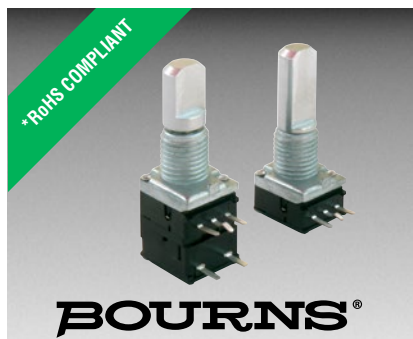




Features

- Push switch option
- Compact, rugged design
- High reliability
- Metal bushing/shaft



PEC09 Series - 9 mm Incremental Encoder

Electrical Characteristics

Output.....	2-bit quadrature code
Closed Circuit Resistance	3 ohms maximum
Contact Rating	10 mA @ 5 VDC
Insulation Resistance	100 megohms @ 250 VDC
Dielectric Withstanding Voltage	
Sea Level.....	300 VAC minimum
Electrical Travel.....	Continuous
Contact Bounce (15 RPM).....	5.0 ms maximum**
RPM (Operating)	60 maximum**

Environmental Characteristics

Operating Temperature Range.....	-10 °C to +70 °C (+14 °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
Rotational Life.....	30,000 cycles minimum
IP Rating.....	IP 40

Mechanical Characteristics

Mechanical Angle	360 ° continuous
Torque	
Running/Detent.....	30 to 200 gf.cm (0.42 to 2.7 oz.-in.)
Mounting	10.0 kgf.cm (8.67 lb.-in.) maximum
Terminal Bend Strength.....	300 gf (10.6 ozf)
Shaft Push-Pull Strength.....	10 kgf (22 lbf)
Weight	5 gm (0.17 oz.) maximum
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

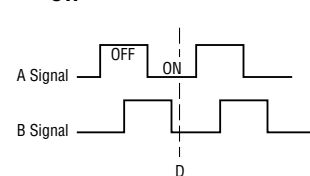
Switch Type	Contact Push ON Momentary SPST
Switch Life	20,000 cycles minimum
Power Rating (Resistive Load).....	10 mA at 5 V DC
Switch Travel	See How to Order
Switch Actuation Force	300 ± 200 gf (10.6 ± 7.0 ozf)

How To Order

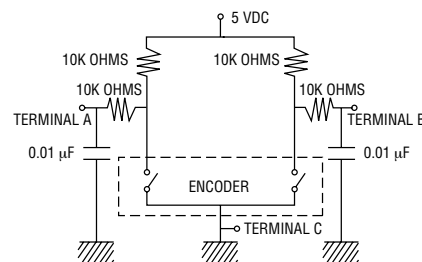
Model	PEC09 - 2 0 20 F - S 0012
Terminal Configuration	2 = PC Pin Vertical/Side Exit
Detent Option	0 = No Detents (12, 15 pulses) 1 = 12 Detents (12 pulses) 2 = 24 Detents (12 pulses) 3 = 30 Detents (15 pulses)
Standard Shaft Length	15 = 15.0 mm 20 = 20.0 mm 25 = 25.0 mm
Shaft Style	F = Metal Flatted Shaft K = Metal Knurled Shaft
Switch Configuration	N = No Switch S = Push Momentary (0.5 mm stroke) T = Push Momentary (1.5 mm stroke)
Resolution	0012 = 12 Pulses per 360 ° Rotation 0015 = 15 Pulses per 360 ° Rotation

Quadrature Output Table

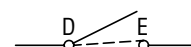
CW →



Suggested Filter Circuit



Switch Circuit



CIRCUIT DIAGRAM

*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:

