



## Features

- Compact design, long life and high reliability
- Momentary push switch option
- Available in a wide variety of configurations to meet many user requirements



## PEC12R - 12 mm Incremental Encoder

### Electrical Characteristics

|                                 |                       |
|---------------------------------|-----------------------|
| Output .....                    | 2-bit quadrature code |
| Contact Rating .....            | 10 mA @ 5 VDC         |
| Insulation Resistance .....     | 10 megohms @ 250 VDC  |
| Dielectric Withstanding Voltage |                       |
| Sea Level .....                 | 50 VAC minimum        |
| Electrical Travel .....         | Continuous            |
| Contact Bounce (15 RPM) .....   | 2.0 ms. maximum**     |
| RPM (Operating) .....           | 100 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 .....                   | 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 .....                  | 30.6 to 204 g-cm (0.42 to 2.83 oz.-in.)                                      |
| Mounting .....                 | 10.2 kgf.cm (8.83 lb.-in.) maximum   |
| Shaft Side Load (Static) ..... | 2.04 kgf (4.5 lbs.) minimum  |
| Weight .....                   | 3 gm (0.1 oz.) maximum   |
| Terminals .....                | Printed circuit board terminals  |
| 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 ± 1 sec.     |
| Hand Soldering .....           | Not recommended  |
| Hardware .....                 | One flat washer and one mounting nut supplied with each encoder with bushing |

### 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              |

### How To Order

|  |                                   |      |
|--|-----------------------------------|------|
|  | <b>PEC12R - 4 0 20 F - S 0012</b> |      |
| Model .....                                      | PEC12R                            | 0012 |
| Terminal/Bushing Configuration .....             | 4                                 | 0    |
| 2 = Vertical Mount - Radial PC Pin/No Bushing    |                                   |      |
| 3 = Horizontal Mount - Axial PC Pin/with Bushing |                                   |      |
| 4 = Horizontal Mount - Axial PC Pin/No Bushing   |                                   |      |
| Detent Option .....                              | 0                                 | 20   |
| 0 = No Detents                                   |                                   |      |
| 1 = 12 Detents (available with 12 pulses only)   |                                   |      |
| 2 = 24 Detents                                   |                                   |      |
| Standard Shaft Length .....                      | 22 = 22.5 mm                      |      |
| 15 = 15.0 mm (Horizontal Mount/No Bushing only)  | 25 = 25.0 mm                      |      |
| 17 = 17.5 mm                                     | 30 = 30.0 mm                      |      |
| 20 = 20.0 mm                                     |                                   |      |
| Shaft Style .....                                | F                                 |      |
| F = Insulated Flatted Shaft                      |                                   |      |
| Switch Configuration .....                       | S                                 |      |
| S = Push Momentary Switch                        |                                   |      |
| N = No Switch                                    |                                   |      |
| Resolution .....                                 |                                   | 0012 |
| 0012 = 12 Pulses per 360 ° Rotation              |                                   |      |
| 0024 = 24 Pulses per 360 ° Rotation              |                                   |      |

### Quadrature Output Table



\*RoHS Directive 2002/95/EC Jan. 27, 2003 including annex and RoHS Recast 2011/65/EU June 8, 2011.

