

SIEMENS

SIMATIC

ET 200S distributed I/O
Power module PM-E DC24..48V
(6ES7138-4CA50-0AB0)

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.

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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.

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.

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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.

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- 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 Power module PM-E DC24..48V (6ES7138-4CA50-0AB0)

Properties

- The power module PM-E DC24..48V monitors the supply voltage for all the electronic modules in the voltage group. The supply voltage is fed in by means of the TM-P terminal module.
- You can use all the electronic modules except the 2DI AC120V ST, 2DI AC230V ST, and 2DO AC24..230V/1A in the voltage group of the PM-E DC24..48V power module.
- Control interface (PIQ) and feedback interface (PII) in the process image for option handling.
- The current status of the power module is stored in the status byte in the process input image (PII). This is updated irrespective of whether the "No Load Voltage" diagnosis has been enabled.
- The PM-E DC24..48V power module is suitable for fail-safe modules.

CAUTION

Only connect the specified rated load voltage of 24 VDC to 48 VDC to the TM-P terminal module of the power module.

The connected rated load voltage must correspond to the supply voltage of the electronic modules in the voltage group.

Maximum configuration per voltage group

The number of modules that can be connected depends on the total current of all modules in a voltage group. This total must not exceed the maximum current carrying capacity.

Address space of inputs/outputs

Address space of inputs/outputs by selecting the following as an option:

Options	Address space of the inputs	Address space of the outputs
Status byte (S)	1 byte	--
Option handling (O)	8 bytes	8 bytes
Status byte and option handling (SO)	9-byte inputs	9 bytes (9th byte not relevant)

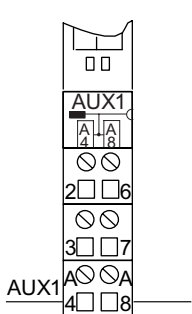
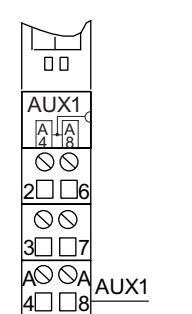
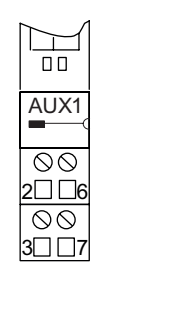
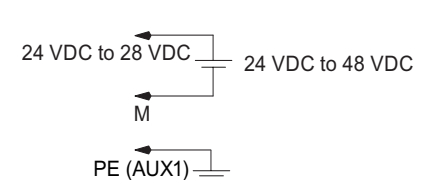
General terminal assignment

Note

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

Terminal assignment for PM-E DC24..48V (6ES7138-4CA50-0AB0)				
Terminal	Assignment	Terminal	Assignment	Notes
2	L+	6	L+	- L+: Rated load voltage 24VDC to 48 VDC - M: Ground - AUX1: Protective-conductor terminal or potential bus (freely usable up to 230 VAC)
3	M	7	M	
A4	AUX1	A8	AUX1	

Usable terminal modules

Usable terminal modules for PM-E DC24..48V (6ES7138-4CA50-0AB0)			
TM-P15C23-A1 (6ES7193-4CC30-0AA0)	TM-P15C23-A0 (6ES7193-4CD30-0AA0)	TM-P15C22-01 (6ES7193-4CE10-0AA0)	← Spring terminal
TM-P15S23-A1 (6ES7193-4CC20-0AA0)	TM-P15S23-A0 (6ES7193-4CD20-0AA0)	TM-P15S22-01 (6ES7193-4CE00-0AA0)	← Screw-type terminal
TM-P15N23-A1 (6ES7193-4CC70-0AA0)	TM-P15N23-A0 (6ES7193-4CD70-0AA0)	TM-P15N22-01 (6ES7193-4CE60-0AA0)	← Fast Connect
			Wiring examples 

Block diagram

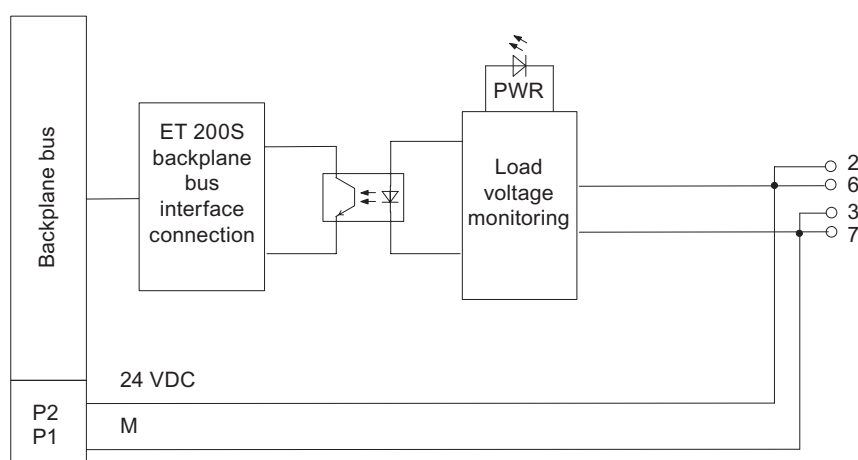


Figure 1-1 Block diagram of the PM-E DC24..48V power module

Technical data PM-E DC24..48V (6ES7138-4CA50-0AB0)

