



## Features

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



Model PEC11 is currently available, but will be replaced by the Model PEC11R per [Product Change Notification](#) details.

## PEC11 Series - 12 mm Incremental Encoder

### Electrical Characteristics

|                                                   |                       |
|---------------------------------------------------|-----------------------|
| Output.....                                       | 2-bit quadrature code |
| Closed Circuit Resistance .....                   | 3 ohms maximum        |
| Contact Rating .....                              | 1 mA @ 5 VDC          |
| Insulation Resistance .....                       | 100 megohms @ 250 VDC |
| Dielectric Withstanding Voltage<br>Sea Level..... | 300 VAC minimum       |
| Electrical Travel.....                            | Continuous            |
| Contact Bounce (15 RPM).....                      | 5.0 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   |
| Vibration .....                  | 30 G                                    |
| Contact Bounce .....             | 10~55~10 Hz / 1 min. / Amplitude 1.5 mm |
| Shock.....                       | 100 G                                   |
| Rotational Life.....             | 30,000 cycles minimum                   |
| Switch Life .....                | 20,000 cycles minimum                   |
| IP Rating.....                   | IP 40                                   |

### Mechanical Characteristics

|                               |                                                                           |
|-------------------------------|---------------------------------------------------------------------------|
| Mechanical Angle .....        | 360 ° continuous                                                          |
| Torque                        |                                                                           |
| Running .....                 | 50 to 200 gf.cm (0.68 to 2.7 oz.-in.)                                     |
| Mounting .....                | 10.2 kgf.cm (8.83 lb.-in.) maximum                                        |
| Shaft Side Load (Static)..... | 2.04 kgf (4.5 lbs.) minimum                                               |
| 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 max. for 3-5 seconds |
| Hand Soldering .....          | Not recommended                                                           |
| Hardware.....                 | One flat washer and one mounting nut supplied with each encoder           |

### Switch Characteristics

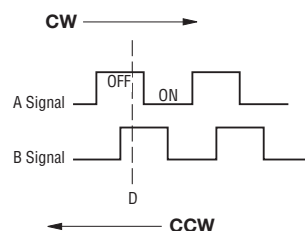
|                                    |                                    |
|------------------------------------|------------------------------------|
| Switch Type .....                  | Contact Push ON Momentary SPST     |
| Power Rating (Resistive Load)..... | 10 mA at 5 V DC                    |
| Switch Travel .....                | 0.5 ± 0.2 mm                       |
| Switch Actuation Force .....       | 610 ± 306 gf (8.47 ± 4.24 oz.-in.) |

### How To Order

|                              |                                                                                                                                  |
|------------------------------|----------------------------------------------------------------------------------------------------------------------------------|
| Model .....                  | PEC11 - 4 0 20 F - S 0012                                                                                                        |
| Terminal Configuration ..... | 4 = PC Pin Horizontal/Rear Facing                                                                                                |
| Detent Option .....          | 0 = No Detents (12, 18, 24 pulses)<br>1 = 18 Detents (18 pulses)<br>2 = 24 Detents (12, 24 pulses)<br>3 = 12 Detents (12 pulses) |
| Standard Shaft Length .....  | 15 = 15.0 mm<br>20 = 20.0 mm<br>25 = 25.0 mm<br>30 = 30.0 mm                                                                     |
| Shaft Style .....            | F = Metal Flatted Shaft<br>K = Metal Knurled Shaft <sup>1</sup>                                                                  |
| Switch Configuration .....   | S = Push Momentary Switch<br>N = No Switch                                                                                       |
| Resolution .....             | 0012 = 12 Pulses per 360 ° Rotation<br>0018 = 18 Pulses per 360 ° Rotation<br>0024 = 24 Pulses per 360 ° Rotation                |

<sup>1</sup> Metal knurled shaft with no switch is available in 15, 20 and 30 mm shaft lengths.  
Metal knurled shaft with push momentary switch is available in 15 and 20 mm shaft lengths.

### Quadrature Output Table



\*RoHS Directive 2002/95/EC Jan 27, 2003 including 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.

Customers should verify actual device performance in their specific applications.