

MANUFACTURER DOCUMENT PACKAGE

Manufacturer's Manual

Selected official pages for procurement and maintenance review

PRODUCT BRAND

Siemens

PRODUCT MODEL

6ES7322-5HF00-0AB0

Eight-Channel Relay Output Module. Relevant section pages: 176, 177, 178, 179, 180, 181, 182. Adjacent model text on shared pages is outside this product reference.

OFFICIAL SOURCE

S7-300 Module data; 05/2022, A5E00105505-AK

Siemens original documentation and product reference

The exact 5HF00 chapter ends on source page 182 before 1HF10 starts. Conditions from the following 1HF10 chapter are not transferred to this product.

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Amikon Limited prepared this independent reference package. Selected manufacturer pages follow with their original content and pagination visible.

SIMATIC

S7-300 S7-300 Module data

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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.

3.35 Relay output module SM 322; DO 8 x Rel. 230VAC/5A; (6ES7322-5HF00-0AB0)

Order number

6ES7322-5HF00-0AB0

Properties

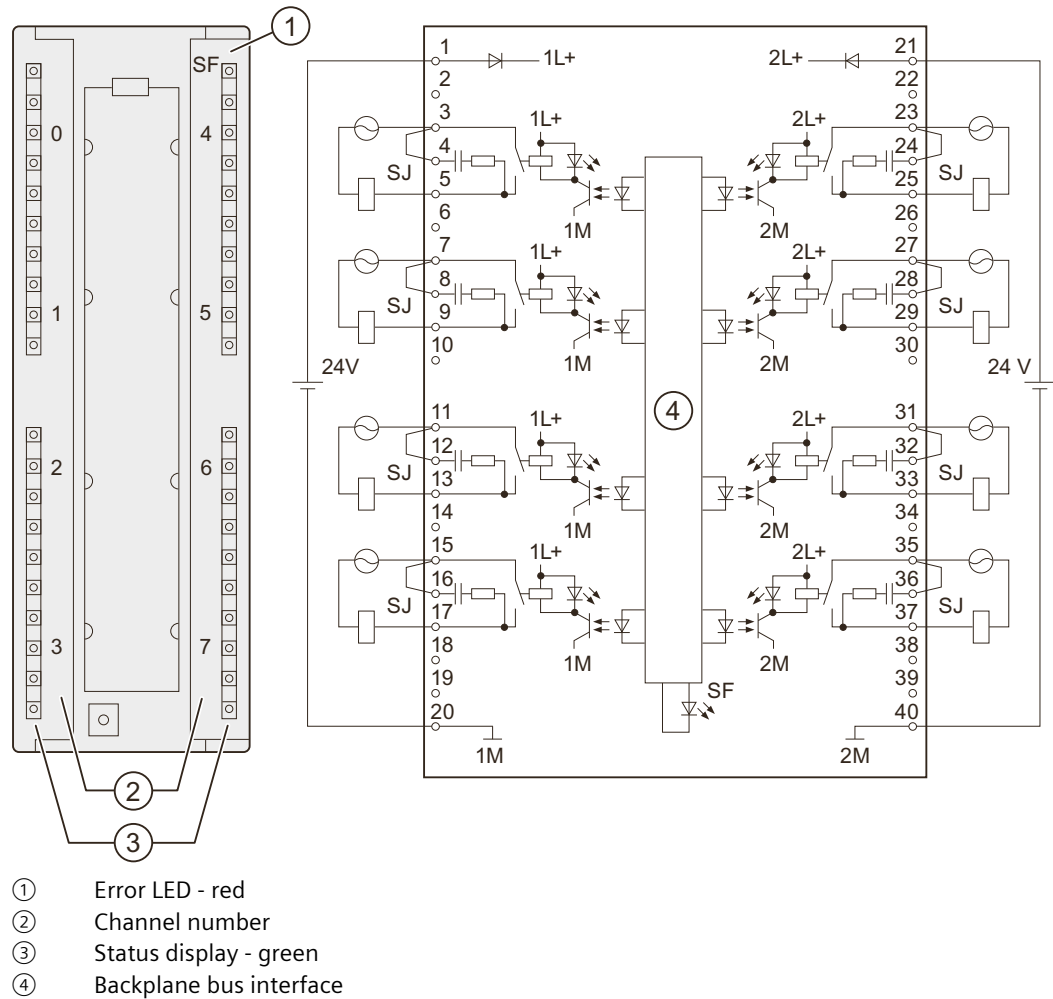
The relay output module SM 322; DO 8 x Rel. 230 V AC / 5A is characterized by the following properties:

- 8 outputs, electrically isolated
- Load voltage 24 to 120 V DC, 24 to 230 V AC
- Suitable for AC solenoid valves, contactors, motor starters, FHP motors and signal lamps
- You can protect the contacts with an RC quenching element by setting a jumper (SJ.)
- Group error display
- Channel-specific status displays
- Programmable diagnostic interrupt
- Programmable substitute value output
- Supports parameter reassignment in RUN

Overvoltage protection of contacts

You can protect the contacts against overvoltage by bridging (SJ) the module terminals 3 and 4, 7 and 8, 12 and 13 etc. (see the diagram below).

