

SIEMENS

SIMATIC

ET 200S distributed I/O
Digital electronic module
4DI DC24V/SRC ST
(6ES7131-4BD51-0AA0)
Manual

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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

All names identified by ® are registered trademarks of the 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

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

- using the support request web form:
<http://www.siemens.com/automation/support-request>
- Phone: + 49 180 5050 222
- Fax: + 49 180 5050 223

For more information about our technical support, refer to our Web site at

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<http://www.siemens.com/automation/service&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. Lots more can be found on our "Services" pages.

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Properties

1.1 Digital electronic module 4DI DC24V/SRC ST (6ES7131-4BD51-0AA0)

Properties

- Digital electronic module with four inputs
- Source input
- Nominal input voltage 24 VDC
- Suitable for switches and proximity switches (BEROs)

General terminal assignment

Note

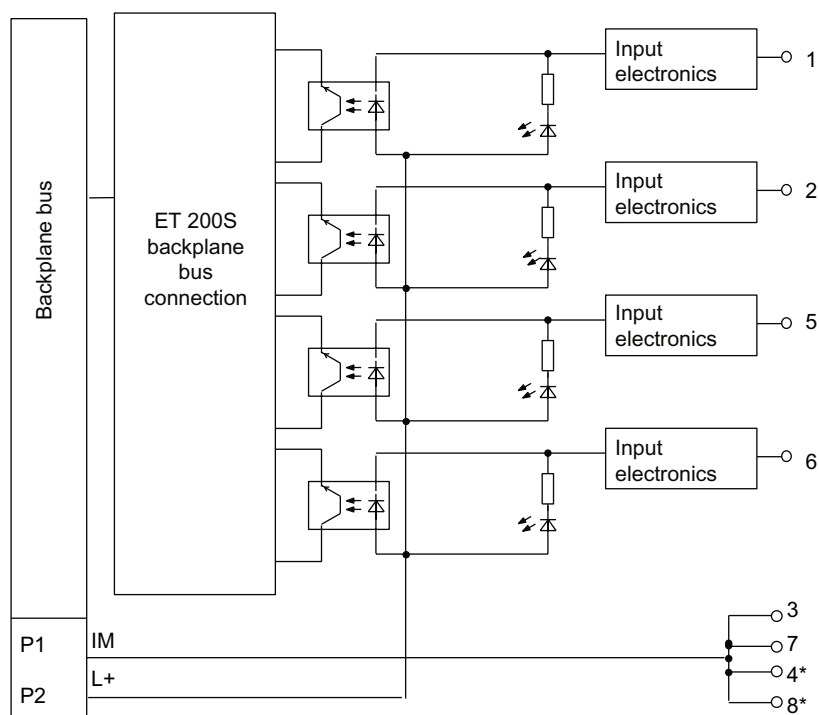
Terminals 4, 8, A4, A8, A3 and A7 are only available at specified terminal modules.

Terminal assignment for the 4DI DC24V/SRC ST (6ES7131-4BD51-0AA0)				
Terminal	Assignment	Terminal	Assignment	Notes
1	DI ₀	5	DI ₁	<ul style="list-style-type: none"> • DI_n: Input signal, Channel n • M: Chassis ground • AUX1: Protective-conductor terminal or potential bus (freely usable up to 230 VAC)
2	DI ₂	6	DI ₃	
3	M	7	M	
4	M	8	M	
A4	AUX1	A8	AUX1	
A3	AUX1	A7	AUX1	

Usable terminal modules

Usable terminal modules for the 4DI DC24V/SRC ST (6ES7131-4BD51-0AA0)				
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
				<p>Wiring examples</p> <p>2-wire</p> <p>3-wire</p> <p>* connect to Terminal 3 or 7 at TM-E15x23-01</p>

Block diagram



* M only for terminal modules with terminal 4 and 8

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

Technical data 4DI DC24V/SRC ST (6ES7131-4BD51-0AA0)

Dimensions and weight	
Width (mm)	15
Weight	Approx. 35 g
Module-specific data	
Supports isochronous operation	No
Number of inputs	4
Cable length	
• Unshielded	Max. 600 m
• Shielded	Max. 1000 m
Parameter length	1 byte
Address space	1 byte
Address space (packed)	4 bits

Properties

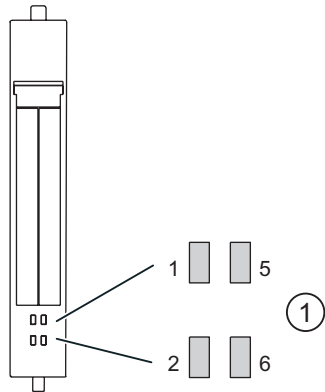
1.1 Digital electronic module 4DI DC24V/SRC ST (6ES7131-4BD51-0AA0)

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 supply output	
Output voltage	
• With load	Max. M +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 to -30 V ¹
• For signal "0"	30 to -5 V ¹
Input current	
• 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
¹ Reference potential is L+	

Diagnostics

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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