



Klippon® Relay

Forced guided contacts explained in detail

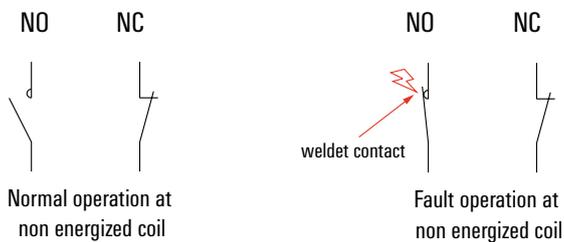
The difference to relays with conventional contacts

Relay modules with forcibly guided contacts use elementary relays according to IEC 61810-1 with a contact set according to IEC 61810-3. From the outside, they can hardly be differentiated from relays with conventional contacts, if at all. Due to their design, an opening failure of forcibly guided contacts can be reliably detected. Relays with such contacts have the following additional characteristics compared to relays with conventional contacts:

- Forcibly guided NC and NO contacts are designed in such a way that they cannot be closed at the same time
- If a contact of a forcibly guided contact set is welded, the antivalent contacts cannot close and the contact opening must be > 0.5 mm
- The contacts are located in contact chambers and are thus specially protected against other contacts and against the coil

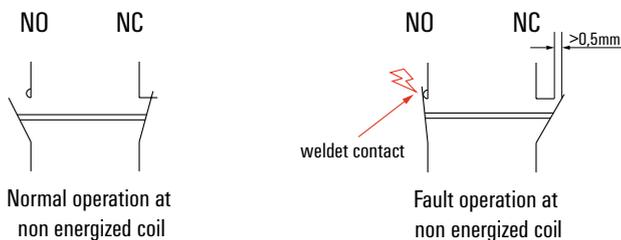
Due to these normative requirements, the design and manufacturing effort for relays with positively driven contacts is much higher.

conventional relay



The normally open contact (NO) is welded in this example. With standard relays, a normally closed contact (NC) can also be closed in case of the de-energized state. In this way, the NC and NO contacts can be closed at the same time and an opening failure cannot be reliably detected.

relay with forcibly guided contacts



The normally open contact (NO) is welded in this example. In this case, relays with forcibly guided contacts cannot have a normally closed contact (NC) which is closed in the de-energized state. In this way, the NC and NO contacts cannot be closed at the same time and an opening failure can be reliably detected. It is mechanically ensured that the NC contact remains open with a minimum contact gap of 0.5 mm even in the de-energized state.



Type A

With type A relays, **all** contacts are mechanically positively driven with each other.

In an example of a six-pole relay with four NO contacts and two NC contacts, the four NO contacts are forcibly guided with both NC contacts. In this example, if one of the NO contacts welds, both NC contacts may no longer close if the relay is de-energized.

Type A relays with forcibly guided contacts can be found in our SAFESERIES Contact Extension.

Type B

In a type B relay, **not all** contacts of a contact set are positively driven with each other.

In an example of a six-pole relay with four NO contacts and two NC contacts, the four NO contacts are forcibly guided with just one of the NC contacts. In this example, if one of the NO contacts welds, the non-force-guided NC contact can still close if the relay is de-energized. The other forcibly guided NC contact may not close. The status of the other NO contacts is undetermined. The non-force-guided NC contact can close because it is not forcibly guided to the other contacts in the relay. The contacts which are not forcibly guided must be specified in the data sheet.

Positively driven relays with changeover contacts (CO) are assigned to type B by the standard, only one NC or NO contact may be used per changeover contact. The reason for this is that the phenomenon of contact spring breakage cannot be excluded, so that in the event of a spring breakage of a changeover contact set, the NO and NC contacts of this contact set can be short-circuited.

Type B relays with forcibly guided contacts can be found in our TERMSERIES FG and RIDERSERIES FG.



SAFESERIES Contact Extension

Visit our online catalogue
for more information



TERMSERIES FG



RIDERSERIES FG