

# SIEMENS

## SIMATIC

ET 200S distributed I/O  
Digital electronic module  
8DI DC24V  
(6ES7131-4BF00-0AA0)

Manual

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## Legal information

### Warning notice system

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.

 <b>DANGER</b>
indicates that death or severe personal injury <b>will</b> result if proper precautions are not taken.
 <b>WARNING</b>
indicates that death or severe personal injury <b>may</b> result if proper precautions are not taken.
 <b>CAUTION</b>
indicates that minor personal injury can result if proper precautions are not taken.
<b>NOTICE</b>
indicates that property damage can result if proper precautions are not taken.


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 product/system described in this documentation may be operated only by **personnel qualified** for the specific task in accordance with the relevant documentation, in particular its warning notices and safety instructions. Qualified personnel are those who, based on their training and experience, are capable of identifying risks and avoiding potential hazards when working with these products/systems.

### Proper use of Siemens products

Note the following:

 <b>WARNING</b>
Siemens products may only be used for the applications described in the catalog and in the relevant technical documentation. If products and components from other manufacturers are used, these must be recommended or approved by Siemens. Proper transport, storage, installation, assembly, commissioning, operation and maintenance are required to ensure that the products operate safely and without any problems. The permissible ambient conditions must be complied with. The information in the relevant documentation must be observed.

### Trademarks

All names identified by ® are registered trademarks of Siemens AG. The remaining trademarks in this publication may be trademarks whose use by third parties for their own purposes could violate the rights of the owner.

### 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

## 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 (<http://support.automation.siemens.com/WW/view/en/1144348>).

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 this manual and do not find the answers in this document, please contact your local Siemens representative (<http://www.siemens.com/automation/partners>).

A guide to the technical documentation for the various SIMATIC products and systems is available on the Internet. (<http://www.siemens.com/simatic-docu>).

The online catalog and ordering systems are available on the Internet (<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 (<http://www.siemens.com/sitrain>).

## Technical Support

You can contact Technical Support for all Industry Automation products by means of the Internet Web form for the Support Request

([http://www.siemens.com/automation/csi\\_en\\_WW/support\\_request](http://www.siemens.com/automation/csi_en_WW/support_request)).

Additional information about Siemens Technical Support is available on the Internet

([http://www.siemens.com/automation/csi\\_en\\_WW/service](http://www.siemens.com/automation/csi_en_WW/service)).

## Service & Support on the Internet

In addition to our documentation, we offer a comprehensive knowledge base on the Internet ([http://www.siemens.com/automation/csi\\_en\\_WW/support](http://www.siemens.com/automation/csi_en_WW/support)).

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, and lots more.

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## Properties

### 1.1 Digital electronic module 8DI DC24V (6ES7131-4BF00-0AA0)

#### Properties

- Digital electronic module with eight inputs
- Nominal input voltage 24 VDC
- Suitable for connecting 2-wire sensors
- Supports isochronous operation

#### Requirements for operation

It is possible to operate the 8DI DC24V digital electronic module using the following interface modules with the order numbers specified (or higher). The interface modules listed in the table are not subject to any constraints.

Interface module	Order number (or higher)	Firmware version (or higher)
IM 151-1 STANDARD	6ES7151-1AA03-0AB0	---
IM 151-1 FO STANDARD	6ES7151-1AB02-0AB0	---
IM 151-1 HIGH FEATURE	6ES7151-1BA01-0AB0	V2.1.3
IM 151-3 PN	6ES7151-3AA20-0AB0	V4.0.1
IM 151-3 PN HIGH FEATURE	6ES7151-3BA20-0AB0	
IM 151-3 PN FO	6ES7151-3BB21-0AB0	

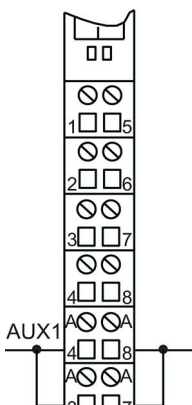
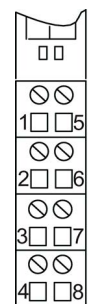
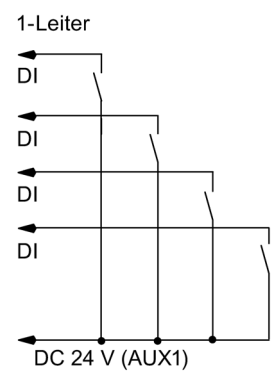
**General terminal assignment**

