### 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>100 milliohms 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 - Sea Level</td>
<td>300 VAC minimum</td>
</tr>
<tr>
<td>Electrical Travel</td>
<td>Continuous</td>
</tr>
<tr>
<td>Contact Bounce (60 RPM)</td>
<td>3.0 ms maximum**</td>
</tr>
<tr>
<td>RPM (Operating)</td>
<td>60 maximum**</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>-20 °C to +70 °C (-4 °F to +158 °F)</td>
</tr>
<tr>
<td>Storage Temperature Range</td>
<td>-35 °C to +85 °C (-31 °F to +185 °F)</td>
</tr>
<tr>
<td>Humidity</td>
<td>MIL-STD-202, Method 103B, Condition A</td>
</tr>
<tr>
<td>Vibration</td>
<td>10–55–10 Hz / 1 min. / Amplitude 1.5 mm</td>
</tr>
<tr>
<td>Shock</td>
<td>100 G</td>
</tr>
<tr>
<td>Rotational Life</td>
<td>100,000 cycles minimum</td>
</tr>
<tr>
<td>IP Rating</td>
<td>IP 40</td>
</tr>
<tr>
<td>Moisture Sensitivity Level</td>
<td>1</td>
</tr>
</tbody>
</table>

### Mechanical Characteristics

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mechanical Angle</td>
<td>360 ° continuous</td>
</tr>
<tr>
<td>Torque</td>
<td>210 ±70 gf-cm (2.0 ± 0.1 oz-in)</td>
</tr>
<tr>
<td>Mounting</td>
<td>70 N-cm (6.2 lb-in) maximum</td>
</tr>
<tr>
<td>Shaft Strength (Push-Pull)</td>
<td>50 N (11.2 lbs)</td>
</tr>
<tr>
<td>Weight</td>
<td>5 gm (0.17 oz) maximum</td>
</tr>
<tr>
<td>Terminals</td>
<td>Printed circuit board terminals</td>
</tr>
<tr>
<td>Soldering Condition</td>
<td>Sn95.5/Ag2.8/Cu0.7 solder with no-clean flux: 260 °C ±5 °C max. for 3 ± 1 seconds</td>
</tr>
<tr>
<td>Hand Soldering</td>
<td>Not recommended</td>
</tr>
<tr>
<td>Hardware</td>
<td>One flat washer and one mounting nut supplied with each encoder</td>
</tr>
</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>30,000 actuations minimum</td>
</tr>
<tr>
<td>Power Rating (Resistive Load)</td>
<td>10 mA at 5 V DC</td>
</tr>
<tr>
<td>Switch Travel</td>
<td>0.5 ± 0.3 mm</td>
</tr>
<tr>
<td>Switch Actuation Force</td>
<td>610 ± 306 gf (8.47 ± 4.24 oz.-in.)</td>
</tr>
</tbody>
</table>

---

**Additional Information**

Click these links for more information:
- PRODUCT
- TECHNICAL LIBRARY
- INVENTORY
- SAMPLES
- CONTACT

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**Electrical Characteristics**

- Output: 2-bit quadrature code
- Closed Circuit Resistance: 100 milliohms maximum
- Contact Rating: 10 mA @ 5 VDC
- Insulation Resistance: 100 megohms @ 250 VDC
- Dielectric Withstanding Voltage - Sea Level: 300 VAC minimum
- Electrical Travel: Continuous
- Contact Bounce (60 RPM): 3.0 ms maximum**
- RPM (Operating): 60 maximum**

**Environmental Characteristics**

- Operating Temperature Range: -20 °C to +70 °C (-4 °F to +158 °F)
- Storage Temperature Range: -35 °C to +85 °C (-31 °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: IP 40
- Moisture Sensitivity Level: 1

**Mechanical Characteristics**

- Mechanical Angle: 360 ° continuous
- Torque: 210 ±70 gf-cm (2.0 ± 0.1 oz-in)
- Mounting: 70 N-cm (6.2 lb-in) maximum
- Shaft Strength (Push-Pull): 50 N (11.2 lbs)
- Weight: 5 gm (0.17 oz) maximum
- 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 ± 1 seconds
- Hand Soldering: Not recommended
- Hardware: One flat washer and one mounting nut supplied with each encoder

**Switch Characteristics**

- Switch Type: Contact Push ON Momentary SPST
- Switch Life: 30,000 actuations minimum
- Power Rating (Resistive Load): 10 mA at 5 V DC
- Switch Travel: 0.5 ± 0.3 mm
- Switch Actuation Force: 610 ± 306 gf (8.47 ± 4.24 oz.-in.)

