

SIMATIC

Distributed I/O ET 200eco Distributed I/O Device

Operating Instructions

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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 this manual

The information in this manual enables you to run the ET 200eco distributed I/O device on PROFIBUS DP in DP slave mode.

Basic knowledge requirements

This manual presumes a general knowledge in the field of automation engineering.

The manual describes the components based on the data valid at the time of its release. SIEMENS reserves the right of including a product information for each new component, and for each component of a later version.

Scope of this manual

This manual applies to the ET 200eco distributed I/O device.

Conventions

Note

A note contains important information about the product described in the documentation, about the handling of the product, and about the section in this documentation demanding your particular attention.

Position in the information landscape

In addition to this manual you require the manual of the DP master system of your configuration.

Guide

This manual describes the hardware of the ET 200eco distributed I/O device. It consists of instructive sections and reference sections (specifications).

Topics covered in this manual:

- Installation and wiring
- Commissioning and diagnostics
- Components
- Article numbers
- Important terms are explained in the glossary.
- The index helps you to quickly find all texts relevant to your keyword.

Recycling and disposal

The ET 200eco distributed I/O device can be recycled due to its low-pollutant equipment.

For environmentally sustainable recycling and disposal of your old device, contact a certificated disposal service for electronic scrap.

Additional support

Please contact your local Siemens representative if you have any questions about the products described in this manual.

You will find your contact person on the Internet (<http://www.automation.siemens.com/partner/>).

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

The online catalog and online ordering system are available on the Internet (<http://mall.industry.siemens.com>).

Training center

Siemens offers corresponding courses to get you started with your ET 200eco distributed I/O device and the SIMATIC S7 automation system. Please contact your local training center or the central training center in Nuremberg, D-90327 Germany.

Additional information about Siemens Technical Support is available on the Internet (http://www.sitrain.com/index_en.html).

Technical Support

You can reach Technical Support for all Industry Automation products via the support request Web form on the Internet (<http://www.siemens.com/automation/support-request>).

Additional information about Siemens Technical Support is available on the Internet (<http://www.siemens.com/automation/service>).

Service & Support on the Internet

In addition to our documentation, we offer a comprehensive knowledge base on the Internet (http://www.siemens.de/automation/csi_en_WW).

There, you will find the following information:

- Our newsletter, providing the latest information on your products
- The right documents for you, using the Service & Support search engine
- Worldwide forum in which users and experts exchange ideas
- Your local Automation & Drives partner in our partner database
- Information about on-site services, repairs, spare parts and more.

Security information

Siemens provides products and solutions with industrial security functions that support the secure operation of plants, solutions, machines, equipment and/or networks. They are important components in a holistic industrial security concept. With this in mind, Siemens' products and solutions undergo continuous development. Siemens recommends strongly that you regularly check for product updates.

For the secure operation of Siemens products and solutions, it is necessary to take suitable preventive action (e.g. cell protection concept) and integrate each component into a holistic, state-of-the-art industrial security concept. Third-party products that may be in use should also be considered. You can find more information about industrial security on the Internet (<http://www.siemens.com/industrialsecurity>).

To stay informed about product updates as they occur, sign up for a product-specific newsletter. You can find more information on the Internet (<http://support.automation.siemens.com>).

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8.7 I/O module 16 DO 0.5A (6ES7142-3BH00-0XA0)

Properties

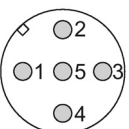
Properties of the I/O module 16 DO 0.5A:

- 16 digital outputs
- Output current 0.5 A per output
- Rated load voltage 24 V DC
- Suitable for solenoid valves, DC contactors and indicator lights

Terminal assignment of the DO sockets

The table below shows the terminal assignment of the eight sockets for connection of the digital outputs.

