

mm inch

### FEATURES

- Relay complies with EN 50205, Type A
- Small PC board area
- Different contact configurations:

Type	l x b x h (mm)
2a2b, 3a1b	31.0 x 28.6 x 14.5
4a2b, 5a1b	39.0 x 28.6 x 14.5

- Low profile: 14.5mm
- Insulation according to EN 60664-1:

Overvoltage category III,  
pollution degree 2, 250V AC

#### Reinforced insulation:

Clearance and creepage 5.5mm  
between all contacts and between  
contact NO4 and coil

#### Basic insulation:

Clearance 3mm and creepage 4mm  
between all contacts and between  
contact NC3 and coil

### TYPICAL APPLICATIONS

- Emergency stop switches
- Machine safety engineering
- Safety control units
- Automation technology
- Elevators
- Cable cars
- Escalators
- Process technology
- Railway and signal technology
- Medical technology
- Conveyance
- Overcurrent protection with monitor contact

## SPECIFICATIONS

### Contact

Item		4 poles	6 poles
Contact arrangement		2 Form A / 2 Form B 3 Form A / 1 Form B	4 Form A / 2 Form B 5 Form A / 1 Form B
Forcibly guided contacts		all contacts: Type A, EN 50205	
Initial contact resistance, max. (By voltage drop 6 V DC 1 A)		100 mΩ	
Contact material		Gold-flashed AgNi alloy type	
Rating (resistive load)	Nominal switching capacity	6 A 250 V AC, 6 A 30 V DC	
	Max. switching power	1,500 VA, 180 W	
	Max. switching voltage	250 V AC, 30 V DC	
	Max. switching current	6 A	
Expected life (min. operations)	Mechanical (at 180 cpm)	10 <sup>7</sup>	
	Electrical	250 V AC 6 A resistive load: 10 <sup>5</sup> (at 20 cpm)	
Degree of protection		RT III#2	

#1 This value can change due to the switching frequency, environmental conditions, and desired reliability level, therefore it is recommended to check this with the actual load.

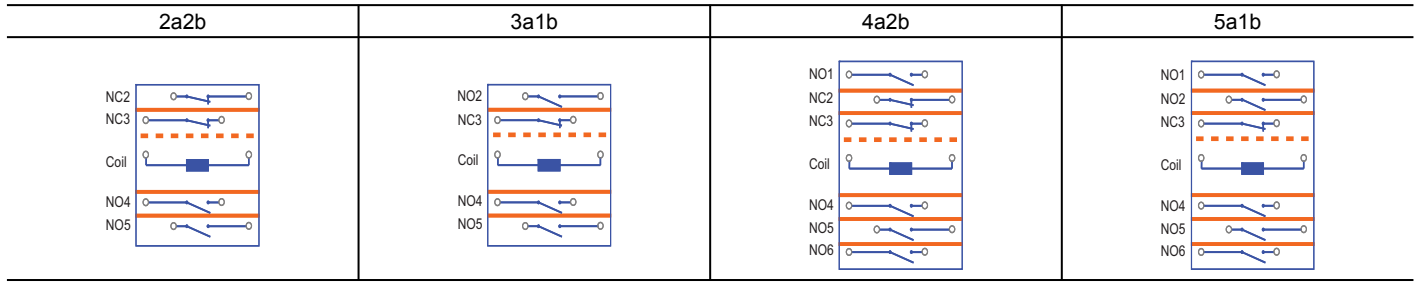
#2 According to EN 61810-1: 2010, table 2

### Coil

Item		4 poles	6 poles
		2 Form A / 2 Form B 3 Form A / 1 Form B	4 Form A / 2 Form B 5 Form A / 1 Form B
Operate / release and holding at 20°C 68°F (% of U <sub>nominal</sub> )		75% / 15% min. 60%	
Nominal operating power		670 mW	

# SF-Y

## Insulation



- = Reinforced insulation: overvoltage category III, pollution degree 2, 250V AC  
Clearance and creepage distance 5.5mm between all contacts and between contact NO4 and coil
- - - = Basic insulation: overvoltage category III, pollution degree 3, 250V AC  
Clearance distance 3mm and creepage distance 4mm between all contacts and between contact NC3 and coil