Dimensions and weight	
Dimension B (mm)	15
Weight	Approx. 35 g
Voltages, currents, potentials	
Rated load voltage	24 VDC to 48 VDC
• Reverse polarity protection	Yes
• Overvoltage protection	No
Protection with automatic circuit breakers	Yes, tripping characteristic B, C
Max. current-carrying capacity (up to 60°C)	10 A
• Short-circuit protection	No
Electrical isolation	
• Between rated load voltage and backplane bus	Yes
• Between the power modules	Yes
Insulation test voltage	500 VDC
Current consumption	
• From the load voltage L+ (no load)	Max. 12 mA
Power dissipation of the module	Typically 500 mW
Parameter length	3 bytes
Status, interrupts, diagnostics	
Diagnostic function	Yes
• Group error	Red "SF" LED
• Load voltage monitoring	Green "PWR" LED
• Diagnostic information readable	Yes

Parameters

Parameters

The following table lists the power module parameters.

Table 2-1 Parameters for power modules

PM-E 24 to 48 VDC	Range of values	Default setting	Applicability
Diagnostics: No load voltage	disable/enable	Disable	Power module

The parameters are explained below.

Diagnostics: No load voltage

Use this parameter to enable a diagnostic message because there is no load voltage.

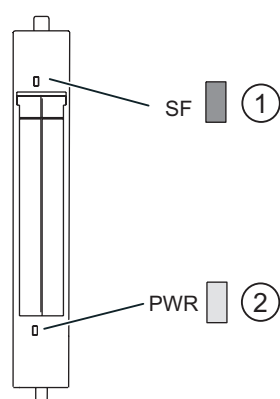
If there is no load voltage only the diagnostic message of the affected power module is sent to the DP master. The SF error LEDs of all modules in the relevant potential group light.

Diagnostics

3.1 Diagnostics using LED display

Power module

LED displays on the power module:



- ① Batch error (red)
- ② Load voltage (green)

Status and error displays by means of LEDs on power modules

The table below shows the status and error displays on the power module.

Event (LEDs)		Cause	Remedy
SF	PWR		
on		No parameter assignment or incorrect module plugged in. A diagnostic message is pending.	Check the parameter assignment. Evaluate the diagnostics.
	off	There is no load voltage at the power module.	Check the load voltage.

3.2 Error types

Power module error types

The diagnostic message is reported on channel 0 and applies to the entire module.

The table below shows the types of errors affecting power modules

Table 3-1 Power module error types

Error type		Meaning	Remedy
17D	10001: Encoder or load voltage missing	Supply voltage not present or too low.	Correct the process wiring. Check the supply voltage.

Configuring

4.1 Configuring the address space

Address area for option handling and status byte

You can control and monitor option handling, and evaluate the status byte of the power module using the control (PIO) and feedback interface (PII).

The address range of the control (PIO) and feedback interface (PII) depends on how the corresponding entry in the configuration software is configured, or which entry has been selected.

This table shows the PII feedback interface and the PIO control interface for different entries.

Table 4-1 PII feedback interface and PIO control interface

With STEP 7, HW Config or COM PROFIBUS or other configuration software	PII feedback interface		PIO control interface	
Usual entry for the power module	---		---	
Ends in ...S	IBx	Status byte	---	
Ends in ...O	IBx :: IBx+7	Option handling	QBx :: QBx+7	Option handling
Ends in ...SO	IBx :: IBx+7	Option handling	QBx :: QBx+7	Option handling
	IBx+8	Status byte	QBx+8	Not applicable

Status byte for power modules

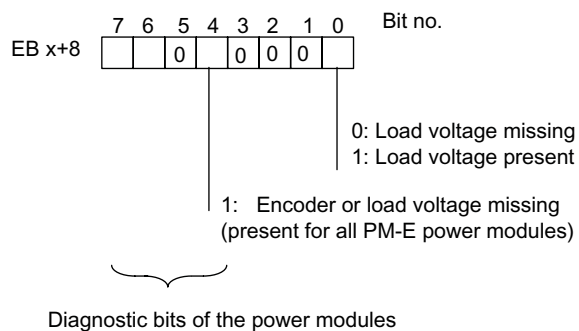


Figure 4-1 Assignment of status byte for power modules

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