Table 8- 7 Pin-out of the digital output sockets X1 to X8

	Assignment				Front view of the socket
Pin	Socket X1	Socket X2	Socket X3	Socket X4	
1	n.c.				
2	Output signal				
	Channel 8	Channel 9	Channel 10	Channel 11	
3	Load voltage ground (2M)				
4	Output signal				
	Channel 0	Channel 1	Channel 2	Channel 3	
5	PE				
Pin	Socket X5	Socket X6	Socket X7	Socket X8	
1	n.c.				
2	Output signal				
	Channel 12	Channel 13	Channel 14	Channel 15	
3	Load voltage ground (2M)				
4	Output signal				
	Channel 4	Channel 5	Channel 6	Channel 7	
5	PE				

Block diagram

The block diagram below shows the I/O module 16 DO 0.5A.

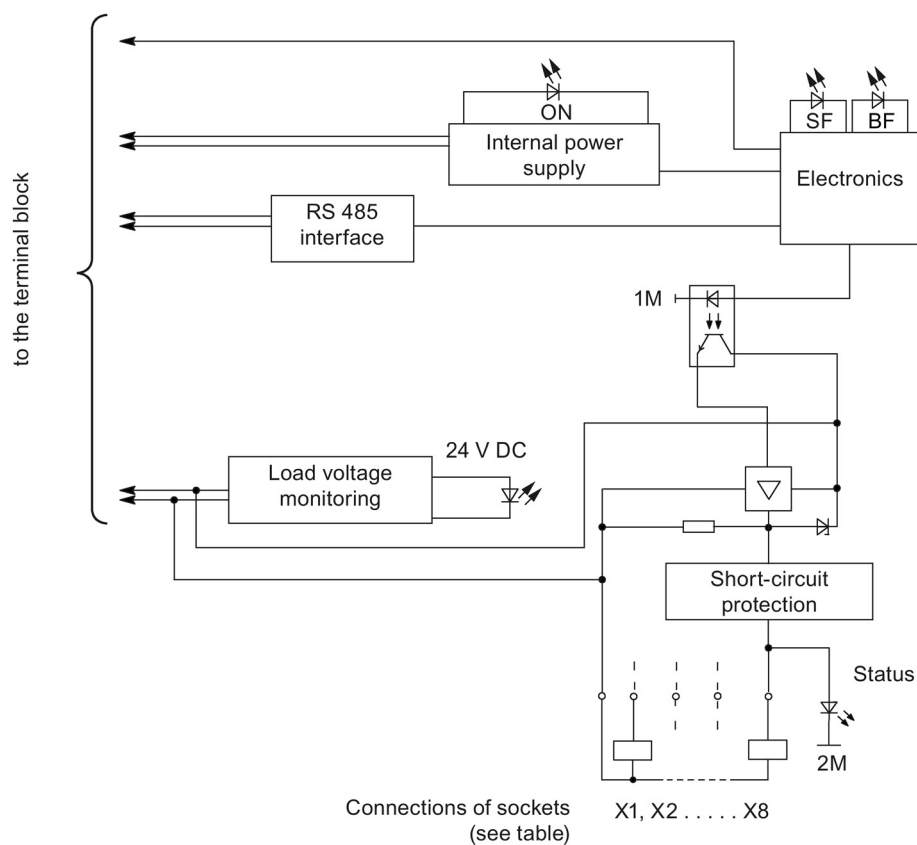


Figure 8-6 Block diagram of I/O module 16 DO 0.5A

Technical specifications of I/O module 16 DO 0.5A

Technical specifications	
Dimensions and weight	
Dimensions W × H × D (mm)	60 × 210 × 28
Weight	Approx. 210 g
Module-specific data	
Transmission rates	9.6/19.2/45.45/93.75/187.5/500 kBaud 1.5/3/6/12 MBaud
Bus protocol	PROFIBUS DP
Number of channels	16 digital outputs
Cable length unshielded	Max. 30 m
Manufacturer ID	80FB _H
Voltages, currents, potentials	
Rated electronics / sensor supply voltage 1L+	24 V DC
Reverse polarity protection	Yes
2L+ rated load voltage	24 V DC
Reverse polarity protection	Yes
Total current of the outputs	
All mounting positions	4A ¹⁾ up to 55 °C
Electrical isolation	
Between channels	No
between PROFIBUS DP and all other circuitry	Yes
Permitted potential difference	
Between different electric circuits	75 V DC, 60 V AC
Isolation test voltage	500 V DC
Current consumption - From supply voltage 1L+ - from 2L+ rated load voltage	Typ. 70 mA Typ. 80 mA
Power loss of the module	Typ. 4 W
Status, interrupts, diagnostics	
Status display	green LED per channel
Alarms	No
Diagnostic functions	
Group error display	red LED (SF)
Channel error display	No
Diagnostic information can be read	Supported

Technical specifications	
Actuator selection data	
Output voltage at "1" signal	Min. 2L+ (-0.8 V)
Output current	
• at "1" signal	0.5 A
• at "0" signal (residual current)	Max. 0.1 mA
Load resistance range	48 Ω to 4 k Ω
Lamp load	Max. 5 W
Wiring 2 outputs in parallel	