\*\*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

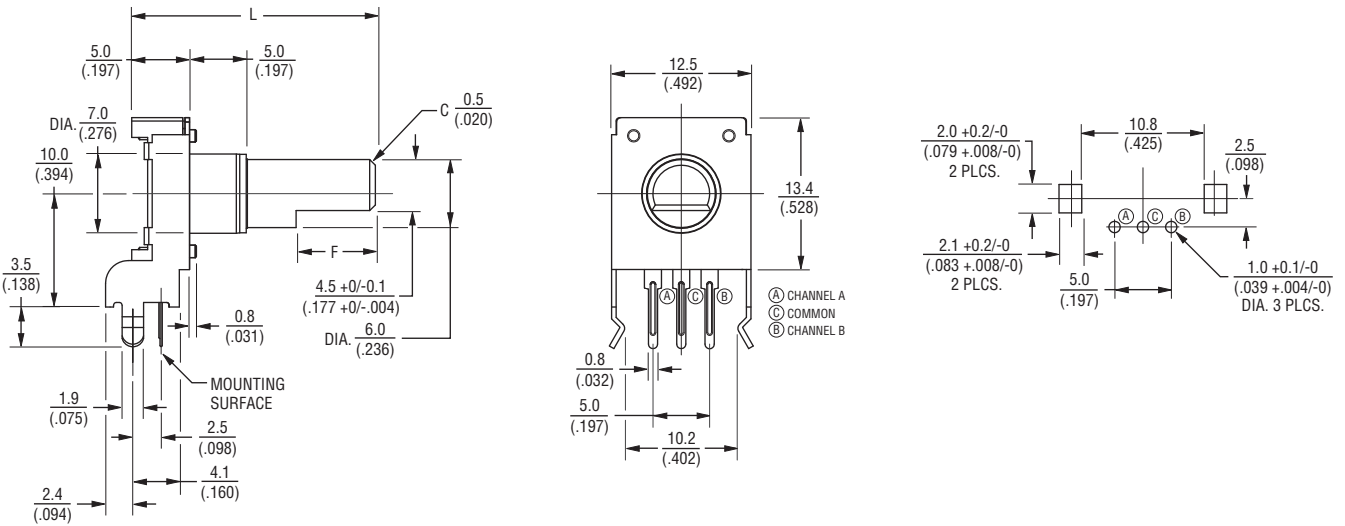
Level control, tuning and timer settings in:

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

## PEC12R - 12 mm Incremental Encoder **BOURNS®**

### Product Dimensions

#### PEC12R-2xxxF-Nxxxx (Vertical Mount - Radial PC Pin/No Bushing, No Switch)



#### PEC12R-2xxxF-Sxxxx (Vertical Mount - Radial PC Pin/No Bushing, Push Momentary Switch)



Switch Circuit

Suggested Filter Circuit

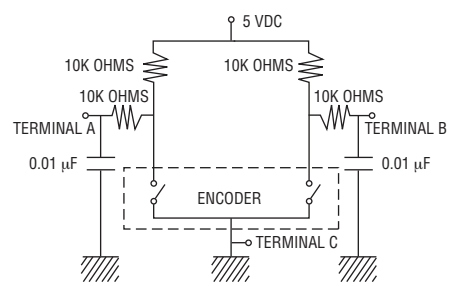
|   |                |                |                |                |                 |
|---|----------------|----------------|----------------|----------------|-----------------|
| L | 17.5<br>(.688) | 20.0<br>(.787) | 22.5<br>(.886) | 25.0<br>(.984) | 30.0<br>(1.181) |
| F | 5.0<br>(.197)  | 7.0<br>(.276)  | 7.0<br>(.276)  | 12.0<br>(.472) | 12.0<br>(.472)  |



