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SIEMENS

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SIMATIC

# ET 200S distributed I/O Digital electronic module 4DI DC24V ST (6ES7131-4BD01-0AA0)

Manual

04/2007
A5E01077099-01

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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.

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

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# 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.

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# Properties

# 1

## 1.1 Digital electronic module 4DI DC24V ST (6ES7131-4BD01-0AA0)

### Properties

- Digital electronic module with four inputs
- Nominal input voltage 24 VDC
- Suitable for switches and proximity switches (BEROs)
- Extended temperature range from 0 to 55 °C with vertical installation

### General terminal assignment

**Note**

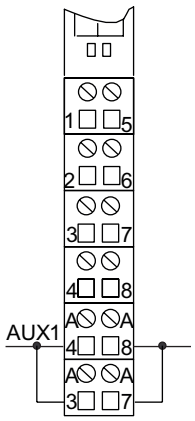
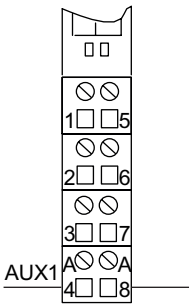
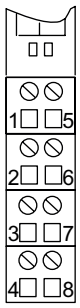
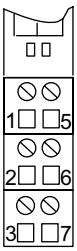
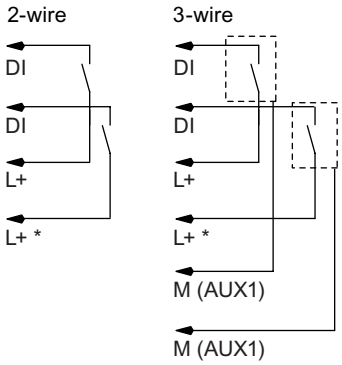
Terminals 4, 8, A4, A8, A3 and A7 are only available at specified terminal modules.

| Terminal assignment for the 4DI DC24V ST (6ES7131-4BD01-0AA0) | | | | |
|---|---|---|---|---|
| **Terminal** | **Assignment** | **Terminal** | **Assignment** | **Notes** |
| **1** | $DI_0$ | **5** | $DI_1$ | • $DI_n$: Input signal, Channel n<br>• L+: Sensor power supply 24 VDC<br>• AUX1: Protective-conductor terminal or potential bus (freely usable up to 230 VAC) |
| **2** | $DI_2$ | **6** | $DI_3$ | |
| **3** | L+ | **7** | L+ | |
| **4** | L+ | **8** | L+ | |
| **A4** | AUX1 | **A8** | AUX1 | |
| **A3** | AUX1 | **A7** | AUX1 | |



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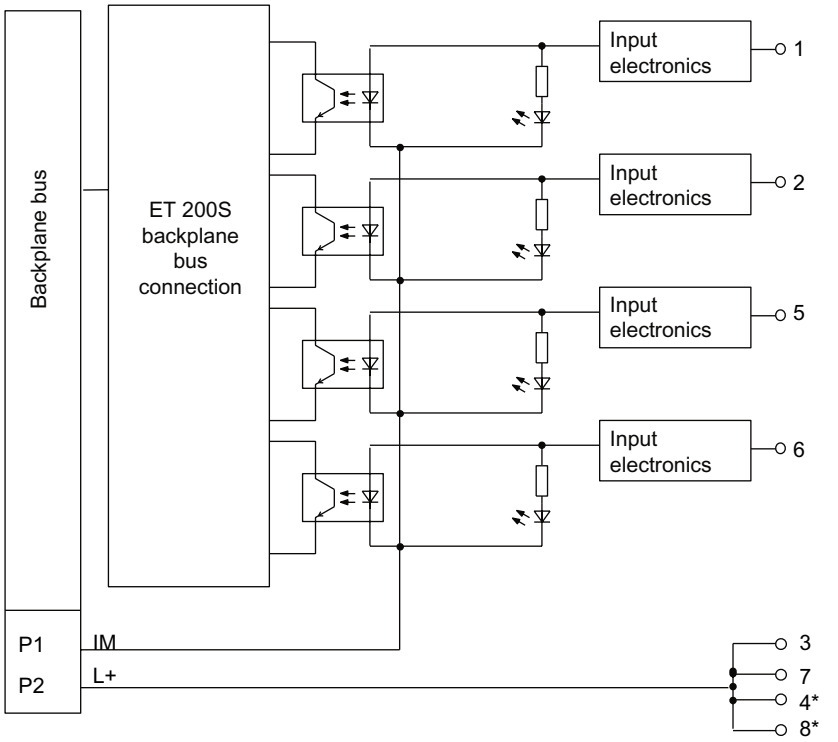
## Usable terminal modules

