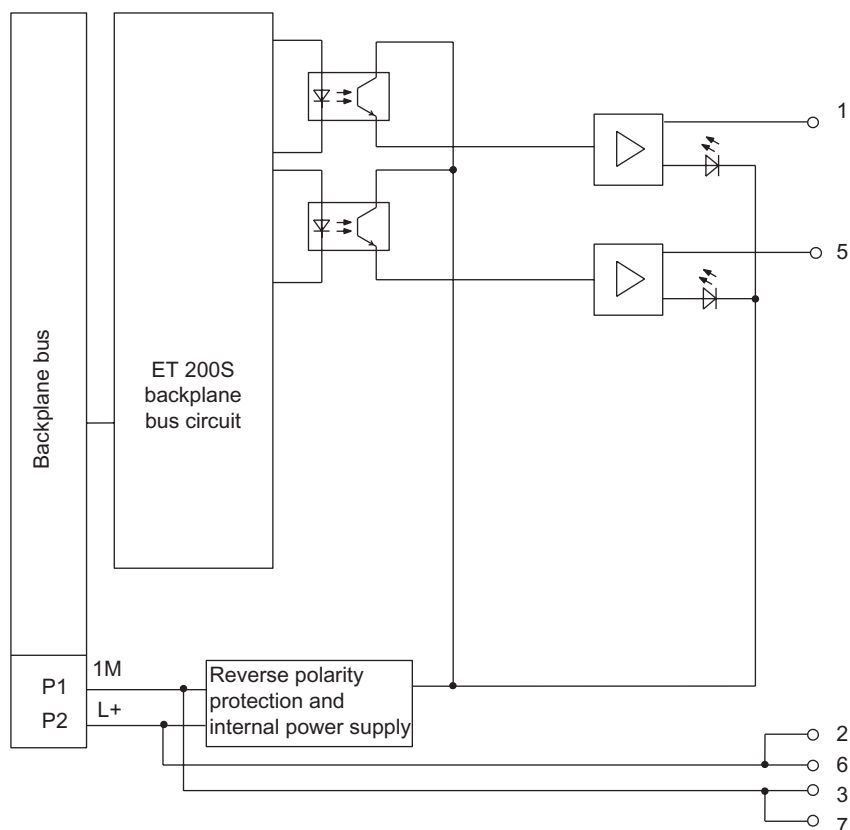


Figure 1-1 Block diagram of the 2DO DC24V/2A ST

## Technical data 2DO DC24V/2A ST (6ES7132-4BB31-0AA0)

| Dimensions and weight                         |                  |
|-----------------------------------------------|------------------|
| Width (mm)                                    | 15               |
| Weight                                        | Approx. 40 g     |
| Module-specific data                          |                  |
| Supports isochronous operation                | No               |
| Number of outputs                             | 2                |
| Cable length                                  |                  |
| • Unshielded                                  | Max. 600 m       |
| • Shielded                                    | Max. 1000 m      |
| Parameter length                              | 1 byte           |
| Address space                                 | 1 byte           |
| Address space (packed)                        | 2 bits           |
| Voltages, currents, potentials                |                  |
| Rated load voltage L+ (from the power module) | 24 VDC           |
| • Polarity reversal                           | Yes <sup>1</sup> |

## Properties

### 1.1 Digital electronic module 2DO DC24V/2A ST (6ES7132-4BB31-0AA0)

|                                                                      |                                                            |
|----------------------------------------------------------------------|------------------------------------------------------------|
| Total current of the outputs (per module)                            | 4 A                                                        |
| Electrical isolation                                                 |                                                            |
| • Between the channels                                               | No                                                         |
| • Between the channels and backplane bus                             | Yes                                                        |
| Permissible potential difference                                     |                                                            |
| • Between the different circuits                                     | 75 VDC / 60 VAC                                            |
| Insulation tested                                                    | 500 VDC                                                    |
| Current consumption                                                  |                                                            |
| • From the rated load voltage L+ (no load)                           | Max. 5 mA per channel                                      |
| Power dissipation of the module                                      | Typically 1,4 W                                            |
| <b>Status, interrupts, diagnostics</b>                               |                                                            |
| Status display                                                       | Green LED per channel                                      |
| Diagnostics function                                                 | No                                                         |
| <b>Data for selecting an actuator</b>                                |                                                            |
| Output voltage                                                       |                                                            |
| • At signal "1"                                                      | Min. L+ (-1 V)                                             |
| Output current                                                       |                                                            |
| • At signal "1"                                                      |                                                            |
| – Rated value                                                        | 2 A                                                        |
| – Permitted range                                                    | 7 mA to 2.4 A                                              |
| • With signal "0" (leakage current)                                  | Max. 0.5 mA                                                |
| Output delay (for resistive load)                                    |                                                            |
| • At "0" to "1"                                                      | Max. 200 µs                                                |
| • At "1" to "0"                                                      | Max. 1.3 ms                                                |
| Load resistor range                                                  | 12 Ω to 3.4 kΩ                                             |
| Lamp load                                                            | max. 10 W                                                  |
| Connecting two outputs in parallel                                   |                                                            |
| • For redundant triggering of a load                                 | Yes (per module)                                           |
| • To increase performance                                            | No                                                         |
| Control of a digital input                                           | Yes                                                        |
| Switch rate                                                          |                                                            |
| • For resistive load                                                 | 100 Hz                                                     |
| • On inductive load                                                  | 2 Hz (0.5 H)                                               |
| • For lamp load                                                      | 10 Hz                                                      |
| Limitation (internal) of the voltage induced on circuit interruption | Typically L+ (-55 V to -60 V)                              |
| Reverse-voltage proof                                                | Yes, if using the same load voltage as at the power module |
| Short-circuit protection of the output                               | Yes <sup>2</sup>                                           |
| • Threshold on                                                       | Typically 2.8 A to 7.2 A                                   |

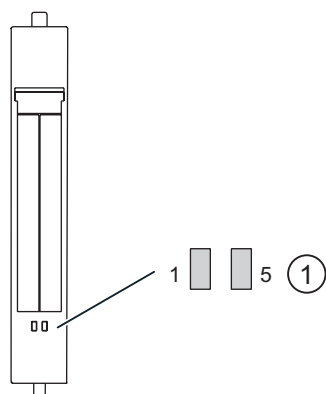
<sup>1</sup> Polarity reversal can lead to the digital outputs being connected through.

<sup>2</sup> Per channel

## Diagnostics

### 2.1 Diagnostics using LED display

#### LED display



① Status display for output status (green)

#### Status and error displays

| Event (LEDs) |    | Cause                          | Remedy |
|--------------|----|--------------------------------|--------|
| 1            | 5  |                                |        |
| On           |    | Output on channel 0 activated. | —      |
|              | On | Output on channel 1 activated. | —      |



# Index

## B

Basic knowledge requirements, 3

## D

Digital electronic module 2DO DC24V/2A ST

Block diagram, 9

Properties, 7

Technical data, 9

Terminal assignment, 7

Disposal, 3

## I

Internet

Service & Support, 4

## L

LED display, 11

## R

Recycling, 3

## S

Scope

Manual, 3

Service & Support, 4

## T

Technical Support, 4

Training center, 4