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**WARNING**

Cancer and Reproductive Harm

www.P65Warnings.ca.gov

Do not store product in high temperature and humidity, direct sunlight and/or places where corrosive gases may be generated. Please use product within 6 months from the date of delivery and promptly after unpacking.
### Applications
Level control, tuning and timer settings in:
- Audio-visual equipment
- Consumer electric appliances
- Environmental controls
- Musical instrumentation
- Communications equipment

### PEC11H Series - 11 mm Encoder w/High Detent Force

#### PEC11H-xxxxF-Nxxxx

<table>
<thead>
<tr>
<th>L (mm)</th>
<th>LB (mm)</th>
<th>F (mm)</th>
<th>P (mm)</th>
<th>A (mm)</th>
<th>C (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>15 (0.591)</td>
<td>5.0 (0.197)</td>
<td>5.0 (0.197)</td>
<td>7.0 (0.276)</td>
<td>6.0 (0.236)</td>
<td>6.0 (0.236)</td>
</tr>
<tr>
<td>20 (0.787)</td>
<td>7.0 (0.276)</td>
<td>10.0 (0.394)</td>
<td>7.0 (0.276)</td>
<td>6.0 (0.236)</td>
<td>7.0 (0.276)</td>
</tr>
<tr>
<td>25 (0.984)</td>
<td>7.0 (0.276)</td>
<td>12.0 (0.472)</td>
<td>12.0 (0.472)</td>
<td>10.0 (0.394)</td>
<td>11.0 (0.433)</td>
</tr>
</tbody>
</table>

**Dim. Tol.**
- L: <10.0 (<0.394)
- LB: ±0.3 (±0.012)
- F: ±0.5 (±0.020)

**Dimensions:**
- **MM**

#### PEC11H-xxxxF-Sxxxx

<table>
<thead>
<tr>
<th>L (mm)</th>
<th>LB (mm)</th>
<th>F (mm)</th>
<th>Dim.</th>
<th>Tol.</th>
</tr>
</thead>
<tbody>
<tr>
<td>15 (0.591)</td>
<td>5.0 (0.197)</td>
<td>5.0 (0.197)</td>
<td>&lt;10.0 (&lt;0.394)</td>
<td>±0.3 (±0.012)</td>
</tr>
<tr>
<td>20 (0.787)</td>
<td>7.0 (0.276)</td>
<td>10.0 (0.394)</td>
<td>10.0 ~ 100 (394 ~ 3.937)</td>
<td>±0.5 (±0.020)</td>
</tr>
<tr>
<td>25 (0.984)</td>
<td>7.0 (0.276)</td>
<td>12.0 (0.472)</td>
<td>12.0 ~ 200 (472 ~ 7.874)</td>
<td>±1.0 (±0.039)</td>
</tr>
</tbody>
</table>

**Dimensions:**
- **MM**

---

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Users should verify actual device performance in their specific applications.
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PEC11H Series - 11 mm Encoder w/High Detent Force

How To Order

Model                  PEC11H - 4 0 20 F - S 0020
Terminal Configuration
4 = PC Pin Horizontal/Rear Facing
Detent Option
0 = 16 Detents (8, 16 pulses)
1 = 20 Detents (20 pulses)
2 = 24 Detents (24 pulses)
3 = 30 Detents (15 pulses)
Standard Shaft Length
15 = 15.0 mm
20 = 20.0 mm
25 = 25.0 mm
30 = 30.0 mm
Shaft Style
F = Metal Flattened Shaft
K = Metal Knurled Shaft
Switch Configuration
S = Push Momentary Switch
N = No Switch
Resolution
0000 = 8 Pulses per 360° Rotation
0001 = 10 Pulses per 360° Rotation
0002 = 20 Pulses per 360° Rotation
0004 = 30 Pulses per 360° Rotation
0005 = 15 Pulses per 360° Rotation
0010 = 20 Pulses per 360° Rotation
0015 = 24 Pulses per 360° Rotation
0020 = 30 Pulses per 360° Rotation
0024 = 16 Pulses per 360° Rotation
0025 = 30 Pulses per 360° Rotation
0026 = 24 Pulses per 360° Rotation

Hardware

Switch Circuit

Suggested Filter Circuit

Quadrature Output Table

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