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

TOLERANCE:  $\frac{<10}{(<.400)} = \frac{\pm 0.3}{(\pm .012)}$

$\frac{\geq 10}{(\geq .400)} = \frac{\pm 0.5}{(\pm .020)}$



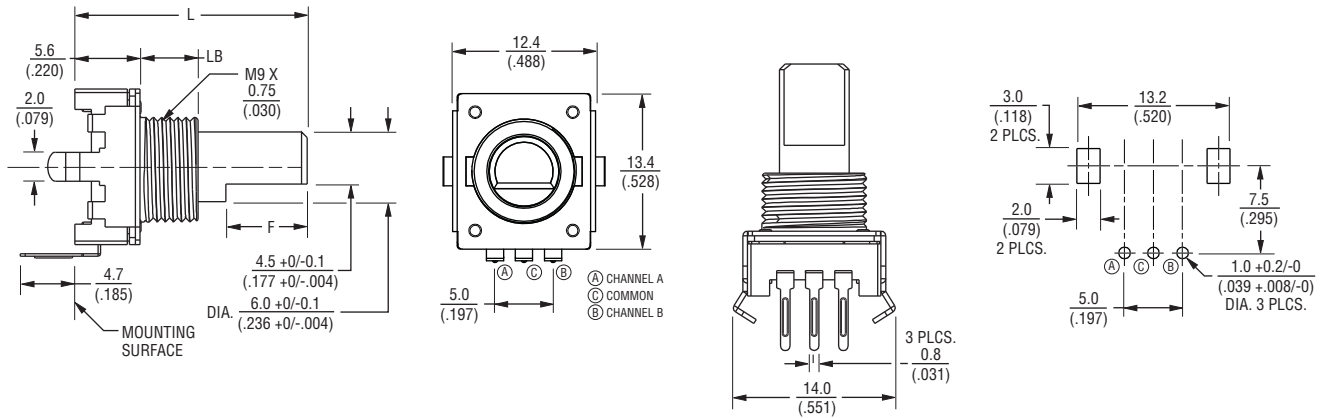
Specifications are subject to change without notice. The device characteristics and parameters in this data sheet can and do vary in different applications and actual device performance may vary over time. Users should verify actual device performance in their specific applications.

# PEC12R - 12 mm Incremental Encoder

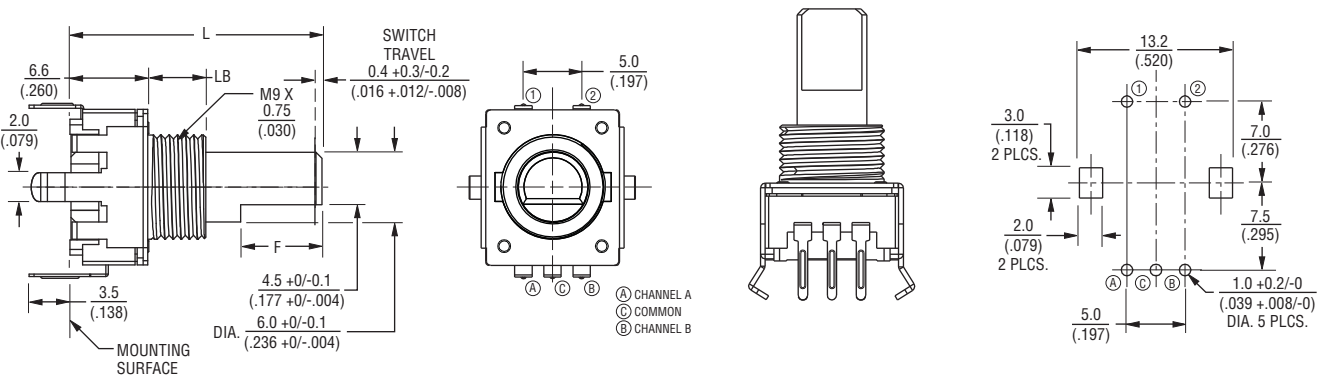
**BOURNS®**

## Product Dimensions

### PEC12R-3xxxF-Nxxxx (Horizontal Mount - Axial PC Pin/with Bushing, No Switch)



### PEC12R-3xxxF-Sxxxx (Horizontal Mount - Axial PC Pin/with Bushing, Push Momentary Switch)



|    |                       |                       |                       |                       |                        |
|----|-----------------------|-----------------------|-----------------------|-----------------------|------------------------|
| L  | $\frac{17.5}{(.688)}$ | $\frac{20.0}{(.787)}$ | $\frac{22.5}{(.886)}$ | $\frac{25.0}{(.984)}$ | $\frac{30.0}{(1.181)}$ |
| LB | $\frac{5.0}{(.197)}$  | $\frac{5.0}{(.197)}$  | $\frac{7.0}{(.276)}$  | $\frac{7.0}{(.276)}$  | $\frac{7.0}{(.276)}$   |
| F  | $\frac{5.0}{(.197)}$  | $\frac{7.0}{(.276)}$  | $\frac{7.0}{(.276)}$  | $\frac{12.0}{(.472)}$ | $\frac{12.0}{(.472)}$  |

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

TOLERANCE:  $\frac{<10}{(<.400)} = \frac{\pm 0.3}{(\pm .012)}$

$\frac{\geq 10}{(\geq .400)} = \frac{\pm 0.5}{(\pm .020)}$

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.

