

Features

- Push switch option standard
- Compact, rugged design
- High reliability
- Metal bushing/shaft
- Surface mount version

Applications

Level control, tuning and timer settings in:

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

PEC11S Series - 12 mm SMD 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).....	2.0 ms maximum
RPM (Operating)	60 maximum

Environmental Characteristics

Operating Temperature Range	-40 °C to +70 °C (-40 °F to +158 °F)
Storage Temperature Range	-40 °C to +85 °C (-40 °F to +185 °F)
Operating Humidity	25 % to 85 % R.H.
Rotational Life.....	15,000 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
Detent Torque	100 ±70 gf.cm (1.36 ±0.1 oz.-in.)
Shaft Push-Pull Strength	10 kg max.
Weight	5 gm (0.17 oz.) maximum
Terminals	Printed circuit board surface mount terminals
Soldering Condition	
Reflow Soldering	Sn95.5/Ag2.8/Cu0.7 solder with no-clean flux (see Solder Profiles for recommended time and temperature)
Hand Soldering	Not recommended
Hardware	No hardware supplied with this encoder

Switch Characteristics

Switch Type	Contact Push ON Momentary SPST
Power Rating (Resistive Load).....	10 mA at 5 V DC
Switch Travel	
S (Standard)	0.5 ± 0.3 mm
H (High)	1.5 ± 0.5 mm
Switch Actuation Force.....	See How to Order
Contact Resistance	100 mΩ max.

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WARNING Cancer and Reproductive Harm - www.P65Warnings.ca.gov

*RoHS Directive 2015/863, Mar 31, 2015 and Annex.

Specifications are subject to change without notice.

Users should verify actual device performance in their specific applications.

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

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1. No clean solder paste is recommended.
2. Aqueous wash is not recommended.
3. Use of water soluble soldering flux shall be avoided due to possible corrosion.
4. Multiple passes through the soldering process is not recommended.

Product Dimensions

(TOP VIEW)

8.1 (.319)

11.7 (.461)

3.0 (.118)

14.2 (.559)

18.0 (.709)

15.0 (.591)

A C B

D E

(TOP VIEW)

8.1 (.319)

11.7 (.461)

3.0 (.118)

14.2 (.559)

18.0 (.709)

15.0 (.591)

A C B

D E

(BOTTOM VIEW)

5 PLCS. 1.0 (.039)

5.0 (.197)

2.0 +0.03/-0.05 (.079 +.001/- .002) DIA.

1.5 +0.03/-0.05 (.059 +.001/- .002) DIA.

1.0 (.039)

5.0 (.197)

(SIDE VIEW)

4.5 (.177)

(SWITCH OR DUMMY TERMINALS)

(ENCODER)

1.2 (.047)

TOLERANCES (UNLESS OTHERWISE NOTED):

$\frac{\leq 10}{\leq (.394)} = \frac{\pm 0.3}{\pm (.012)}$	$\frac{> 10}{> (.394)} = \frac{\pm 0.5}{\pm (.020)}$
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DIMENSIONS: MM (INCHES)

Technical drawing of a mechanical part with dimensions in inches and millimeters. The drawing includes a top view and a side view. Dimensions are provided for various features, including holes, slots, and overall lengths. The drawing is oriented horizontally with the top view on the left and the side view on the right.

Top View Dimensions:

- Overall width: 12.5 ± 0.1 ($.492 \pm .004$)
- Distance from left edge to first hole center: 7.5 ± 0.1 ($.295 \pm .004$)
- Distance from first hole center to second hole center: 6.3 ± 0.1 ($.248 \pm .004$)
- Distance from second hole center to right edge: $2.4 \pm .01$ ($.094 \pm .004$)
- Distance from left edge to first slot center: $2.05 \pm 0.1/-0$ ($.081 \pm .004/-0$)
- Distance from first slot center to second slot center: $2.2 \times 1.55 \pm 0.1/-0$ ($.087 \times .061 \pm .004/-0$)
- Distance from second slot center to third slot center: 8.2 ± 0.1 ($.323 \pm .004$)
- Distance from third slot center to right edge: 8.5 ± 0.1 ($.335 \pm .004$)
- Distance from left edge to first hole: 19.0 ± 0.1 ($.748 \pm .004$)
- Distance from first hole to second hole: 12.6 ± 0.1 ($.496 \pm .004$)
- Distance from second hole to third hole: 4.5 ± 0.1 ($.177 \pm .004$)
- Distance from third hole to right edge: 1.3 ± 0.1 ($.051 \pm .004$)
- Distance from left edge to first slot: 12.6 ± 0.1 ($.496 \pm .004$)
- Distance from first slot to second slot: 4.0 ± 0.1 ($.157 \pm .004$)
- Distance from second slot to third slot: 16.5 ± 0.1 ($.650 \pm .004$)
- Distance from third slot to right edge: 9.0 ± 0.1 ($.354 \pm .004$)

