



## Features

- Compact design, long life and high reliability
- Low cost compared to optical type encoders
- Available in a wide variety of configurations to meet many user requirements



# PEC16 - 16 mm Incremental Encoder

## Electrical Characteristics

Output.....	2-bit quadrature code
Closed Circuit Resistance .....	3 ohms maximum
Contact Rating.....	1 mA @ 5 VDC
Insulation Resistance .....	10 megohms @ 50 VDC
Dielectric Withstanding Voltage	
Sea Level.....	50 VAC minimum
Electrical Travel.....	Continuous
Contact Bounce (15 RPM).....	5.0 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.....	100,000 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).....	3.06 kgf (6.7 lbs.) minimum
Weight .....	8 gm (0.28 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 3-5 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 +0.4/-0.3 mm
Switch Actuation Force .....	360 +153/-102 gf (5 +2.1/-1.4 oz.-in.)

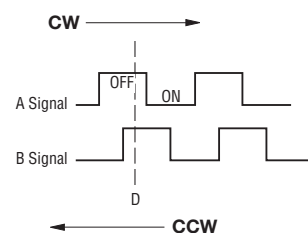
## How To Order

**PEC16 - 4 0 20 F - S 0012**

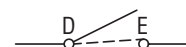
Model .....	PEC16 - 4 0 20 F - S 0012
Terminal Configuration .....	4 = PC Horizontal/Rear Facing
2 = PC Pin Vertical/Down Facing	
Detent Option .....	0 = No Detents
1 = 12 Detents	
2 = 24 Detents	
Standard Shaft Length .....	20 = 20.0 mm
15 = 15 mm	
25 = 25.0 mm <sup>1</sup>	
30 = 30.0 mm <sup>1</sup>	
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	

<sup>1</sup> Not available with switch

## Quadrature Output Table



## Switch Circuit



\*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:

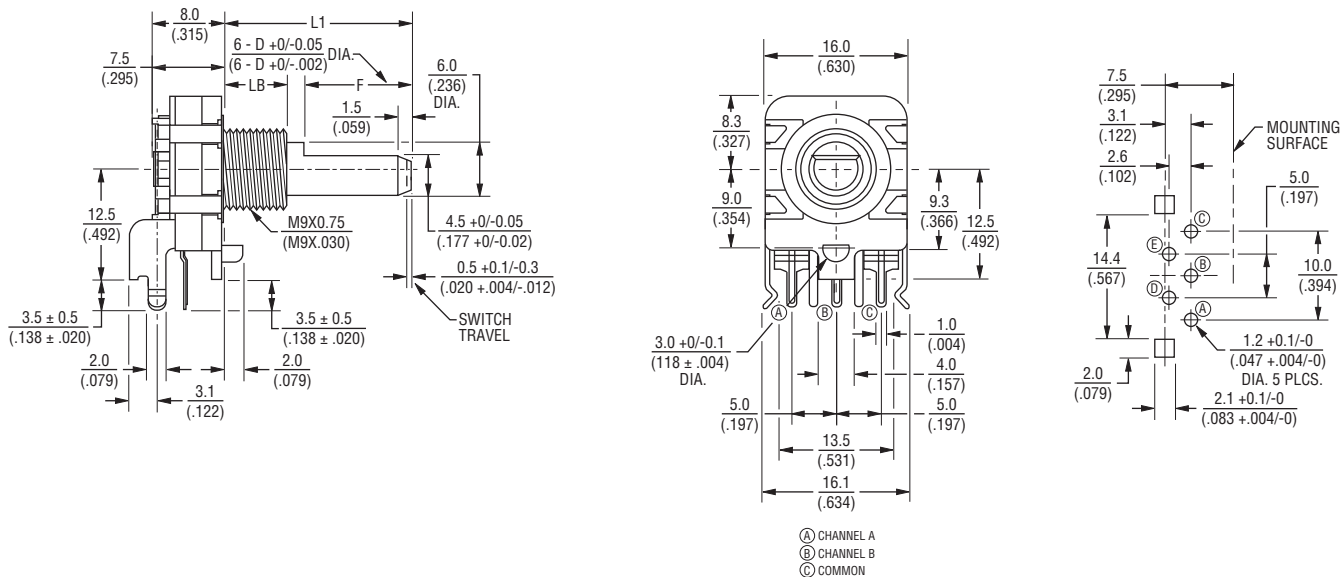
- Audio-visual equipment
- Consumer electric appliances
- Radios
- Musical instrumentation
- Communications equipment

