INCH-POUND

MIL-DTL-26126C
15 February 2002
SUPERSEDING
MIL-R-26126B(USAF)
10 May 1994

DETAIL SPECIFICATION

RELAYS, ELECTRICAL, OVERVOLTAGE, DC,
GENERAL SPECIFICATION FOR

Inactive for new design after the date of this document. No superseding specification.

This specification is approved for use by all Departments and Agencies of the Department of Defense.

1. SCOPE

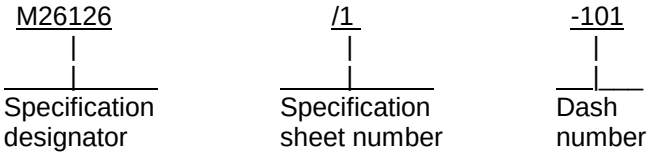
1.1 Scope. This specification covers the general requirements for dc overvoltage sensing relays for use in electrical applications. Relays covered by this specification are capable of meeting the electrical and environmental requirements when mounted directly to the structure of aircraft, missile, spacecraft, ship, and other primary vehicles or in ground support and shipboard equipment. Other ratings may be as specified (see 3.1).

1.2 Classification.

1.2.1 Classification. Relays are to be classified as follows:

Type I - Electromagnetic, sealed.
Type II - Hybrid, hermetically sealed.

1.2.2 Military part number. The military part number is to consist of the letter "M," the basic number of the specification sheet, and an assigned dash number (see 3.1) as shown in the following:



2. APPLICABLE DOCUMENTS

2.1 General. The documents listed in this section are specified in sections 3 and 4 of this specification. This section does not include documents cited in other sections of this specification or recommended for additional information or as examples. While every effort has been made to ensure the

Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to Defense Supply Center, Columbus, Post Office Box 3990, Columbus, OH 43216-5000, by using the Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by letter.

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completeness of this list, document users are cautioned that they must meet all specified requirements documents cited in sections 3 and 4 of this specification, whether or not they are listed.

2.2 Government documents.

2.2.1 Specifications, standards, and handbooks. The following specifications, standards, and handbooks form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those listed in the issue of the Department of Defense Index of Specifications and Standards (DoDISS) and supplement thereto, cited in the solicitation (see 6.2).

SPECIFICATION

DEPARTMENT OF DEFENSE

MIL-W-5088 - Wiring, Aerospace Vehicle.
MIL-DTL-26126/2 - Relay, Electrical, Overvoltage, Hybrid, Hermetically Sealed.

STANDARDS

FEDERAL

FED-STD-H28 - Screw-Thread Standards for Federal Services.

DEPARTMENT OF DEFENSE

MIL-STD-810 - Environmental Test Methods and Engineering Guidelines.
MIL-STD-202 - Electronic and Electrical Component Parts, Test Methods for.
MIL-STD-889 - Dissimilar Metals.
MIL-STD-1285 - Marking of Electrical and Electronic Parts.

(Unless otherwise indicated, copies of the above specifications, standards, and handbooks are available from the Document Automation and Production Service, Building 4D (DPM-DODSSP), 700 Robbins Avenue, Philadelphia, PA 19111-5094.)

2.2.2 Other Government documents, drawings, and publications. The following other Government documents, drawings, and publications form a part of this document to the extent specified herein. Unless otherwise specified, the issues are those cited in the solicitation.

2.3 Non-Government publications. The following document(s) form a part of this document to the extent specified herein. Unless otherwise specified, the issues of the documents which are DoD adopted are those listed in the issue of the DoDISS cited in the solicitation. Unless otherwise specified, the issues of documents not listed in the DoDISS are the issues of the documents cited in the solicitation (see 6.2).

2.4 Order of precedence. In the event of a conflict between the text of this document and the references cited herein (* except for related associated specifications, specification sheets, or MS sheets), the text of this document takes precedence. Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

3. REQUIREMENTS

3.1 Specification sheets. The individual item requirements shall be as specified herein and in accordance with the applicable specification sheet. In the event of any conflict between the requirements of this specification and the specification sheet, the latter shall govern.