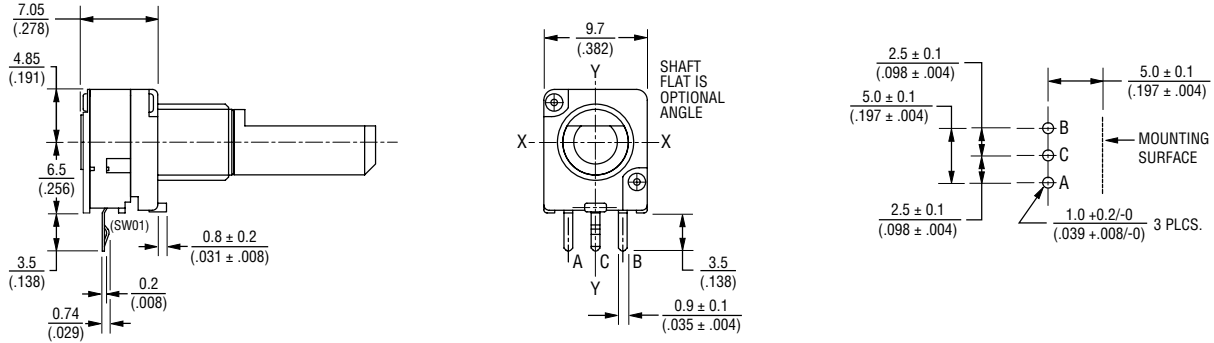
- Audio-visual equipment
- Consumer electric appliances
- Environmental controls
- Musical instrumentation
- Communications equipment

PEC09 Series - 9 mm Incremental Encoder

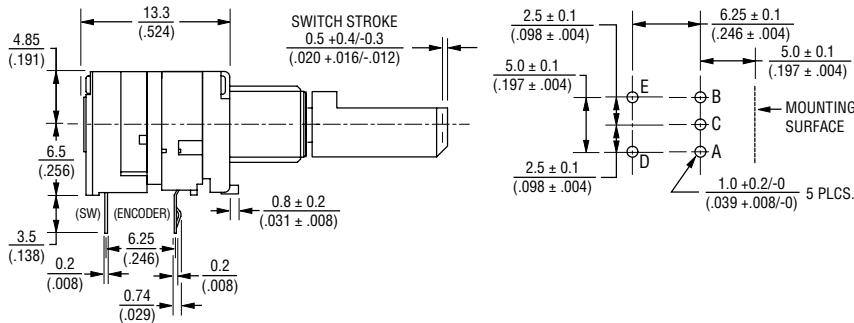
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Product Dimensions

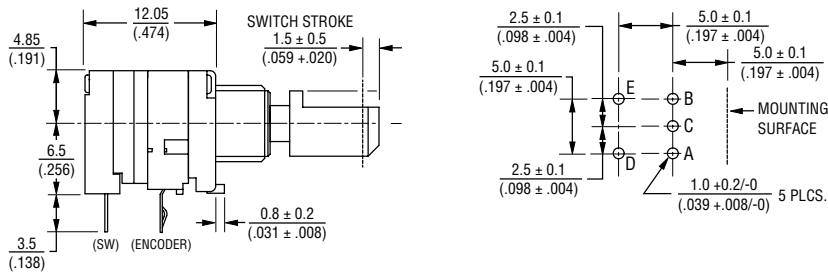
PEC09-2xxxF-Nxxxx



PEC09-2xxxF-Sxxxx

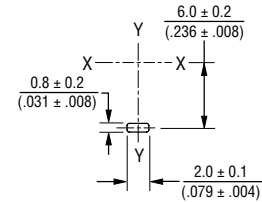


PEC09-2xxxF-Txxxx

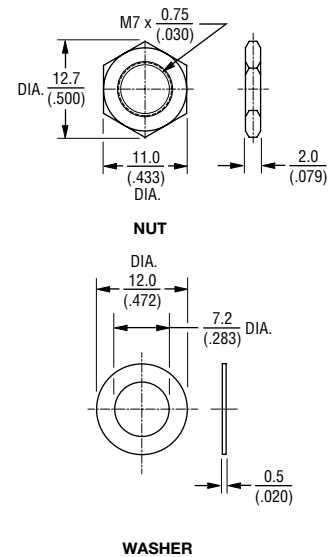


DIMENSIONS: $\frac{\text{MM}}{(\text{INCHES})}$

Locating Lug Detail



Hardware



Specifications are subject to change without notice.

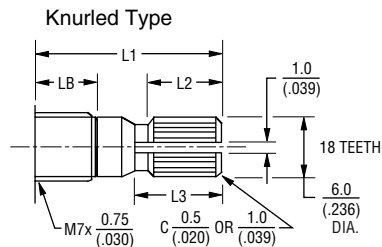
The device characteristics and parameters in this data sheet can and do vary in different applications and actual device performance may vary over time. Users should verify actual device performance in their specific applications.