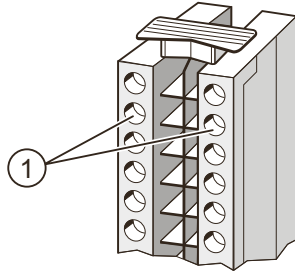
Wiring and block diagram of SM 322; DO 8 x Rel. 230 V AC / 5A



Operation on safety extra-low voltage (SELV)

Make allowances for the special feature outlined below when operating the 6ES7322-5HF00-0AB0 relay output module on SELV:

The horizontally adjacent terminal of a terminal operated on SELV may not be operated at a rated voltage higher than 120 VUC. When operated at voltages higher than 120 VUC, the creepage distances and air gaps in the 40-pin front connector do not meet SIMATIC requirements of safe electrical separation.



- ① If one of two horizontally adjacent terminals is operated on SELV, the other terminal may not be operated at more than 120 VUC.

Technical specifications of the SM 322; DO 8 x Rel. 230 V AC / 5A

Technical specifications	
Dimensions and weight	
Dimensions W x H x D (mm)	40 x 125 x 117
Weight	ca. 320 g
Module-specific data	
Supports parameter reassignment in RUN	Yes
• Reaction of non-programmed outputs	Return the output value which was valid before the parameterization
Supports isochronous mode	no
Number of outputs	8
Cable length	
• unshielded	max. 600 m
• shielded	max. 1000 m
Voltages, currents, electrical potentials	
Rated electronics supply voltage L+	24 V DC
• Reverse polarity protection	yes
Total current of outputs (per group)	
• horizontal mounting position up to 60°	max. 5 A
• vertical mounting position up to 40°	max. 5 A
Electrical isolation	
• between channels and the backplane bus	yes
• between channels and the power supply to relays	yes
• between channels in groups of	yes 1
Maximum potential difference	
• Between M _{internal} and the power supply to relays and outputs	250 V AC
• Between outputs of different groups	500 V AC

3.35 Relay output module SM 322; DO 8 x Rel. 230VAC/5A; (6ES7322-5HF00-0AB0)

Technical specifications		
Isolation test voltage		
• between M _{internal} and the power supply to relays	500 V DC	
• between M _{internal} and the power supply to relays and outputs	1500 V AC	
• between outputs of different groups	2000 V AC	
Current consumption		
• from the backplane bus	max. 100 mA	
• from power supply L+	max. 160 mA	
Power loss of the module		typ. 3.5 W
Status, interrupts, diagnostics		
Status display	green LED per channel	
Interrupts		
• Diagnostic interrupt	programmable	
Diagnostic functions		programmable
• Group error display	red LED (SF)	
• Reading diagnostics information	supported	
Actuator selection data		
Thermal current, continuous		max. 5 A
Minimum load voltage / current		10 V /10 mA ¹⁾
Residual current		11.5 mA ²⁾
Short circuit-proof to IEC 947-5-1		With circuit-breaker, characteristics B, for: cos Φ 1.0: 600 A cos Φ 0.5...0.7: 900 A With 8 A Diazed fuse: 1000 A
Switching capacity and useful life of contacts		
• with resistive load		
Voltage	Current	No. of switching cycles (typical)
24 V DC	5.0 A	0.2 million
24 V DC	2.5 A	0.4 million
24 V DC	1.0 A	0.9 million
24 V DC	0.2 A	1.7 million
24 V DC	0.1 A	2 million
120 V DC	0.2 A	1.7 million
120 V DC	0.1 A	2 million
230 V AC	5.0 A	0.2 million
230 V AC	2.5 A	0.4 million
230 V AC	1.0 A	0.9 million
230 V AC	0.2 A	1.7 million
230 V AC	0.1 A	2 million
• with inductive load		
Voltage	Current	No. of switching cycles (typical)

Technical specifications		
24 V DC	5.0 A	0.1 million
24 V DC	2.5 A	0.25 million
24 V DC	1.0 A	0.5 million
24 V DC	0.2 A	1 million
24 V DC	0.1 A	1.2 million
120 V DC	0.1 A	1.2 million
230 V AC	5.0 A	0.1 million
230 V AC	2.5 A	0.25 million
230 V AC	1.0 A	0.5 million
230 V AC	0.2 A	1 million
230 V AC	0.1 A	1.2 million
An RC quenching element (jumper "SJ" inserted) or an external protection circuit extend the service life of contacts.		
Size of the motor starter	max. size 5 to NEMA	
	Power	No. of switching cycles (typical)
Lamp load (230 V AC)	1000 W 1500 W	25000 10000
Energy-saving lamps/fluorescent lamps with electronic ballast ³⁾	10 x 58 W	25000
Fluorescent lamps, conventionally compensated	1 x 58 W	25000
Fluorescent lamps, non-compensated	10 x 58 W	25000
Contact protection	RC quenching element; 330 Ω, 0.1 μF	
Wiring two outputs in parallel		
• for redundant load control	supported (only outputs with the same load voltage)	
• for performance increase	not supported	
Control of a digital input	supported	
Switching frequency		
• Mechanical	max. 10 Hz	
• with resistive load	max. 2 Hz	
• with inductive load to IEC 947-5-1, DC13/AC15	max. 0.5 Hz	
• with lamp load	max. 2 Hz	
Wiring of the actuators	using a 40-pin front connector	
¹⁾ Without inserted jumper (SJ).		
²⁾ With AC load voltage and inserted jumper (SJ). No residual current if the jumper (SJ) is not installed.		
³⁾ The sum of all inrush currents on a ballast connected to an output must not exceed 5 A.		

