REQUIREMENTS:

1. GENERAL:
   A. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
   B. SUPPLIER SHALL CONFORM TO QUALITY ASSURANCE PROVISIONS SPECIFIED IN ND 1015404, CLASS 2.
   C. UNITS SHALL BE CAPABLE OF MEETING ALL QUALIFICATION REQUIREMENTS SPECIFIED IN ND 1002046 UNLESS MODIFIED OR AMENDED BY DESIGN REQUIREMENTS OF THIS DRAWING.
   D. THIS UNIT SHALL MEET ALL APPLICABLE PARAGRAPHS OF MIL-R-5757 WITH THE FOLLOWING QUALIFICATIONS.
   E. PRESERVATION, PACKAGING, PACKING AND CONTAINER MARKING REQUIREMENTS SPECIFIED IN ND 1002215, CLASS 1, CODE 1, WITH THE FOLLOWING EXCEPTIONS:
      - THERE ARE NO CRITICAL FUNCTIONING OR CLOSELY TOLERANCED SURFACES AS DESCRIBED IN ND 1002215.

2. INSPECTION AND ACCEPTANCE:
   A. MECHANICAL REQUIREMENTS:
      - LEAD MATERIAL: SHALL BE THE LENGTH SPECIFIED AND SHALL BE INCO B-50 ALLOY, COPPER CLAD, ANNEALED, GOLD PLATED (DUMET) WIRE LEADS PER ND 1015401. A CERTIFICATE OF COMPLIANCE WITH THIS REQUIREMENT SHALL ACCOMPANY EACH SHIPMENT.
      - MARKING: UNIT SHALL BE PERMANENTLY AND LEGIBLY MARKED WITH THE FOLLOWING: MANUFACTURER'S NAME OR SYMBOL, MANUFACTURER'S PART NUMBER, NASA DRAWING NUMBER, DASH NUMBER, AND REVISION LETTER, RATED COIL VOLTAGE, DATE CODE, COIL RESISTANCE, CIRCUIT DIAGRAM.
      - SEALING: 100% INSPECTION) SEAL TEST #11 EXCEPT THE MAXIMUM LEAK RATE SHALL BE 10^-8 cc/SEC.
   B. ELECTRICAL REQUIREMENTS:
      - PULL-IN VOLTAGE: SEE TABLE 1.
      - DROP-OUT VOLTAGE: SEE TABLE 1.
      - CONTACT RESISTANCE: (100% INSPECTION) .05 OHM MAXIMUM BEFORE AND DURING LIFE (.10 OHMS MAXIMUM AFTER LIFE) WHEN MEASURED WITH 100 MILLIAMPS FROM A SIX (6) VOLT DC SOURCE. THE CONTACTS SHALL NOT SWITCH THE MEASURING LOAD.

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

INSTRUMENTATION LAB
CAMDEN, MASS.

RELAY, ARMATURE (GENERAL PURPOSE)

SPECIFICATION CONTROL DRAWING

DO NOT SCALE DRAWING (GENERAL PURPOSE)
REQUIREMENTS: (CONTINUED)

(a) Sea Level: 1000 Volts RMS 60 CPS between:
1. Contact Terminals and Coil Terminals,
2. Contact Terminals and Case,
3. Circuits
(b) Sea Level: 500 Volts RMS 60 CPS between:
1. Open Contact Terminals of Each Circuit (Relay both Energized and Deenergized)
2. Coil Terminals and Case.
(c) Altitude: 300 Volts RMS 60 CPS between:
1. All Terminals and Case,
2. All Terminals

Insulation Resistance: 1000 Megohms Minimum, using a 500 Volt DC Test Potential Applied between:
(a) Coil Terminals, Commonly Connected, and Case—
(b) Each Normally Open Contact and Case
(c) Each movable, or "Common", Contact and Case (with coil deenergized)
(d) All Contact Terminals, Commonly Connected, and the Coil Terminals,

Operate Time: 5 Milliseconds Maximum over the Ambient Temperature Range,
Release Time: 5 Milliseconds Maximum over the Ambient Temperature Range,
Contact Bounce Time: 2 Milliseconds Maximum over the Ambient Temperature Range. (Contact Bounce Time is not to be included in operate and release time).