# PEC12R - 12 mm Incremental Encoder

**BOURNS®**

## Product Dimensions

### PEC12R-4xxxF-Nxxxx (Horizontal Mount - Axial PC Pin/No Bushing, No Switch)



### PEC12R-4xxxF-Sxxxx (Horizontal Mount - Axial PC Pin/No Bushing, Push Momentary Switch)



|    |                |                |                |                |                |                 |
|----|----------------|----------------|----------------|----------------|----------------|-----------------|
| L  | 15.0<br>(.591) | 17.5<br>(.688) | 20.0<br>(.787) | 22.5<br>(.886) | 25.0<br>(.984) | 30.0<br>(1.181) |
| LB | 2.0<br>(.079)  | 5.0<br>(.197)  | 5.0<br>(.197)  | 5.0<br>(.197)  | 5.0<br>(.197)  | 5.0<br>(.197)   |
| F  | 5.0<br>(.197)  | 5.0<br>(.197)  | 7.0<br>(.276)  | 7.0<br>(.276)  | 12.0<br>(.472) | 12.0<br>(.472)  |

|             |                                  |
|-------------|----------------------------------|
| DIMENSIONS: | MM<br>(INCHES)                   |
| TOLERANCE:  | <10<br>(<.400) = ±0.3<br>(±.012) |
|             | ≥10<br>(≥.400) = ±0.5<br>(±.020) |

**BOURNS®**

**Asia-Pacific:**  
Tel: +886-2 2562-4117  
Fax: +886-2 2562-4116

**EMEA:**  
Tel: +36 88 520 390  
Fax: +36 88 520 211

**The Americas:**  
Tel: +1-951 781-5500  
Fax: +1-951 781-5700

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

REV. 04/15

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.



Компания «ЭлектроПласт» предлагает заключение долгосрочных отношений при поставках импортных электронных компонентов на взаимовыгодных условиях!

Наши преимущества:

- Оперативные поставки широкого спектра электронных компонентов отечественного и импортного производства напрямую от производителей и с крупнейших мировых складов;
- Поставка более 17-ти миллионов наименований электронных компонентов;
- Поставка сложных, дефицитных, либо снятых с производства позиций;
- Оперативные сроки поставки под заказ (от 5 рабочих дней);
- Экспресс доставка в любую точку России;
- Техническая поддержка проекта, помощь в подборе аналогов, поставка прототипов;
- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
- Лицензия ФСБ на осуществление работ с использованием сведений, составляющих государственную тайну;
- Поставка специализированных компонентов (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Aeroflex, Peregrine, Syfer, Eurofarad, Texas Instrument, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits, General Dynamics и др.);

Помимо этого, одним из направлений компании «ЭлектроПласт» является направление «Источники питания». Мы предлагаем Вам помощь Конструкторского отдела:

- Подбор оптимального решения, техническое обоснование при выборе компонента;
- Подбор аналогов;
- Консультации по применению компонента;
- Поставка образцов и прототипов;
- Техническая поддержка проекта;
- Защита от снятия компонента с производства.



#### Как с нами связаться

**Телефон:** 8 (812) 309 58 32 (многоканальный)

**Факс:** 8 (812) 320-02-42

**Электронная почта:** [org@eplast1.ru](mailto:org@eplast1.ru)

**Адрес:** 198099, г. Санкт-Петербург, ул. Калинина, дом 2, корпус 4, литера А.