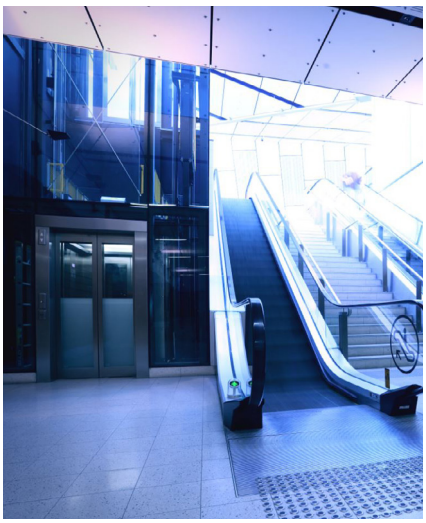
SCHRACK FORCE GUIDED RELAYS

For safety solutions



SCHRACK Force Guided Relays are used in safety circuits in combination with light curtains, interlock switches, and emergency stop switches to control outputs. In the design of the Force Guided Relays, special importance was attached to the switching of low loads by the monitoring circuit. TE Connectivity (TE) has developed comprehensive documentation of Forced Guided Relays which supports accelerating the development process for safety controls and application notes help to point out possible error sources.

CREDIBILITY & RELIABILITY

- Established in the relay market for 20 years
- Innovators in replacing contactors in safety circuits

INDUSTRY 4.0

- High volume manufacturing
- Virtually fully automated packing improves traceability

INDUSTRY STANDARDS & CERTIFICATIONS

- CCC, UL, TUV & VDE*
- Sealed against external influences according to IEC
- IEC 61810-3 protection category RTIII

*for exact product approvals please refer to the individual product group data sheet

EASE DESIGN-IN PROCESS & SUPPORT

- TE has developed special procedures to provide contact reliability
- Comprehensive documentation accelerates the development process for safety controls

TE has extensive capabilities in the design and manufacturing of relays and a broad portfolio of switching solutions for demanding, high performance applications. These relay products are remotely actuated to control electrical power flow by either interrupting or completing an electrical circuit.

In many safety critical applications only a special version of an electro mechanical relay can be used, a Force Guided Relays, according to IEC 61810-3. The special design connects NC (normally closed) and NO (normally open) contacts through an actuator, so that one contact interacts with all the other contacts during switching operation in a planned, forced manner.

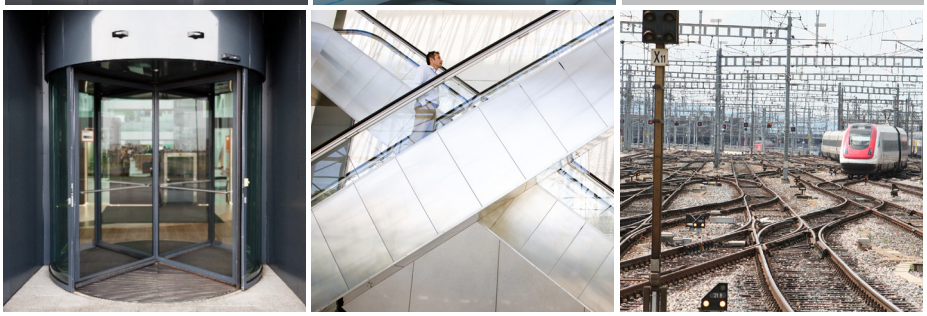
The ultimate goal is, in case of contact welding or other potential failure modes of the relay, to enable a minimum of 0.5 mm (0.20 inch) contact gap of the antivalent contacts – in other words, NO and NC contacts can never be closed at the same time throughout the whole life cycle of the relay and allow operations to switch into a safe state.

TE's SCHRACK Force Guided Relays are essential for safety control applications and help protect people's lives & health when danger needs to be addressed in applications.

FOCUS APPLICATIONS:

- Machine safety such as presses, cutting machines and robot controls
- Building automation such as elevator, escalator and door controls
- Railway such as signaling, break controls, level crossings controls
- Medical devices such as x-ray, ventilation and diagnostic systems

Safety is **paramount** for human beings in all areas of our **daily** lives.



Watch the SCHRACK Force Guided Relays Webinar on TE.com

The SCHRACK portfolio of Force Guided Relays meets the superior requirements towards quality and lifetime of a Force Guided Relays.

