

S relay - miniature, 1 or 2 pole, 8 - 16 A

Datasheet



Application

Miniature relays may be applied in alarm systems, as interface systems in industrial automation, power-electric systems, lighting control systems (e.g. in daylight-saving switches), staircase systems of household and catering industry equipment and in numerous electric appliances.

Description

The basic features of the miniature relays are:

- Wide range of coil voltages, AC and DC coils
- Rated contact switching current up to 16 A (depending on relay type)
- Height 15.7 mm
- High electrical insulation strength
- Mounting on PCB or socket

Features

- Compact PCB plug-in design
- 1 or 2 C/O contact(s)
- Optional plug-in LED indicator
- Rated load AC1 8-16 A

Benefits

- Small size
- Light weight construction
- Long term availability
- Competitive price

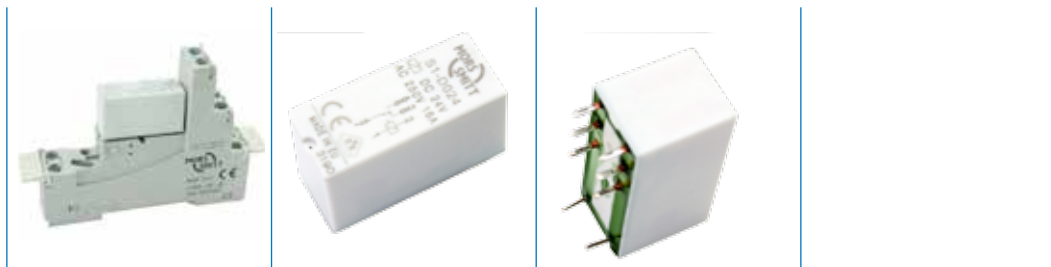
Industry compliancy

- EN 60335-1 Household and similar electrical appliances
- EN 60255 Relay design and environmental conditions
- EN 60947 Low voltage switch gear and control gear
- EN 60947-5-1 Electromechanical control circuit devices and switching elements
- IEC 61810 Electromechanical elementary relays
- The relays meet the requirements of the RoHS directive
- EN 61810-1:2008 Low voltage directive 2006/95/EC