3.2 Commercial parts. Commercial parts having suitable properties may be used where, at the time of award of contract, there are no suitable standard parts. In any case, commercial utility parts, such as screws, studs, nuts, washers, etc, having suitable properties, may be used provided:

a. They can be replaced by the standard parts (MS or AN) without alteration.

b. The corresponding standard Part or Identifying Numbers (PIN's) are referenced in the parts list and, if practical, on the contractor's drawings.

3.2.1 Standard parts. With the exception in 3.3.1, MS and AN standard parts shall be used where they suit the purpose. They shall be identified on the drawing by their PIN's.

3.3 Materials.

3.3.1 Fungus-proof materials. Materials that are nutrients for fungi shall not be used where it is practical to avoid them. Where used and not hermetically sealed, they shall be treated with a fungicidal agent acceptable to the acquiring activity. However, if they will be used in a hermetically sealed enclosure, fungicidal treatment is not necessary.

3.3.2 Metals. Metals shall be of the corrosion-resistant type or suitably treated to resist corrosion due to fuels, salt spray, or atmospheric conditions as may be encountered in storage or normal service.

3.3.2.1 Dissimilar metals. Unless suitably protected against electrolytic corrosion, dissimilar metals shall not be used in intimate contact with each other. Dissimilar metals are defined in MIL-STD-889.

3.4 Design and construction. Relays shall be of the design, construction, weight, and physical dimensions specified (see 3.1). Relays shall be designed to ensure proper operation when mounted in any position. Relays having adjustable features shall be designed so that the setting of any relay adjustment will not be altered by the tests specified herein.

3.4.1 Threaded parts. All threaded parts shall be in accordance with FED-STD-H28. Where practical, all threads shall be in conformity with the coarse-thread series. The fine-thread series may be used only for applications that show a definite advantage through their use. Where a special diameter-pitch combination is required, the thread shall be of American National Form and of any pitch between 16 and 36, which is used in the fine-thread series. Terminal threads shall be class 2A and 2B for external and internal threads, respectively.

3.4.2 Circuit. The internal circuit and terminals of the relay shall be as specified (see 3.1).

3.4.3 Creepage and clearance distances. Unless otherwise specified, the minimum creepage distance between current-carrying parts and ground shall be .125 inch (3.18 mm). The minimum spacing between current-carrying parts of opposite polarity and any other portion of the relay, other than suitable insulating material, shall be .0625 inch (1.588 mm).

3.4.4 Terminal finish. Finish of terminals shall provide a good electrical contact and meet the performance requirements specified herein. Pure tin plating is prohibited internally and externally. Tin-

lead finish is acceptable, provided that lead content is at least 3 percent. Zinc plating and cadmium plating are prohibited internally and externally.

3.5 Performance.

3.5.1 Dielectric withstanding voltage. When tested as specified in 4.6.2, relays shall withstand the test voltage specified without damage, and there shall be no leakage current in excess of 1.0 milliampere (mA) nor evidence of damage due to arcing (air discharge), flashover (surface discharge), or insulation breakdown (puncture discharge).

3.5.2 Calibration.

3.5.2.1 Pickup voltage. When relays are tested as specified in 4.6.3.1, the pickup voltage shall be within the specified voltage limits (see 3.1).

3.5.2.2 Time-voltage characteristics. When tested as specified in 4.6.3.2, the time voltage characteristics shall be within the limits of figure 1 at each of the specified voltages.

3.5.3 Endurance. Relays shall be cycled with contacts loaded in accordance with 4.6.4. After the tests, the fuse shall be tested for continuity. A blown fuse is considered a relay failure. After the test, the relay shall meet the calibration requirements specified in 3.5.2.

3.5.4 Overload. When relays are tested as specified in 4.6.5, they shall not be damaged. After the test, the relays shall meet the pickup voltage requirements specified in 3.5.2.1. The input voltage drop shall not exceed 7 percent during the load period.

3.5.5 High temperature. When tested as specified in 4.6.6, the relays shall meet the calibration requirements specified in 3.5.2. During high temperature testing, no solder joint connected to a resistor within the relay shall attain a temperature within 75°C of the softening temperature of solder.