3. DESIGN REQUIREMENTS:
A. Ambient Temperature Range: -65°C to +125°C
B. Coil Resistance: See Table I
C. Life: When tested at any of the above ratings, or between the maximum rating and the minimum rating, for 100,000 cycles, over the ambient temperature range, there shall be no failures as defined in N D 1002046 and there shall be no contact resistance reading greater than 1 ohm during any cycle.
D. Terminal Strength: 3 lbs Minimum Axial Pull
E. Environmental Levels:
1. Temperature:
   (a) High: +125°C
   (b) Low: -65°C
2. Thermal Shock: -65°C to +125°C
3. Vibration: 10-200 CPS, 20 G
4. Shock: 50 G, 11 Milliseconds
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REQUIREMENTS: (CONTINUED)

(5) ACCELERATION: 20 G
(6) ALTITUDE: 70,000 FEET
(7) HUMIDITY: 10 CYCLES
(8) SALT SPRAY TESTS AS REFERENCED IN MIL-R-5757 ARE NOT APPLICABLE.

F. CONTACT FORM AND SWITCHING ACTION: 2 FORM C CONTACTS

G. COIL VOLTAGE: SEE TABLE

H. CONTACT RATINGS: (MAXIMUM AMPERES PER POLE) NORMALLY OPEN OR NORMALLY CLOSED.

<table>
<thead>
<tr>
<th>LOAD VOLTAGE</th>
<th>28 VDC</th>
<th>115 V RMS, 60 CPS</th>
<th>115 V RMS, 400 CPS</th>
<th>115/200 V RMS, 60 CPS</th>
<th>115/200 V RMS, 400 CPS</th>
</tr>
</thead>
<tbody>
<tr>
<td>RESISTIVE</td>
<td>1.0</td>
<td>2.0</td>
<td>1.0</td>
<td>0.5</td>
<td>0.75</td>
</tr>
<tr>
<td>INDUCTIVE</td>
<td>0.5</td>
<td>0.5</td>
<td>0.5</td>
<td>0.5</td>
<td>0.28</td>
</tr>
<tr>
<td>LAMP</td>
<td>0.5</td>
<td>0.5</td>
<td>0.5</td>
<td>0.5</td>
<td>0.28</td>
</tr>
<tr>
<td>MINIMUM</td>
<td>0.1</td>
<td>0.1</td>
<td>0.1</td>
<td>0.1</td>
<td>0.1</td>
</tr>
</tbody>
</table>

NOTE 2 (SHEET 3)

NOTE 1 (SHEET 3)

4. SPECIAL CONDITIONING:

A. MISS TEST:

(1) THE MANUFACTURER SHALL SUBJECT ALL RELAYS TO 5000 OPERATIONS UNDER THE FOLLOWING CONDITIONS:
   (a) 30 MICROAMPERES MAXIMUM CURRENT
   (b) 50 MILLI-VOLTS MAXIMUM VOLTAGE
   (c) 50 OHMS MAXIMUM CONTACT RESISTANCE PER CONTACT PAIR.
   (d) RATED COIL VOLTAGE APPLIED
   (e) 5 CPS MAXIMUM SWITCHING SPEED

(2) CONTACT RESISTANCE, PULL-IN AND DROP-OUT VOLTAGE SHALL BE MEASURED BY THE MANUFACTURER AFTER THE 5000 CYCLE TEST AND JUST PRIOR TO SHIPMENT. CERTIFICATION OF THESE MEASUREMENTS SHALL BE FURNISHED TO THE USER. THE MANUFACTURER SHALL ALSO FURNISH THE USER A TABULATION SHOWING THE NUMBER OF RELAYS SUBJECT TO THE 5000 CYCLE TEST, THE NUMBER OF RELAYS FAILING DURING THE 5000 CYCLE TEST AND THE TIME OR CYCLE TO FAILURE, ONE COPY OF THIS INFORMATION SHALL BE FURNISHED WITH EACH SHIPMENT OF PARTS.