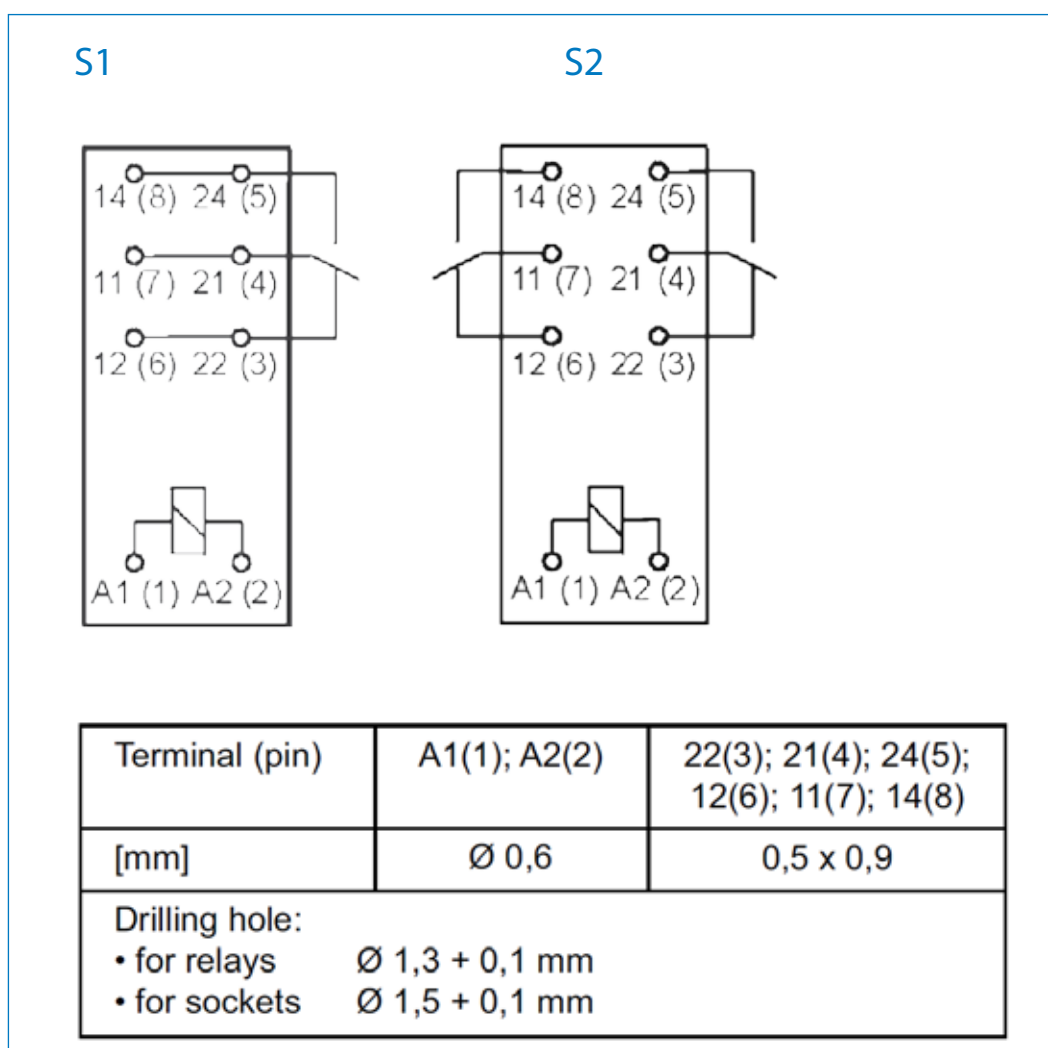


S-relays

Technical specifications



Connection diagram (pin side view)



S-relays

Technical specifications

Coil data DC-versions

Operating time at nominal voltage	
Pull-in time	7 ms
Release time	3 ms
Operating voltage range in %	0.7 - 1.4 Unom*
Nominal power consumption	0.4 - 0.48 W
Min hold-up voltage	0.1 Unom

* depending on temperature, see page 6 & 7

Coil code	Rated voltage Un VDC	Coil resistance $\pm 10\%$ at 20 °C Ω	Coil operating range VDC	
			min. (at 20 °C)	max. (at 20 °C)
D 003	3	22	2.1	7.6
D 005	5	60	3.5	12.7
D 006	6	90	4.2	15.3
D009	9	200	6.3	22.9
D 012	12	360	8.4	30.6
D 018	18	710	12.6	45.9
D 024	24	1440	16.8	61.2
D 036	36	3140	25.2	91.8
D 048	48	5700	33.6	122.4
D 060	60	7500	42.0	153.0
D 110	110	25200	77.0	280.0

*other voltages on request

Coil data AC-versions

Operating time at nominal voltage	
Pull-in time	7 ms
Release time	3 ms
Operating voltage range in %	0.8 - 1.2 Unom
Nominal power consumption	0.75 VA
Min hold-up voltage	0.15 Unom

Coil code	Rated voltage Un VAC	Coil resistance $\pm 15\%$ at 20 °C Ω	Coil operating range VAC	
			min. (at 20 °C)	max. (at 20 °C)
A 012	12	100	9.6	13.2
A 024	24	400	19.2	28.8
A 048	48	1550	38.4	57.6
A 060	60	2600	48.0	72.0
A 110	110	8900	88.0	132.0
A 115	115	9600	92.0	138.0
A 120	120	10200	96.0	144.0
A 220	220	35500	176.0	264.0
A 230	230	38500	184.0	276.0
A 240	240	42500	192.0	288.0

*other voltages on request



S-relays

Technical specifications

Contact data

	S1	S2
Maximum make current	30 A	15 A
Maximum continuous current	16 A	8 A
Maximum switching voltage	250 V, 400 V	250 V, 400 V
Minimum switching voltage/current	5 V / 5 mA	5 V / 5 mA
Material	AgNi	AgNi
Contact resistance	≤100 mΩ	≤100 mΩ

* AgNi/Au 5 μm or AgSnO₂ on request

Performance characteristics

Electrical life (number of cycles)	
- Resistive AC1	> 10 ⁵ , 8 A, 250 VAC
- DC L/R = 40 ms	> 10 ⁵ , 0.15 A, 220 VDC
Mechanical life	≥ 3 x 10 ⁷ cycles (Unpowered)
Dielectric strength	Between coil contacts 5000 VAC Contact clearance 1000 VAC Pole - pole 2500 VAC
Max. operating frequency	At rated load 600 cycles/hour (AC1) No load 72000 cycles/hour

