

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
Moisture Sensitivity Level	1
ESD Classification (HBM)	N/A

Mechanical Characteristics

Mechanical Angle	360 ° continuous
Torque	
Detent	30 to 90 gf-cm (0.41 to 1.25 oz-in)
Running	10 to 70 gf-cm (0.14 to 0.97 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
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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

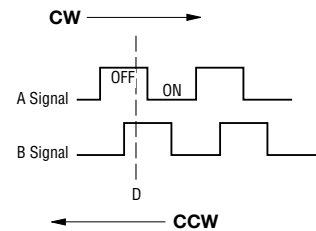
Model _____	PEC12R - 4 0 20 F - S 0012	
Terminal/Bushing Configuration _____		
2 = Vertical Mount - Radial PC Pin/No Bushing		
3 = Horizontal Mount - Axial PC Pin/with Bushing		
4 = Horizontal Mount - Axial PC Pin/No Bushing		
Detent Option _____		
0 = No Detents 1 = 12 Detents (available with 12 pulses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

Additional Information

Click these links for more information:



Quadrature Output Table



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



WARNING

Cancer and Reproductive Harm

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.



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

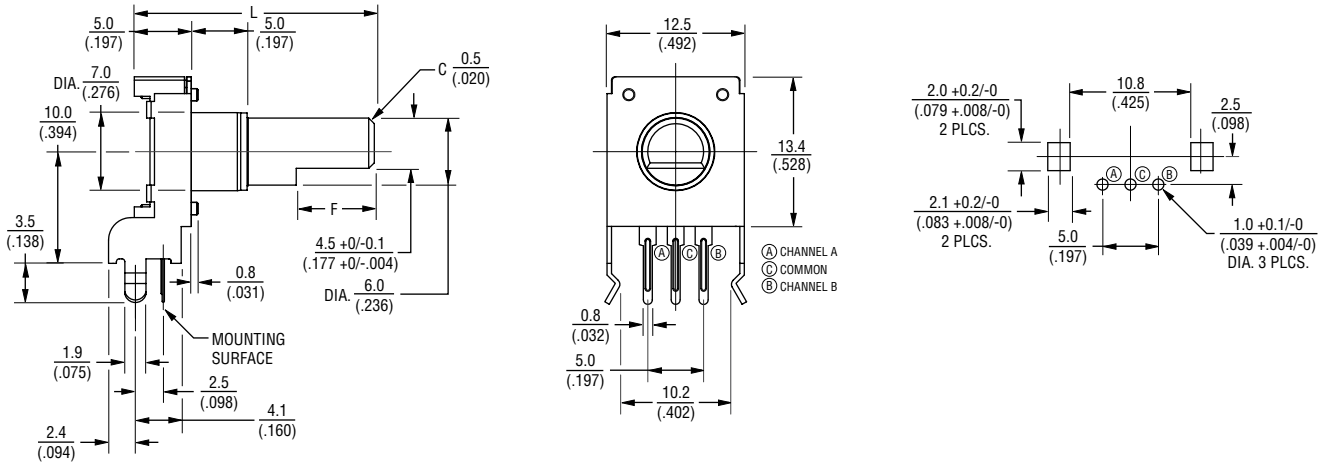
Level control, tuning and timer settings in:

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

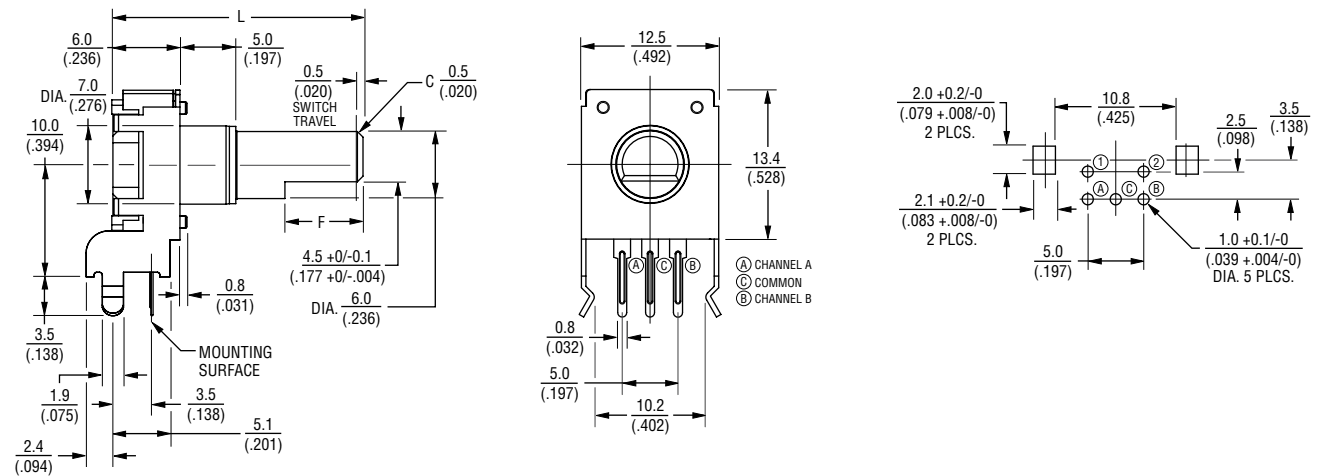
PEC12R - 12 mm Incremental Encoder **BOURNS®**

