

Features

- Compact design, long life and high reliability
- Vertical and horizontal mount versions
- Flatted and knurled shaft styles
- Variety of LED colors available
- Bushing and bushingless options



PEL12S - 12 mm Encoder with Illuminated Shaft

Electrical Characteristics

Output.....	2-bit quadrature code
Closed Circuit Resistance	3 ohms maximum
Contact Rating.....	0.5 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)	100 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)
Operating Humidity.....	25 % to 85 % R.H.
Rotational Life.....	30,000 cycles minimum
IP Rating.....	IP 40

Mechanical Characteristics

Mechanical Angle	360 ° continuous
Detent Torque30 to 200 g-cm (0.42 to 2.77 oz.-in.)
Running Torque	50 g-cm (0.69 oz-in.) maximum
Shaft Strength (Push).....	5 kgf (11.0 lbs.)
Shaft Strength (Pull).....	10 kgf (22.0 lbs.)
Weight	3 gm (0.1 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 5 ± 1 seconds
Hand Soldering	Not recommended
Hardware	No hardware supplied

How To Order

PEL12S - 4 0 20 F - N 1 024

Model _____

Terminal Configuration _____
 2 = Vertical Mount/Side Exit PC Pin 4 = Horizontal Mount/Rear Exit PC Pin

Detent Option _____
 0 = No Detents 2 = 24 Detents

Standard Shaft Length _____
 Flatted: Knurled:
 15 = 15.0 mm 25 = 25.0 mm 24 = 24.0 mm
 17 = 17.5 mm 30 = 30.0 mm
 20 = 20.0 mm

Shaft Style _____
 F = Insulated Flatted Shaft S = Insulated Knurled Shaft (18 Teeth)
 G = Insulated Flatted Shaft w/Bushing*** T = Insulated Knurled Shaft (18 Teeth) w/Bushing

Switch Configuration _____
 N = No Switch

LED Color _____
 Single:
 1 = Red 3 = Blue 5 = White
 2 = Green 4 = Orange

Resolution _____
 024 = 24 Pulses per 360 ° Rotation

*** Available in 17.5, 20 and 25 mm shaft lengths.

*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.

Customers should verify actual device performance in their specific applications.

Applications

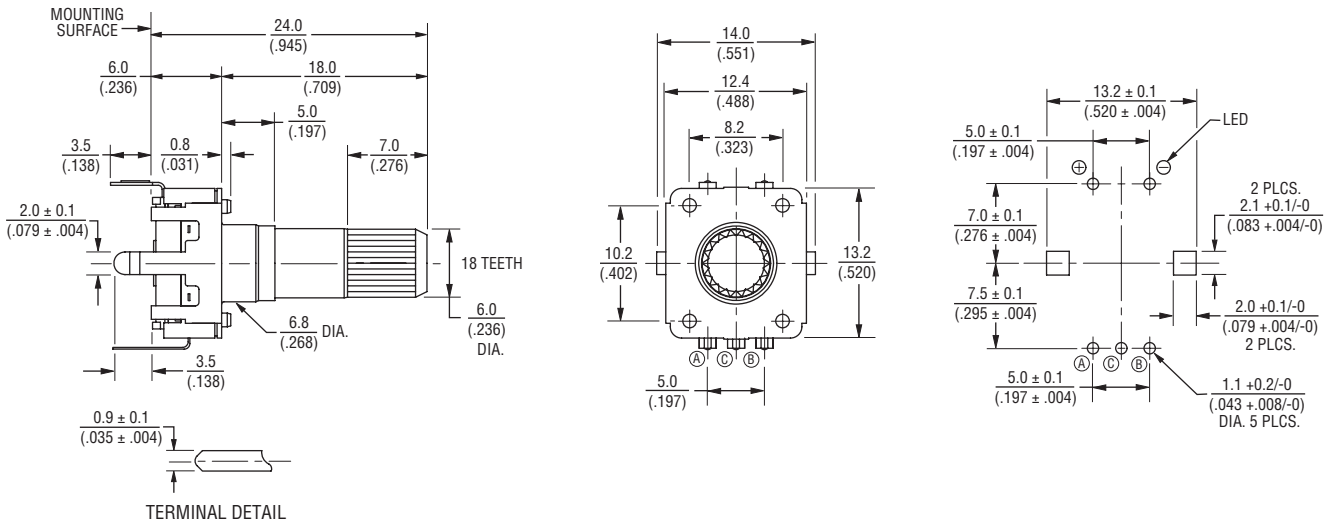
Level control, tuning and timer settings in:

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

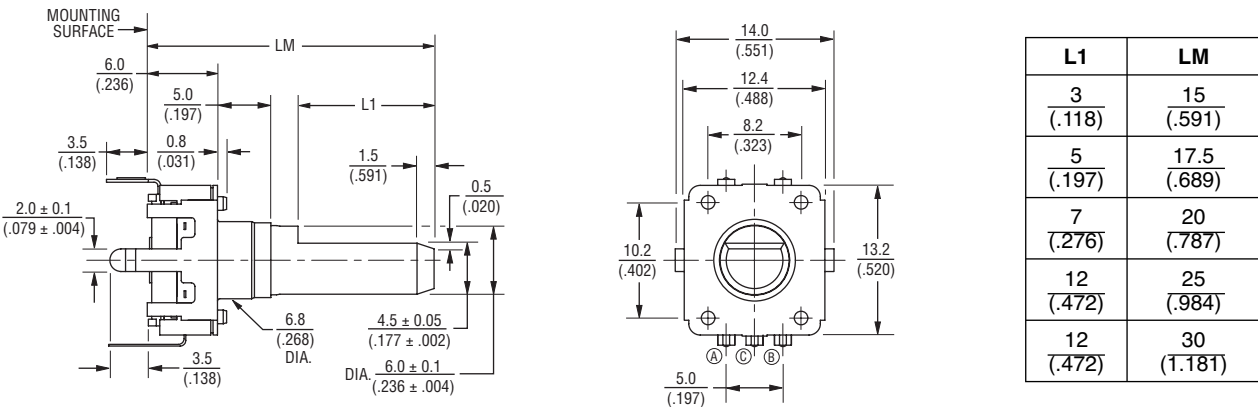
PEL12S - 12 mm Encoder with Illuminated Shaft BOURNS®

Product Dimensions

PEL12S-4xxxS-Nxxxx (Horizontal Mount w/Single LED, No Switch, Knurled Shaft)



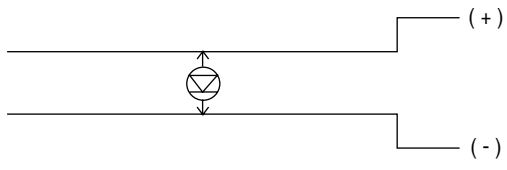
PEL12S-4xxxF-Nxxxx (Horizontal Mount w/Single LED, No Switch, Flatted Shaft)



L1	LM
3 (.118)	15 (.591)
5 (.197)	17.5 (.689)
7 (.276)	20 (.787)
12 (.472)	25 (.984)
12 (.472)	30 (1.181)

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

Single LED Circuit



TOLERANCES:
 UNDER $\frac{10.0}{(.394)} = \frac{\pm 0.3}{(\pm .012)}$ $\frac{10.0 - 100}{(.394 - 3.937)} = \frac{\pm 0.5}{(\pm .020)}$