Mechanical data

Dimensions (d x w x h)	29 x 12.7 x 15.7mm
Weight	14 g

Environment conditions

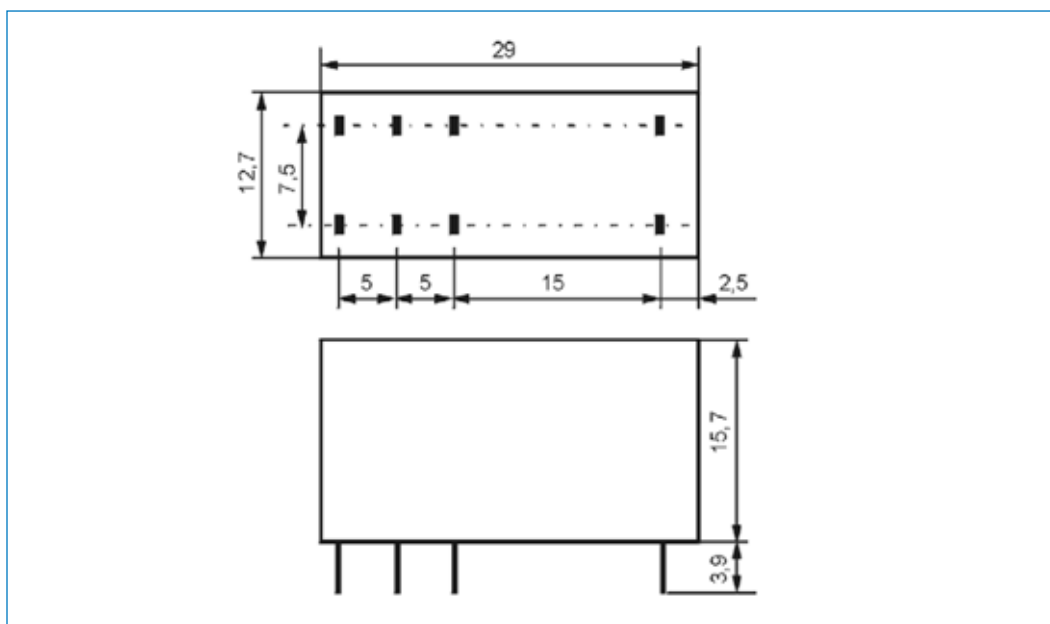
Storage temperature	-40 °C...+85 °C	
Operating temperature	AC -40 °C...+70 °C DC -40 °C...+85 °C	
Shock	S1: 30 g / S2: 20 g	
Vibrations	5 g, 10-150 Hz	
Environment protection	EN 116000-3	RTIII
Degree of protection	EN 60529	IP40



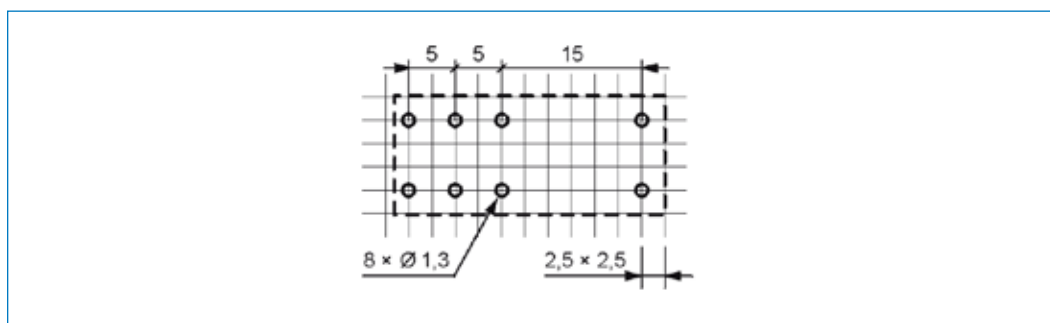
S-relays

Technical specifications

Dimensions



Pin out (solder side view)



