PEC11R Series - 12 mm Incremental Encoder

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

**Electrical Characteristics**
- **Output:** 2-bit quadrature code
- **Contact Resistance:** 10 ma @ 5 VDC
- **Insulation Resistance:** 100 megohms @ 250 VDC
- **Dielectric Withstanding Voltage:**
- **Electrical Travel:** 300 VAC minimum
- **Contact Bounce (15 RPM):** 2.0 ms maximum**
- **RPM (Operating):** 60 maximum**

**Environmental Characteristics**
- **Operating Temperature Range:** -30 °C to +70 °C (-22 °F to +158 °F)
- **Storage Temperature Range:** -40 °C to +85 °C (-40 °F to +185 °F)
- **Humidity:** MIL-STD-202, Method 103B, Condition B
- **Shock:** 10~55~10 Hz / 1 min. / Amplitude 1.5 mm
- **Vibration:**
- **Humidity:** MIL-STD-202, Method 103B, Condition B
- **Shock:** 100 G
- **Vibration:**

**Mechanical Characteristics**
- **Mechanical Angle:** 360 ° continuous
- **Torque Running:** 50 to 200 gf.cm (0.68 to 2.7 oz.-in.)
- **Shaft Side Load (Static):** 10.2 kgf.cm (8.53 lb.-in.) maximum
- **Weight:** 5 gram (0.17 oz.) maximum
- **Terminal:** Printed circuit board terminals
- **Wave Soldering:** Sn95.5/Ag2.8/Cu0.7 solder with no-clean flux: 260 °C max. for 3 ±1 sec.
- **Hand Soldering:** Not recommended
- **Soldering Condition:**

**Switch Characteristics**
- **Switch Type:** Contact Push ON Momentary SPST
- **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.)
- **Contact Resistance:** 100 milliohms @ 5 VDC

**Quadrature Output 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.
The device characteristics and parameters in this data sheet can and do vary in different applications and actual device performance may vary over time.
Users should verify actual device performance in their specific applications.
Applications
Level control, tuning and timer settings in:

- Audio-visual equipment
- Consumer electric appliances
- Radios
- Musical instrumentation
- Communications equipment

PEC11R Series - 12 mm Incremental Encoder

Product Dimensions

<table>
<thead>
<tr>
<th>Dimensions (MM)</th>
<th>Dimensions (INCHES)</th>
</tr>
</thead>
<tbody>
<tr>
<td>15</td>
<td>(.591)</td>
</tr>
<tr>
<td>20</td>
<td>(.787)</td>
</tr>
<tr>
<td>25</td>
<td>(.984)</td>
</tr>
<tr>
<td>30</td>
<td>(1.181)</td>
</tr>
</tbody>
</table>

PEC11R-4xxxF-Nxxxx

Switch Circuit

Suggested Filter Circuit

© State Electronics
36 State Route 10, STE 6 • East Hanover, NJ 07936-0436
973-887-2550 • Toll Free 1-800-631-8083 • Fax 973-887-1940
http://www.potentiometers.com

Page 3
PEC11R Series - 12 mm Incremental Encoder

**Product Dimensions**

**PEC11R-4xxxK-Nxxxx**

<table>
<thead>
<tr>
<th>L</th>
<th>LB</th>
<th>P</th>
<th>A</th>
</tr>
</thead>
<tbody>
<tr>
<td>15</td>
<td>5.0</td>
<td>7.0</td>
<td>6.0</td>
</tr>
<tr>
<td>(.591)</td>
<td>(.197)</td>
<td>(.276)</td>
<td>(.236)</td>
</tr>
<tr>
<td>20</td>
<td>7.0</td>
<td>7.0</td>
<td>6.0</td>
</tr>
<tr>
<td>(.787)</td>
<td>(.276)</td>
<td>(.276)</td>
<td>(.236)</td>
</tr>
<tr>
<td>30</td>
<td>7.0</td>
<td>16.0</td>
<td>12.0</td>
</tr>
<tr>
<td>(1.181)</td>
<td>(.276)</td>
<td>(.630)</td>
<td>(.472)</td>
</tr>
</tbody>
</table>

**PEC11R-4xxxK-Sxxxx**

<table>
<thead>
<tr>
<th>L</th>
<th>LB</th>
<th>P</th>
<th>A</th>
</tr>
</thead>
<tbody>
<tr>
<td>15</td>
<td>5.0</td>
<td>7.0</td>
<td>6.0</td>
</tr>
<tr>
<td>(.591)</td>
<td>(.197)</td>
<td>(.276)</td>
<td>(.236)</td>
</tr>
<tr>
<td>20</td>
<td>7.0</td>
<td>7.0</td>
<td>6.0</td>
</tr>
<tr>
<td>(.787)</td>
<td>(.276)</td>
<td>(.276)</td>
<td>(.236)</td>
</tr>
</tbody>
</table>

**How To Order**

PEC11R - 4 0 20 F - S 0012

Model

Terminal Configuration
4 = PC Pin Horizontal/Rear Facing
Detent Option
0 = No Detents (12, 18, 24 pulses)
1 = 18 Detents (18 pulses)
2 = 24 Detents (12, 24 pulses)
3 = 12 Detents (12, 24 pulses)
Standard Shaft Length
15 = 15.0 mm
20 = 20.0 mm
25 = 25.0 mm
30 = 30.0 mm
Shaft Style
F = Metal Platted Shaft
K = Metal Knurled Shaft
Switch Configuration
S = Push Momentary Switch
N = No Switch
Resolution
0012 = 12 Pulses per 360° Rotation
0018 = 18 Pulses per 360° Rotation
0024 = 24 Pulses per 360° Rotation

For more information about this product, visit our website at: www.potentiometers.com

© State Electronics
36 State Route 10, STE 6 • East Hanover, NJ 07936-0436
973-887-2550 • Toll Free 1-800-631-8083 • Fax 973-887-1940
http://www.potentiometers.com

Page 3

THE POTENTIOMETER SPECIALISTS®
Updated March 30, 2016

REV. 07/14

Specifications are subject to change without notice.
The device characteristics and parameters in this data sheet can and do vary in different applications and actual device performance may vary over time.
Users should verify actual device performance in their specific applications.