## Characteristics (at 20°C 68°F)

Item	4 poles		6 poles	
	2 Form A / 2 Form B 3 Form A / 1 Form B		4 Form A / 2 Form B 5 Form A / 1 Form B	
Max. operating speed	20 cpm (at nominal voltage)			
Initial insulation resistance	Min. 1,000 MΩ at 500 V DC			
Initial breakdown voltage	At open contact	1,500 Vrms for 1 min.		
	Between contacts	— 4,000 Vrms for 1 min.: NC2, NO2 / NC3 NO4 / NO5	— 4,000 Vrms for 1 min.: NO1 / NC2, NO2 NC2, NO2 / NC3 NO4 / NO5 NO5 / NO6	
	Between contact and coil	- - - 2,500 Vrms for 1 min.: NC3 — 4,000 Vrms for 1 min.: NO4		
Operate time (at nominal voltage)	Max. 20 ms			
Release time (at nominal voltage)	Max. 10 ms			
Shock resistance	Functional	200 m/s <sup>2</sup>		
	Destructive	1,000 m/s <sup>2</sup>		
Vibration resistance	Functional	10 to 55 Hz at double amplitude of 1.5 mm (detection time: 10μs)		
	Destructive	10 to 55 Hz at double amplitude of 1.5 mm		
Conditions for operation, transport and storage (Not freezing and condensing at low temperature)	Ambient temp.	-40°C to +70°C -40°F to +158°F		
	Humidity	5 to 85% R.H.		
Unit weight	Approx. 19 g Approx. 0.67 oz		Approx. 23 g Approx. 0.81 oz	

### Important: Relay characteristics may be influenced by:

- strong external magnetic fields
- magnetic conductive materials near the relay
- narrow top-to-top mounting (printed surface to printed surface)

## ORDERING INFORMATION

SFY  -

Contact arrangement	Rated coil voltage
2: 2 Form A / 2 Form B	DC 5, 12, 18, 21, 24V
3: 3 Form A / 1 Form B	
4: 4 Form A / 2 Form B	
5: 5 Form A / 1 Form B	

Note: Standard packing: Tube 20 pcs.  
Please inquire about other coil voltages.  
Gold-clad contact type available on request.

## TYPES

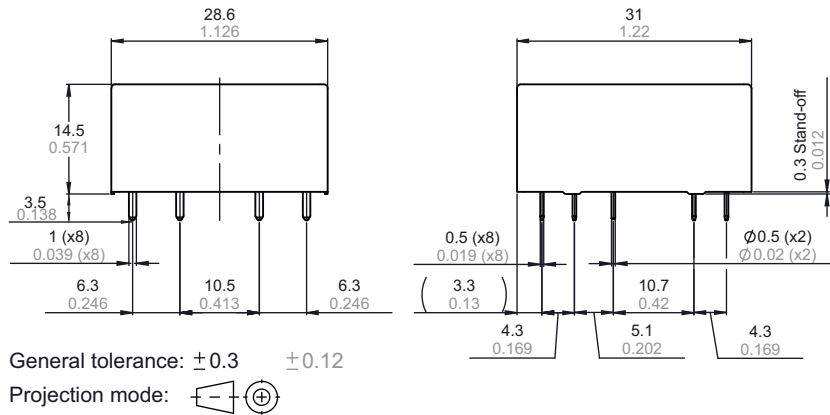
Contact arrangement		Nominal voltage	Part No.
4 poles	2 Form A / 2 Form B	5 V DC	SFY2-DC5V
		12 V DC	SFY2-DC12V
		18 V DC	SFY2-DC18V
		21 V DC	SFY2-DC21V
		24 V DC	SFY2-DC24V
	3 Form A / 1 Form B	5 V DC	SFY3-DC5V
		12 V DC	SFY3-DC12V
		18 V DC	SFY3-DC18V
		21 V DC	SFY3-DC21V
		24 V DC	SFY3-DC24V
6 poles	4 Form A / 2 Form B	5 V DC	SFY4-DC5V
		12 V DC	SFY4-DC12V
		18 V DC	SFY4-DC18V
		21 V DC	SFY4-DC21V
		24 V DC	SFY4-DC24V
	5 Form A / 1 Form B	5 V DC	SFY5-DC5V
		12 V DC	SFY5-DC12V
		18 V DC	SFY5-DC18V
		21 V DC	SFY5-DC21V
		24 V DC	SFY5-DC24V