**Note**

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

Terminal assignment for 8DI DC24V (6ES7131-4BF00-0AA0)				
Terminal	Assignment	Terminal	Assignment	Notes
1	DI <sub>0</sub>	5	DI <sub>1</sub>	<ul style="list-style-type: none"> <li>DI<sub>n</sub>: Input signal, Channel n</li> <li>AUX1: Sensor power supply 24 VDC (for example from power module) or potential bus (can be used freely up to 230 VAC)</li> </ul>
2	DI <sub>2</sub>	6	DI <sub>3</sub>	
3	DI <sub>4</sub>	7	DI <sub>5</sub>	
4	DI <sub>6</sub>	8	DI <sub>7</sub>	
A4	AUX1	A8	AUX1	
A3	AUX1	A7	AUX1	

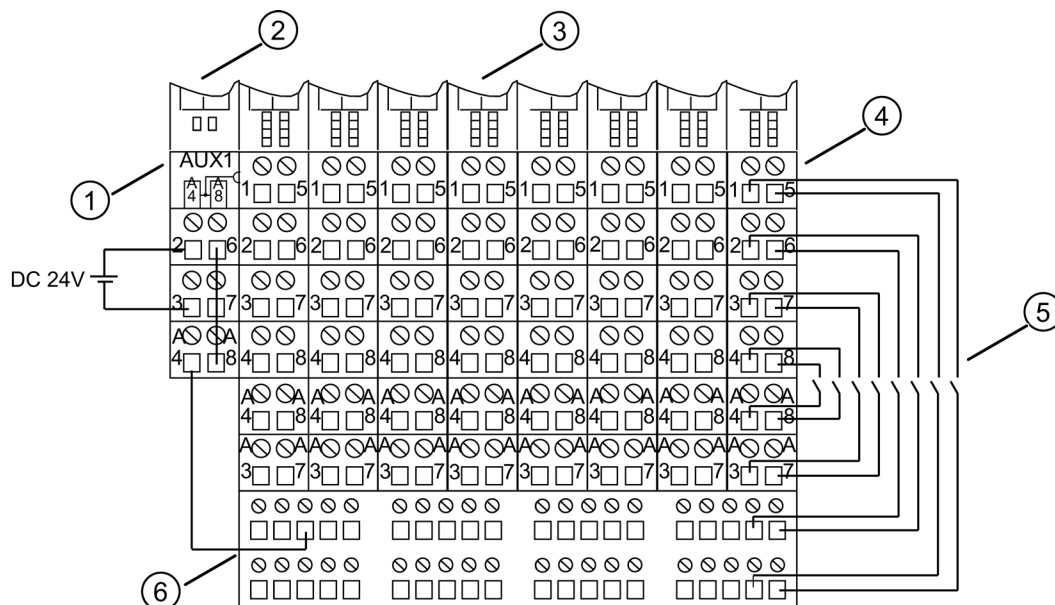
**Usable terminal modules**

Usable terminal modules for 8DI DC24V (6ES7131-4BF00-0AA0)		
TM-E15C26-A1 (6ES7193-4CA50-0AA0)	TM-E15C24-01 (6ES7193-4CB30-0AA0)	← Spring terminal
TM-E15S26-A1 (6ES7193-4CA40-0AA0)	TM-E15S24-01 (6ES7193-4CB20-0AA0)	← Screw-type terminal
TM-E15N26-A1 (6ES7193-4CA80-0AA0)	TM-E15N24-01 (6ES7193-4CB70-0AA0)	← Fast Connect
		<p><b>Anschlussbeispiele</b></p> 



### Two-wire connection

The following configuration example shows a two-wire connection with the electronic modules 8DI DC24V. You require further terminals so that sufficient terminals are available for the 24 VDC sensor power supply when the TM-E15S26-A1 terminal modules are used. In the example this is implemented by the add-on terminal TE-U120S4x10. Per add-on terminal, terminal modules of the same height must exist across a minimum width of 120 mm. You can naturally also use other terminals for this configuration (for example, ET 200S potential distribution module 4POTDIS).



