MANUFACTURER DOCUMENT PACKAGE

Manufacturer's Manual

Reference package for procurement and maintenance review

SIEMENS

6ES7422-5EH10-0AB0

SIXTEEN-CHANNEL DC DIGITAL OUTPUT MODULE

Used with the applicable SIMATIC S7-400 SM 422 configuration.

REFERENCE PACKAGE

OFFICIAL DOCUMENT

Selected official manufacturer pages follow this cover.

Source: Siemens S7-400 Module Data Reference Manual A5E00850736-08, November 2016; exact SM 422 section, pages 132-136.

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SIMATIC

S7-400
S7-400 Automation System Module Data

Reference Manual

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Ausgabe 11/2016
A5E00850736-08

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.

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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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Control of a digital input	Possible
Switching frequency max.	
• With resistive load	100 Hz
• With an inductive load in accordance with IEC 947-51, DC 13	0.2 Hz at 1 A 0.1 Hz at 2 A
• With lamp load	Maximum 10 Hz
(Internal) limitation of inductive switch-off voltage to	Maximum -30 V
Short-circuit protection for output	Clocked electronically[2]
• Response threshold	2.8 to 6 A
[1] A supply group always consists of 2 neighboring channels, starting from channel 0. Channels 0 and 1, 2 and 3, ... 14 and 15 therefore each form a supply group. [2] Reclosing at full load is not guaranteed after a short circuit. Measures for dealing with this problem: • Change the signal at the output or • Interrupt the load voltage of the module • Briefly disconnect the load from the output	

4.15 Digital output module SM 422; DO 16 x DC 20-125 V/1.5 A (6ES7422-5EH10-0AB0)

4.15.1 Features

Overview

The SM 422; DO 16 x DC 20-125 V/1.5 A has the following features:

- 16 outputs, each channel is fused; reverse polarity protection and isolated in groups of 8
- Output current 1,5 A
- Nominal load voltage 20 to 125 VDC
- Group error display for internal faults (INTF) and external faults (EXTF)
- Programmable diagnostics
- Programmable diagnostic interrupt
- Programmable substitution value output