TE'S FORCE GUIDED RELAYS PORTFOLIO OFFERS FLEXIBLE DESIGN OPTIONS SUCH AS:

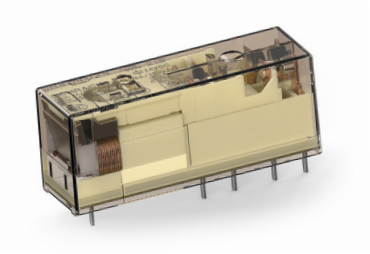
- Multiple contact configurations up to 5 NO (form A) and up to 3 NC (form B) in different form factors
- Different plating options such as standard plating AgSnO2 or high-performance gold plating AgSnO2 + 0.2 µm Au
- Different pin layouts and version with selective contact loading to enable higher voltage ratings
- Standard and sensitive coil options for longer lifetime and improved heat dissipation
- Different packaging options such as box packaging and tube packaging

Being one of the leading manufacturers of Force Guided Relays globally, our standard products are compliant to UL, CSA, VDE, TÜV and CCC regulation (please see details per family for exact approvals).

2 pole
SR2
SRS2

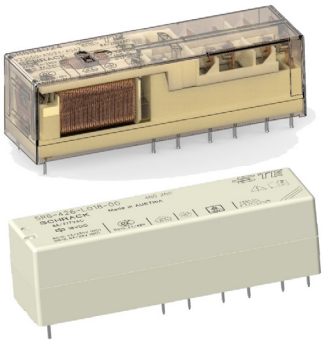
1NO / 1NC and
SR2: 2CO contacts
PCB and socket mount version
SRS2: slim relay

4 pole
SR4



3NO/1NC or
2NO/2NC contacts
16.5 mm height

4 & 6 pole
SR6



6 poles (3 contact versions) or 4 poles for extended isolation
15.7 mm height

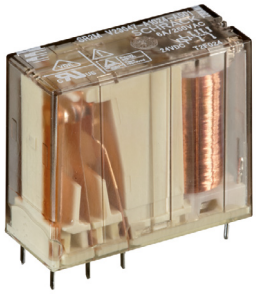
7 pole
SRL7

6NO / 1NC contacts
10.7 mm height

Check out free samples on www.te.com/usa-en/utilities/te-digital-resources/how-to-order-samples.html

Contents

SCHRACK SR2



SCHRACK SR2 Force Guided Relays offer high endurance with reinforced insulation between all adjacent contacts for loads up to 6A. The SR2 family offers a 2-pole contact arrangement with either 1 NO (form A) + 1 NC (form B) contact set or 2 CO (form C) contact set with Force Guided Relays contacts according to IEC 61810-3. The robust and slim footprint of 12.6 mm allows economic usage, if the application requires dense stacked relay design and reinforced insulation at the same time.

FEATURES

- 2 pole relay with force guided contacts according to IEC 61810-3
- Reinforced insulation between poles

CONTACT DATA

- Contact arrangement:
  1 form A (NO) + 1 form B (NC) IEC 61810-3 type A
  2 form C (CO) IEC 61810-3 type B
- Rated voltage: 250 VAC
- Rated current: 6A
- Contact material: AgNi
- Min. recommended contact load: 5 V/10 mA

COIL DATA

- Magnetic system: DC
- Rated coil voltage: 5 to 110 VDC
- Rated coil power: 700 mW

APPLICATIONS

- Emergency shut-off
- Press control
- Machine control
- Elevator and escalator control

INSULATION DATA

- Initial dielectric strength
  - between open contacts: 1500 Vrms
  - between contact and coil: 4000 Vrms
  - between adjacent contacts: 3000 Vrms
- Clearance/creepage between contact and coil: ≥8/8 mm

OTHER DATA

- Ambient temperature (max.): +70°C
- Mounting and terminal type: PCB, THT

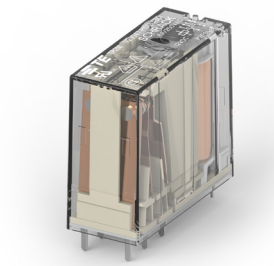
PRODUCT INFORMATION

Product Code	Coil voltage	Contact Arrangement	Part Number
V23047-A1024-A501	24V	2 form C (CO)	1-1393258-5
V23047-A1021-A501	21V	2 form C (CO)	1-1393258-1
V23047-A1024-A511	24V	1 NO (form A) + 1 NC (form B)	1-1393258-7
V23047-A1012-A501	12V	2 form C (CO)	1393258-4
V23047-A1110-A501	110V	2 form C (CO)	1-1415012-1

For additional configurations, see the Data Sheet - SCHRACK SR2

SCHRACK SR2 PLUG-IN & ACCESSORIES

DIN rail mountable sockets for the SCHRACK SR2 2 pole Force Guided Relays allow quick changeover if required. Time efficient spring clamp wire connection and robust screw clamp wire connection available for high flexibility. White snap on marking tabs and virtually tool-less mounting clips save installer most important asset – their time.



