



Application Notes

Technical Definitions

ADJUSTMENT. The modification of any or all of the elements of tension shape or position of relay parts (to affect one or more of the operating characteristics or to meet mechanical requirements), for example, adjustments of armature gap, restoring spring force, contact gap, or contact force.

AMPERE-TURNS. The product of the number of turns in an electromagnetic coil winding and the current in amperes passing through the winding. With AC the RMS current value is generally used in the product of current and turns and is referred to as RMS ampere-turns.

ARMATURE. The moving magnetic member of an electromagnetic relay structure.

BIAS, MAGNETIC. A steady magnetic field (permanent magnet) applied to the magnetic circuit of a relay to aid or impede operation of the armature.

BOBBIN. A structure upon which a coil is wound.

BOUNCE, CONTACT. Internally caused intermittent and undesired opening of closed contacts or closing of open contacts of a relay, caused by one or more of the following:

- (1) Impingement of mating contacts.
- (2) Impact of the armature against the coil core on pickup or against the backstop on dropout.
- (3) From momentary hesitation, or reversal of the armature motion during the pickup or dropout stroke.

BREAK. The opening of closed contacts to interrupt an electric circuit.

BRIDGING. (1) Normal bridging: the normal make-before-break action of a make-break or "D" contact combination. In a stepping switch the coming together momentarily of two adjacent contacts, by a wiper shaped for that purpose, in the process of moving from one contact to the next. (2) Abnormal bridging: the undesired closing of open contacts caused by metallic bridge or protrusion developed by arcing.

COIL. An assembly consisting of one or more windings, usually wound over an insulated iron core or on a bobbin or spool, or self-supporting, with terminals, and other required parts such as a sleeve or slug.

CONTACT. (1) The portion of current-carrying members at which electric circuits are opened or closed. (2) The current carrying part of a relay that engages or disengages to open or close electric circuits. (3) Used to denote a combination or set. ("Contacts" also used).

CONTACT, ARMATURE. (1) A contact mounted directly on the armature. (2) Sometimes used for a movable contact

CONTACT GAP. The gap between the contact tips (points), under specified conditions, when the contact circuit is open.

CONTACT FORCE. The force which two contact tips (points) exert against each other in the closed position under specified conditions.

CONTACT FOLLOW. The further specified movement of the contact tips (points) when making and after they have just touched and while they are traveling in the same direction as that of the moving contact member.

CONTACT WIPE. When a contact is making, the relative rubbing movement of contact tips (points) after they have just touched.

CONTACT, BIFURCATED. A forked, or branched, contacting member so formed or arranged as to provide some degree of independent dual contacting.

CONTACT, DRY CIRCUIT. A contact that carries current but neither opens nor closes while its load circuit is energized. Erroneously used if referring to low level contacts.

CONTACT, LOW LEVEL. Contacts that control only the flow of relatively small currents in relatively low-voltage circuits; for example, alternating currents and voltages encountered in voice or tone circuits, direct currents in the order of microamperes, and voltage below the softening voltages of record for various contact materials (that is 0.080 volt for gold, 0.25 volt for platinum, etc.). Also defined as contact switching loads where there is no electrical (arc transfer) or detectable thermal effect and where only mechanical forces can change the conditions of the contact interface.

CONTACT, MOVABLE. The member of a contact combination that is moved directly by the actuating system. This member is also referred to as the armature contact or swinger contact.

CONTACT, NORMALLY CLOSED. A contact combination which is closed when the armature is in its unoperated position. Contact, normally open. A contact combination that is open when the armature is in its unoperated position.

CONTACT, STATIONARY. A member of a contact combination that is not moved directly by the actuating system.

CONTACT WELD. A contacting failure due to fusing of contacting surfaces to the extent that the contacts fail to separate when intended to do so.

CONTACTOR. See relay, power.

DIELECTRIC STRENGTH. The maximum allowable AC RMS voltage (50/60 Hz) which may be applied between two specified test points.

DROPOUT, TO DROP OUT. A monostable relay drops out when it changes from an energized condition to the unenergized condition.

ENERGIZATION. The application of power to a coil winding of a relay. With respect to an operating coil winding use of the word commonly assumes enough power to operate the relay fully, unless otherwise stated.

FRAME. The main supporting portion of a relay, which may include parts of the magnetic structure.

GAP, ARMATURE. The distance between armature and pole face.

GAP, CONTACT. The distance between a pair of mating relay contacts when the contacts are open.

