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.

**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**
indicates that minor personal injury can result if proper precautions are not taken.

**NOTICE**
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:

**WARNING**
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/mail].

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


Additional information about Siemens Technical Support is available on the Internet [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].

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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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.

<table>
<thead>
<tr>
<th>Interface module</th>
<th>Order number (or higher)</th>
<th>Firmware version (or higher)</th>
</tr>
</thead>
<tbody>
<tr>
<td>IM 151-1 STANDARD</td>
<td>6ES7151-1AA03-0AB0</td>
<td>---</td>
</tr>
<tr>
<td>IM 151-1 FO STANDARD</td>
<td>6ES7151-1AB02-0AB0</td>
<td>---</td>
</tr>
<tr>
<td>IM 151-1 HIGH FEATURE</td>
<td>6ES7151-1BA01-0AB0</td>
<td>V2.1.3</td>
</tr>
<tr>
<td>IM 151-3 PN</td>
<td>6ES7151-3AA20-0AB0</td>
<td>V4.0.1</td>
</tr>
<tr>
<td>IM 151-3 PN HIGH FEATURE</td>
<td>6ES7151-3BA20-0AB0</td>
<td></td>
</tr>
<tr>
<td>IM 151-3 PN FO</td>
<td>6ES7151-3BB21-0AB0</td>
<td></td>
</tr>
</tbody>
</table>
1. Digital electronic module 8DI DC24V (6ES7131-4BF00-0AA0)

General terminal assignment

**Note**

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

<table>
<thead>
<tr>
<th>Terminal</th>
<th>Assignment</th>
<th>Terminal</th>
<th>Assignment</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>DIo</td>
<td>5</td>
<td>DI1</td>
<td>• DIn: Input signal, Channel n</td>
</tr>
<tr>
<td>2</td>
<td>DI2</td>
<td>6</td>
<td>DI3</td>
<td>• AUX1: Sensor power supply 24 VDC (for example from power module) or potential bus (can be used freely up to 230 VAC)</td>
</tr>
<tr>
<td>3</td>
<td>DI4</td>
<td>7</td>
<td>DI5</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>DI6</td>
<td>8</td>
<td>DI7</td>
<td></td>
</tr>
<tr>
<td>A4</td>
<td>AUX1</td>
<td>A8</td>
<td>AUX1</td>
<td></td>
</tr>
<tr>
<td>A3</td>
<td>AUX1</td>
<td>A7</td>
<td>AUX1</td>
<td></td>
</tr>
</tbody>
</table>

**Usable terminal modules**

<table>
<thead>
<tr>
<th>Usable terminal modules for 8DI DC24V (6ES7131-4BF00-0AA0)</th>
</tr>
</thead>
<tbody>
<tr>
<td>TM-E15C26-A1 (6ES7193-4CA50-0AA0)</td>
</tr>
<tr>
<td>TM-E15S26-A1 (6ES7193-4CA40-0AA0)</td>
</tr>
<tr>
<td>TM-E15N26-A1 (6ES7193-4CA80-0AA0)</td>
</tr>
</tbody>
</table>

**Anschlussbeispiele**

1-Leiter

DI

DC 24 V (AUX1)
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 implement 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
Properties

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

Block diagram

Figure 1-1  Block diagram of the 8DI DC24V
### Technical Specifications 8DI DC24V (6ES7131-4BF00-0AA0)

<table>
<thead>
<tr>
<th>Dimensions and weight</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Width (mm)</td>
<td>15</td>
</tr>
<tr>
<td>Weight</td>
<td>Approx. 35 g</td>
</tr>
</tbody>
</table>

**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
Properties

1.1 Digital electronic module 8DI DC24V (6ES7131-4BF00-0AA0)
2.1 Diagnostics using LED display

LED display

<table>
<thead>
<tr>
<th>Event (LEDs)</th>
<th>Cause</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>On</td>
<td>Input on channel 0 activated.</td>
<td>—</td>
</tr>
<tr>
<td>On</td>
<td>Input on channel 1 activated.</td>
<td>—</td>
</tr>
<tr>
<td>On</td>
<td>Input on channel 2 activated.</td>
<td>—</td>
</tr>
<tr>
<td>On</td>
<td>Input on channel 3 activated.</td>
<td>—</td>
</tr>
<tr>
<td>On</td>
<td>Input on channel 4 activated.</td>
<td>—</td>
</tr>
<tr>
<td>On</td>
<td>Input on channel 5 activated.</td>
<td>—</td>
</tr>
<tr>
<td>On</td>
<td>Input on channel 6 activated.</td>
<td>—</td>
</tr>
<tr>
<td>On</td>
<td>Input on channel 7 activated.</td>
<td>—</td>
</tr>
</tbody>
</table>
Diagnostics

2.1 Diagnostics using LED display