

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

PEC12R - 4 0 20 F - S 0012

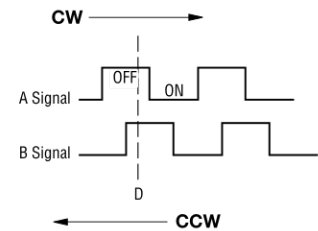
Model _____	_____
Terminal/Bushing Configuration _____	_____
2 = Vertical Mount - Radial PC Pin/No Bushing	
3 = Horizontal Mount - Axial PC Pin/with Bushing	
4 = Horizontal Mount - Axial PC Pin/No Bushing	
Detent Option _____	_____
0 = No Detents 1 = 12 Detents (available with 12 pulses only) 2 = 24 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

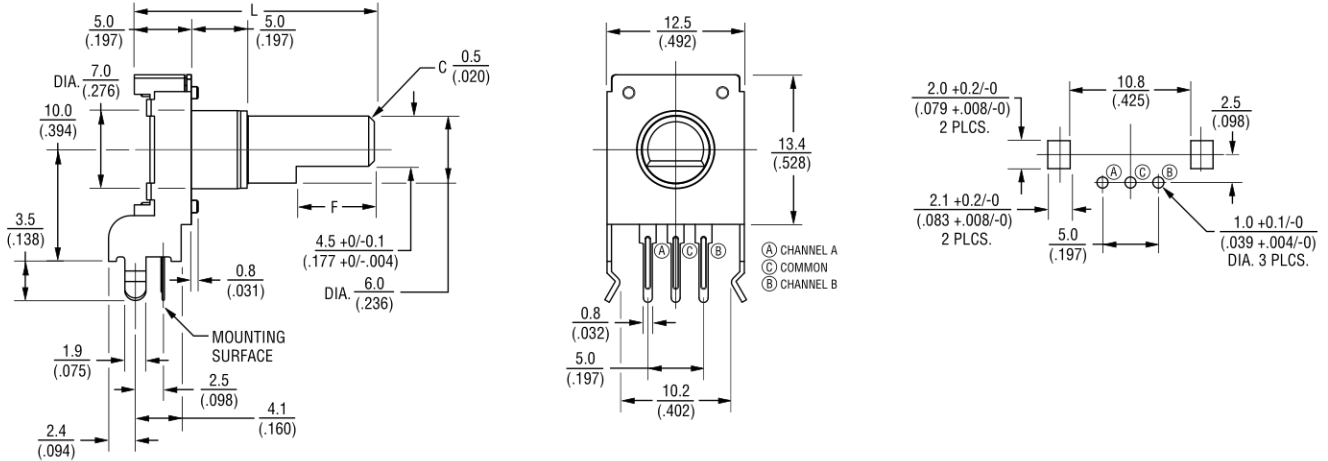
Level control, tuning and timer settings in:

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

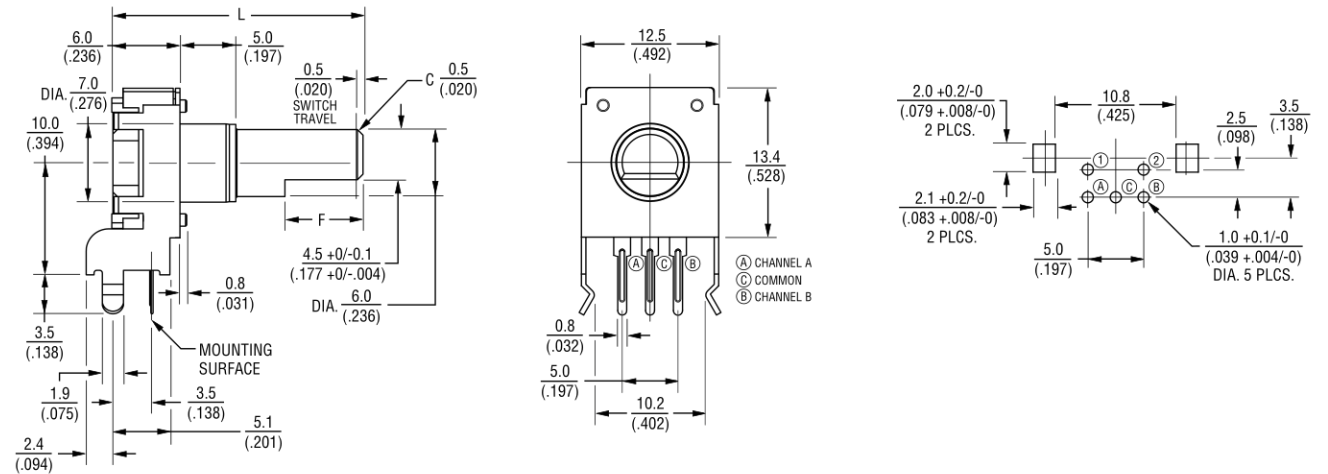
PEC12R - 12 mm Incremental Encoder **BOURNS®**

