



## Features

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



## PEC11L Series - 11 mm Low Profile Encoder

### 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) .....   | 10 ms maximum**       |
| RPM (Operating) .....           | 60 maximum**          |

### 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 .....                   | IP 40                                   |

### Mechanical Characteristics

|                                  |  |
|----------------------------------|--|
| Mechanical Angle .....           | 360 ° continuous   |
| Torque                           |  |
| Detent .....                     | 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 .....                     | 5 gm (0.17 oz) maximum   |
| Terminals .....                  | Printed circuit board terminals  |
| Soldering Condition              |  |
| 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  |
| Hardware .....                   | 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                       |
| Switch Actuation Force .....        | 610 ± 306 gf (8.47 ± 4.24 oz.-in.) |

### How To Order

PEC11L - 4 0 20 F - S 0015

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

### Additional Information

Click these links for more information:



## BOURNS®

### Asia-Pacific:

Tel: +886-2 2562-4117  
Email: asiacus@bourns.com

### Europe:

Tel: +36 88 885 877  
Email: eurocus@bourns.com

### The Americas:

Tel: +1-951 781-5500  
Email: americus@bourns.com

[www.bourns.com](http://www.bourns.com)



**WARNING**  
**Cancer and Reproductive Harm**  
[www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov)

\*RoHS Directive 2015/863, Mar 31, 2015 and Annex.  
\*\*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](http://www.bourns.com/docs/legal/disclaimer.pdf).



**CAUTION**

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

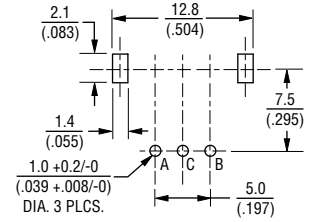
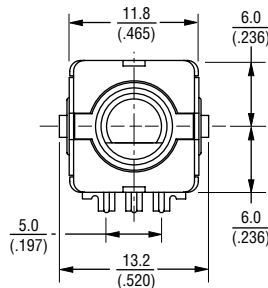
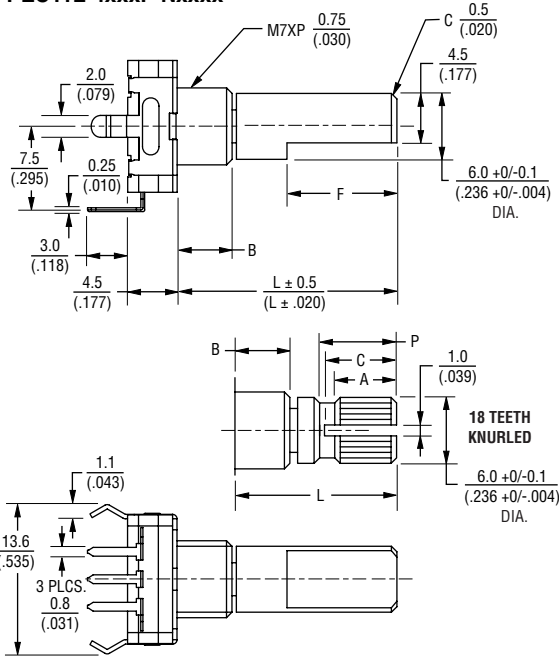
Level control, tuning and timer settings in:

- Audio-visual equipment
- Consumer electric appliances
- Environmental controls
- Musical instrumentation
- Communications equipment

## PEC11L Series - 11 mm Low Profile Encoder **BOURNS®**

### Product Dimensions

#### PEC11L-4xxxF-Nxxxx

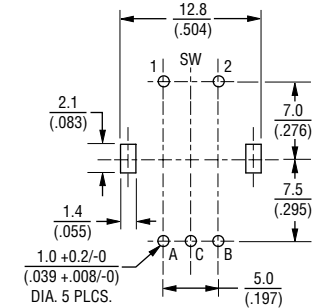
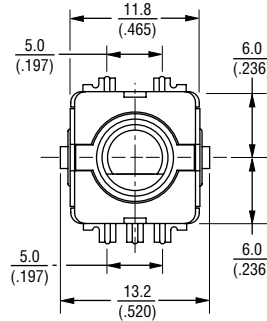
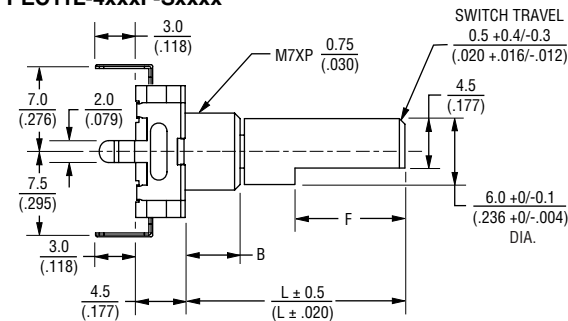


| L            | B             | F              | P              | A              | C              |
|--------------|---------------|----------------|----------------|----------------|----------------|
| 15<br>(.591) | 5.0<br>(.197) | 7.0<br>(.276)  | 7.0<br>(.276)  | 6.0<br>(.236)  | 7.0<br>(.276)  |
| 20<br>(.787) | 7.0<br>(.276) | 10.0<br>(.394) | 7.0<br>(.276)  | 6.0<br>(.236)  | 7.0<br>(.276)  |
| 25<br>(.984) | 7.0<br>(.276) | 12.0<br>(.472) | 12.0<br>(.472) | 10.0<br>(.394) | 11.0<br>(.433) |

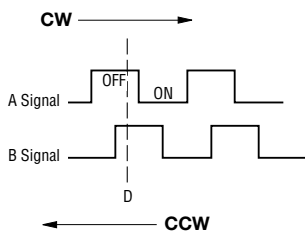
| Dim.                         | Tol.            |
|------------------------------|-----------------|
| <10.0<br>(<.394)             | ±0.3<br>(±.012) |
| 10.0 ~ 100<br>(.394 ~ 3.937) | ±0.5<br>(±.020) |

DIMENSIONS:  $\frac{\text{MM}}{\text{(INCHES)}}$

#### PEC11L-4xxxF-Sxxxx



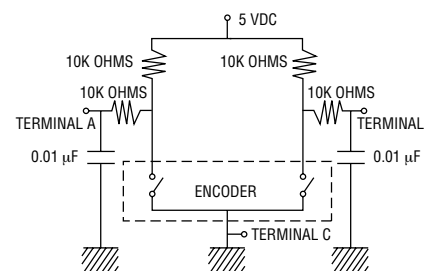
### Quadrature Output Table



### Switch Circuit



### Suggested Filter Circuit



REV. 07/21

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](http://www.bourns.com/docs/legal/disclaimer.pdf).