**RI-48 Series Dry Reed Switch**

### RI-48 Series
Micro dry-reed switch hermetically sealed in a gas-filled glass envelope. Single-pole, single-throw (SPST) type, having normally open contacts, and containing two magnetically actuated reeds. The switch is of the double-ended type and may be actuated by an electromagnet, a permanent magnet or a combination of both.

The device is intended for use in relays for switching power loads and high stand-off voltage applications.

### RI-48 Series Features
- Perfect heavy load switch
- Can handle loads up to 70 Watts
- Contact layers: Gold, sputtered ruthenium
- Superior glass-to-metal seal and blade alignment
- Excellent life expectancy and reliability

### General data for all models RI-48

**AT-Customization / Preformed Leads**
Besides the standard models, customized products can also be supplied offering the following options:
- Operate and release ranges to customer specification
- Cropped and/or preformed leads

**Coils**
All characteristics are measured using the Philips Standard Coil. For definitions of the Philips Standard Coil, refer to “Application Notes” in the Reed Switch Technical & Application Information Section of this catalog.

**Life expectancy and reliability**
The life expectancy data given below are valid for a coil energized at 1.5 times the published maximum operate value for each type in the RI-48 series.

**No-load conditions (operating frequency: 100 Hz)**
Life expectancy: min. $10^8$ operations with a failure rate of less than $10^{-9}$ with a confidence level of 90%.

End of life criteria:
- Contact resistance > 1Ω after 2 ms
- Release time > 2 ms (latching or contact sticking).

**Loaded conditions (resistive load: 20 V; 500 mA; operating frequency: 125 Hz)**

**RI-48AA**
Life expectancy: min. $10^7$ operations with a failure rate of less than $10^{-8}$ with a confidence level of 90%.
End of life criteria:
- Contact resistance > 2Ω after 2.5 ms
- Release time > 2.5 ms (latching or contact sticking).

**RI-48A; RI-48B; RI-48C**
Life expectancy: min. $2.5 \times 10^7$ operations with a failure rate of less than $10^{-8}$ with a confidence level of 90%.
End of life criteria:
- Contact resistance > 2Ω after 2.5 ms
- Release time > 2.5 ms (latching or contact sticking).

**Loaded conditions (resistive load: 100 V-700 mA; operating frequency: 20 Hz)**

**RI-48B; RI-48C**
Life expectancy: min. $3 \times 10^5$ operations with a failure rate of less than $10^{-6}$ with a confidence level of 90%.
RI-48 Series Dry Reed Switch

Model Number

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Test Conditions</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>RI-48A</td>
<td>RI-48B</td>
<td>RI-48C</td>
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</table>

Operating Characteristics

<table>
<thead>
<tr>
<th>Operate Range</th>
<th>AT</th>
<th>15-28</th>
<th>24-51</th>
<th>46-70</th>
</tr>
</thead>
<tbody>
<tr>
<td>Release Range</td>
<td>AT</td>
<td>8-20</td>
<td>13-27</td>
<td>18-32</td>
</tr>
<tr>
<td>Operate Time - including bounce (typ.)</td>
<td>ms (energization)</td>
<td>0.35 (35 AT)</td>
<td>0.35 (64 AT)</td>
<td>0.35 (87.5 AT)</td>
</tr>
<tr>
<td>Bounce Time (typ.)</td>
<td>ms (energization)</td>
<td>0.15 (35 AT)</td>
<td>0.15 (64 AT)</td>
<td>0.15 (87.5 AT)</td>
</tr>
<tr>
<td>Release Time (max)</td>
<td>µs</td>
<td>30 (35 AT)</td>
<td>30 (64 AT)</td>
<td>30 (87.5 AT)</td>
</tr>
<tr>
<td>Resonant Frequency (typ.)</td>
<td>Hz</td>
<td>3200</td>
<td>3200</td>
<td>3200</td>
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</tbody>
</table>