## PEC16 - 16 mm Incremental Encoder

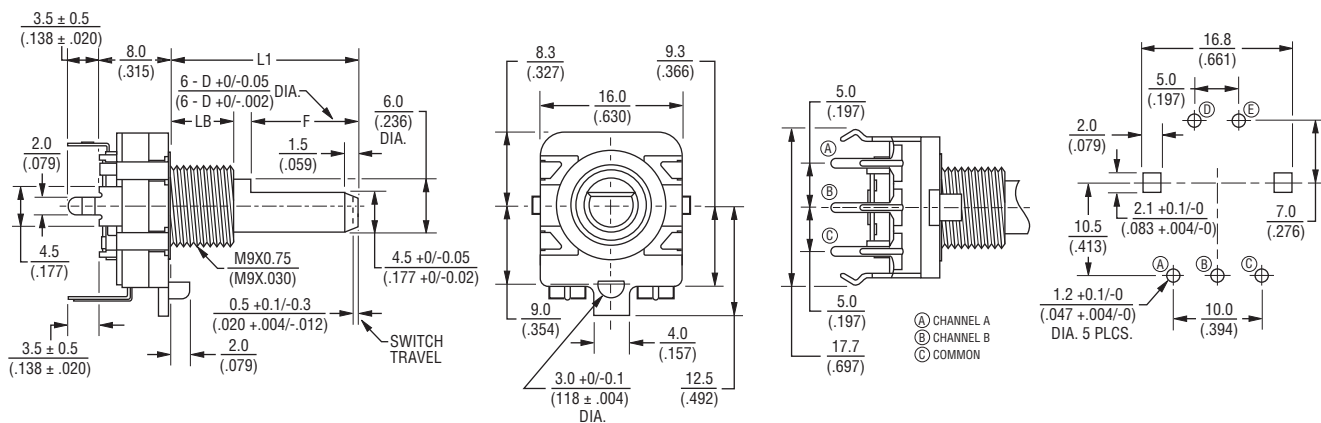


### Product Dimensions

#### PEC16-2xxxF-Sxxxx



#### PEC16-4xxxF-Sxxxx



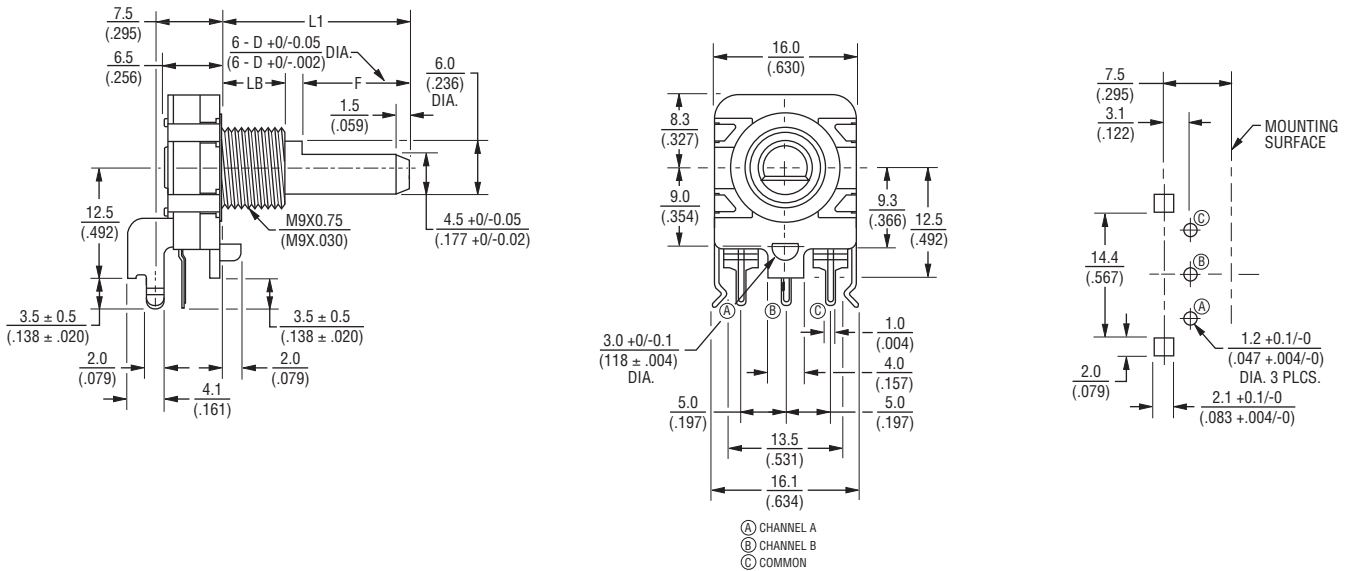
L1	15.0 (.591)	20.0 (.787)
LB	5.0 (.197)	7.0 (.276)
F	7.0 (.276)	12.0 (.472)

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

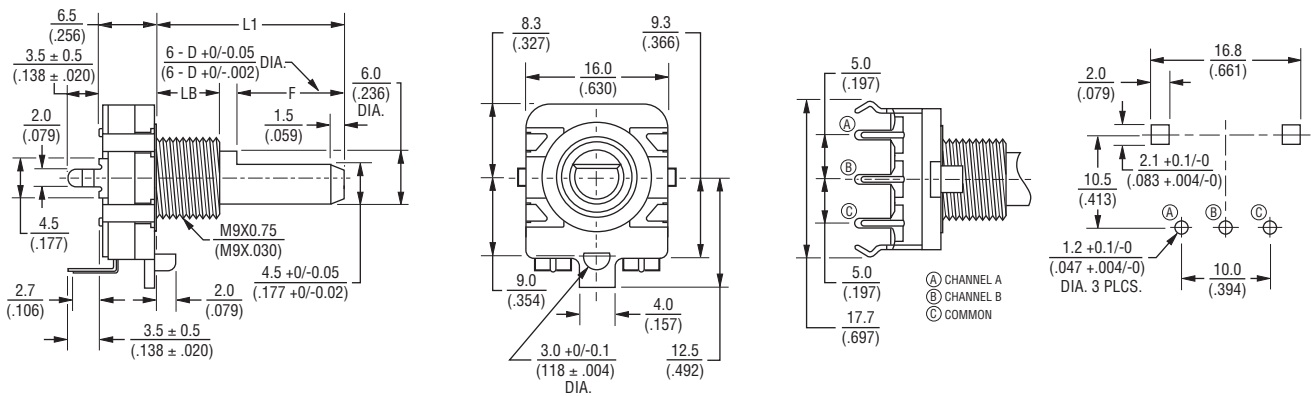
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## Product Dimensions

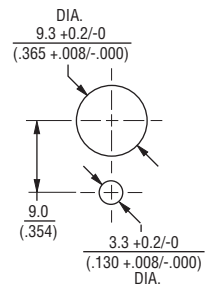
### PEC16-2xxxF-Nxxxx



### PEC16-4xxxF-Nxxxx



### Panel Hole Detail



L1	15.0 (.591)	20.0 (.787)	25.0 (.984)	30.0 (1.181)
LB	5.0 (.197)	7.0 (.276)	7.0 (.276)	7.0 (.276)
F	7.0 (.276)	12.0 (.472)	12.0 (.472)	12.0 (.472)

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

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For more information about this product, visit our website at:

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