Wiring diagram of the SM 422; DO 16 x DC 20-125 V/1.5 A

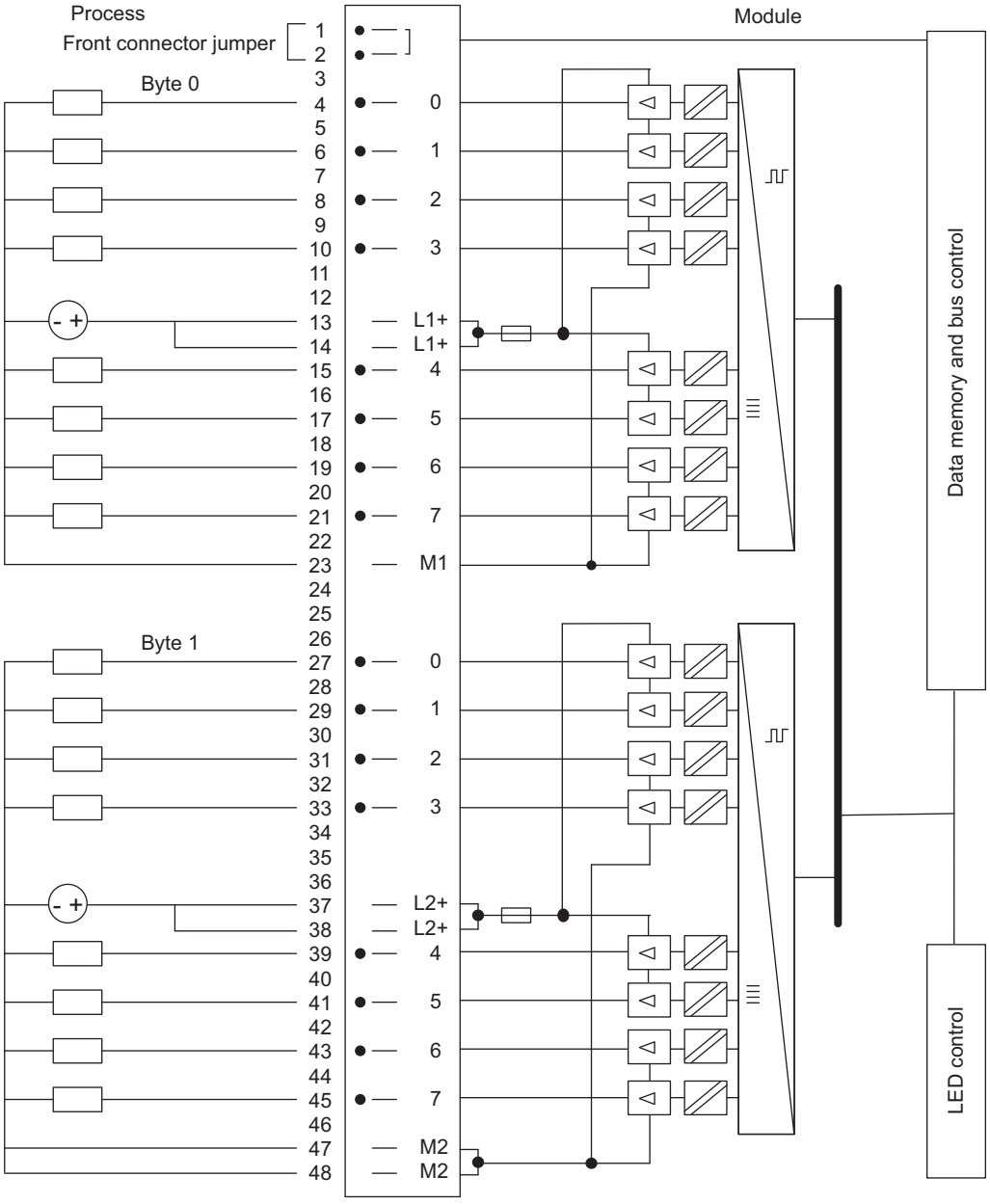


Figure 4-12 Wiring diagram of the SM 422; DO 16 x DC 20-125 V/1.5 A

Specifications of the SM 422; DO 16 x DC 20-125 V/1.5 A

Dimensions and weight	
Dimensions W x H x D (mm)	25 x 290 x 210
Weight	Approx. 800 g
Module-specific data	
Number of outputs	16

Cable length		
• Unshielded	Max. 600 m	
• Shielded	Max. 1000 m	
Voltages, currents, electrical potentials		
Nominal load voltage L1	20 to 138 V DC	
• Reverse polarity protection	Yes, with fuse	
Total current of the outputs [1)]		
		With fan subassembly
• Up to 40° C	Max. 16 A	21 A
• Up to 60° C	Max. 8 A	14 A
Electrical isolation		
• Between channels and the backplane bus	Yes	
• Between channels	Yes	
In groups of	8	
Permissible potential difference		
• Between outputs of different groups	250 VAC	
Isolation test voltage	1500 VAC	
Current consumption		
• From the backplane bus (5 V)	Max. 700 mA	
• From load voltage L+ (no load)	Max. 2 mA	
Power loss of the module	Typ. 10 W	
Status, interrupts, diagnostics		
Status display	Green LED per channel	
Interrupts		
• Diagnostic interrupt	Programmable	
Diagnostic functions		
• Group error display for internal disruption for external disruption	Configurable Red LED (INTF) Red LED (EXTF)	
• Diagnostic information dump	Yes	
Injection of substitution values	Yes, programmable	
Actuator selection data		
Output voltage		
• With "1" signal	Min. L+ (-1.0 V)	
Output current		
• With signal "1" Rated value Permissible range Permissible peak current	 1.5 A 10 mA to 1.5 A Maximum 3 A (for 10 ms)	
• With "0" signal (residual current)	Max. 0,5 mA	
Output delay (resistive load)		
• At "0" to "1" transitions	Max. 2 ms	
• With "1" to "0"	Max. 13 ms	

Wiring two outputs in parallel	
• For redundant load control	Supported (only outputs of the same group)
• For performance increase	Supported (only outputs of the same group)
Triggering a digital input	Supported
Switching frequency	
• With resistive load	Max. 10 Hz
• With inductive load in accordance with IEC 947-5-1, DC 13	Max. 0.5 Hz
Short-circuit protection of the output	Electronically protected[2)]
• Threshold	Typ. 04 to 5 A
Replacement fuses	Fuse, 8 A/250 V, quick blow
[1] To achieve maximum performance capability, distribute the high-current load between the two groups. [2] To reset a deactivated output, first set the output signal to 0 and then to 1. If output signal 1 is written to a deactivated output and the short-circuit remains, additional interrupts are generated (provided the diagnostic interrupt parameter was set).	

Note

If the power supply is switched on by means of a mechanical contact, a voltage pulse may occur at the outputs. The transient pulse lasts a maximum of 0.5 ms.

Changing fuses

⚠ WARNING

This can result in injury.

If you change a fuse without removing the front connector of the module, you could be injured by an electric shock.

Consequently, always remove the front connector before you change the fuse.

4.15.2 Assigning parameters to the SM 422; DO 16 x DC 20-125 V/1.5 A

Parameter assignment

You will find a description of the general procedure for assigning parameters to digital modules in the respective sections.

Parameters of the SM 421; DO 16 x DC 20-125 V/1.5 A

You will find an overview of the parameters you can set and their default settings for the SM 422; DO 16 x DC 20-125 V/1.5 A in the following table.

Table 4-12 Parameters of the SM 421; DO 16 x DC 20-125 V/1.5 A

Parameters	Value range	Default setting[2]	Parameter type	Scope
Enable				
• Diagnostic interrupt[1]	Yes/no	No	Dynamic	Module
• Destination CPU for interrupt	1 to 4	-	Static	Module
Reaction to CPU STOP	Substitute a value (SV) Keep last value (KLV)	SV	Dynamic	Module
Diagnostics				
• Load voltage L+ missing	Yes/no	No	Static	Channel group
• Short-circuit to M	Yes/no	No	Static	Channel
Set substitution value "1"	Yes/no	No	Dynamic	Channel

[1] If you use the module in ER-1/ER-2, you must set this parameter to "No" because the interrupt lines are not available in ER-1/ER-2.

[2] Only in the CR (central rack) is it possible to start up the digital modules with the default settings.

Assigning the "No load voltage L+" diagnostics to channel groups

You can only set the "No load voltage L+" diagnostics separately for each channel group. In other words, the setting for channel 0 applies to inputs 0 to 7, and the setting for channel 8 applies to inputs 8 to 15.

See also

Parameters (Page 85)