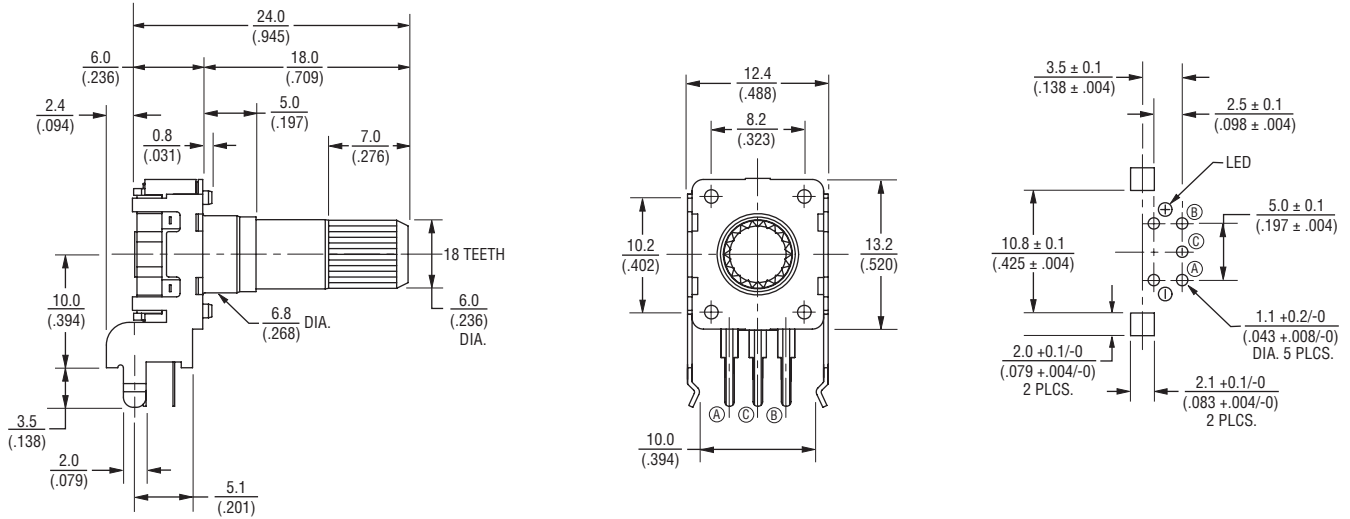
Specifications are subject to change without notice. Customers should verify actual device performance in their specific applications.

PEL12S - 12 mm Encoder with Illuminated Shaft

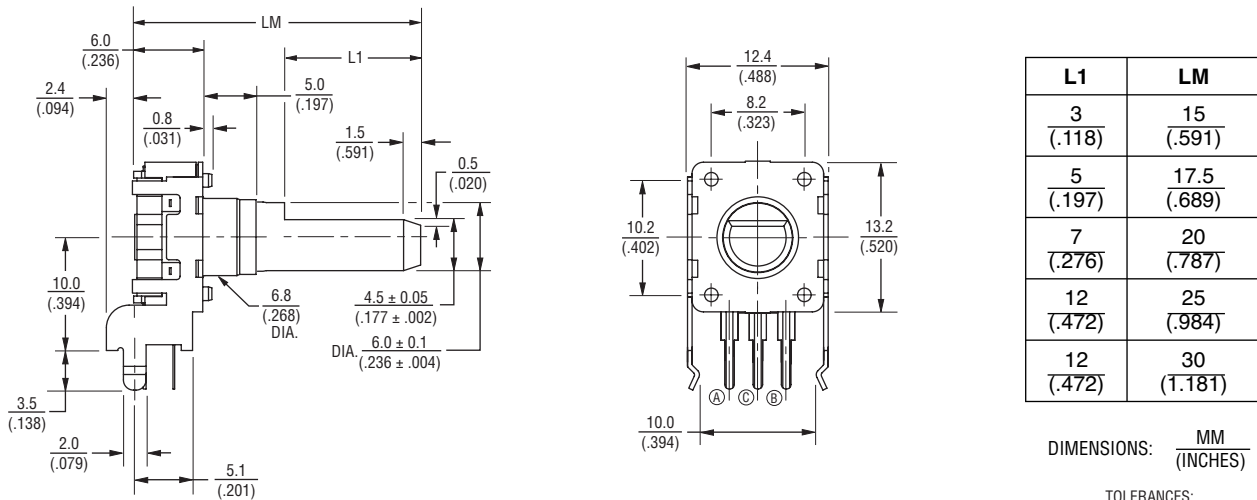
BOURNS®

Product Dimensions

PEL12S-2xxxS-Nxxxx (Vertical Mount w/Single LED, No Switch, Knurled Shaft)