FEATURES

- 2 pole relay with force guided contacts according to IEC 61810-3
- Version for use in sockets

CONTACT DATA

- Contact arrangement:
  1 form A (NO) + 1 form B (NC) IEC 61810-3 type A
  2 form C (CO) IEC 61810-3 type B
- Rated voltage: 250 VAC
- Rated current: 6 A
- Contact material: AgNi
- Min. recommended contact load: 5 V/10 mA

COIL DATA

- Magnetic system: DC
- Rated coil voltage: 5 to 110 VDC
- Rated coil power: 700 mW

APPLICATIONS

- Emergency shut-off
- Press control
- Machine control
- Elevator and escalator control

INSULATION DATA

- Initial dielectric strength
  - between open contacts: 1000 Vrms
  - between contact and coil: 4000 Vrms
  - between adjacent contacts: 2500 Vrms
- Clearance/creepage between contact and coil: ≥8/8 mm

OTHER DATA

- Ambient temperature (max.): +70°C
- Mounting and terminal type: DIN rail or PCB socket

PRODUCT SELECTION INFORMATION

Product Code	Coil voltage	Contact Arrangement	Part Number
V23047-P1012-A501	12 V	2 Form C (CO)	7-1415543-6
V23047-P1024-A501	24 V		7-1415543-8

For additional configurations, see Schrack SR2 Plug-in and SR2 Plug-in Accessories

Force Guided Relay SRS2

SRS2 is a force guided relay (IEC/ EN61810-3 type A) for safety applications with limited space. The just 210 mW coil power consumption allows a dense arrangement in hot environments. The NO contact can switch 2 A/ 250 VAC or 6 A/ 24 VAC/DC and is linked to a monitoring NC contact with a diagnostic coverage of 99% (IEC 61508-2). The relay can be mounted upright or horizontal.

FEATURES

- Slim 2 pole relay with force guided relay according to type A of IEC/EN 61810-3 (EN50205)
- 1 form A (NO) + 1 form B (NC) contacts
- Small size (28 x 6 x 15.5) mm
- Polarized magnet system with small coil power consumption (210 mW)
- Reinforced insulation between NO and NC–circuit and between NO and relay coil

CONTACT DATA

- Contact arrangement: 1 form A (NO) + 1 form B (NC) IEC 61810-3 type A
- Rated voltage: 250 VAC
- Rated current (NO): 6A (70VAC) / 2A (250VAC)
- Contact material: NO: AgSnO2 NC: AgNi + gold plated
- Min. recommended contact load: NO: 12V/3 mA NO: 3.3V/1 mA

COIL DATA

- Magnetic system: DC
- Rated coil voltage: 3.3 to 24 VDC
- Rated coil power: 210 mW

APPLICATIONS

- Safety relay modules
- Safety controllers
- Programmable logic controllers (PLC's)
- Machines
- Presses
- Robots
- Emergency shut-off
- Light barriers
- Elevator and escalator safety control
- Railway level crossings
- Signaling

INSULATION DATA

- Initial dielectric strength
  - between open contacts: 500 Vrms
  - between NO contact and coil: 3000 Vrms
  - between NC contact and coil: 800 Vrms
- Clearance/creepage between NO and coil: ≥8/8 mm

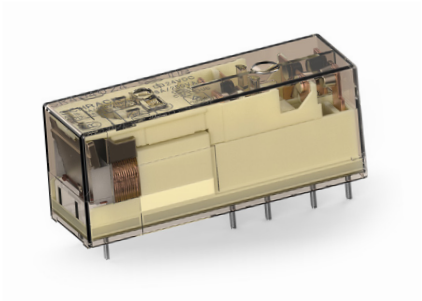
OTHER DATA

- Ambient temperature (max.): +80°C
- Mounting and terminal type: PCB, THT

For additional configurations, see the Data Sheet - Force Guided Relay SRS2

SCHRACK SR4

SCHRACK SR4 Force Guided Relays is compact and space efficient for loads up to 8 A. The SR4 family offers a 4-pole contact arrangement with either 3 NO (form A) + 1 NC (form B) contact set or 2 NO (form A) + 2 NC (form B) contact set with Force Guided Relays contacts according to IEC 61810-3. The optimized ratio between 13 mm width and 16.5 mm height allows miniaturization for horizontally or vertically installed PCBs and modules.



