

Relay Terminology

Ambient Temperature: The temperature of the surrounding medium that comes in contact with the device/ equipment.

Breakdown Voltage: The minimum root-mean-square (rms) value of a sinusoidal voltage that results in sparkover.

Coil, relay: One or more windings on a common form.

Coil Power Dissipation: The amount of electric power consumed by a winding. For the most practical purpose, this equals the I^2R loss.

Coil Resistance: The total terminal-to-terminal resistance of a coil at a specified temperature.

Contact Gap: The final length of the isolating distance between mating contacts when the contacts are open.

Contact Arrangement: The combination of contact forms that make up the entire relay switching structure.

Contact Housing: The part that provides means for mounting fixed contacts on a supporting structure.

Contact Material: Substance or combination of substances used as constituents in the manufacture of the contacts.

AgSnO₂ + 0.2μmAu: Silver-Tin Dioxide with a 0.2 layer of gold. Medium to high current applications for resistive, capacitive and particular inductive loads, 100mA-10A.

AgNi10+ 0.2μmAu: Silver-Nickel 10 with a 0.2 layer of gold. Medium to high current applications, 15mA-10A.

AgNi10+ 5μmAu: Silver-Nickel 10 with a 5 layer of gold. Low current applications only, where switching of very low current is crucial; 1mA-300mA, 100mV-60V.

Contact Pressure: Force exerted by one contact against the mating contact of a relay.

Contact Switching Rate: The velocity at which contact switching occurs, e.g., 10 switching operations per second.

Corrosion: The deterioration of a substance, usually a metal, because of a reaction with its environment.

Cover Material: Substance or combination of substances used as constituents in the manufacture of a protective covering used to enclose equipment.

Creeping Distance: The shortest distance between two conducting parts measured along the surface or joints of the insulating material between them.

Safety Relay Selection Material Table

Material	Characteristics	Applications	Range
AgSnO ₂ + 0.2μmAu C	very low welding tendency highest burn-up resistivity very good arc suppression	special for switching, inductive loads	100mA - 10A
AgNi10 + 0.2μmAu N	low welding tendency high burn-up resistivity good arc suppression	circuits with medium to high switching current, DC current circuits	15mA - 10A
AgNi10 + 5μmAu S	higher welding tendency low burn-up resistivity low contact resistance	where very low to medium switching current and voltage is mandatory	1mA - 300mA

Crown Contacts: Improved contact form to enforce high contact stress on at least two spots on the contact to penetrate any built-up contamination; to maintain low contact resistance throughout the life of a relay; and to increase the value of switchable output voltage. Supports low current to high power applications.

Custom Design: Special design to meet customer requirements regarding coil voltage, coil resistance, contact pressure, and relay operate/release time. Possible alteration of max. 3 specifications from the original standard value while the remaining 1 is retained at its original value.

Graphic Symbols

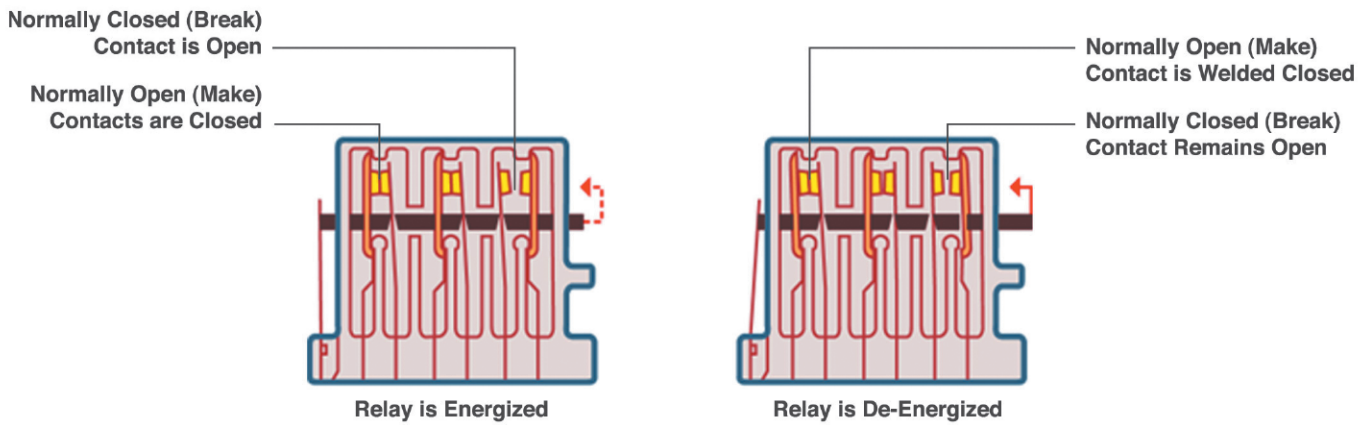
Contact Name	Short Form	DIN / IEC Symbol	UL / CSA Symbol
Normally Open	NO, Form A		
Normally Closed	NC, Form B		
Changeover	CO, Form C, SPDT		

