SIEMENS

SIMATIC

ET 200S Distributed I/O System
Digital Electronic Module
8DI DC24V SOURCE INPUT
(6ES7131-4BF50-0AA0)

Manual

07/2007
A5E01077465-01

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.

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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.

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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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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:
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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.

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

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- 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

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1.1 Digital Electronic Module 8DI DC24V SOURCE INPUT (6ES7131-4BF50-0AA0)

Properties

- Digital electronic module with eight inputs
- Source input
- 24 VDC nominal input voltage
- Suitable for connecting 2-wire sensors
- Supports isochronous mode

Requirements for operation

It is possible to operate the Digital Electronic Module 8DI DC24V SOURCE INPUT with the following interface module versions (specified order number or higher). Interface modules not 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	6ES7151-1BA02-0AB0	---
IM 151-3 PN IM 151-3 PN HIGH FEATURE IM 151-3 PN FO	6ES7151-3AA20-0AB0 6ES7151-3BA20-0AB0 6ES7151-3BB21-0AB0	V4.0.1

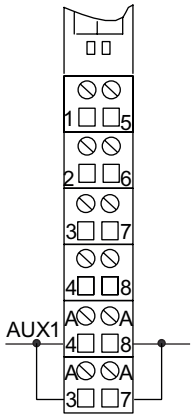
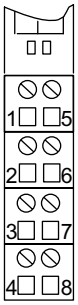
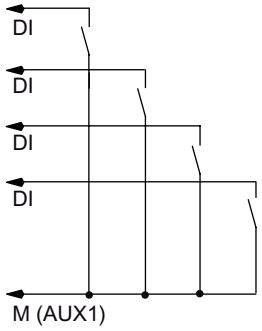
General terminal assignment

Note

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

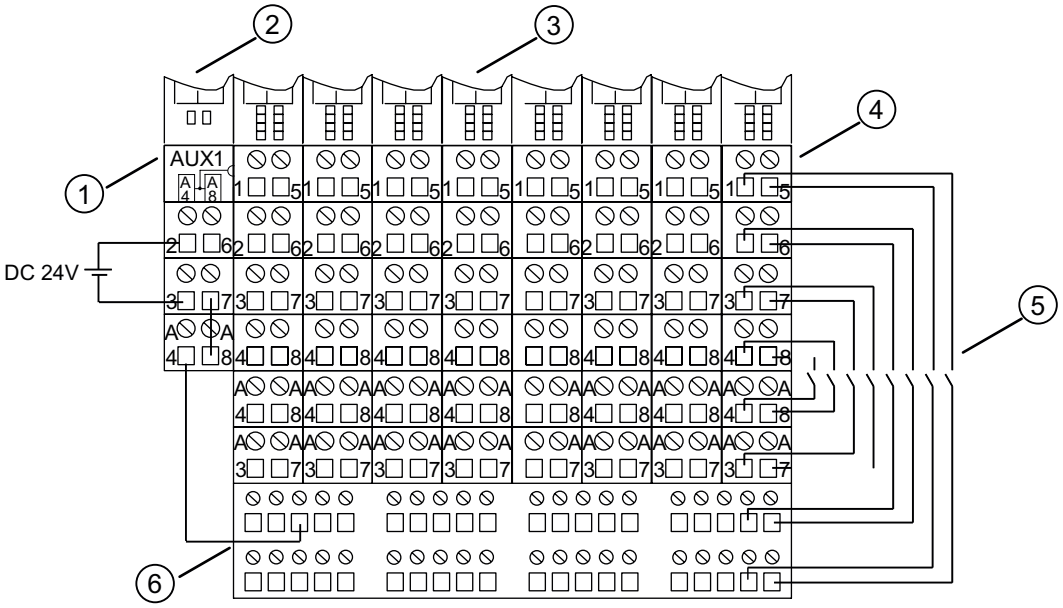
Terminal assignment for 8DI DC24V SOURCE INPUT (6ES7131-4BF50-0AA0)				
Terminal	**Assignment**	**Terminal**	**Assignment**	**Notes**
1	DI_0	**5**	DI_1	• DI_n: Input signal, Channel n • AUX1: M chassis ground (from the power module, for example) or potential bus (available for use up to 230 VAC)
2	DI_2	**6**	DI_3	
3	DI_4	**7**	DI_5	
4	DI_6	**8**	DI_7	
A4	AUX1	**A8**	AUX1	
A3	AUX1	**A7**	AUX1	

Available terminal modules

Available terminal modules for 8DI DC24V SOURCE INPUT (6ES7131-4BF50-0AA0)		
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
		Sample connections 1-wire 