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)

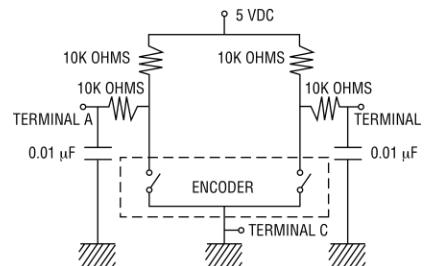
DIMENSIONS: $\frac{\text{MM}}{\text{(INCHES)}}$

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



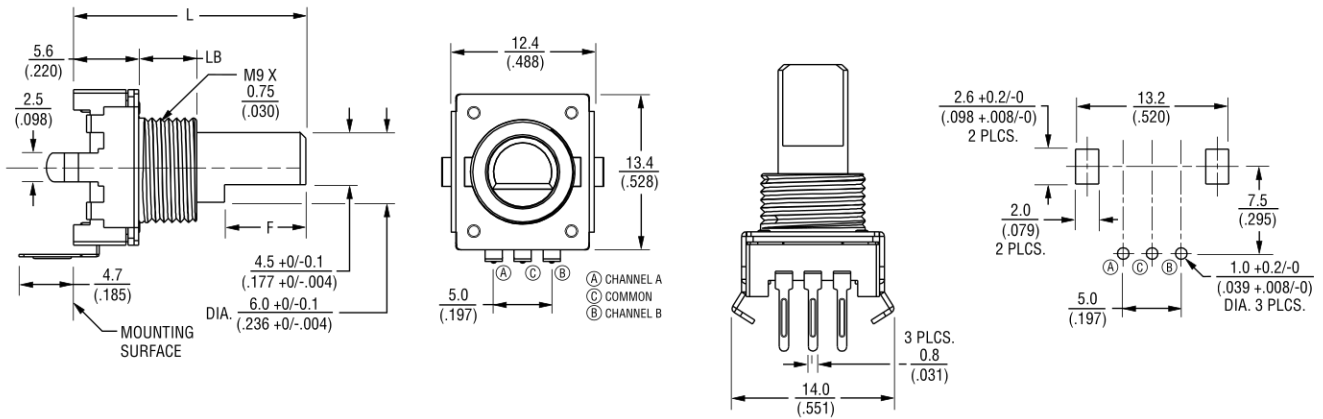
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PEC12R - 12 mm Incremental Encoder

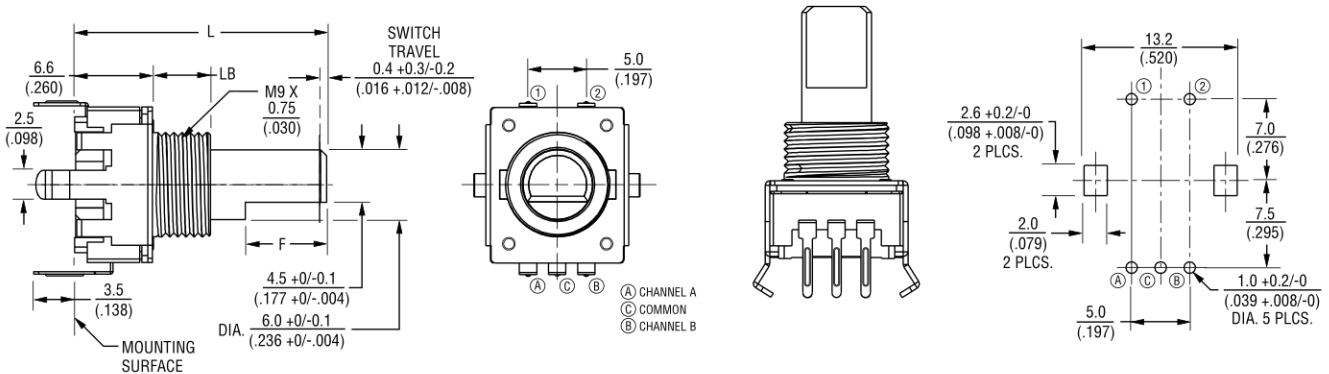
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Product Dimensions