Side View Dimensions:

- Overall height: 5.0 ± 0.1 ($.197 \pm .004$)
- Distance from top edge to first hole: 5.0 ± 0.1 ($.197 \pm .004$)
- Distance from first hole to second hole: 5.0 ± 0.1 ($.197 \pm .004$)
- Distance from second hole to third hole: 5.0 ± 0.1 ($.197 \pm .004$)
- Distance from third hole to bottom edge: 5.0 ± 0.1 ($.197 \pm .004$)

Notes:

- DIA. HOLES
- DIA. HOLES
- 2 PLCS.
- 5 PLCS.

[illegible]

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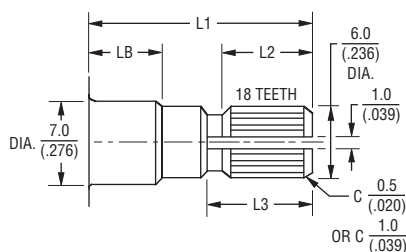
PEC11S Series - 12 mm SMD Incremental Encoder

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Product Dimensions - Shaft Styles

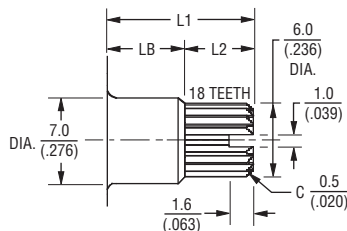
PEC11S without Switch

KNURLED SHAFT



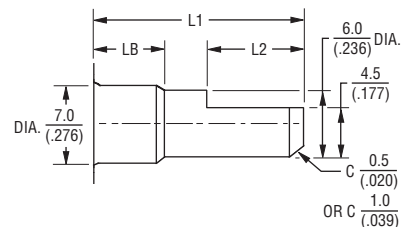
L1	LB	L2	L3
15 (.591)	5 (.197)	7 (.279)	8 (.315)
20 (.787)	7 (.276)	10 (.394)	11 (.433)

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



L1	LB	L2
9.5 (.374)	5 (.197)	4.5 (.177)

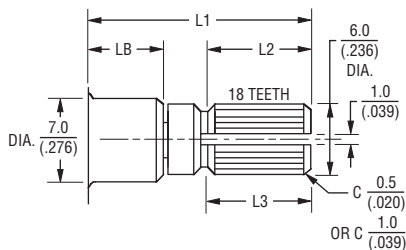
FLATTED SHAFT



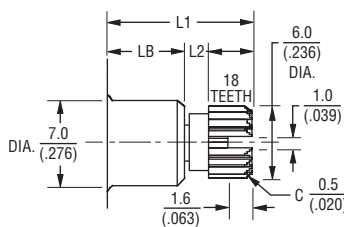
L1	LB	L2
15 (.591)	5 (.197)	7 (.276)
20 (.787)	7 (.276)	12 (.472)

PEC11S with 0.5 mm Switch Travel

KNURLED SHAFT

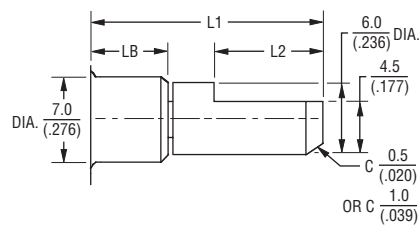


L1	LB	L2	L3
15 (.591)	5 (.197)	7 (.276)	7.5 (.295)
20 (.787)	7 (.276)	9 (.354)	10 (.394)



L1	LB	L2
9.5 (.374)	5 (.197)	2.7 (.106)
13.5 (.531)	5 (.197)	6.7 (.264)