Forced-Guided Contacts: Electro-mechanical relay contacts that are mechanically linked together, so that when the relay coil is energized or de-energized, all of the linked contacts move together. If one set of contacts in the relay becomes immobilized, no other contact of the same relay will be able to move. An open-contact gap > 0.5 mm (0.02 in.) is maintained during life of the relay, even with malfunction, and at 1.6 x Nominal Voltage. Forced-Guided contacts are also known as captive contacts, positive-guided contacts, or locked contacts. They are used in Safety Relays.

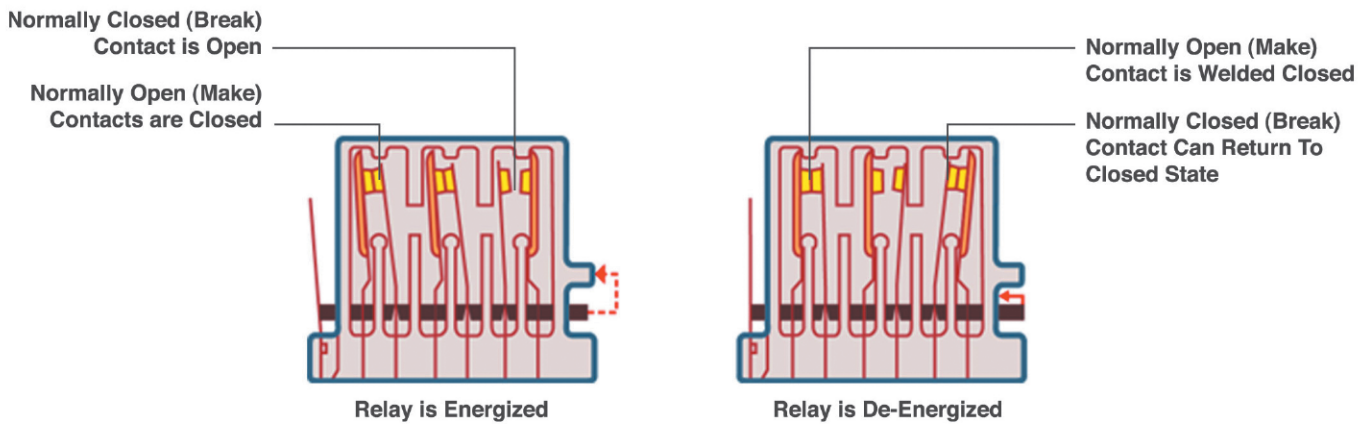
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Forced-Guided versus Standard Relay Contacts

Forced-Guided Relay Contacts



Standard Relay Contacts



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Flash-Plated: Thin gold coating of the relay contacts to prevent corrosion during shelf-life (long-time storage).

Mechanical Life: Number of expected operation cycles of the relay contacts.