INSULATION RESISTANCE. The DC resistance between input and output of solid state relays and across contact and between contacts and coil for electromechanical and reed relays.

LOAD, CONTACT. The electrical power encountered by a contact set in any particular application.

MAKE. The closure of open contacts to complete an electric circuit.

MECHANICAL SHOCK NON-OPERATING. That mechanical shock level (amplitude, duration and wave shape) to which the relay may be subjected without permanent electrical or mechanical damage.

MECHANICAL SHOCK, OPERATING. That mechanical shock level (amplitude, duration, and wave shape) to which the relay may be subjected without electrical malfunction or mechanical damage.

OPERATING CHARACTERISTICS. Pickup, nonpickup, hold and dropout, voltage or current.

DROPOUT VALUE, MEASURED. As the current or voltage on an operated relay is decreased, the value at which all contacts restore to their unoperated positions.

DROPOUT VALUE, SPECIFIED. As the current or voltage on an operated relay is decreased, the value at or above which all relay contacts must restore to their unoperated positions.

HOLD VALUE, SPECIFIED. As the current or voltage on an operated relay is decreased, the value which must be reached before any contact change occurs.

NONPICKUP VALUE, SPECIFIED. As the current or voltage on an unoperated relay is increased, the value which must be reached before any contact change occurs.

PICKUP VALUE, MEASURED. As the current or voltage on an unoperated relay is increased, the value at which all contacts function.

PICKUP VALUE, SPECIFIED. As the current or voltage on an unoperated relay is increased, the value at or below which all contacts must function.

OVERTRAVEL, ARMATURE DROPOUT. The portion of the armature travel that occurs between closure of the normally closed contact(s) and the fully released static position of the armature.

OVERTRAVEL, ARMATURE PICKUP. The portion of the armature travel occurring between closure of the normally open contact(s) and the fully operated static position of the armature.

PICKUP, TO PICK UP. A monostable relay picks up when it changes from the unenergized condition to an energized condition.

POLE, DOUBLE. A term applied to a contact arrangement to denote that it includes two separate contact combinations, that is, two single-pole contact assemblies.

RATING, CONTACT. The electrical load handling capability of relay contacts under specified conditions and for a prescribed number of operations.

RELAY. An electrically controlled device that opens and closes electrical contacts to effect the operation of other devices in the same or another electrical circuit.

RELAY, ENCLOSED.

(1) **HERMETICALLY SEALED** A relay contained within an enclosure that is sealed by fusion or other comparable means to ensure a low rate of gas leakage. (Generally metal-to-metal or metal-to-glass sealing is employed.)

(2) **ENCAPSULATED** A relay embedded in a suitable potting compound

(3) **SEALED** A relay that has both coil and contacts enclosed in a relatively airtight cover

(4) **COVERED.**A relay contained in an unsealed housing. Note—The coil and contact assemblies may be separately enclosed and isolated from each other by various combinations of the above enclosures.

RELAY, LATCHING. A relay that maintains its contacts in the last position assumed without the need of maintaining coil energization.

(1) **MAGNETIC LATCHING.** A relay that remains operated, held by either remnant magnetism in the structure or by the influence of a permanent magnet, until reset. (See also relay, polarized bistable.)

RELAY, POLARIZED. A relay whose operation is dependent upon the polarity of the energizing current.

RELAY, BISTABLE A bistable polarized relay is a 2-position relay that will remain in its last operated position keeping the operated contacts closed after the operating winding is de-energized.

RELAY, POWER. A relay with heavy-duty contacts usually rated 15 amperes or higher. Sometimes called a contactor.

RELAY, REED. A relay using glass-enclosed magnetic reeds as the contact members .

RELAY, SENSITIVE. A relay that operates on comparatively low input power.

RESET. The return of contacts or a mechanism to the normal state.

RESISTANCE, CONTACT. The electrical resistance of closed contacts as measured at their associated contact terminals.

SENSITIVITY. Specified pickup expressed in watts.

TIME, CONTACT BOUNCE. The time interval from initial actuation of a contact to the end of bounce.

TIME, OPERATE. The time interval from coil energization to the functioning of the last contact to function. Where not otherwise stated, the functioning time of the contact in question is taken as its initial actuation time (that is, it does not include contact bounce time).

TIME, RELEASE. The time interval from coil de-energization to the functioning of the last contact to function. Where not otherwise stated, the functioning time of the contact in question is taken as its initial actuation time (that is, it does not include contact bounce time).

WIPE, CONTACT. The sliding or tangential motion between two mating contact surfaces as they open or close.



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