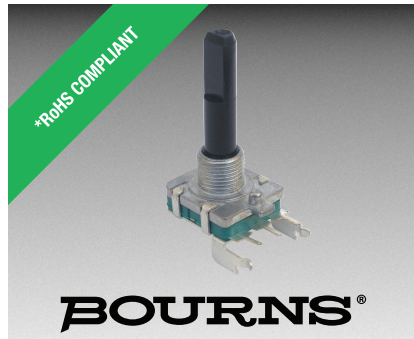




**THE DATASHEET OF  
PEC16-2220F-N0024**





## 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
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 1.24 oz.-in)
Running.....	10 to 70 gf-cm (0.13 to 0.97 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
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 +0.4/-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.....	2 = PC Pin Vertical/Down Facing    4 = PC Horizontal/Rear Facing
Detent Option.....	0 = No Detents    1 = 12 Detents    2 = 24 Detents
Standard Shaft Length.....	15 = 15 mm    25 = 25.0 mm <sup>1</sup> 20 = 20.0 mm    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

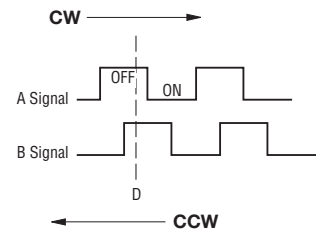
<sup>1</sup> Not available with switch.

### Additional Information

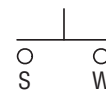
Click these links for more information:



### Quadrature Output Table



### Switch Circuit



**WARNING**  
Cancer and Reproductive Harm  
[www.P65Warnings.ca.gov](http://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](http://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

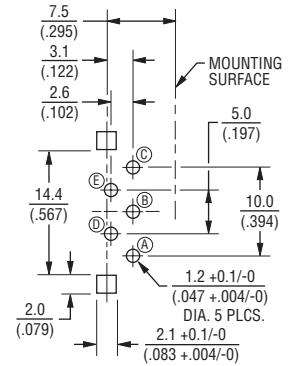
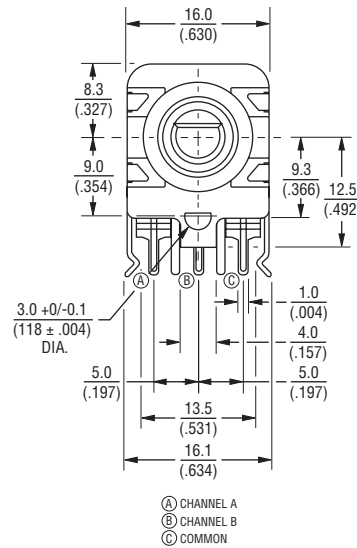
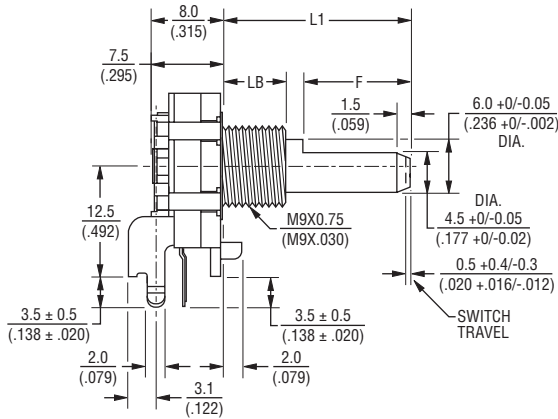
Level control, tuning and timer settings in:

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

## PEC16 - 16 mm Incremental Encoder **BOURNS®**

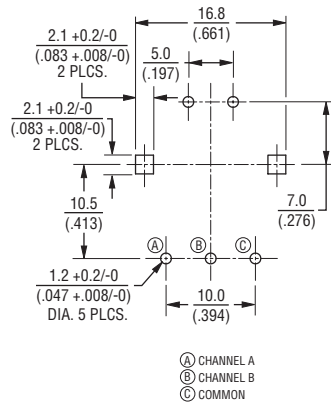
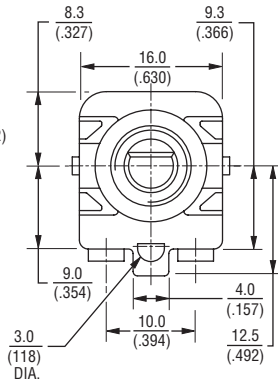
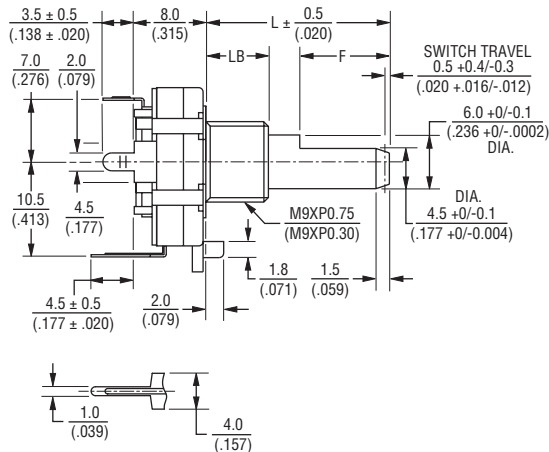
### Product Dimensions

#### PEC16-2xxxF-Sxxxx



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

#### PEC16-4xxxF-Sxxxx



L	$\frac{15.0}{(.591)}$	$\frac{20.0}{(.787)}$
LB	$\frac{5.0}{(.197)}$	$\frac{7.0}{(.276)}$
F	$\frac{7.0}{(.276)}$	$\frac{12.0}{(.472)}$

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

Specifications are subject to change without notice.

Users should verify actual device performance in their specific applications.

