**PEC09 Series - 9 mm Incremental Encoder**

### Features
- Push switch option
- Compact, rugged design
- High reliability
- Metal bushing/shaft

### Electrical Characteristics

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Output</td>
<td>2-bit quadrature code</td>
</tr>
<tr>
<td>Closed Circuit Resistance</td>
<td>3 ohms maximum</td>
</tr>
<tr>
<td>Contact Rating</td>
<td>10 mA @ 5 VDC</td>
</tr>
<tr>
<td>Insulation Resistance</td>
<td>100 megohms @ 250 VDC</td>
</tr>
<tr>
<td>Dielectric Withstanding Voltage</td>
<td>300 VAC minimum</td>
</tr>
<tr>
<td>Soldering Condition</td>
<td>Continuous</td>
</tr>
<tr>
<td>Terminal Bend Strength</td>
<td>10.0 kgf.cm (8.67 lb.-in.) maximum</td>
</tr>
<tr>
<td>Shaft Push-Pull Strength</td>
<td>300 gf (10.6 ozf)</td>
</tr>
<tr>
<td>Weight</td>
<td>5 gm (0.17 oz.) maximum</td>
</tr>
<tr>
<td>Terminal Bend Strength</td>
<td>10 kgf (22 lbf)</td>
</tr>
<tr>
<td>RPM (Operating)</td>
<td>30 to 200 gf.cm (0.42 to 2.7 oz.-in.)</td>
</tr>
<tr>
<td>Torque</td>
<td>30 to 200 gf.cm (0.42 to 2.7 oz.-in.)</td>
</tr>
<tr>
<td>Rotational Life</td>
<td>20,000 cycles minimum</td>
</tr>
<tr>
<td>Rotational Life</td>
<td>30,000 cycles minimum</td>
</tr>
<tr>
<td>Environmental Characteristics</td>
<td></td>
</tr>
<tr>
<td>Mechanical Angle</td>
<td>360 ° continuous</td>
</tr>
<tr>
<td>Torque</td>
<td>Contact Push ON Momentary SPST</td>
</tr>
<tr>
<td>Running/Detent</td>
<td>Contact Push ON Momentary SPST</td>
</tr>
<tr>
<td>Mounting</td>
<td>20,000 cycles minimum</td>
</tr>
<tr>
<td>Shaft Style</td>
<td>See How to Order</td>
</tr>
<tr>
<td>Soldering Condition</td>
<td>300 ± 200 gf (10.6 ± 7.0 ozf)</td>
</tr>
<tr>
<td>Wave Soldering</td>
<td>300 ± 200 gf (10.6 ± 7.0 ozf)</td>
</tr>
<tr>
<td>Hand Soldering</td>
<td>300 ± 200 gf (10.6 ± 7.0 ozf)</td>
</tr>
<tr>
<td>Switch Circuit</td>
<td>300 ± 200 gf (10.6 ± 7.0 ozf)</td>
</tr>
</tbody>
</table>

### Environmental Characteristics

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating Temperature Range</td>
<td>-10 °C to +70 °C (+14 °F to +158 °F)</td>
</tr>
<tr>
<td>Storage Temperature Range</td>
<td>-40 °C to +85 °C (+40 °F to +185 °F)</td>
</tr>
<tr>
<td>Humidity</td>
<td>MIL-STD-202, Method 103B, Condition B</td>
</tr>
<tr>
<td>Rotational Life</td>
<td>300 cycles minimum</td>
</tr>
<tr>
<td>IP Rating</td>
<td>IP 40</td>
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</tbody>
</table>

### Switch Characteristics

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Switch Type</td>
<td>Contact Push ON Momentary SPST</td>
</tr>
<tr>
<td>Switch Life</td>
<td>20,000 cycles minimum</td>
</tr>
<tr>
<td>Power Rating</td>
<td>See How to Order</td>
</tr>
<tr>
<td>Switch Travel</td>
<td>300 ± 200 gf (10.6 ± 7.0 ozf)</td>
</tr>
<tr>
<td>Switch Actuation Force</td>
<td>300 ± 200 gf (10.6 ± 7.0 ozf)</td>
</tr>
</tbody>
</table>