3.5.6 Low temperature. When tested as specified in 4.6.7, the relays shall meet the requirements of 4.6.3.

3.5.7 Vibration.

3.5.7.1 Vibration (endurance). When tested as specified in 4.6.8.1, with the relay sensing circuit energized with 29 V dc, the contacts shall not close for more than 10 microseconds. When tested with the relay sensing circuit de-energized, the relay contacts shall not close for more than 10 microseconds. There shall be no damage to or malfunction of the relay during the test. Following this test, the relay shall meet the calibration requirements specified in 3.5.2.

3.5.7.2 Vibration (calibration). When tested as specified in 4.6.8.2, the relay shall meet the requirements of figure 2. Following the test, the relay shall meet the pickup voltage requirements specified in 3.5.2.1.

3.5.8 Low-temperature altitude. When tested as specified in 4.6.9 (see figure 2), immediately after the 2-minute coil energization, the relay shall meet the calibration requirements specified in 3.5.2.

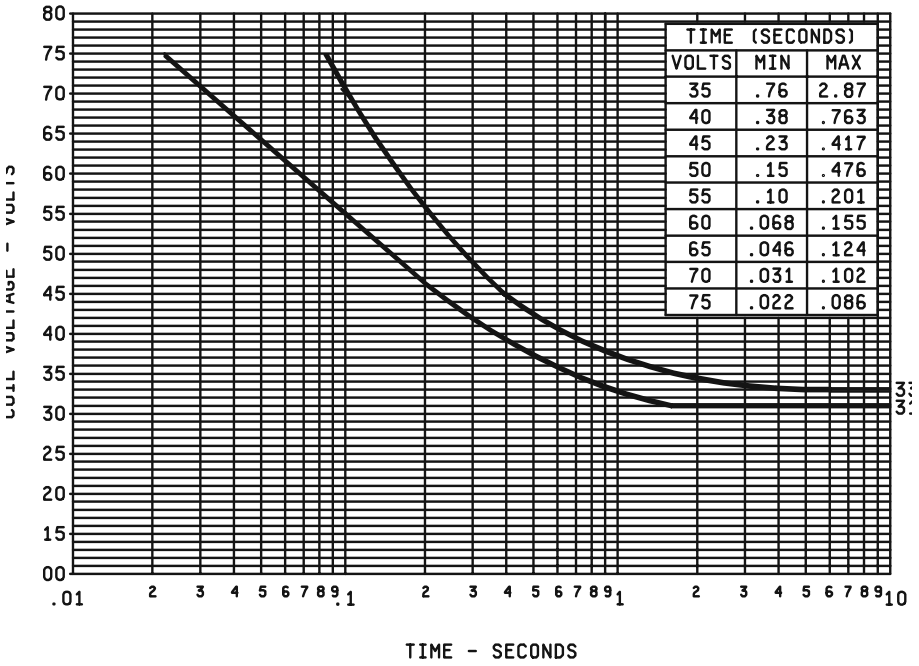

FIGURE 1. Time voltage curve.

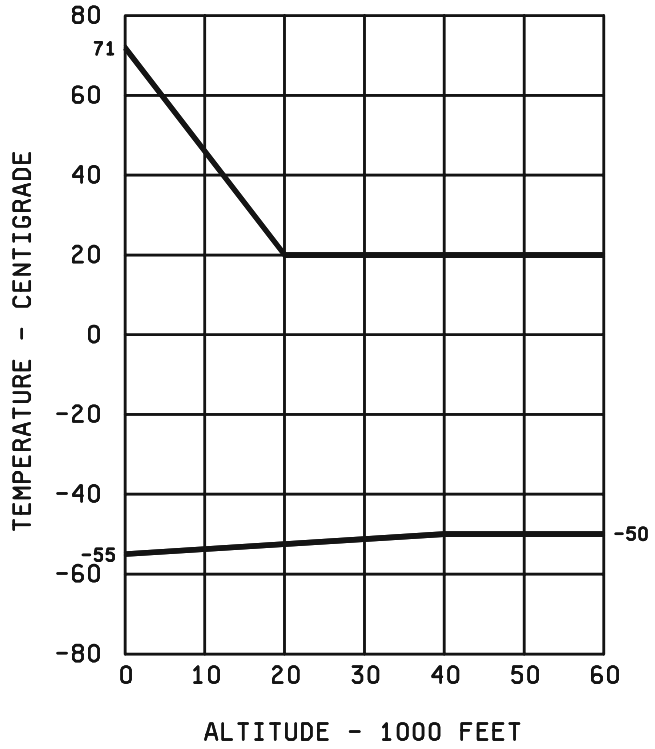

FIGURE 2. Temperature limits over altitude range for relay operation.