• for redundant load control	Supported
• For performance increase	Not supported
Control of a digital input	Supported
Switching frequency	
• with resistive load	Max. 100 Hz
• with inductive load to IEC 947-5-1, DC13	Max. 0.5 Hz
• with lamp load	Max. 1 Hz
Internal limiting of the inductive shutdown voltage to	Typ. 2L+ (-47 V)
Short-circuit protection of output	Yes, electronic
• Response threshold	Typ. 1.4 A (per channel)
¹ Observe the current carrying capacity of the cable.	

Appendix

A.1 Article numbers

Introduction

The tables below show the article numbers of all components of the ET 200eco automation system.

ET 200eco components

Table A- 1 ET 200eco components – article numbers

Description	Article number
I/O module 8 DI DC 24V; 8 X M12	6ES7141-3BF00-0XA0
I/O module 16 DI DC 24V; 8 X M12	6ES7141-3BH00-0XA0
I/O module 8 DO DC 24V/2A; 8 X M12	6ES7142-3BF00-0XA0
I/O module 16 DO DC 24V/0,5A; 8 X M12	6ES7142-3BH00-0XA0
I/O module 8 DI / 8 DO DC 24V/2A; 8 X M12	6ES7143-3BH00-0XA0
I/O module 8 DI / 8 DO DC 24V/1,3A; 8 X M12	6ES7143-3BH10-0XA0
Terminal block M12, 7/8"	6ES7194-3AA00-0BA0
ECOFAST terminal block	6ES7194-3AA00-0AA0

ET 200eco accessories

Table A- 2 ET 200eco accessories – article numbers

Description	Article number
Labels 20 mm x 7 mm	3RT1900-1SB2

Accessories for I/O modules

Table A- 3 Accessories for I/O modules – article numbers

Description		Article number
Pre-assembled cables:		
• M12 connecting cable (PUR sheath), pre-assembled, socket and connector on both ends, 3 x 0.34 mm ²	1.5 m	3RK1902-4PB15-3AA0
• M12 connecting cable (PUR sheath), 5 x 0.34 mm ² , pre-assembled with socket on one end (socket on one end, other end open)	1.5 m	3RK1902-4HB15-5AA0
	5.0 m	3RK1902-4HB50-5AA0
	10.0 m	3RK1902-4HC01-5AA0
Miscellaneous:		
• M12 caps		3RX9802-0AA00
		3RK1901-1KA00
• Y-cable for connection of two I/Os		6ES7194-6KA00-0XA0
• Y-connector M12, 5-pin (for the connection of two actuators and sensors to digital I/Os).		6ES7194-1KA01-0XA0
• M12 connector, 5-pin, max. 0.75 mm ² , screw terminals		3RK1902-4BA00-5AA0
• M12 connector, angular, 5-pin, max. 0.75 mm ² , screw terminals		3RK1902-4DA00-5AA0