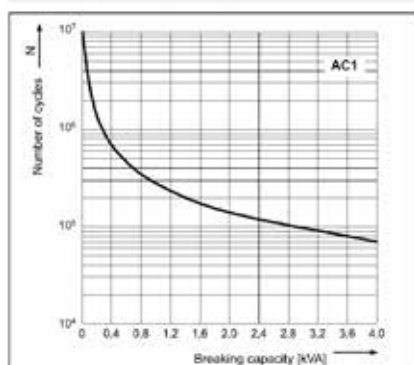
S-relays

Technical specifications

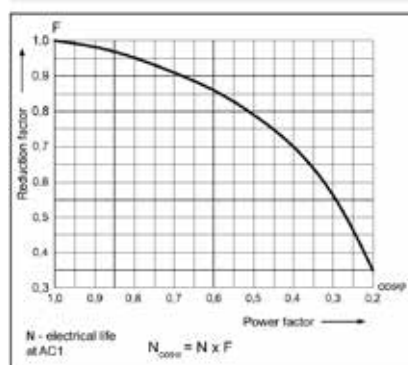
Electrical life expectancy - S1

The life expectancy values shown below are based on factory tests. These values could be different in real life applications as environmental conditions, switching frequencies and duty cycles will influence these values.

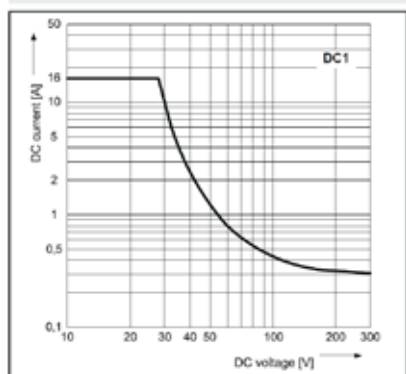
Electrical life at AC resistive load. Switching frequency: 600 cycles/hour Fig. 1



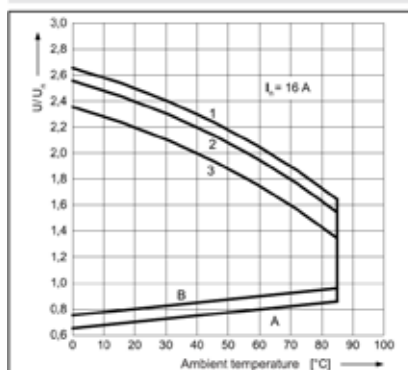
Electrical life reduction factor at AC inductive load Fig. 2



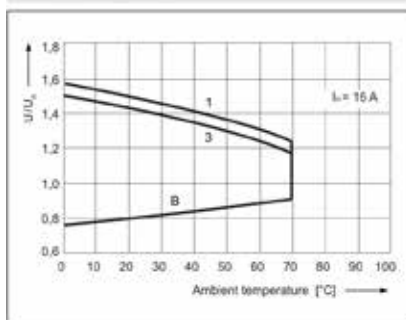
Max. DC resistive load breaking capacity Fig. 3



Coil operating range - DC Fig. 4



Coil operating range - AC 50 Hz. Fig. 5



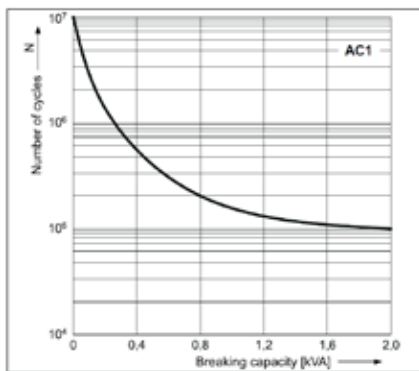
S-relays

Technical specifications

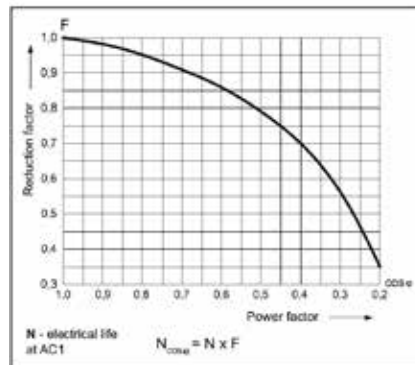
Electrical life expectancy - S2

The life expectancy values shown below are based on factory tests. These values could be different in real life applications as environmental conditions, switching frequencies and duty cycles will influence these values.