NOTE

The residual current of an RC quenching element connected to IEC Type 1 inputs may cause unwanted signal states. Remove the SJ jumper to rectify this fault.

Configuration in RUN

Special considerations must be given if you use the Configuration in RUN function.
 SF LED is lit:

Status before re-configuration diagnostics on, SF LEDs lit among others (on CPU, IM or module), although diagnostics are no longer pending and the module is operating correctly.
Solution:

- Only change the configuration when no diagnostics are pending for the module or
- Pulling and plugging the module.

3.35.1 Parameters of SM 322; DO 8 x Rel. AC 230V/5A

Parameters of SM 322; DO 8 x Rel. AC 230V/5A

The table below provides an overview of configurable parameters and defaults for SM 322; DO 8 x Rel. AC 230V/5A.

The defaults apply if you have not set any parameters in **STEP 7**.

Table 3-35 Parameters of SM 322; DO 8 x Rel. AC 230V/5A

Parameters	Range of values	Defaults	Parameter type	Scope
Enable • Diagnostic interrupts	yes/no	no	Dynamic	Module
Reaction to CPU STOP	Set substitution value (SSV) Hold last value (HLV)	SSV	Dynamic	Channel
Set substitution value "1"	yes/no	no	Dynamic	Channel

See also

[Programming digital modules \(Page 52\)](#)

3.35.2 SM 322; DO 8 x Rel. AC 230V/5A - Diagnostics

Diagnostics messages of SM 322; DO 8 x Rel. AC 230V/5A

The table below provides an overview of the diagnostic messages of SM 322; DO 8 x Rel. AC 230V/5A.

Table 3-36 Diagnostics messages of SM 322; DO 8 x Rel. AC 230V/5A

Diagnostics message	LED	Scope of diagnostics	programmable
Watchdog time-out	SF	Module	no
EPROM error	SF	Module	no
RAM error	SF	Module	no

Causes of error and troubleshooting

Table 3-37 Diagnostic messages of SM 322; DO 8 x Rel. AC230V/5A, cause of error and troubleshooting

Diagnostics message	Error detection	Possible cause of error	To correct or avoid errors
Watchdog time-out	generally	infrequent high level of electro-magnetic interference	Eliminate interference and cycle the CPU power supply off and on
		Defective module	Replace the module

3.36 Relay output module SM 322; DO 8 x Rel. AC 230 V/5 A; (6ES7322-1HF10-0AA0)

Diagnostics message	Error detection	Possible cause of error	To correct or avoid errors
EPROM error	generally	infrequent high level of electro-magnetic interference	Eliminate interference and cycle the CPU power supply off and on
		Defective module	Replace the module
RAM error	generally	transient high electromagnetic interference	Eliminate interference and cycle the CPU power supply off and on
		Defective module	Replace the module

3.35.3 SM 322; DO 8 x Rel. AC 230V/5A - Interrupts

Introduction

The SM 322; DO 8 x Rel. AC 230V/5A can trigger diagnostic interrupts.

For detailed information on the OBs and SFCs mentioned below, refer to the *STEP 7* Online Help.

Enabling interrupts

There is no default interrupt setting, i.e. interrupts are disabled if not set accordingly. Program the interrupt enable parameter in **STEP 7**.

Diagnostic interrupt

Incoming error events (initial occurrence) and outgoing error events (error is cleared) are reported by means of diagnostics interrupt, if this interrupt is enabled.

The CPU interrupts user program execution in order to process diagnostics interrupt OB82. You can call SFC51 or 59 in OB82 in the user program to obtain detailed diagnostics data from the module.

Diagnostics data remain consistent until the program exits OB82. The module acknowledges the diagnostics interrupt when the program exits OB82.

3.36 Relay output module SM 322; DO 8 x Rel. AC 230 V/5 A; (6ES7322-1HF10-0AA0)

Order number: "Standard module"

6ES7322-1HF10-0AA0

Order number: "SIPLUS S7-300 module"

6AG1322-1HF10-2AA0

Properties

The SM 322; DO 8 x Rel. 230 V AC / 5 A is characterized by the following properties:

- 8 outputs, electrically isolated in groups of 1
- Rated load voltage 24 to 120 V DC, 48 V to 230 V AC
- Suitable for AC/DC solenoid valves, contactors, motor starters, FHP motors and signal lamps.