3.5.9 Acceleration. When tested as specified in 4.6.10, the relay contacts shall not close for more than 10 microseconds during the test.

3.5.10 Shock (specified pulse). When tested as specified in 4.6.11, the relay contacts shall not close for more than 10 microseconds during the tests. Following the test, the relay shall meet the dielectric withstanding voltage requirements specified in 3.5.1.

3.5.11 Fungus resistance (type I relays only, (see 3.1)). After testing as specified in 4.6.12, the relay shall meet the dielectric withstanding voltage requirements specified in 3.5.1. Any fungus growth shall be cause for rejection.

3.5.12 Stray magnetic fields (type I relays only). When tested as specified in 4.6.13, there shall be no closure of the relay contacts.

3.5.13 Humidity. After the 240 hour period, when tested as specified in 4.6.14, the relay shall meet the calibration requirements specified in 3.5.2. Following drying and return to room temperature, the relay shall meet the calibration and dielectric withstanding voltage requirements specified in 3.5.2 and 3.5.1.

3.5.14 Salt spray. When tested as specified in 4.6.15, there shall be no evidence of breaking, cracking, chipping or flaking of the finish, exposure of the base metal due to corrosion, or effect on the operational characteristics, which adversely affect the application or performance of the relay. After the test, type I relays shall meet the calibration requirements specified in 3.5.2.

3.5.15 Thermal shock. When relays are tested as specified in 4.6.16, there shall be no breaking, cracking, chipping or flaking of the finish, or loosening of the terminals. Following the test, relays shall meet the calibration requirements specified in 3.5.2.

3.5.16 Seal.

3.5.16.1 Type I relays. When relays are tested as specified in 4.6.17b.(1), the leakage rate of the hermetically sealed switching device shall not exceed $1x10^{-8}$ atm cc/s.

3.5.16.2 Type II relays. When relays are tested as specified in 4.6.17b.(2), the leakage rate shall not exceed $1x10^{-6}$ atm cc/s for relays greater than 2 cubic inches in volume and $1x10^{-8}$ atm cc/s for relays 2 cubic inches or less in volume.

3.5.16.3 Type I and type II relays with potting (rather than gas) filler. When relays are tested as specified in 4.6.17.1, there shall be no evidence of leakage.

3.5.17 Resistance to solvents. When relays are tested as specified in 4.6.18, the marking shall remain legible.

3.6 Weight. The weight of the relay shall not exceed the value specified in 3.1.

3.7 Marking. Relays shall be marked in accordance with method I of MIL-STD-1285, and shall include the military PIN; CAGE code or manufacturer's name; date code and lot symbol; circuit schematic diagram; highest contact rating (amperes) and rated dc input voltage.

3.8 Recycled, recovered, or environmentally preferable materials. Recycled, recovered, or environmentally preferable materials should be used to the maximum extent possible provided that the material meets or exceeds the operational and maintenance requirements, and promotes economically advantageous life cycle costs.

3.9 Workmanship. Relays shall be fabricated in such a manner as to be uniform in quality and shall be free of cracked or displaced parts, sharp edges, burrs, and other defects that will affect life, serviceability, and appearance.

4. VERIFICATION

4.1 Classification of inspections. The inspection requirements specified herein are classified as follows:

a. First article inspection (see 4.3).

b. Conformance inspection (see 4.4).

4.2 Inspection conditions. Unless otherwise specified herein, all requirements shall be performed in accordance with the test conditions specified in the General Requirements section of MIL-STD-202.

4.3 First article inspection. First article inspection shall be performed at a laboratory acceptable to the Government on sample relays produced with equipment and procedures normally used in production.