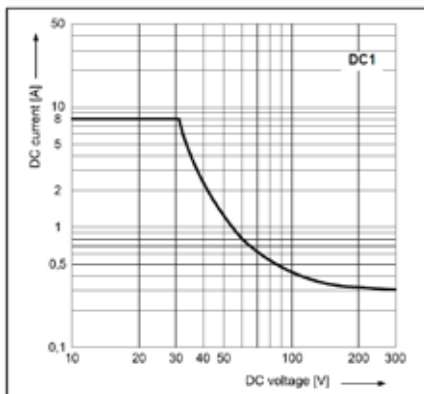
Electrical life at AC resistive load. Switching frequency: 600 cycles/hour Fig. 1



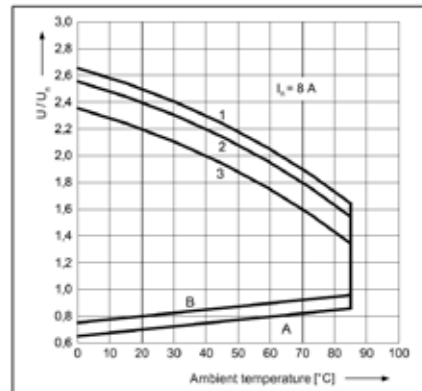
Electrical life reduction factor at AC inductive load Fig. 2



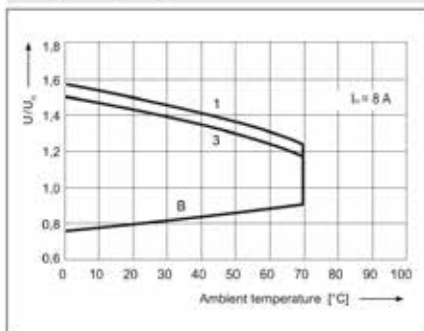
Max. DC resistive load breaking capacity Fig. 3



Coil operating range - DC Fig. 4

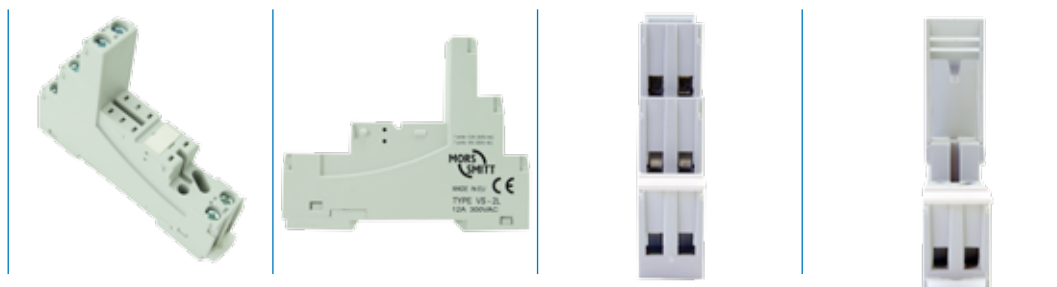


Coil operating range - AC 50 Hz Fig. 5



S-relays

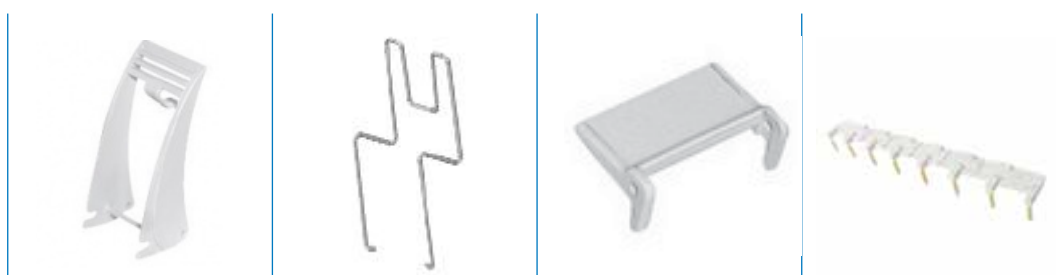
Sockets



VS-2L

Art. no.	Type	Weight (g)	Dimensions (mm)
321000559	VS-2L	42	78.1 x 15.9 x 61

Accessories



MS-2L

CS-1

DPS-1

S-connect-5

Art. no.	Type	Applicable for
321000560	MS-2L	Relay retaining clip, plastic
321000563	CS-1	Relay retaining clip, metal
321000564	DPS-1	Description plate
321000562	S-connector-5	Interconnection strip