## COIL DATA (at 20°C 68°F)

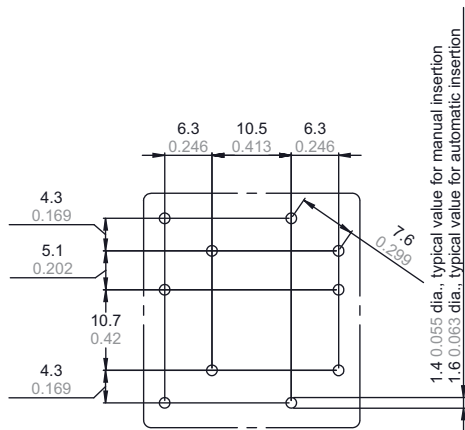
Contact arrangement		Nominal voltage, V DC	Pick-up voltage, V DC (max.) (initial)	Drop-out voltage, V DC (min.) (initial)	Nominal operating current, mA ( $\pm 10\%$ )	Coil resistance $\Omega$ ( $\pm 10\%$ )	Nominal operating power, mW	Max. allowable voltage, V DC
4 poles	2 Form A / 2 Form B	5	3.75	0.75	134	38	Approx. 670	6
		12	9.00	1.8	56	215		14.4
		18	13.50	2.7	37	483		21.6
		21	15.75	3.15	32	666		25.2
		24	18.00	3.6	28	864		28.8
	3 Form A / 1 Form B	5	3.75	0.75	134	38		6
		12	9.00	1.8	56	215		14.4
		18	13.50	2.7	37	483		21.6
		21	15.75	3.15	32	666		25.2
		24	18.00	3.6	28	864		28.8
6 poles	4 Form A / 2 Form B	5	3.75	0.75	134	38	6	
		12	9.00	1.8	56	215	14.4	
		18	13.50	2.7	37	483	21.6	
		21	15.75	3.15	32	666	25.2	
		24	18.00	3.6	28	864	28.8	
	5 Form A / 1 Form B	5	3.75	0.75	134	38	6	
		12	9.00	1.8	56	215	14.4	
		18	13.50	2.7	37	483	21.6	
		21	15.75	3.15	32	666	25.2	
		24	18.00	3.6	28	864	28.8	

### 1. 4 poles (2 Form A / 2 Form B, 3 Form A / 1 Form B)

[CAD Data](#)