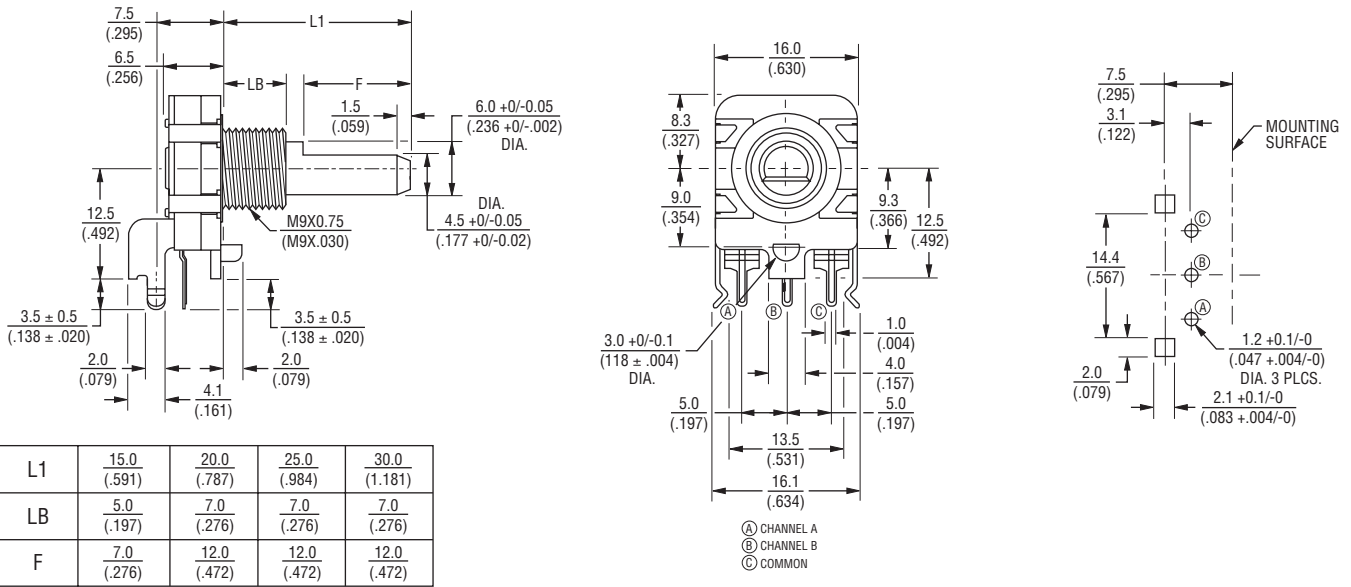
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# PEC16 - 16 mm Incremental Encoder

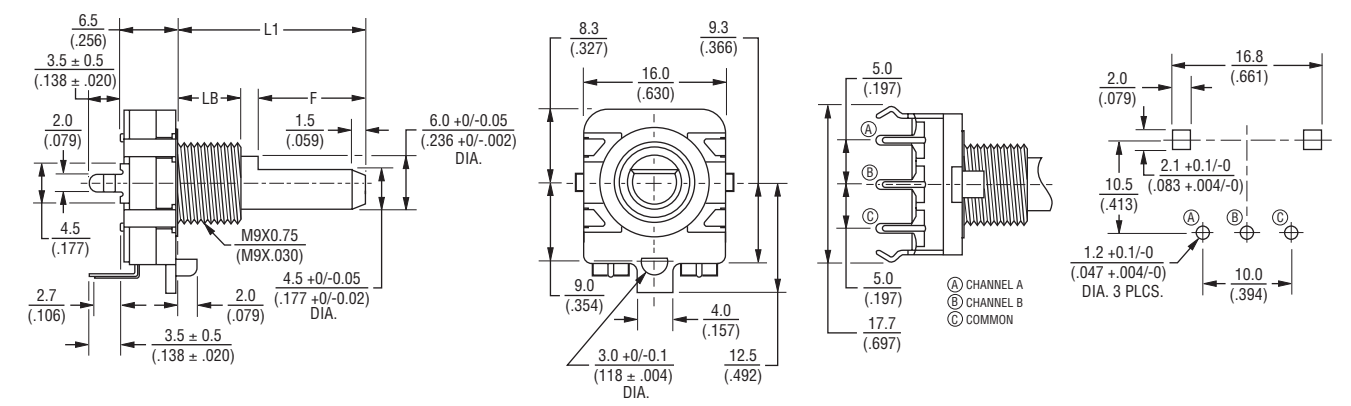


## Product Dimensions

### PEC16-2xxxF-Nxxxx



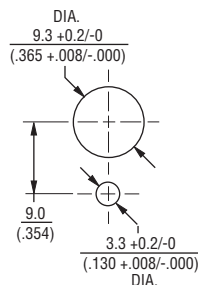
### PEC16-4xxxF-Nxxxx



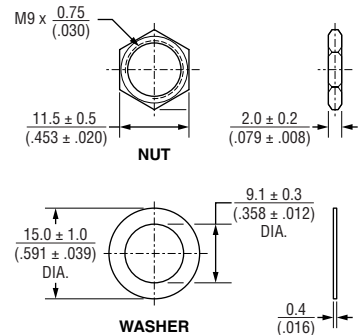
L1	15.0 (.591)	20.0 (.787)	25.0 (.984)	30.0 (1.181)
LB	5.0 (.197)	7.0 (.276)	7.0 (.276)	7.0 (.276)
F	7.0 (.276)	12.0 (.472)	12.0 (.472)	12.0 (.472)

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

### Panel Hole Detail



### Hardware



REV. 03/13/23

Specifications are subject to change without notice.

Users should verify actual device performance in their specific applications.

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