4.3.1 Sample size. The number of relays to be subjected to first article inspection shall be as specified in table I.

4.3.2 Inspection routine. Sample relays shall be tested as specified in table I in the order shown, as applicable for each relay.

4.3.3 Failures. Any failure shall be cause for refusal to grant first article approval, except that if a sample fails the life test, one additional lot of two samples may be tested and no failure shall be allowed.

4.4 Conformance inspection.

4.4.1 Inspection of product for delivery. Inspection of product for delivery shall consist of the group A inspection.

4.4.1.1 Inspection lot. An inspection lot shall consist of all relays covered by a single specification sheet produced under essentially the same conditions, and offered for inspection at one time.

4.4.1.2 Group A inspection. The group A inspection shall consist of the examinations and tests specified in table II in the order shown.

4.4.1.2.1 Sampling plan. The group A tests shall be performed on 100 percent of the relays furnished under this specification.

4.4.1.2.2 Rejected lots. Relays which have failed to pass any procedure in group A to which they have been subjected shall be removed from the lot.

4.4.1.2.3 Disposition of sample units. Sample units which have passed the group A inspection may be delivered on the contract or purchase order if the lot is accepted and the sample units are still within specified electrical tolerances.

TABLE I. First article inspection.

Test	Relay 1	Relay 2	Relay 3	Relay 4	Requirement paragraph	Test paragraph
Visual and mechanical examination	X	X	X	X	3.1, 3.3, 3.4, 3.7, and 3.9	4.6.1
	X	X	X	X	3.5.1	4.6.2
Dielectric withstanding voltage	X	X	X	X	3.5.2	4.6.3
Calibration	X			X	3.5.3	4.6.4
Endurance	X				3.5.4	4.6.5
Overload		X	X		3.5.5	4.6.6
High temperature		X	X		3.5.6	4.6.7
Low temperature						
Vibration:		X			3.5.7.1	4.6.8.1
Endurance		X			3.5.7.2	4.6.8.2
Calibration	X	X			3.5.8	4.6.9
Low temperature altitude		X	X		3.5.9	4.6.10
Acceleration		X		X	3.5.10	4.6.11
Shock (specified pulse)	X				3.5.11	4.6.12
Fungus resistance 1/			X		3.5.12	4.6.13
Stray magnetic fields			X		3.5.13	4.6.14
Humidity			X		3.5.14	4.6.15
Salt spray				X	3.5.15	4.6.16
Thermal shock	X	X	X	X	3.5.16	4.6.17
Seal	X	X		X	3.5.17	4.6.18
Resistance to solvents						

1/ Type I relays only.

TABLE II. Group A inspection.

Examination or test	Requirement paragraph	Method paragraph
Visual and mechanical examination (external) 1/	3.1, 3.3, 3.4, 3.7, and 3.9	4.6.1
Dielectric withstanding voltage	3.5.1	4.6.2
Calibration	3.5.2	4.6.3
Seal	3.5.16	4.6.17

1/ Physical dimensions shall be measured on 5 percent of the sample units only.

4.5 Test conditions.

4.5.1 Cable size. Cable used in any of the specified tests shall be of the sizes specified in MIL-W-5088 as determined by the rated load of the relay.

4.6 Methods of examination and test.

4.6.1 Visual and mechanical examination (external). Relays shall be examined to verify that the materials, external design and construction, physical dimensions, marking, and workmanship are in accordance with the applicable requirements (see 3.1, 3.3, 3.4, 3.7, and 3.9).

4.6.2 Dielectric withstanding voltage (see 3.5.1). A potential of 1,000 V rms, 60 Hz, shall be applied for 60 seconds, or 1,200 volts for 1 second between terminals and case.

4.6.3 Calibration (see 3.5.2).

4.6.3.1 Pickup voltage (see 3.5.2.1). A voltage of 28 V dc shall be instantaneously applied to the S and G terminals. The voltage shall be slowly increased (without interruption of voltage) up to 31 V, after which the voltage increments and rate of increase shall be .25 V, steps 5 to 10 seconds apart.