NOTES:

1. INDUCTIVE LOAD LIMITED BY \( \leq 0.008 \text{ sec} \), \( R = 100 \text{ M } \Omega \)
   POWER FACTOR 50% FOR AC
2. ALL AC RATINGS ARE GIVEN FOR UNGROUNDED CASE ONLY.
### Table 1

<table>
<thead>
<tr>
<th>DASH NO.</th>
<th>SCHEMATIC NO.</th>
<th>FIGURE NO.</th>
<th>NOMINAL RATED COIL VOLTAGE (VOLTS DC)</th>
<th>MAX (OVER AMBIENT TEMP (AT +25°C))</th>
<th>MIN (OVER AMBIENT TEMP RANGE)</th>
<th>COIL RESISTANCE RANGE AT +25°C (OHMS)</th>
<th>P/L LENGTH</th>
</tr>
</thead>
<tbody>
<tr>
<td>-1</td>
<td>A</td>
<td>1</td>
<td>28.0</td>
<td>18.0</td>
<td>9.0</td>
<td>745 TO 990</td>
<td>1.00 MIN</td>
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<tr>
<td>-2</td>
<td>A</td>
<td>2</td>
<td>28.0</td>
<td>18.0</td>
<td>9.0</td>
<td>745 TO 990</td>
<td>1.00 MIN</td>
</tr>
<tr>
<td>-3</td>
<td>A</td>
<td>3</td>
<td>28.0</td>
<td>18.0</td>
<td>9.0</td>
<td>745 TO 990</td>
<td>1.00 MIN</td>
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<tr>
<td>-4</td>
<td>A</td>
<td>4</td>
<td>12.0</td>
<td>5.0</td>
<td>5.0</td>
<td>4.41 TO 235</td>
<td>1.00 MIN</td>
</tr>
<tr>
<td>-5</td>
<td>A</td>
<td>5</td>
<td>12.0</td>
<td>5.0</td>
<td>5.0</td>
<td>4.41 TO 235</td>
<td>1.00 MIN</td>
</tr>
<tr>
<td>-6</td>
<td>A</td>
<td>6</td>
<td>12.0</td>
<td>5.0</td>
<td>3.41 TO 235</td>
<td>1.00 MIN</td>
<td></td>
</tr>
<tr>
<td>-7</td>
<td>A</td>
<td>7</td>
<td>12.0</td>
<td>4.0</td>
<td>2.3</td>
<td>2.3 TO 235</td>
<td>1.00 MIN</td>
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<tr>
<td>-8</td>
<td>A</td>
<td>8</td>
<td>12.0</td>
<td>4.0</td>
<td>2.3</td>
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<td>1.00 MIN</td>
</tr>
<tr>
<td>-9</td>
<td>B</td>
<td>1</td>
<td>28.0</td>
<td>12.0</td>
<td>5.0</td>
<td>745 TO 990</td>
<td>1.00 MIN</td>
</tr>
<tr>
<td>-10</td>
<td>B</td>
<td>2</td>
<td>28.0</td>
<td>18.0</td>
<td>9.0</td>
<td>745 TO 990</td>
<td>1.00 MIN</td>
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<tr>
<td>-11</td>
<td>B</td>
<td>3</td>
<td>28.0</td>
<td>19.0</td>
<td>9.0</td>
<td>745 TO 990</td>
<td>1.00 MIN</td>
</tr>
<tr>
<td>-12</td>
<td>B</td>
<td>4</td>
<td>28.0</td>
<td>18.0</td>
<td>9.0</td>
<td>745 TO 990</td>
<td>1.00 MIN</td>
</tr>
</tbody>
</table>

**Schematic B**

Contacts shown de-energized (numbers for FEF only)

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**Legend**

- **DASH NO.**
- **SCHEMATIC NO.**
- **FIGURE NO.**
- **NOMINAL RATED COIL VOLTAGE (VOLTS DC)**
- **MAX (OVER AMBIENT TEMP (AT +25°C))**
- **MIN (OVER AMBIENT TEMP RANGE)**
- **COIL RESISTANCE RANGE AT +25°C (OHMS)**
- **P/L LENGTH**

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**Part Number and Drawing Information**

- **NASA APPROVAL**
- **NASA DRAWING NO.**
- **CODE IDENT NO.**
- **PART OR IDENTIFYING NO.**
- **DESCRIPTION**
- **NOMENCLATURE OR LIST OF MATERIALS**
- **SPECIFICATION CONTROL DRAWING**
- **RELAY ARMATURE (GENERAL PURPOSE)**
- **MAN NED SPACECRAFT CENTER**
- **HOUSTON, TEXAS**
- **INSTRUMENTATION LAB**
- **REVISIONS**
- **DESCRIPTION**
- **DATE**
- **APPROVAL**

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