FEATURES

- 4 pole relay with force guided contacts according to IEC 61810-3
- Compact design, space efficient

CONTACT DATA

- Contact arrangement: 3 form A + 1 form B (3 NO + 1 NC) and 2 form A + 2 form B (2 NO + 2 NC)
- Rated voltage: 250 VAC
- Rated current: 8 A
- Contact material: AgSnO2
- Min. recommended contact load: 5 V/10 mA

COIL DATA

- Magnetic system: DC
- Rated coil voltage: 5 to 110 VDC
- Rated coil power: 800 mW

APPLICATIONS

- Emergency shut-off
- Press control
- Machine control
- Elevator and escalator control

INSULATION DATA

- Initial dielectric strength
  - between open contacts: 1500 Vrms
  - between contact and coil: 4000 Vrms
  - between adjacent contacts: 2500 Vrms
- Clearance/creepage between contact and coil: ≥10/10 mm

OTHER DATA

- Ambient temperature (max.): +70°C
- Mounting and terminal type: PCB, THT

PRODUCT INFORMATION

Product Code	Coil voltage	Contact Arrangement	Part Number
SR4D4012	12 V	2 form A + 2 form B (2 NO + 2 NC)	1415055-1
SR4D4018	18 V		1-1415055-1
SR4D4024	24 V		3-1415055-1
SR4M4012	12 V	3 form A + 1 form B (3 NO + 1 NC)	8-1415053-1
SR4M4018	18 V		9-1415053-1
SR4M4024	24 V		4-1415053-1

For additional configurations, see the Data Sheet - SCHRACK SR4

SCHRACK SR6 WITH 4 CONTACTS

If reinforced insulation between all adjacent contacts is a must. The SCHRACK SR6 Force Guided Relays family offers a 4-pole contact arrangement with either 3 NO (form A) + 1 NC (form B) contact set or 2 NO (form A) + 2 NC (form B) contact set with Force Guided Relays contacts according to IEC 61810-3. Reinforced insulation of up to 4000 V between selectively loaded, adjacent contacts – in addition to the reinforced insulation between coil and contact.

FEATURES

- 4 pole relay with force guided contacts according to IEC 61810-3
- High insulation distances between electrical circuits

CONTACT DATA

- Contact arrangement: 3 form A + 1 form B (3 NO + 1 NC) and 2 form A + 2 form B (2 NO + 2 NC)
- Rated voltage: 250 VAC
- Rated current: 8A
- Contact material: AgSnO2
- Min. recommended contact load: 5 V/10 mA

COIL DATA

- Magnetic system: DC
- Rated coil voltage: 5 to 110 VDC
- Rated coil power: 550 mW white cover
  1200 mW transparent cover

APPLICATIONS

- Emergency shut-off
- Press control
- Machine control
- Elevator and escalator control

INSULATION DATA

- Initial dielectric strength
  - between open contacts: 1500 Vrms
  - between contact and coil: 4000 Vrms
  - between adjacent contacts: 3000/4000 Vrms
- Clearance/creepage between contact and coil: ≥5.5/5.5 mm

OTHER DATA

- Ambient temperature (max.): +85°C white cover
  +70°C transparent cover
- Mounting and terminal type: PCB, THT

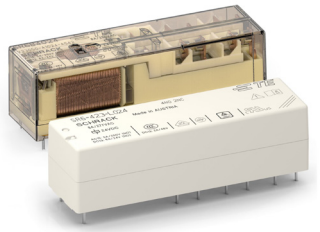
PRODUCT INFORMATION

Product Code	Coil voltage	Coil power / cover	Contact Arrangement	Part Number
SR6-223-U024	24 V	550 mW non transparent cover	2 Form A (NO) + 2 Form B (NC)	1558740-8
SR6-223-U110	110 V			1-1558740-5
SR6D4024	24 V	1200 mW transparent cover		6-1415027-1
SR6D4110	110 V			1415062-1
SR6-313-U024	24 V	550 mW non transparent cover	3 Form A (NO) + 1 Form B (NC)	1558741-8
SR6-313-U048	48 V			1-1558741-2
SR6M4024	24 V	1200 mW transparent cover		3-1415353-1

For additional configurations, see the Data Sheet - SCHRACK SR6 with 4 contacts

SCHRACK SR6 WITH 6 CONTACTS

Our most versatile relay type for design-in flexibility for loads up to 8 A. SCHRACK SR6 Force Guided Relays family offers a 6-pole contact arrangement with either 3 NO (form A) + 3 NC (form B) contact set, 4 NO (form A) + 2 NC (form B) contact set or 5 NO (form A) + 1 NC (form B) contact set with Force Guided Relays contacts according to IEC 61810-3. Sensitive versions with low coil power consumption of only 700 mW approximately, enables excellent low temperature to increase and support lifetime.