S-relays Modules



Art.no.	Type	Schematic	Voltage	LED colour
321000507	DM-1 Limits overvoltage on DC coils	+A2 -A1	6...230 VDC	
321000524	DM-2 Limits overvoltage on DC coils	-A2 +A1	6...230 VDC	
321000525	DLM-3R Limits overvoltage on DC coils	+A2 -A1	6...24 VDC	Red
321000526			24...60 VDC	Red
321000527	DLM-3G Limits overvoltage on DC coils	+A2 -A1	110...230 VDC	Red
321000528			6...24 VDC	Green
321000529	DLM-3G Limits overvoltage on DC coils	+A2 -A1	24...60 VDC	Green
321000530			110...230 VDC	Green
321000531	DLM-4R Limits overvoltage on DC coils	-A2 +A1	6...24 VDC	Red
321000532			24...60 VDC	Red
321000533	DLM-4G Limits overvoltage on DC coils	-A2 +A1	110...230 VDC	Red
321000534			6...24 VDC	Green
321000535	DLM-4G Limits overvoltage on DC coils	-A2 +A1	24...60 VDC	Green
321000536			110...230 VDC	Green
321000537	RCM-5 Limits overvoltage on DC coils	A2 A1	6...24 VAC/DC	
321000538			24...60 VAC/DC	
321000539	RCM-5 Coil energizing indication	A2 A1	110...230 VAC/DC	
321000540	LM-6R Limits overvoltage on DC coils	≈ A2 ± A1	6...24 VDC	Red
321000541			24...60 VDC	Red
321000542	LM-6G Limits overvoltage on DC coils	≈ A2 ± A1	110...230 VDC	Red
321000543			6...24 VDC	Green
321000544	LM-6G Limits overvoltage on DC coils	≈ A2 ± A1	24...60 VDC	Green
321000545			110...230 VDC	Green
321000546	LVM-7R Limits overvoltage on DC coils	≈ A2 ± A1	6...24 VDC	Red
321000547			24...60 VDC	Red
321000548	LVM-7G Limits overvoltage on DC coils	≈ A2 ± A1	110...230 VDC	Red
321000549			6...24 VDC	Green
321000550	LVM-7G Limits overvoltage on DC coils	≈ A2 ± A1	24...60 VDC	Green
321000551			110...230 VDC	Green
321000552	VM-8 Limits overvoltage on AC coils	A2 A1	24 VAC	
321000553		A2 A1	130 VAC	
321000554		A2 A1	230 VAC	
321000555	RM-9 Limits overvoltage on DC coils	A2 A1	110...230 VAC	



S-relays

Instructions

Installation, operation, maintenance

Installation

- Install the socket and connect wiring according the identification on the terminals, plug the relay into the socket
- Reverse installation of socket is not possible due to mechanical blocking by pinning
- Do not reverse the polarity of the coilconnection when a diode is used
- Relays can be mounted tight next to each other
- Warning! Never use silicon near by relays!

Operation

- Before operate always apply voltage to coil to check correct operation
- Also switching the load a few times is advised
- Long term storage may corrode the silver on the relay pins
- By plugging the relay into the socket, the connector receivers will automatically clean the corrosion on the pins and guarantee a good connection
- Do not use the relay in places with flammable gas as the arc generated from switching could ignite gasses

Maintenance

- When the relay does not appear to operate correct, please check presence of coil voltage
- Use a multimeter
- If optional LED is used coil presence should be indicated, if coil voltage is present but the relay does not work, a short circuit of suppression diode is possible (The coil connection was reversed)
- If relay does not work after inspection, please replace the relay by a similar model



S-relays

Ordering codes

S1-relays

S1-D012	12 VDC	321000751
S1-D024	24 VDC	321000752
S1-A230	230 VAC	321000759

S2-relays

S2-D012	12 VDC	321000771
S2-D024	24 VDC	321000772
S2-A230	230 VAC	321000779

** other voltages on request*





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