Mixed Contact Material: Pertaining to a safety relay on which each single contact can be made of different material, e.g., 6 pole safety relay: 4 n/o contacts made of $\text{AgSnO}_2 + 0.2\mu\text{mAu}$ and 2 n/c contacts made of $\text{AgNi } 10 + 5\mu\text{mAu}$.

Normally Closed Contact (NC): A relay contact pair that is closed when the coil is not energized.

Normally Open Contact (NO): A relay contact pair that is open when the coil is not energized.

Nominal Coil Voltage: The voltage by which the coil is designated and to which certain operating characteristics of the relay are related.

Operating Voltage: The voltage by which the relay performs to the desired function.

Pin Diagram: A diagram of the points at which a connection is made between the relay and the circuit board.

Protection Rating: Classification system for the sealing effectiveness of electrical equipment to protect against foreign bodies. In a two digit code, the first digit indicates the protection against solid objects, while the second indicates protection from moisture.

International Protection (IP, according to IEC 529): Protection against a process whereby unwanted material enter the relay to occupy space that would otherwise remain free of such material.

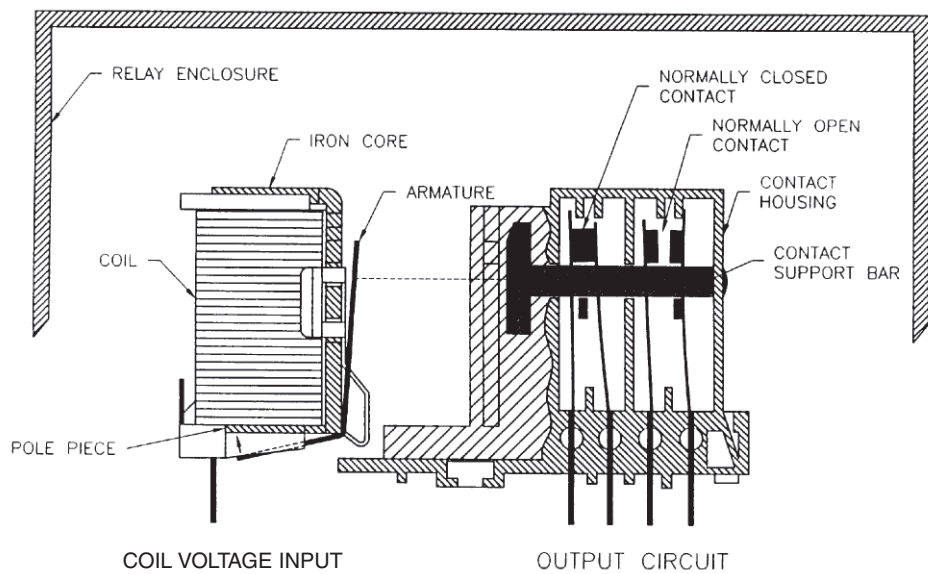
IP 40, First digit 4: Protection from entry by solid objects with a diameter greater than 1.0 mm.
Second digit 0: no special protection against moisture

IP 67, First digit 6: Dust-tight.
Second digit 7: Protection against immersion.

Relay Operate Time: The time interval from coil energization to the functioning time of the last contact to function.

Relay Release Time: The time interval from coil de-energization to the functioning time of the last contact to function.

Safety Relay: An electro-mechanical relay with forced-guided contacts used in Safety Devices such as Emergency Stop Modules, Safety Gate Monitors, 2-Hand Safety Modules, Safety Light Curtains, etc.



Switching Current: The value of the root-mean-square (rms) symmetrical current expressed in amperes, which the relay output contact interrupts at the rated maximum voltage and rated frequency.

Switching Power: The value of the product of switching voltage x switching current, which the relay output contact interrupts under certain test conditions.

Switching Voltage: The value of the voltage expressed in volt, which the relay output contact interrupts at the rated maximum current and rated frequency.

Voltage Range: The region between the lower and upper limits in regards of the Nominal Coil Voltage.

Washable: A sealed construction allows automatic washing and cleaning of the PC board.