FEATURES

- 6 pole relay with force guided contacts according to IEC 61810-3
- Reinforced insulation between all contacts

CONTACT DATA

- Contact arrangement: 3 form A + 3 form B (3 NO + 3 NC), 4 form A + 2 form B (4 NO + 2 NC) and 5 form A + 1 form B (5 NO + 1 NC)
- Rated voltage: 250 VAC
- Rated current: 8 A
- Contact material: AgSnO2
- Min. recommended contact load: 5 V/10 mA

COIL DATA

- Magnetic system: DC
- Rated coil voltage: 5 to 110 VDC
- Rated coil power: 1200 mW/800 mW or 700 mW

APPLICATIONS

- Emergency shut-off
- Press control
- Machine control
- Elevator and escalator control

INSULATION DATA

- Initial dielectric strength
  - between open contacts: 1500 Vrms
  - between contact and coil: 4000 Vrms
  - between adjacent contacts: 3000 Vrms
- Clearance/creepage between contact and coil: ≥5.5/5.5 mm

OTHER DATA

- Ambient temperature (max.): +85°C white cover
  +70°C transparent cover
- Mounting and terminal type: PCB, THT

PRODUCT INFORMATION

Product Code	Coil voltage	Coil power / cover	Contact Arrangement	Part Number
SR6-333-L012	12 V	700 mW non transparent cover	3 Form A (NO) + 3 Form B (NC)	1558736-4
SR6-333-L024	24 V			1558736-8
SR6A4024	24 V	1200 mW transparent cover		1415015-1
SR6A4110	110 V			9-1415018-1
SR6-426-L012	12 V	700 mW non transparent cover	4 Form A (NO) + 2 Form B (NC)	2-1558737-4
SR6-426-L018	18 V			2-1558737-6
SR6-426-L021	21 V			2-1558737-7
SR6-423-L110	110 V			1-1558737-5
SR6B4024	24 V	1200 mW transparent cover		1393260-7
SR6B4110	110 V			1-1393260-3
SR6-516-L012	12 V	700 mW non transparent cover	5 Form A (NO) + 1 Form B (NC)	2-1558738-4
SR6-513-L024	24 V			1558738-8
SR6-513-L110	110 V			1-1558738-5
SR6C4024	24 V	1200 mW transparent cover		1415017-1

For additional configurations, see the Data Sheet - SCHRACK SR6

SCHRACK SRL7

The flattest version of a TE Force Guided Relays with only 10.8 mm height for loads up to 6 A. SCHRACK SRL7 family offers a 7-pole contact arrangement with 5 NO (form A) + 2 NC (form B) contact set with Force Guided Relays contacts according to IEC 61810-3. With an overall height of only 10.7 mm the 7-pole relay belongs to the flattest Force Guided Relays. The low profile is highly reliable for the realization of compact safety modules (overall width of only 17.5 mm), but also wherever there is little space for installation height. The low coil power consumption of only 700 mW enable excellent low temperature to increase and expand the usage of this relay from 70°C now up to 85°C ambient temperature condition.

FEATURES

- Low profile relay with force guided contacts according to IEC 61810-3
- 5 form A (NO) + 2 form B (NC) contacts
- Reinforced insulation between contact circuits

CONTACT DATA

- Contact arrangement: 5 form A + 2 form B contacts (5 NO + 2 NC)
- Rated voltage: 250 VAC
- Rated current: 6 A
- Contact material: Ag alloy
- Min. recommended contact load: 5 V/10 mA

COIL DATA

- Coil voltage range: 5 to 110 VDC
- Operative range: IEC 61810-2
- Max. coil power: 700 mW

APPLICATIONS

- Safety modules
- Process technology
- Elevator and escalator control
- Emergency shut-off
- Remote control
- Robotics
- Machine tools

INSULATION DATA

- Initial dielectric strength
  - between open contacts: 1000 Vrms 1000 Vrms
  - between contact and coil: 4000 Vrms 2500 Vrms
  - between adjacent contacts: 4000 Vrms 2500 Vrms
- Clearance/creepage between contact and coil: ≥5.5/5.5 mm ≥3/4 mm

OTHER DATA

- Ambient temperature (max.): -40°C to 85°C
- Mounting and terminal type: PCB, THT

PRODUCT SELECTION INFORMATION

Product Code	Coil voltage	Contact Arrangement	Part Number
SRL7-523-D012	12 V	5 form A + 2 form B	2045880-4
SRL7-523-D021	21 V		2045880-7
SRL7-523-D024	24 V		2045880-8

For additional configurations, see the Data Sheet - SCHRACK SRL7

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