PEL12S-2xxxF-Nxxxx (Vertical Mount w/Single LED, No Switch, Flatted Shaft)



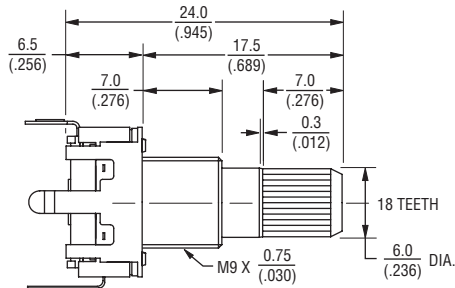
Specifications are subject to change without notice.
 Customers should verify actual device performance in their specific applications.

PEL12S - 12 mm Encoder with Illuminated Shaft

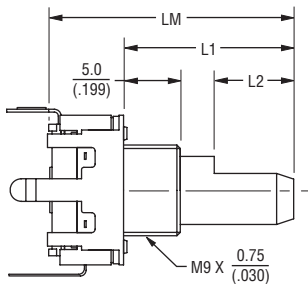
BOURNS®

Product Dimensions

PEL12S-4xxxT-Nxxxx (Horizontal Mount w/Single LED, No Switch, Knurled Shaft w/Bushing)



PEL12S-4xxxG-Nxxxx (Horizontal Mount w/Single LED, No Switch, Flatted Shaft w/Bushing)

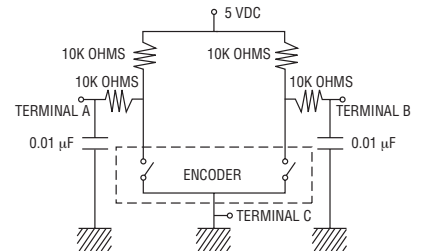


L2	L1	LM
5 (.197)	11 (.433)	17.5 (.689)
7 (.276)	13.5 (.532)	20 (.787)
12 (.472)	18.5 (.728)	25 (.984)

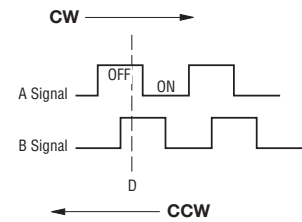
DIMENSIONS: $\frac{\text{MM}}{\text{(INCHES)}}$

TOLERANCES:
 UNDER $\frac{10.0}{(.394)} = \frac{\pm 0.3}{(\pm 0.012)}$ $\frac{10.0 \sim 100}{(.394 \sim 3.937)} = \frac{\pm 0.5}{(\pm 0.020)}$

Suggested Filter Circuit



Quadrature Output Table



LED Characteristics (Single)

LED Color	Power Dissipation (mW)	DC Forward Current (mA)	Forward Voltage (V)	
			Typ.	Max.
Red	58	25	1.8	2.3
Green	53	25	2.0	2.5
Blue	80	20	3.5	4.0
Orange	100	30	2.2	2.6
White	120	30	3.4	4.0

Notes:

Reverse Current: 10 µA
 Reverse Voltage: 5 VDC
 Test Condition (IF): 20 mA

BOURNS®

Asia-Pacific:

Tel: +886-2 2562-4117
 Fax: +886-2 2562-4116

Europe:

Tel: +41-41 768 5555
 Fax: +41-41 768 5510

The Americas:

Tel: +1-951 781-5500
 Fax: +1-951 781-5700

www.bourns.com

REV. 05/12

Specifications are subject to change without notice.
 Customers should verify actual device performance in their specific applications.