Electrical Characteristics

<table>
<thead>
<tr>
<th>Switched Power (max)</th>
<th>W</th>
<th>70</th>
<th>70</th>
<th>70</th>
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</thead>
<tbody>
<tr>
<td>Switched Voltage DC (max)</td>
<td>V</td>
<td>200</td>
<td>200</td>
<td>200</td>
</tr>
<tr>
<td>Switched Voltage AC, RMS value (max)</td>
<td>V</td>
<td>250</td>
<td>250</td>
<td>250</td>
</tr>
<tr>
<td>Switched Current DC (max)</td>
<td>mA</td>
<td>1.75</td>
<td>2.25</td>
<td>2.25</td>
</tr>
<tr>
<td>Switched Current AC, RMS value (max)</td>
<td>mA</td>
<td>1000</td>
<td>1000</td>
<td>1000</td>
</tr>
<tr>
<td>Carry Current DC; AC, RMS value (max)</td>
<td>A</td>
<td>1.75</td>
<td>2.25</td>
<td>2.25</td>
</tr>
<tr>
<td>Breakdown Voltage (min)</td>
<td>V</td>
<td>400</td>
<td>580</td>
<td>780</td>
</tr>
<tr>
<td>Contact Resistance (initial max) (energization)</td>
<td>m Ω</td>
<td>90 (27 AT)</td>
<td>90 (36 AT)</td>
<td>90 (36 AT)</td>
</tr>
<tr>
<td>Contact Resistance (initial typ.) (energization)</td>
<td>m Ω</td>
<td>60 (27 AT)</td>
<td>60 (36 AT)</td>
<td>60 (36 AT)</td>
</tr>
<tr>
<td>Contact Capacitance (max)</td>
<td>pF</td>
<td>0.2</td>
<td>0.2</td>
<td>0.2</td>
</tr>
<tr>
<td>Insulation Resistance (min)</td>
<td>RH ≤ 45%</td>
<td>10^6</td>
<td>10^6</td>
<td>10^6</td>
</tr>
</tbody>
</table>

End of life criteria:
- Contact resistance > 1.5Ω after 2.5 ms.
- Release time > 2.5 ms (latching or contact sticking).
- Switching different loads involves different life expectancy and reliability data. Further information is available on request.

Mechanical Data

Contact arrangement is normally open; lead finish is tinned; net mass is approximately 280 mg; and can be mounted in any position.

Shock
The switches are tested in accordance with “IEC 68-2-27”, test Ea (peak acceleration 500 G, half sinewave; duration 11 ms). Such a shock will not cause an open switch (no magnetic field present) to close, nor a switch kept closed by an 80 AT coil to open.

Vibration
The switches are tested in accordance with “IEC 68-2-6”, test Fc (acceleration 10 G; below cross-over frequency 57 to 62 Hz; amplitude 0.75 mm; frequency range 10 to 2000 Hz, duration 90 minutes). Such a vibration will not cause an open switch (no magnetic field present) to close, nor a switch kept closed by an 80 AT coil to open.

Mechanical Strength
The robustness of the terminations is tested in accordance with “IEC 68-2-21”, test Ua1 (load 40 N).

Operating and Storage Temperature
Operating ambient temperature; min: -55°C; max: +125°C. Storage temperature; min: -55°C; max: +125°C. Note: Temperature excursions up to 150°C may be permissible. For more information contact your nearest Coto Technology sales office.

Soldering
The switch can withstand soldering heat in accordance with “IEC 68-2-20”, test Tb, method 1B: solder bath at 350 ±10°C for 3.5 ±0.5 s. Solderability is tested in accordance with “IEC 68-2-20”, test Ta, method 3: solder globule temperature 235°C; ageing 1b: 4 hours steam.

Welding
The leads can be welded.

Mounting
The leads should not be bent closer than 1 mm to the glass-to-metal seals. Stress on the seals should be avoided. Care must be taken to prevent stray magnetic fields from influencing the operating and measuring conditions.