

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 Torque	30 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	One flat washer and one mounting nut supplied with each encoder with bushing

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.

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:

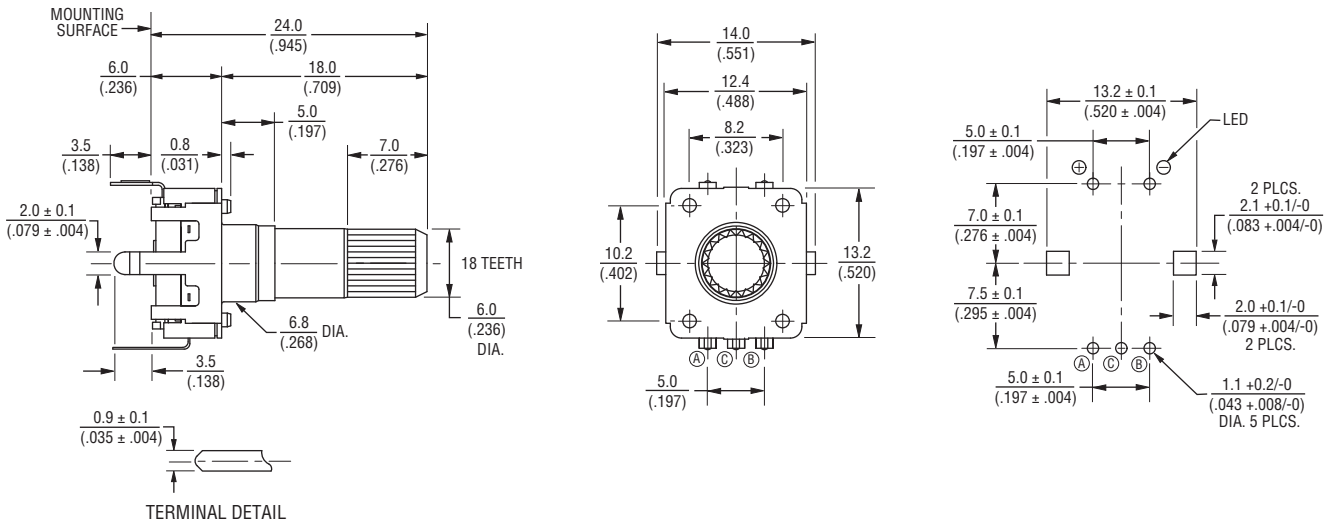
- Audio-visual equipment
- Consumer electric appliances
- Musical instrumentation
- Communications equipment

PEL12S - 12 mm Encoder with Illuminated Shaft

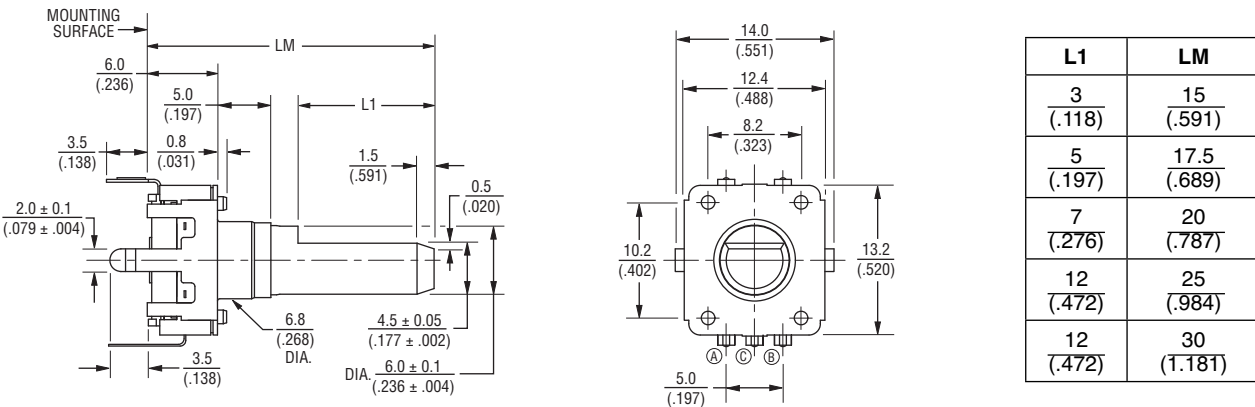


Product Dimensions

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



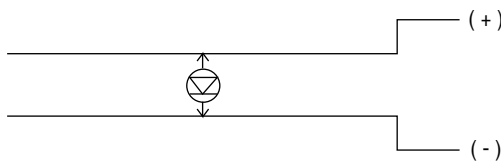
PEL12S-4xxxF-Nxxxx (Horizontal Mount w/Single LED, No Switch, Flatted Shaft)