PEC09 Series - 9 mm Incremental Encoder

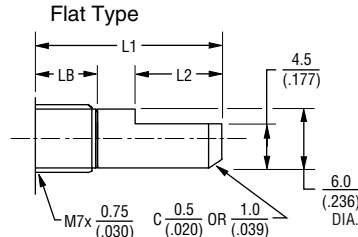
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Shaft Options

PEC09-2xxxx-Nxxxx

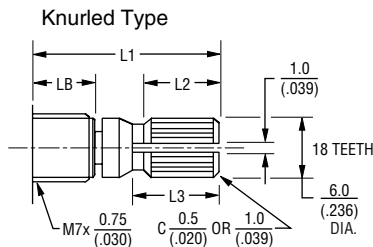


L1	LB	L2	L3
15 (.591)	5.0 (.197)	6.0 (.236)	7.0 (.276)
20 (.787)	7.0 (.276)	10.0 (.394)	11.0 (.433)
25 (.984)	10.0 (.394)	10.0 (.394)	11.0 (.433)

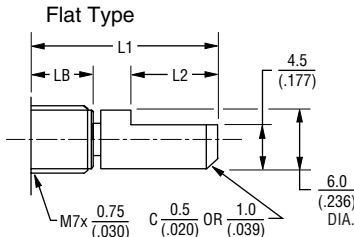


L1	LB	L2
15 (.591)	5.0 (.197)	7.0 (.276)
20 (.787)	7.0 (.276)	12.0 (.472)
25 (.984)	10.0 (.394)	12.0 (.472)

PEC09-2xxxx-Sxxxx (0.5 mm Switch Stroke)

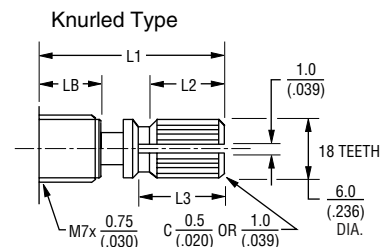


L1	LB	L2	L3
15 (.591)	5.0 (.197)	6.0 (.236)	7.0 (.276)
20 (.787)	7.0 (.276)	9.0 (.354)	10.0 (.394)
25 (.984)	10.0 (.394)	9.0 (.354)	10.0 (.394)

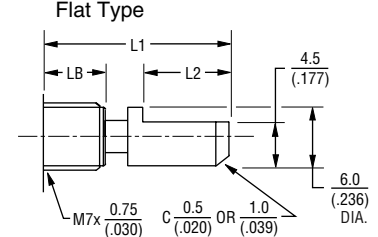


L1	LB	L2
15 (.591)	5.0 (.197)	7.0 (.276)
20 (.787)	7.0 (.276)	10.0 (.394)
25 (.984)	10.0 (.394)	10.0 (.394)

PEC09-2xxxx-Txxxx (1.5 mm Switch Stroke)



L1	LB	L2	L3
15 (.591)	5.0 (.197)	5.0 (.197)	6.0 (.236)
20 (.787)	7.0 (.276)	8.0 (.315)	9.0 (.354)
25 (.984)	10.0 (.394)	8.0 (.315)	9.0 (.354)



L1	LB	L2
15 (.591)	5.0 (.197)	7.0 (.276)
20 (.787)	7.0 (.276)	10.0 (.394)
25 (.984)	10.0 (.394)	10.0 (.394)

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

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<u>PEC09-2220F-S0012</u>	<u>PEC09-2225K-N0012</u>	<u>PEC09-2320F-S0015</u>	<u>PEC09-2325K-N0015</u>	<u>PEC09-2125K-S0012</u>
<u>PEC09-2225K-S0012</u>	<u>PEC09-2115F-S0012</u>	<u>PEC09-2115K-S0012</u>	<u>PEC09-2215K-T0012</u>	<u>PEC09-2220K-S0012</u>
<u>PEC09-2315K-S0015</u>	<u>PEC09-2025F-N0015</u>	<u>PEC09-2215F-N0012</u>	<u>PEC09-2115K-N0012</u>	<u>PEC09-2215F-T0012</u>
<u>PEC09-2215K-N0012</u>	<u>PEC09-2315F-N0015</u>	<u>PEC09-2325F-S0015</u>	<u>PEC09-2015F-N0015</u>	<u>PEC09-2015F-N0012</u>
<u>PEC09-2120K-S0012</u>				