4.6.3.2 Time-voltage characteristics (see 3.5.2.2). The relay shall be tested to determine that the normally open contacts close within the time limits specified by the time-voltage curves shown on figure 1. For routine testing only, the relay shall be tested with the relay axis horizontal. A voltage of 28 V shall be applied to the coil terminals for a minimum of 2 seconds. The voltage shall be instantaneously raised to the overvoltage values shown on figure 1. After each overvoltage step, the relay shall be completely de-energized for at least 2 seconds before the next overvoltage step is taken. The relay shall be tested at 35, 40, 50, 60, and 75 V. An oscillograph, electronic timer, or other suitable timing device acceptable to the acquiring activity, shall be used to determine the time delay. Three readings at each voltage shall be obtained.

4.6.4 Endurance (see 3.5.3). The relay contacts shall be connected to the load as specified in the applicable specification sheet. The relay's case shall be connected to the power supply ground or negative, with a normal blow fuse rated at 150 V dc, 100 milliamperes. The relay shall be operated at 40 V dc for 15,000 cycles at the rate of 10 cycles per minute. The current shall be on for 3 seconds and off for 3 seconds. The relay contacts shall be monitored during each cycle. A miss shall be defined as failure of the contacts to make positive contact as checked by automated test equipment or failure of the case fuse.

4.6.5 Overload (see 3.5.4). The relay shall be tested as specified in 4.6.4 except for the following: Total test cycles - 40; input voltage - 150 V dc; timing cycle - 2 cycles, 5 seconds apart. Each pair of cycles shall be spaced 55 seconds apart.

4.6.6 High temperature (see 3.5.5). The relay shall be subjected to an ambient temperature of 71°C ±2°C for 5 hours with 30 V applied to the S and G terminals. At the end of this period and with the relay at the stated temperature, the unit shall be tested to the requirements of 3.5.2. At not less than 6 hours after the high-temperature test, the relay shall be resubjected to the tests specified in 3.5.2. During the high temperature test, temperature measurements shall be conducted on all electrical connections to resistor(s) within the relays which have soldered connections.

4.6.7 Low temperature (see 3.5.6). The relay shall be subjected to a temperature of -55°C ±2°C for 5 hours. At the end of this period with the relay at the stated temperature, 28 V dc shall be applied to the relay coil for 2 minutes before taking the time-voltage characteristic. The test shall be accomplished in a minimum amount of time to prevent heating of the coil above the temperature reached in the 2 minute heating period. The tests specified in 4.6.3 shall be conducted at the end of the low temperature soak (while at low temperature). Tests specified in 4.6.3 shall be repeated after the unit has been temperature stabilized at room temperature.

4.6.8 Vibration.

4.6.8.1 Vibration (endurance, see 3.5.7.1). Relays shall be tested in accordance with method 201 of MIL-STD-202. The following details and exceptions shall apply:

a. Mounting method: Rigidly mounted by normal mounting means. Connections to the relay shall be made by attaching flexible stranded wires to the relay terminals.

b. Electrical load conditions:

(1) The relay S and G terminals shall be energized with 29 V dc during each 4-hour vibration cycling period. The relay contact circuit (T and P terminals) shall be continuously monitored for closing in accordance with method 310 of MIL-STD-202, test circuit B, test condition A.

(2) With the relay S and G terminals de-energized, the relays shall be vibrated for 1 hour in each direction. The terminals shall be monitored as above.

c. Duration of vibration: Included in b.

d. Directions of motion: Two; both horizontal. One in line with the long axis and the other at right angles to the long axis.

e. Measurement after vibration: Calibration as specified in 4.6.3.

4.6.8.2 Vibration (calibration) (see 3.5.7.2). The time-voltage characteristics of the relay shall be measured at vibration frequencies of 0, 10, 20, 30, 40, 50, and 55 Hz and at any resonant frequency or frequencies within this range, with the amplitude adjusted to .03 inch (0.8 mm). The relay shall be vibrated through each of the three mutually perpendicular axes; however, if the relay contains a movable plunger, the plunger travel axis shall always be in a horizontal plane. The relay shall be vibrated as follows:

a. Mounted feet down in a horizontal plane, with the vibration applied in a horizontal plane through the long axis of the relay.

b. Mounted as above, except that it shall be rotated 90° from position a. Vibration shall be applied in a horizontal plane at right angles to the long axis of the relay.

c. Mounted with the mounting feet in a vertical plane. Vibration shall be applied in a horizontal plane 90° from the long axis of the relay.