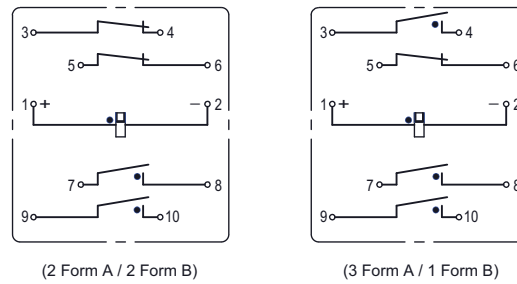


### PC board pattern (Bottom view)



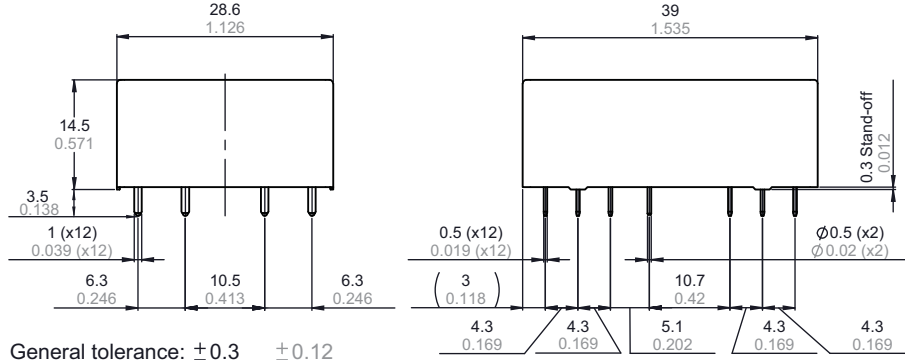
Tolerance:  $\pm 0.1$   $\pm 0.04$

### Schematic (Bottom view)



2. 6 poles (4 Form A / 2 Form B, 5 Form A / 1 Form B)

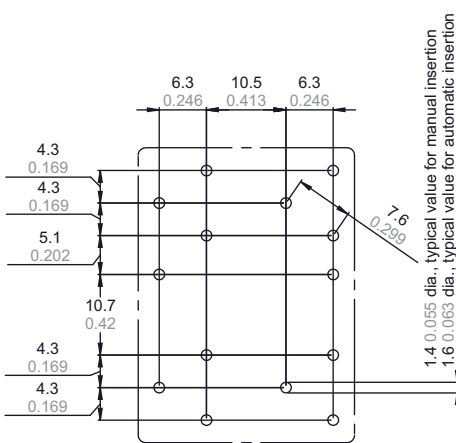
CAD Data



General tolerance:  $\pm 0.3$   $\pm 0.12$

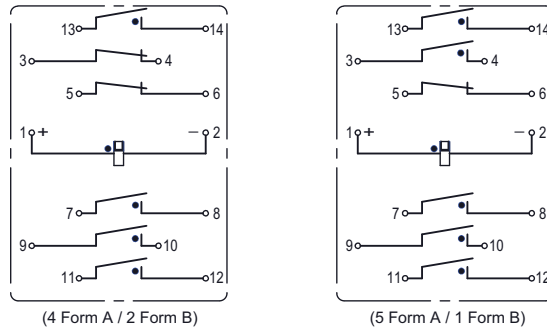
Projection mode:

PC board pattern (Bottom view)



Tolerance:  $\pm 0.1$   $\pm 0.04$

Schematic (Bottom view)



SAFETY STANDARDS

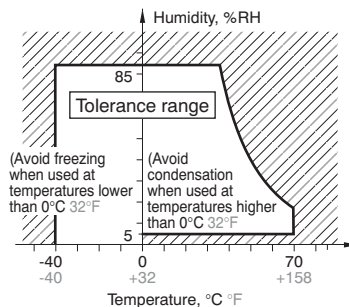
Certification authority	File No.	Applicable standard	Rating	Remarks
TÜV	tbd.	EN 61810-1 EN 50205	230V AC 6A (cos $\varphi = 1.0$ ) 70°C 158°F 24V DC 6A resistive	approved
UL, C-UL	E120782	UL508, CSA C22.2 No.14	250V AC 6A, general use, 100K <sub>ops</sub> 30V DC 6A, general use, 100K <sub>ops</sub> B300, R300 (pilot duty)	pending

NOTES

Conditions for operation, transport and storage

- Ambient temperature, humidity, and atmospheric pressure during usage, transport, and storage of the relay:
  - Temperature: -40 to +70°C -40 to +158°F
  - Humidity: 5 to 85% RH (Avoid freezing and condensation.) The humidity range varies with the temperature. Use within the range indicated in the graph below.

- Atmospheric pressure: 86 to 106 kPa
- Temperature and humidity range for usage, transport, and storage:



- Condensation: Condensation forms when there is a sudden change in temperature under high temperature and high humidity conditions. Condensation will cause deterioration of the relay insulation.
- Freezing: Condensation or other moisture may freeze on the relay when the temperature is lower than 0°C (32°F). This causes problems such as sticking of movable parts or operational time lags.
- Low temperature, low humidity environments: The plastic becomes brittle if the relay is exposed to a low temperature, low humidity environment for long periods of time.

For Cautions for Use, see [Relay Technical Information](#).