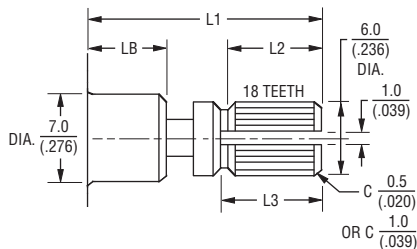
FLATTED SHAFT



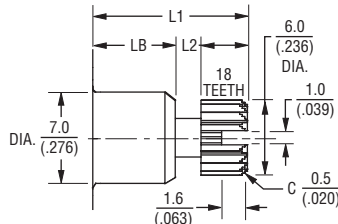
L1	LB	L2
9.5 (.374)	5 (.197)	3 (.118)
15 (.591)	5 (.197)	7 (.276)
20 (.787)	7 (.276)	10 (.394)

PEC11S with 1.5 mm Switch Travel

KNURLED SHAFT

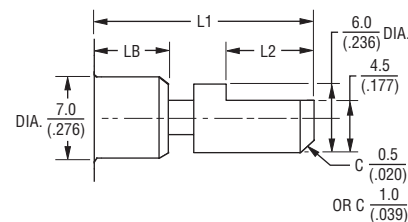


L1	LB	L2	L3
15 (.591)	5 (.197)	6 (.236)	6.5 (.256)
20 (.787)	7 (.276)	8 (.315)	9 (.354)



L1	LB	L2
9.5 (.374)	5 (.197)	2.9 (.114)
13.5 (.531)	5 (.197)	6.9 (.272)

FLATTED SHAFT



L1	LB	L2
15 (.591)	5 (.197)	7 (.276)
20 (.787)	7 (.276)	10 (.394)
25 (.985)	7 (.275)	12 (.473)

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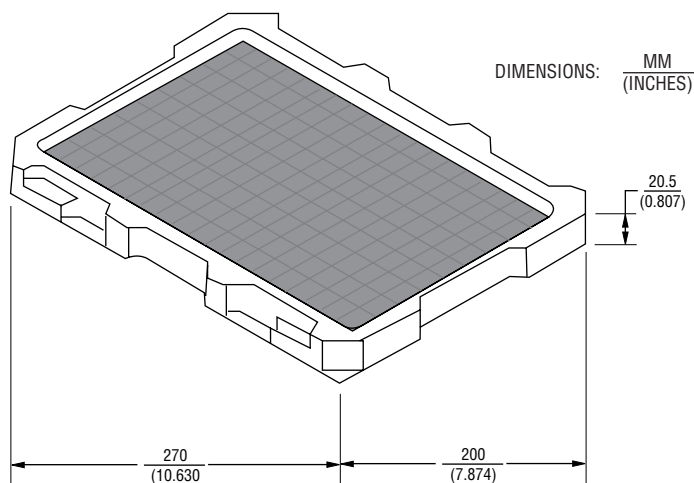
How To Order

PEC11S - 9 2 20 F - S 0015

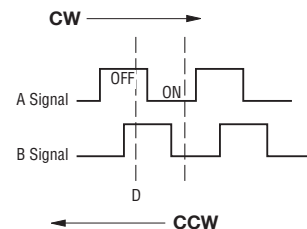
Model _____
 Terminal Configuration _____
 9 = Surface Mount Gull-wing Style
 Detent Option _____
 2 = 30 Detents
 Shaft Length (See Product Dimensions - Shaft Styles for Availability) _____
 9 = 9.5 mm
 13 = 13.5 mm
 15 = 15.0 mm
 20 = 20.0 mm
 25 = 25.0 mm (Flat Shaft and H-Switch Configuration Only)
 Shaft Style _____
 F = Flatted, Metal
 K = Knurled, Metal
 Switch Configuration (SPST) _____
 S = 350 ± 100 gf
 H = 400 ± 200 gf
 N = No Switch
 Resolution _____
 0015 = 15 Pulses per 360 ° Rotation

Packaging

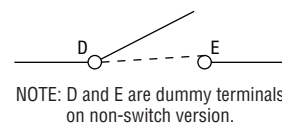
Tray 60 pcs. per tray
 Outer Box 10 trays; 1200 pcs. per box



Quadrature Output Table



Switch Circuit



REV. 07/25

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