

Features

- Compact design, long life and high reliability
- Momentary switch
- Triple LED design
- Flatted and knurled shaft styles
- Bushing and bushingless options



PEL12T - 12 mm Encoder with Switch and 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
Switch Life	20,000 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

Switch Characteristics

Switch Type	Contact Push ON Momentary SPST
Power Rating (Resistive Load)	10 mA at 5 V DC
Contact Resistance	100 milliohms
Switch Travel	0.5 +0.0/-0.3 mm
Switch Actuation Force	450 ± 200 gf (15.9 ± 7.0 oz.)

How To Order

PEL12T - 4 0 21 F - S 1 024

Model _____

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

Detent Option _____
 0 = No Detents 1 = 12 Detents 2 = 24 Detents

Standard Shaft Length _____

Flatted:	Knurled:
16 = 16.0 mm	25 = 25.0 mm
18 = 18.5 mm	31 = 31.0 mm
21 = 21.0 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 _____
 S = Push Momentary Switch

LED Color _____
 Triple:
 1 = Red/Green/Blue

Resolution _____
 012 = 12 Pulses per 360 ° Rotation 024 = 24 Pulses per 360 ° Rotation

*** Available in 18.5, 21 and 26 mm shaft lengths.

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

**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. Users should verify actual device performance in their specific applications.

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

Applications

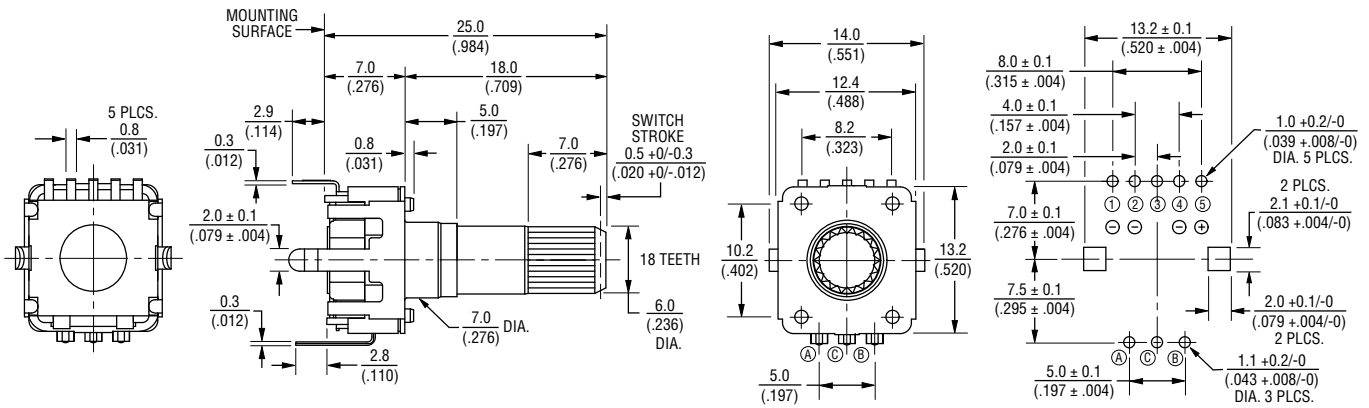
Level control, tuning and timer settings in:

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

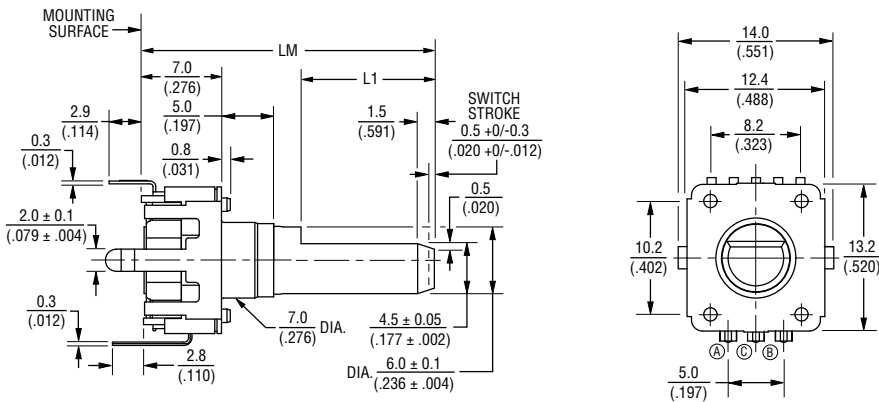
PEL12T - 12 mm Encoder with Switch and Illuminated Shaft BOURNS®

