



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 |

Mechanical Characteristics

| | |
|--------------------------------|--|
| Mechanical Angle | 360 ° continuous |
| Running Torque | 30.6 to 204 g-cm (0.42 to 2.83 oz.-in.) |
| 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 | No hardware supplied |

Switch Characteristics

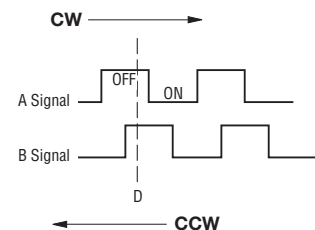
| | |
|-------------------------------------|------------------------------------|
| Switch Type | Contact Push ON Momentary SPST |
| Power Rating (Resistive Load) | 10 mA at 5 V DC |
| Switch Travel | 0.5 ± 0.3 mm |
| Switch Actuation Force | 610 ± 306 gf (8.47 ± 4.24 oz.-in.) |
| Contact Resistance | 100 milliohms @ 5 VDC |

How To Order

PEC12R - 4 0 20 F - S 0012

| | |
|--|----------------------------|
| Model | PEC12R - 4 0 20 F - S 0012 |
| Terminal/Bushing Configuration | 4 |
| 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 |
| 0 = No Detents | |
| 1 = 12 Detents (available with 12 pulses only) | |
| 2 = 24 Detents | |
| Standard Shaft Length | 20 |
| 15 = 15.0 mm (Horizontal Mount only) | |
| 17 = 17.5 mm | |
| 20 = 20.0 mm | |
| 22 = 22.5 mm | |
| 25 = 25.0 mm | |
| 30 = 30.0 mm | |
| Shaft Style | F |
| F = Insulated Flatted Shaft | |
| Switch Configuration | S |
| S = Push Momentary Switch | |
| N = No Switch | |
| Resolution | 0012 |
| 0012 = 12 Pulses per 360 ° Rotation | |
| 0024 = 24 Pulses per 360 ° Rotation | |

Quadrature Output Table



*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
- Musical instrumentation
- Communications equipment

PEC12R - 12 mm Incremental Encoder

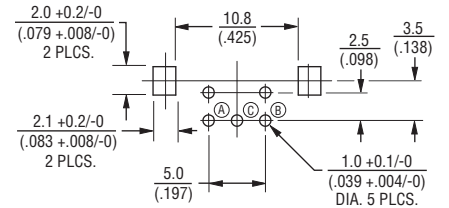
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Product Dimensions

PEC12R-2xxxF-Nxxxx (Vertical Mount - Radial PC Pin/No Bushing, No Switch)



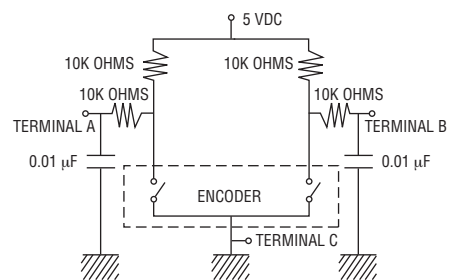
PEC12R-2xxxF-Sxxxx (Vertical Mount - Radial PC Pin/No Bushing, Push Momentary Switch)



Switch Circuit



Suggested Filter Circuit



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

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PEC12R - 12 mm Incremental Encoder