- ① Terminal module TM-P15S23-A0
- ② Power module PM-E 24 VDC
- ③ Electronic modules 8DI DC24V
- ④ Terminal modules TM-E15S26-A1
- ⑤ Sensor in 2-wire connection
- ⑥ Add-on terminal TE-U120S4x10

Block diagram

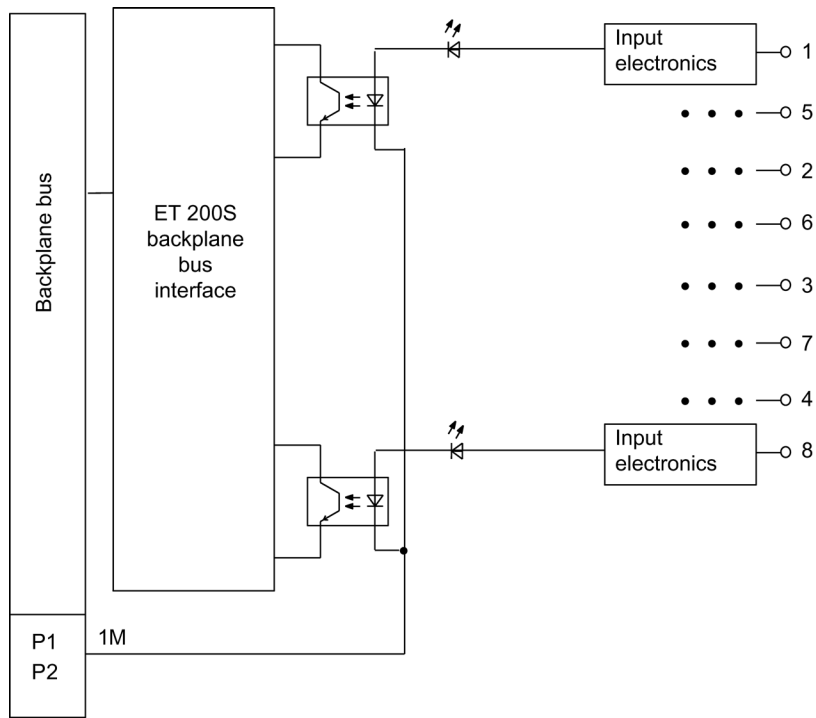


Figure 1-1 Block diagram of the 8DI DC24V

## Technical Specifications 8DI DC24V (6ES7131-4BF00-0AA0)

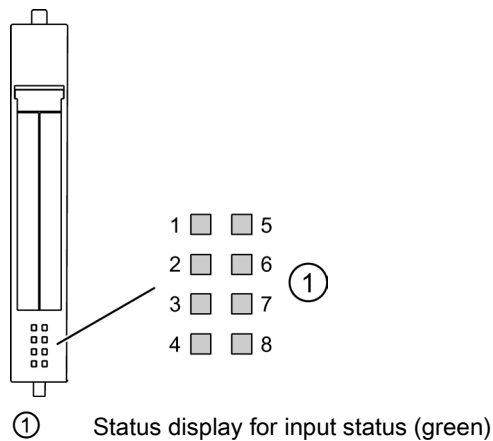
Dimensions and weight	
Width (mm)	15
Weight	Approx. 35 g
Module-specific data	
Supports isochronous operation	Yes
Number of inputs	8
Length of cable	
• Unshielded	max. 600 m
• Shielded	Max. 1,000 m
Parameter length	3 bytes
Address space	1 byte
Voltages, currents, potentials	
Rated supply voltage (from 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 1.2 W
Status, interrupts, diagnostics	
Status display	Green LED per channel
Diagnostics function	No
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	
• At signal "1"	Typ. 5 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



## Diagnostics

### 2.1 Diagnostics using LED display

#### LED display



#### Status and error displays

Event (LEDs)								Cause	Remedy
1	5	2	6	3	7	4	8		
On								Input on channel 0 activated.	—
	On							Input on channel 1 activated.	—
		On						Input on channel 2 activated.	—
			On					Input on channel 3 activated.	—
				On				Input on channel 4 activated.	—
					On			Input on channel 5 activated.	—
						On		Input on channel 6 activated.	—
							On	Input on channel 7 activated.	—