Product Dimensions

PEL12T-4xxxS-S1024 (Horizontal Mount w/Triple LED & Switch, Knurled Shaft)



PEL12T-4xxxF-S1024 (Horizontal Mount w/Triple LED & Switch, Flatted Shaft)



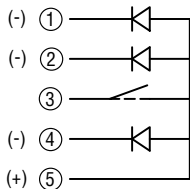
L1	LM
$\frac{3}{(.118)}$	$\frac{16}{(.630)}$
$\frac{5}{(.197)}$	$\frac{18.5}{(.728)}$
$\frac{7}{(.276)}$	$\frac{21}{(.827)}$
$\frac{12}{(.472)}$	$\frac{26}{(1.024)}$
$\frac{12}{(.472)}$	$\frac{31}{(1.220)}$

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

TOLERANCES:

UNDER $\frac{10.0}{(.394)} = \frac{\pm 0.3}{(\pm 0.12)}$ $\frac{10.0 - 100}{(.394 - 3.937)} = \frac{\pm 0.5}{(\pm 0.20)}$

Triple LED Circuit



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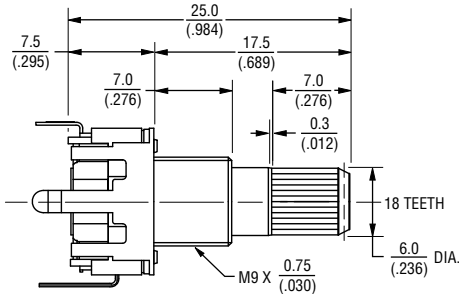
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PEL12T - 12 mm Encoder with Switch and Illuminated Shaft

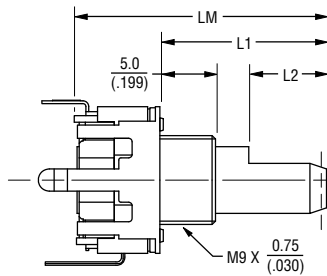


Product Dimensions

PEL12T-4xxxT-S1024 (Horizontal Mount w/Triple LED & Switch, Knurled Shaft w/Bushing)



PEL12T-4xxxG-S1024 (Horizontal Mount w/Triple LED & Switch, Flatted Shaft w/Bushing)



L2	L1	LM
$\frac{5}{(.197)}$	$\frac{11}{(.433)}$	$\frac{18.5}{(.728)}$
$\frac{7}{(.276)}$	$\frac{13.5}{(.532)}$	$\frac{21}{(.827)}$
$\frac{12}{(.472)}$	$\frac{18.5}{(.728)}$	$\frac{26}{(1.024)}$

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

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

LED Characteristics (Triple)

LED Color	Power Dissipation (mW)	DC Forward Current (mA)	Forward Voltage (V)		
			Typ.	Max.	
Red/Green/Blue	Red	60	25	2.0	2.4
	Green	110	25	3.3	3.7
	Blue	110	25	3.3	3.7

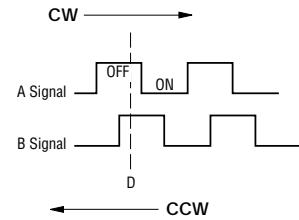
Notes:

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

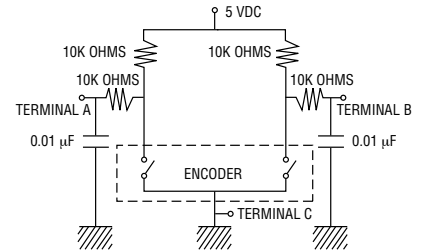
LED Terminal Decoder

Code	Color	Terminals
1	Red / Green / Blue	① ⑤ / ② ⑥ / ④ ⑦

Quadrature Output Table



Suggested Filter Circuit



Asia-Pacific:

Tel: +886-2 2562-4117
 Email: asiacus@bourns.com

Europe:

Tel: +36 88 885 877
 Email: eurocus@bourns.com

The Americas:

Tel: +1-951 781-5500
 Email: americus@bourns.com

www.bourns.com

REV. 09/19

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