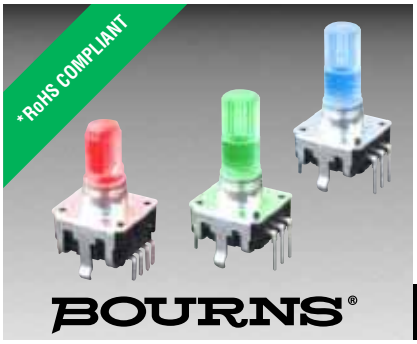


Features

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

BOURNS® PRO AUDIO

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:
- 16 = 16.0 mm
- 18 = 18.5 mm
- 21 = 21.0 mm
- 26 = 26.0 mm
- 31 = 31.0 mm

Knurled:
- 25 = 25.0 mm

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

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

*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.
The products described herein and this document are subject to specific legal disclaimers as set forth on the last page of this document, and at www.bourns.com/docs/legal/disclaimer.pdf

Applications

Level control, tuning and timer settings in:

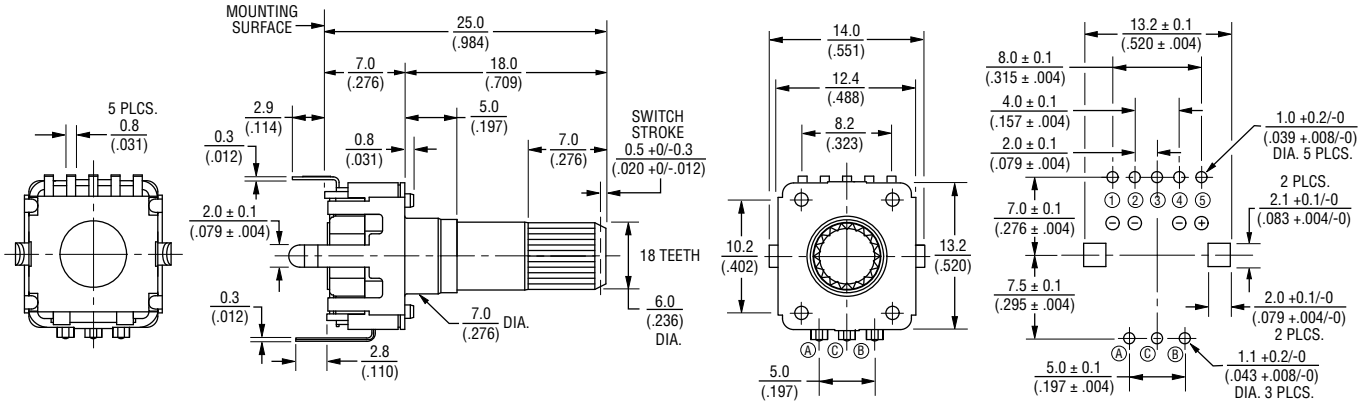
- Audio-visual equipment
- Consumer electric appliances
- Musical instrumentation
- Communications equipment

PEL12T - 12 mm Encoder with Switch and Illuminated Shaft

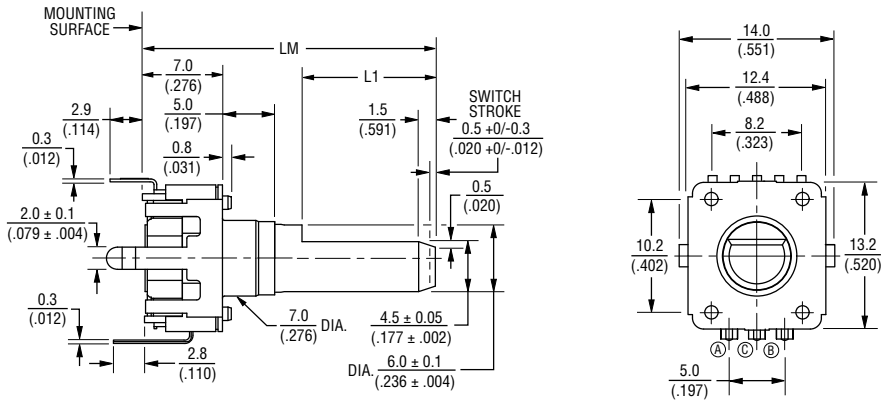
BOURNS®

Product Dimensions

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



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



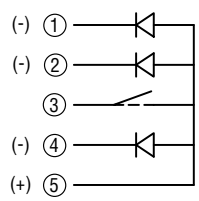
L1	LM
3 (.118)	16 (.630)
5 (.197)	18.5 (.728)
7 (.276)	21 (.827)
12 (.472)	26 (1.024)
12 (.472)	31 (1.220)

DIMENSIONS: MM (INCHES)

TOLERANCES:

UNDER 10.0 (.394) = ±0.3 (±.012) 10.0 ~ 100 (.394 ~ 3.937) = ±0.5 (±.020)

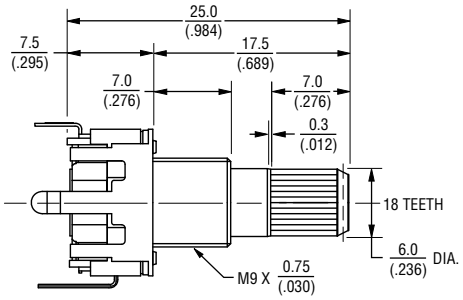
Triple LED Circuit



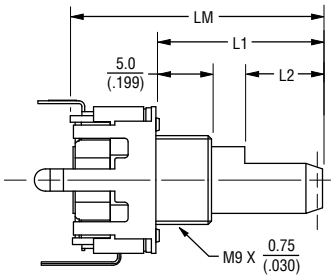
PEL12T - 12 mm Encoder with Switch and Illuminated Shaft

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
5 (.197)	11 (.433)	18.5 (.728)
7 (.276)	13.5 (.532)	21 (.827)
12 (.472)	18.5 (.728)	26 (1.024)

DIMENSIONS: MM (INCHES)

TOLERANCES:
UNDER 10.0 (.394) = ±0.3 (±.012) 10.0 ~ 100 (.394 ~ 3.937) = ±0.5 (±.020)

LED Characteristics (Triple)

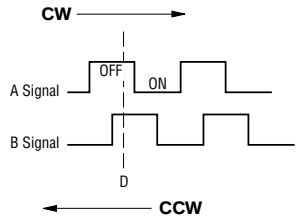
LED Color		Power Dissipation (mW)	DC Forward Current (mA)	Forward Voltage (V)	
				Typ.	Max.
Red/Green/ Blue	Red	60	25	2.0	2.4
	Green	110	25	3.3	3.7
	Blue	110	25	3.3	3.7

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

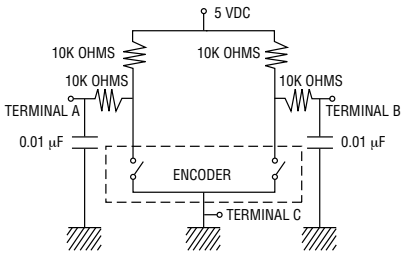
LED Terminal Decoder

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

Quadrature Output Table



Suggested Filter Circuit



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