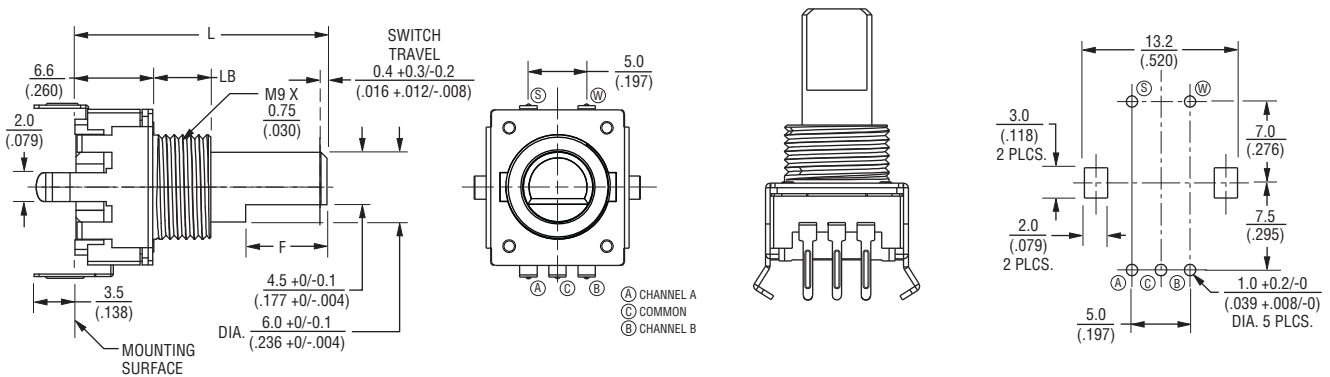
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Product Dimensions

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 | $\frac{17.5}{(.688)}$ | $\frac{20.0}{(.787)}$ | $\frac{22.5}{(.886)}$ | $\frac{25.0}{(.984)}$ | $\frac{30.0}{(1.181)}$ |
| LB | $\frac{5.0}{(.197)}$ | $\frac{5.0}{(.197)}$ | $\frac{7.0}{(.276)}$ | $\frac{7.0}{(.276)}$ | $\frac{7.0}{(.276)}$ |
| F | $\frac{5.0}{(.197)}$ | $\frac{7.0}{(.276)}$ | $\frac{7.0}{(.276)}$ | $\frac{12.0}{(.472)}$ | $\frac{12.0}{(.472)}$ |

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

TOLERANCE: $\frac{<10}{(<.400)} = \frac{\pm 0.3}{(\pm .012)}$

$\frac{\geq 10}{(\geq .400)} = \frac{\pm 0.5}{(\pm .020)}$

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PEC12R - 12 mm Incremental Encoder

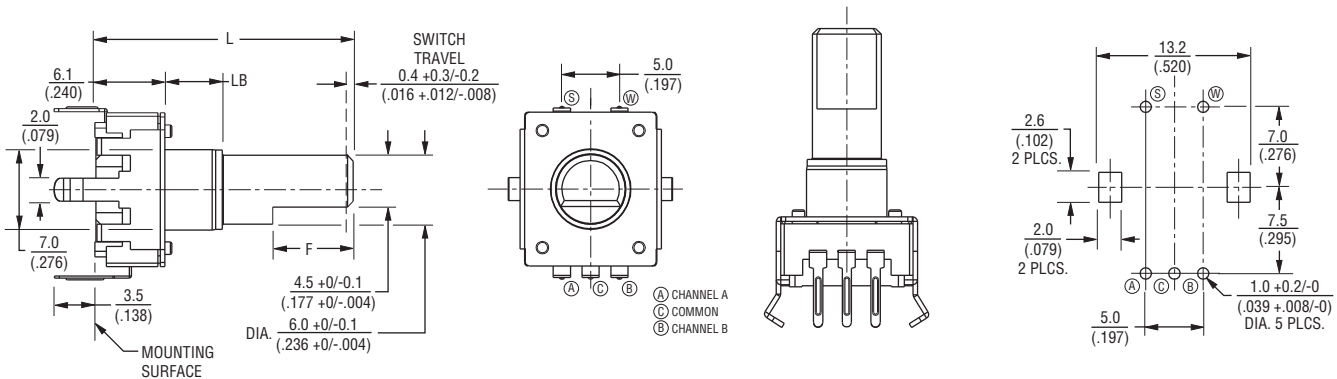
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Product Dimensions

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: | MM (INCHES) |
| TOLERANCE: | <10 (<.400) = ±0.3 (±.012) |
| | ≥10 (≥.400) = ±0.5 (±.020) |

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