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	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: $\frac{<10}{(<.400)} = \pm 0.3$
 $\frac{>10}{(\ge .400)} = \pm 0.5$

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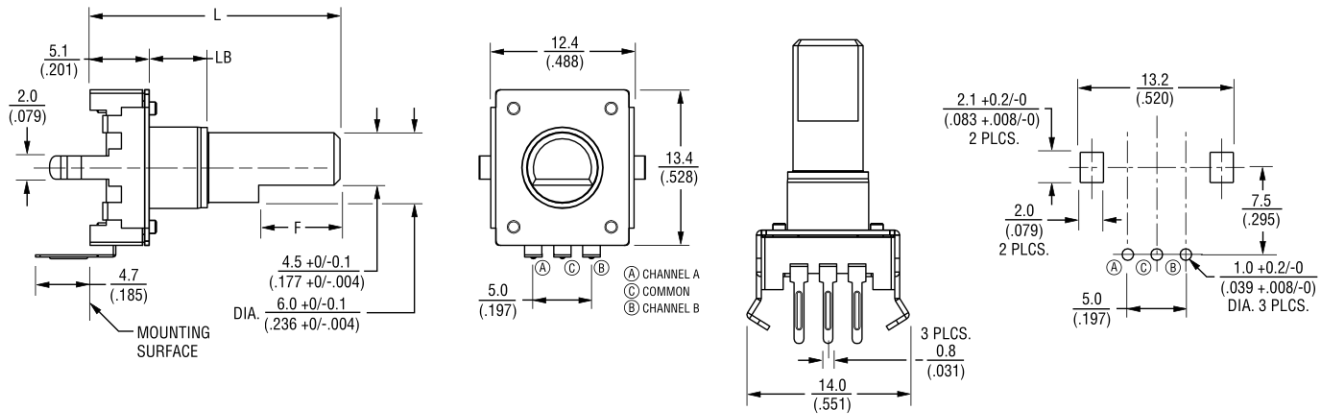
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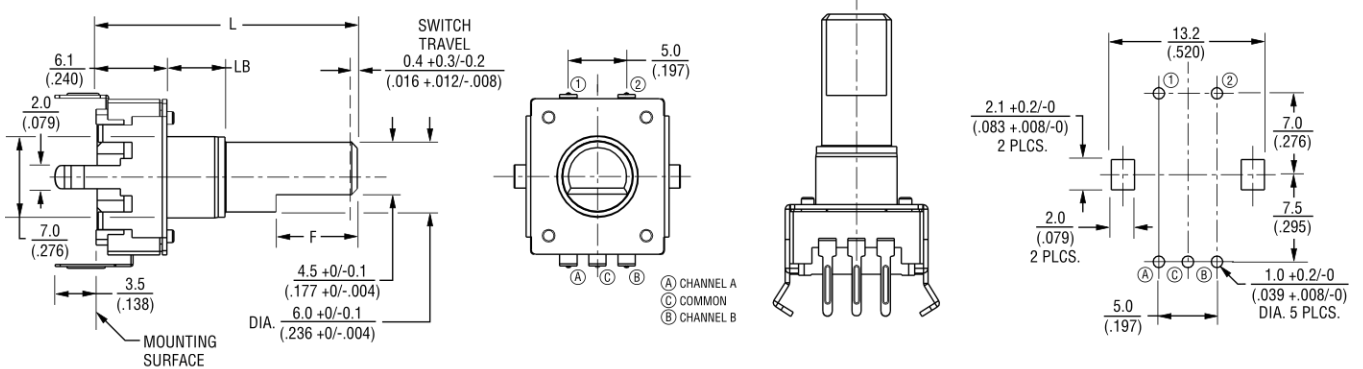
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Product Dimensions

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

REV. 07/21

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