### How To Order

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>973-887-2550</td>
<td>Toll Free 1-800-631-8083</td>
</tr>
<tr>
<td>36 State Route 10, STE 6 • East Hanover, NJ 07936-0436</td>
<td></td>
</tr>
</tbody>
</table>

### Quadrature Output Table

<table>
<thead>
<tr>
<th>Signal</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>CW</td>
</tr>
<tr>
<td>B</td>
<td>CCW</td>
</tr>
</tbody>
</table>

### Resolution

<table>
<thead>
<tr>
<th>Resolution</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>12 pulses</td>
<td>360 ° Rotation</td>
</tr>
<tr>
<td>15 pulses</td>
<td>360 ° Rotation</td>
</tr>
</tbody>
</table>


*Devices are tested using standard noise reduction filters.*

For optimum performance, designers should use noise reduction filters in their circuits.

Specifications are subject to change without notice.

Customers should verify actual device performance in their specific applications.
PEC09 Series - 9 mm Incremental Encoder

Product Dimensions

PEC09-2xxxF-Nxxxx

PEC09-2xxxF-Sxxxx

PEC09-2xxxF-Txxxx

Hardware

Locating Lug Detail

Suggested Filter Circuit

Applications

Level control, tuning and timer settings in:
- Audio-visual equipment
- Consumer electric appliances
- Environmental controls
- Musical instrumentation
- Communications equipment

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973-887-2550 • Toll Free 1-800-631-8083 • Fax 973-887-1940
http://www.potentiometers.com

Page 2
Shaft Options

PEC09-2xxxx-Nxxxx

<table>
<thead>
<tr>
<th>Knurled Type</th>
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</thead>
<tbody>
<tr>
<td>L1</td>
<td>LB</td>
<td>L2</td>
</tr>
<tr>
<td>15</td>
<td>5.0</td>
<td>6.0</td>
</tr>
<tr>
<td>(.591)</td>
<td>(.197)</td>
<td>(.236)</td>
</tr>
<tr>
<td>20</td>
<td>7.0</td>
<td>10.0</td>
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<tr>
<td>(.787)</td>
<td>(.276)</td>
<td>(.394)</td>
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<tr>
<td>25</td>
<td>10.0</td>
<td>10.0</td>
</tr>
<tr>
<td>(.984)</td>
<td>(.394)</td>
<td>(.394)</td>
</tr>
</tbody>
</table>

PEC09-2xxxx-Sxxxx (0.5 mm Switch Stroke)

<table>
<thead>
<tr>
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<td>9.0</td>
</tr>
<tr>
<td>(.787)</td>
<td>(.276)</td>
<td>(.354)</td>
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<tr>
<td>25</td>
<td>10.0</td>
<td>9.0</td>
</tr>
<tr>
<td>(.984)</td>
<td>(.394)</td>
<td>(.394)</td>
</tr>
</tbody>
</table>

PEC09-2xxxx-Txxxx (1.5 mm Switch Stroke)

<table>
<thead>
<tr>
<th>Knurled Type</th>
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</tr>
</thead>
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<td>LB</td>
<td>L2</td>
</tr>
<tr>
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<td>5.0</td>
<td>5.0</td>
</tr>
<tr>
<td>(.591)</td>
<td>(.197)</td>
<td>(.394)</td>
</tr>
<tr>
<td>20</td>
<td>7.0</td>
<td>8.0</td>
</tr>
<tr>
<td>(.787)</td>
<td>(.276)</td>
<td>(.315)</td>
</tr>
<tr>
<td>25</td>
<td>10.0</td>
<td>8.0</td>
</tr>
<tr>
<td>(.984)</td>
<td>(.394)</td>
<td>(.315)</td>
</tr>
</tbody>
</table>

DIMENSIONS: MM

**REV. 10/11**

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For more information about this product, visit our website at: [www.potentiometers.com](http://www.potentiometers.com)