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

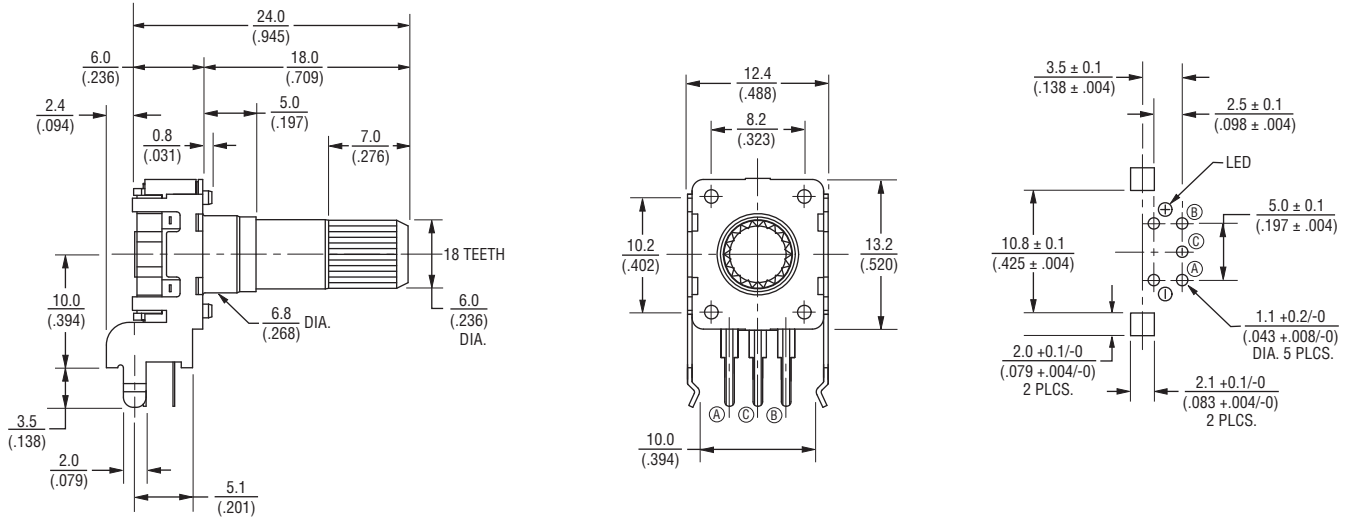
Specifications are subject to change without notice. The device characteristics and parameters in this data sheet can and do vary in different applications and actual device performance may vary over time. Users should verify actual device performance in their specific applications.

PEL12S - 12 mm Encoder with Illuminated Shaft

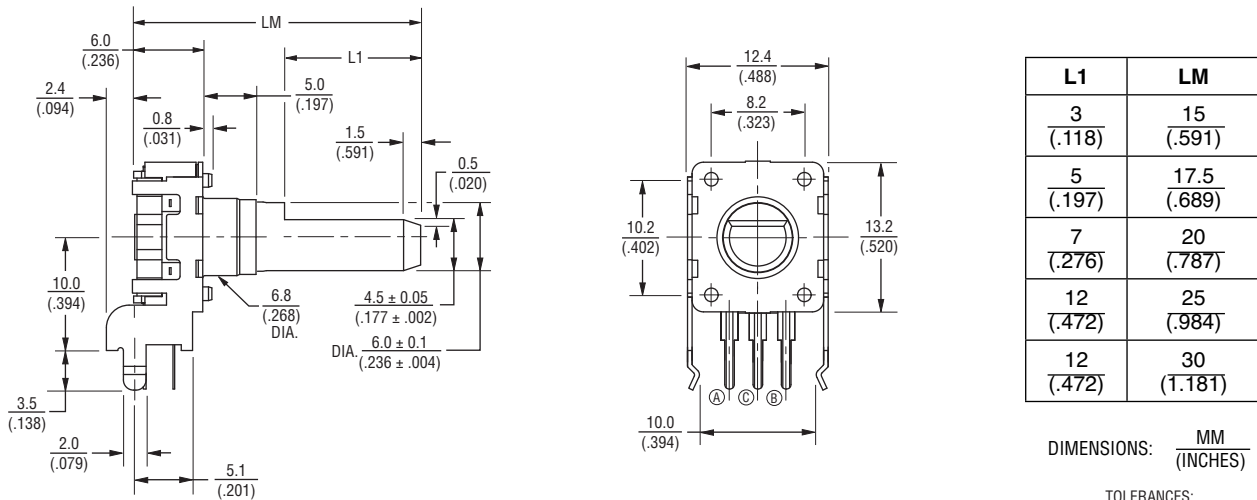
BOURNS®

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)



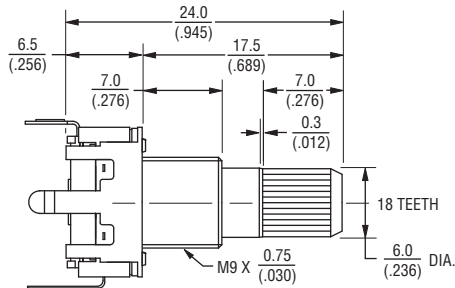
Specifications are subject to change without notice.
 The device characteristics and parameters in this data sheet can and do vary in different applications and actual device performance may vary over time.
 Users should verify actual device performance in their specific applications.

PEL12S - 12 mm Encoder with Illuminated Shaft

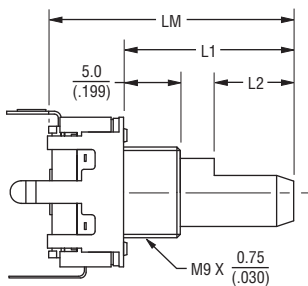
BOURNS®

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)

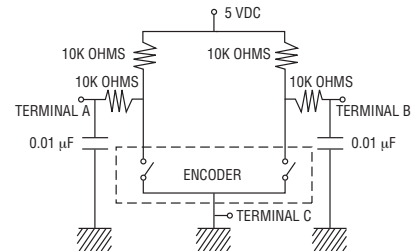


L2	L1	LM
5 (.197)	11 (.433)	17.5 (.689)
7 (.276)	13.5 (.532)	20 (.787)
12 (.472)	18.5 (.728)	25 (.984)

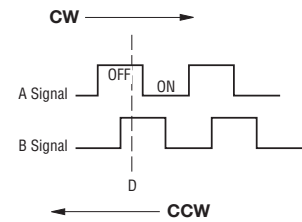
DIMENSIONS: $\frac{\text{MM}}{\text{(INCHES)}}$

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

EMEA:

Tel: +36 88 520 390
 Fax: +36 88 520 211

The Americas:

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

www.bourns.com

REV. 03/15

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.