Following the test, the relay shall be tested for pickup voltage as specified in 4.6.3.1.

4.6.9 Low temperature altitude (see 3.5.8). The relay shall be subjected to a temperature of -55°C ±2°C for 5 hours at a pressure corresponding to an altitude of 50,000 ± 2,000 feet. While still at this temperature and pressure, 28 V shall be applied for 2 minutes. Immediately following, calibration shall be conducted as specified in 4.6.3.

4.6.10 Acceleration (see 3.5.9). Relays shall be tested in accordance with method 212 of MIL-STD-202. The following details and exceptions shall apply:

a. Mounting of specimens: By normal mounting means.

b. Test condition letter: A, except 3 g's when applied in the direction of the axis of the plunger travel when initiating closing of the contacts, while the force applied through the other direction in this axis shall be 15 g's.

c. A force of 15 g's shall be applied in both directions in the two remaining axes. The acceleration required in each of the six directions shall be applied and removed three times in succession without removing the coil voltage. The coil voltage shall be 3 V dc below the relay pickup voltage.

d. Measurement after test: After the accelerating force has been removed and without disconnecting the coil voltage, the time-voltage operation at 35 V shall be conducted. The operating time shall fall within the limits specified on figure 1.

4.6.11 Shock (specified pulse) (see 3.5.10). Relays shall be tested in accordance with method 213 of MIL-STD-202. The following details and exceptions shall apply:

a. Mounting method: Normal mounting means.

b. Test condition: A, except peak value shall be 10 g's.

c. Electrical load conditions: In each direction of shock, the relay shall be de-energized during two shocks and energized with 29 V dc during two shocks.

d. Examinations after test: Dielectric withstanding voltage and calibration shall be as specified in 4.6.2 and 4.6.3.

4.6.12 Fungus resistance (type I relays only, see 3.5.11). Relays shall be tested in accordance with method 508 of MIL-STD-810. After the test, the relays shall meet the calibration (see 3.5.2) and dielectric withstanding voltage requirements, except the dielectric withstanding voltage shall be 250 V rms, 60 Hz. Following dielectric withstanding voltage, the relays shall be examined for fungus growth externally, and with the case removed.

4.6.13 Stray magnetic fields (type I relays only, see 3.5.12). A 4-inch inside diameter loop, energized to produce 600 ampere turns, shall be placed around the relay in any attitude or polarity while the relay is energized with 2 V below the pickup voltage of the relay. Current shall be applied instantaneously, held for 10 seconds, then removed instantaneously. A circular coil with 20 to 200 turns may be used to produce the required ampere turns.

4.6.14 Humidity (see 3.5.13). When tested as specified in method 103, test condition A, MIL-STD-202, and after return to room temperature (25°C), the relays shall be tested for calibration as specified in 4.6.3. The relays shall then be dried in a circulating air oven at 75 ±2°C for 6 hours, then returned to room temperature and tested for dielectric withstanding voltage and calibration as specified in 4.6.2 and 4.6.3.

4.6.15 Salt spray (see 3.5.14). Relays shall be tested in accordance with method 101 of MIL-STD-202. The following details and exceptions apply:

a. Test condition letter: B.

b. Applicable salt solution: 5 percent.

c. Examination after test: Relays shall be examined for evidence of peeling, chipping, blistering of the finish, and exposure of base metal due to corrosion. Type I relays shall be tested for calibration as specified in 4.6.3.

4.6.16 Thermal shock (see 3.5.15). Relays shall be tested in accordance with method 107 of MIL-STD-202. The following details and exceptions apply:

a. Relays shall be suspended in the test chamber by twine or other nonheat-conducting material.

b. Test condition letter: A. The minimum exposure time for steps 1 and 3 shall be 1 hour each.

c. Measurements after cycling: Relays shall be visually examined for cracking, peeling, and flaking of the finish. Calibration shall then be conducted as specified in 4.6.3.

