PEC11L Series - 11 mm Low Profile Encoder

**Features**
- Push switch option
- Compact, low profile
- High rotational life and switch life
- Metal bushing/shaft
- RoHS compliant*

**Electrical Characteristics**
- Output: 2-bit quadrature code
- Closed Circuit Resistance: 100 mΩ maximum
- Insulation Resistance: 100 megohms @ 250 VDC
- Dielectric Withstanding Voltage: 1.000 VAC minimum
- Contact Bounce (60 RPM): 10 ms maximum**
- Power Rating (Resistive Load): 10 mA @ 5 V DC
- Switch Travel: 0.5 ± 0.3 mm
- Switch Actuation Force: 610 ± 306 gf (8.47 ± 4.24 oz.-in.)

**Environmental Characteristics**
- Operating Temperature Range: -25 °C to +80 °C (-13 °F to +176 °F)
- Storage Temperature Range: -40 °C to +85 °C (-40 °F to +185 °F)
- Humidity: MIL-STD-202, Method 103B, Condition A
- Vibration: 10–55–10 Hz / 1 min. / Amplitude 1.5 mm
- Shock: 100 G
- Rotational Life: 100,000 cycles minimum
- IP Rating: 40

**Mechanical Characteristics**
- Mechanical Angle: 360 ° continuous
- Torque: 20-200 gf-cm (0.27 to 2.8 oz-in)
- Running: 10 to 150 gf-cm (0.14 to 2.1 oz-in)
- Mounting: 70 N-cm (6.2 lb-in) maximum
- Shaft Side Load (Static): 2.04 kgf (4.5 lbs) minimum
- Shaft Strength (Push-Pull): 100 N (22.5 lbs)
- Weight: 0.5 ± 0.3 mm
- Terminals: Printed circuit board terminals
- Soldering Condition: Sn95.5/Ag2.8/Cu0.7 solder with no-clean flux: 260 °C ±5 °C max. for 3-5 seconds
- Wave Soldering: Sn95.5/Ag2.8/Cu0.7 solder with no-clean flux: 260 °C ±5 °C max. for 3-5 seconds
- Hand Soldering: Not recommended
- One flat washer and one mounting nut supplied with each encoder

**Switch Characteristics**
- Switch Type: Contact Push On Momentary SPST
- Switch Life: 100,000 actuations minimum
- Power Rating (Resistive Load): 10 mA at 5 V DC
- Switch Travel: 0.5 ± 0.3 mm

**How To Order**

<table>
<thead>
<tr>
<th>Model</th>
<th>Terminal Configuration</th>
<th>Detent Option</th>
<th>Standard Shaft Length</th>
<th>Shaft Style</th>
<th>Switch Configuration</th>
<th>Resolution</th>
</tr>
</thead>
<tbody>
<tr>
<td>PEC11L - 4 0 20 F - S 0015</td>
<td>4 = PC Pin Horizontal/Rear Facing</td>
<td>0 = No Detents (15, 20 pulses)</td>
<td>15 = 15.0 mm</td>
<td>F = Metal Flatted Shaft</td>
<td>S = Push Momentary Switch</td>
<td>0015 = 15 Pulses per 360 ° Rotation</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1 = 20 Detents (20 pulses)</td>
<td>20 = 20.0 mm</td>
<td>K = Metal Knurled Shaft</td>
<td>N = No Switch</td>
<td>0020 = 20 Pulses per 360 ° Rotation</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2 = 30 Detents (15 pulses)</td>
<td>25 = 25.0 mm</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Additional Notes**
- ** 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.
- Users should verify actual device performance in their specific applications.
- The products described herein and this document are subject to specific legal disclaimers as set forth on the last page of this document, and at www.bourns.com/docs/legal/disclaimer.pdf.
**Applications**

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

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**PEC11L Series - 11 mm Low Profile Encoder**

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**Product Dimensions**

<table>
<thead>
<tr>
<th>PEC11L-4xxxF-Nxxxx</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>DIMENSIONS:</strong></td>
<td><strong>MM</strong></td>
</tr>
<tr>
<td>10 TEETH KNURLLED</td>
<td></td>
</tr>
<tr>
<td>0.75</td>
<td>(.030)</td>
</tr>
<tr>
<td>0.5</td>
<td>(.020)</td>
</tr>
<tr>
<td>4.5</td>
<td>(.177)</td>
</tr>
<tr>
<td>6.0</td>
<td>(.236)</td>
</tr>
<tr>
<td>11.8</td>
<td>(.465)</td>
</tr>
<tr>
<td>6.0</td>
<td>(.236)</td>
</tr>
<tr>
<td>2.1</td>
<td>(.083)</td>
</tr>
<tr>
<td>12.8</td>
<td>(.504)</td>
</tr>
</tbody>
</table>

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**Quadrature Output Table**

<table>
<thead>
<tr>
<th>A Signal</th>
<th>B Signal</th>
</tr>
</thead>
<tbody>
<tr>
<td>CW</td>
<td>OFF → ON</td>
</tr>
<tr>
<td>CCW</td>
<td></td>
</tr>
</tbody>
</table>

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**Suggested Filter Circuit**

- 5 VDC
- 10K OHMS
- 10K OHMS
- 0.01 μF
- ENCORDER
- TERMINAL A
- TERMINAL B
- 0.01 μF

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REV. 01/20

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