2-wire connection

The following configuration example shows a 2-wire connection with the 8DI DC24V SOURCE INPUT electronic modules. You require further terminals so that sufficient terminals are available for the chassis ground connection M when the TM-E15S26-A1 terminal modules are used. In the example, this is achieved through the Add-On Terminal TE-U120S4x10. Terminal modules of the same height over a minimum width of 120 mm must be present for each add-on terminal. 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 DC24V
③ Electronic Module 8DI DC24V SOURCE INPUT
④ Terminal Module TM-E15S26-A1
⑤ Sensor in 2-wire connection
⑥ Add-On Terminal TE-U120S4x10

Block diagram

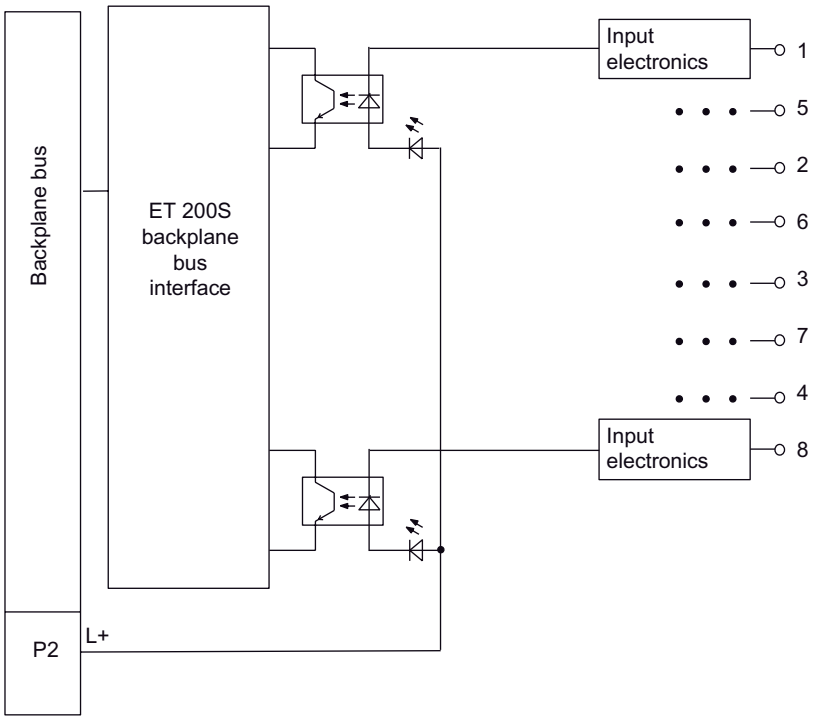


Figure 1-1 Block diagram of the 8DI DC24V SOURCE INPUT

Technical specifications of 8DI DC24V SOURCE INPUT (6ES7131-4BF50-0AA0)

Dimensions and weight	
Width (mm)	15
Weight	Approx. 35 g
Module-specific data	
Supports isochronous mode	Yes
Number of inputs	8
Cable length	
• Unshielded	Max. 600 m
• Shielded	Max. 1000 m
Parameter length	3 bytes
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 backplane bus	Max. 10 mA
• From supply voltage	Dependent on the sensor
Power dissipation of the module	Typ. 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; reference potential is L+
• For signal "0"	30 V to -5 V; reference potential is L+
Input current	
• For signal "1"	Typ. 6 mA (at 24 V)
Input delay	
• For "0" to "1"	Typ. 3 ms
• For "1" to "0"	Typ. 3 ms
Input characteristic curve	According to IEC 61131, Type 1
Connection of 2-wire BEROs	Supported
• Permitted bias current	Max. 1.5 mA

Diagnostics

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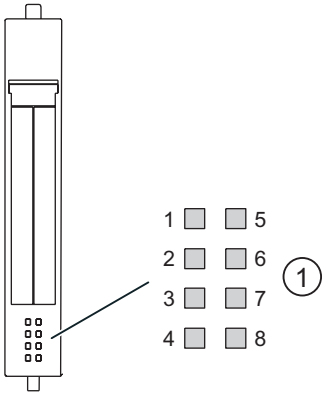
2.1 Diagnostics using LED display

LED display



① Status display for input/output status (green)

Status displays

Event (LEDs)								Cause	Remedy
1	5	2	6	3	7	4	8		
On								Input/output at Channel 0 activated.	—
	On							Input/output at Channel 1 activated.	—
		On						Input/output at Channel 2 activated.	—
			On					Input/output at Channel 3 activated.	—
				On				Input/output at Channel 4 activated.	—
					On			Input/output at Channel 5 activated.	—
						On		Input/output at Channel 6 activated.	—
							On	Input/output at Channel 7 activated.	—

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