| Usable terminal modules for the 4DI DC24V ST (6ES7131-4BD01-0AA0) | | | | |
|---|---|---|---|---|
| TM-E15C26-A1 (6ES7193-4CA50-0AA0) | TM-E15C24-A1 (6ES7193-4CA30-0AA0) | TM-E15C24-01 (6ES7193-4CB30-0AA0) | TM-E15C23-01 (6ES7193-4CB10-0AA0) | ← Spring terminal |
| TM-E15S26-A1 (6ES7193-4CA40-0AA0) | TM-E15S24-A1 (6ES7193-4CA20-0AA0) | TM-E15S24-01 (6ES7193-4CB20-0AA0) | TM-E15S23-01 (6ES7193-4CB00-0AA0) | ← Screw-type terminal |
| TM-E15N26-A1 (6ES7193-4CA80-0AA0) | TM-E15N24-A1 (6ES7193-4CA70-0AA0) | TM-E15N24-01 (6ES7193-4CB70-0AA0) | TM-E15N23-01 (6ES7193-4CB60-0AA0) | ← Fast Connect |
|  |  |  |  | Wiring examples<br><br>* connect to Terminal 3 or 7 at TM-E15x23-01 |



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## Block diagram




* M only for terminal modules with terminal 4 and 8

Figure 1-1 Block diagram of the 4DI DC24V ST

## Technical data 4DI DC24V ST (6ES7131-4BD01-0AA0)

| | |
|---|---|
| **Dimensions and weight** | |
| Width (mm) | 15 |
| Weight | Approx. 35 g |
| **Module-specific data** | |
| Supports isochronous operation | No |
| Number of inputs | 4 |
| Length of cable | |
| • Unshielded | Max. 600 m |
| • Shielded | Max. 1,000 m |
| Parameter length | 1 byte |
| Address space | 1 byte |
| Address space (packed) | 4 bits |



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| | |
|---|---|
| **Voltages, currents, potentials** | |
| Rated supply voltage (from the power module) | 24 VDC |
| • Reverse polarity protection | Yes |
| 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 test voltage | 500 VDC |
| Current consumption | |
| • From supply voltage | Dependent on the sensor |
| Power dissipation of the module | Typically 0.7 W |
| **Status, interrupts, diagnostics** | |
| Status display | Green LED per channel |
| Diagnostics function | No |
| **Sensor power supply output** | |
| Output voltage | |
| • With load | Min. L+ (-0.5 V) |
| Output current | |
| • Rated value | 500 mA |
| • Permitted range | 0 to 500 mA |
| **Data for selecting a sensor** | |
| Input voltage | |
| • Rated value | 24 VDC |
| • For signal "1" | 15 V to 30 V |
| • For signal "0" | -30 V to 5 V |
| Input current<br>• At signal "1" | Typ. 7 mA (for 24 V) |
| Input delay | |
| • At "0" to "1" | Typ. 3 ms (2.0 to 4.5 ms) |
| • At "1" to "0" | Typ. 3 ms (2.0 to 4.5 ms) |
| Input characteristic curve | According to IEC 61131, Type 1 |
| Connection of 2-wire BEROs | Supported |
| • Permitted bias current | Max. 1.5 mA |



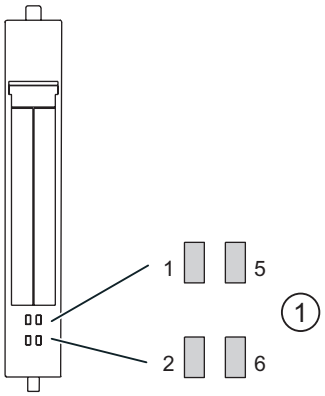
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# Diagnostics

# 2

## 2.1 Diagnostics using LED display

### LED display




① Status display for input status (green)

### Status displays

| Event (LEDs) | | | | Cause | Remedy |
|---|---|---|---|---|---|
| 1 | 5 | 2 | 6 | | |
| On | | | | Input on channel 0 activated. | — |
| | On | | | Input on channel 1 activated. | — |
| | | On | | Input on channel 2 activated. | — |
| | | | On | Input on channel 3 activated. | — |



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