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)



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

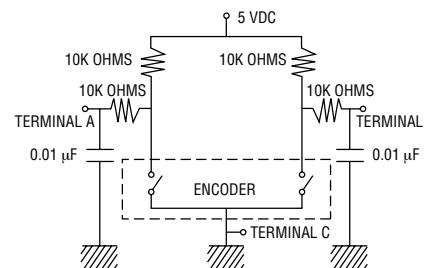
DIMENSIONS: $\frac{\text{MM}}{\text{(INCHES)}}$

TOLERANCE: $\frac{<10}{(<.400)} = \frac{\pm 0.3}{(\pm .012)}$
 $\frac{\geq 10}{(\geq .400)} = \frac{\pm 0.5}{(\pm .020)}$

Switch Circuit



Suggested Filter Circuit



Specifications are subject to change without notice.

Users should verify actual device performance in their specific applications.

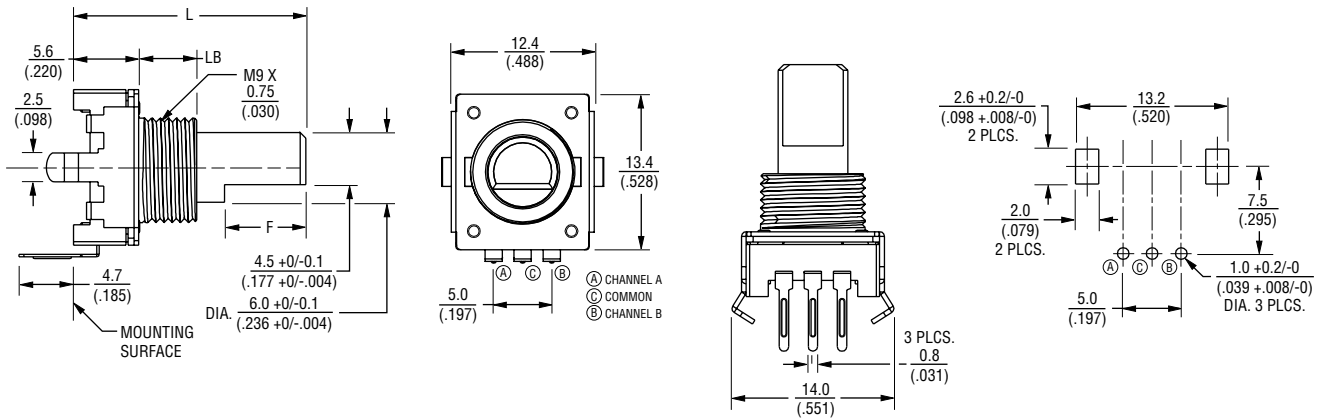
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PEC12R - 12 mm Incremental Encoder

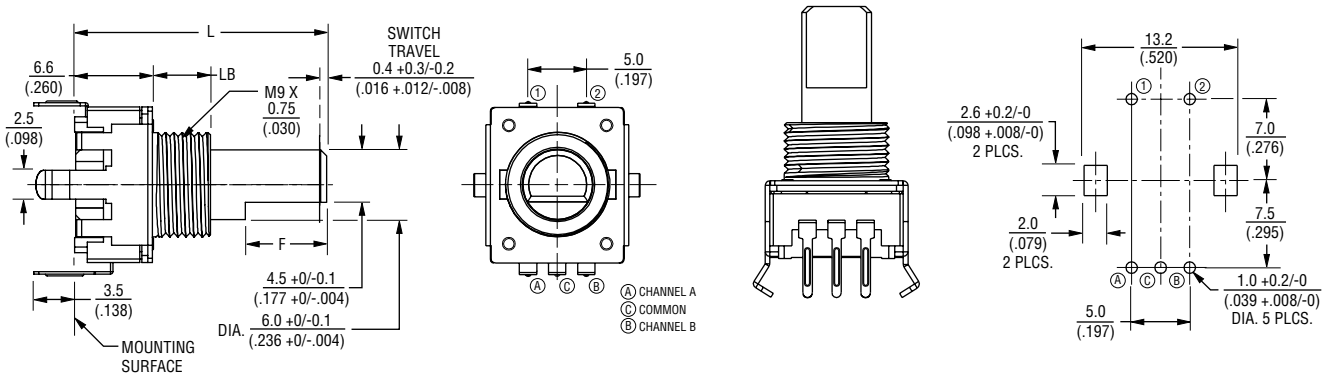
BOURNS®

Product Dimensions

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



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



L	17.5 (.688)	20.0 (.787)	22.5 (.886)	25.0 (.984)	30.0 (1.181)
LB	5.0 (.197)	5.0 (.197)	7.0 (.276)	7.0 (.276)	7.0 (.276)
F	5.0 (.197)	7.0 (.276)	7.0 (.276)	12.0 (.472)	12.0 (.472)