4.6.17 Seal (see 3.5.16). Relays shall be tested in accordance with method 112 of MIL-STD-202. The following details apply:

a. Test condition letter: C (procedure III or IV at the option of the manufacturer).

b. Leakage-rate sensitivity:

(1) Type I relays: 1×10^{-8} atm cc/s. When a separate hermetically sealed switching device is a part of the relay, each device shall be individually tested for hermetic seal.

(2) Type II relays: Greater than 2 cubic inches in volume - 1×10^{-6} atm cc/s; 2 cubic inches or less - 1×10^{-8} atm cc/s.

c. Reduced pressure of chamber and duration of pressurization (procedure IV): Below 5 millimeters of mercury until the leak detector reading is stabilized.

d. Measurements after test: Not applicable.

4.6.17.1 Nonhermetically-sealed and hermetically-sealed (potted) relays (alternate method) (see 3.5.16.3). Relays shall be tested as follows:

a. Prior to installing a gasket on the relay header (if a gasket is used), the relay shall be totally immersed in a container of "tap" water. (The term "tap" water as used here means ordinary drinking water that has not been altered in any way, such as by the addition of any other substance, distilling, etc.) The part of the relay closest to the surface of the water shall be a minimum of 1.00 inch (25.4 mm) below this surface.

b. The container and water-covered relay shall then be placed in a vacuum chamber. The chamber

shall be sealed. The chamber pressure shall be reduced from room ambient to 1.00 inch (25.4 mm) (75,000 feet) +0.0 -.2 inch (5 mm) of mercury within 5 minutes, and shall be maintained at this level for 30 minutes minimum. The chamber pressure shall be increased to room ambient within 1 minute, and shall be maintained at room ambient pressure for 30 minutes, minimum. The foregoing shall constitute one cycle. The relay shall remain fully immersed in the water during the cycle.

c. Within a maximum of 1/2 hour after the cycle, each relay shall be removed from the water and dried by shaking, wiping, or blowing with contaminant-free air or gas, but not by any form of heating or baking.

d. Within a maximum of 1/2 hour after drying, each relay shall pass the insulation resistance and dielectric withstanding voltage tests.

4.6.18 Resistance to solvents (see 3.5.17). Relays shall be tested in accordance with method 215 of MIL-STD-202. The following details and exceptions apply:

a. Portion to be brushed: All marking.

b. Specimens to be tested: Three (one in each solution).

c. Examination: Specimens shall be examined for legibility of marking.

5. PACKAGING

5.1 Packaging. For acquisition purposes, the packaging requirements shall be as specified in the contract or order (see 6.2). When actual packaging of materiel is to be performed by DoD personnel, these personnel need to contact the responsible packaging activity to ascertain requisite packaging requirements. Packaging requirements are maintained by the Inventory Control Point's packaging activity within the Military Department or Defense Agency, or within the Military Department's System Command. Packaging data retrieval is available from the managing Military Department's or Defense Agency's automated packaging files, CD-ROM products, or by contacting the responsible packaging activity.

6. NOTES

(This section contains information of a general or explanatory nature that may be helpful, but is not mandatory.)

6.1 Intended use. Typically, these relays are used to de-energize dc generator fields by tripping a dc generator field control relay whenever the generator voltage exceeds the specified time-voltage values.

6.2 Acquisition requirements. Acquisition documents must specify the following:

a. Title, number, and date of the specification.

b. Issue of DoDISS to be cited in the solicitation, and if required, the specific issue of individual documents referenced (see 2.1).

c. Packaging requirements (see 5.1).

6.3 PIN. This specification requires a PIN that describes codification and/or classification and appropriate references to associated documents (see 1.2 and 3.1).

6.3 Subject term (key word) listing.

Electrically operated switch
Electronic component
Sensing relay

6.4 Changes from previous issue. Marginal notations are not used in this revision to identify changes with respect to the previous issue due to the extensiveness of the changes.

Custodian:
Air Force - 11
DLA - CC

Preparing activity:
DLA - CC

Review activities:
Air Force - 99

(Project 5945-1136)