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

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

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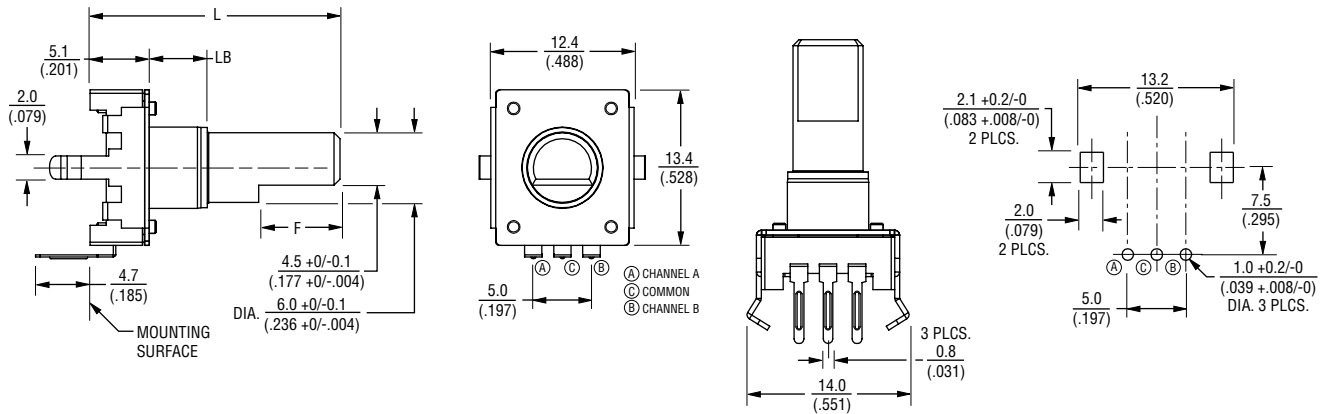
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PEC12R - 12 mm Incremental Encoder

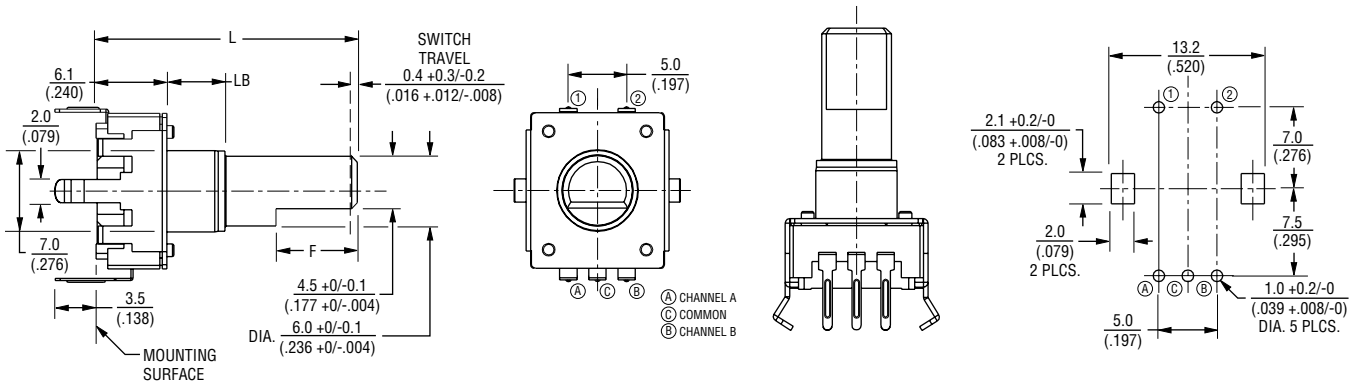
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Product Dimensions

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 (.591)	17.5 (.688)	20.0 (.787)	22.5 (.886)	25.0 (.984)	30.0 (1.181)
LB	2.0 (.079)	5.0 (.197)	5.0 (.197)	5.0 (.197)	5.0 (.197)	5.0 (.197)
F	5.0 (.197)	5.0 (.197)	7.0 (.276)	7.0 (.276)	12.0 (.472)	12.0 (.472)

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

TOLERANCE: $\frac{<10}{(<.400)} = \frac{\pm 0.3}{(\pm .012)}$
 $\frac{\geq 10}{(\geq .400)} = \frac{\pm 0.5}{(\pm .020)}$

REV. 07/21

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