



Long Life Potentiometer - 2 Million Cycles, Heavy Duty - Cermet, Fully Sealed



FEATURES

- 2 million cycles
- High power rating 3 W at 70 °C
- Cermet element
- Low temperature coefficient (± 150 ppm/°C typical)
- Custom designs on request
- Tests according to CECC 41000 or IEC 60393-1
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912



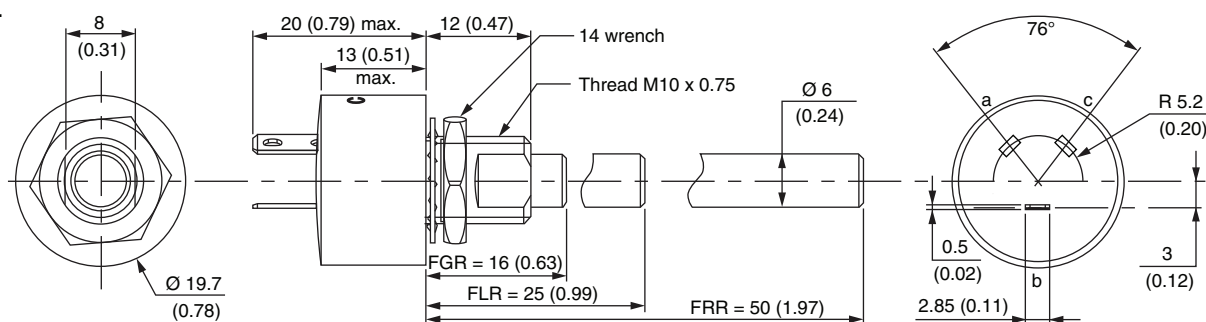
RoHS
COMPLIANT

QUICK REFERENCE DATA

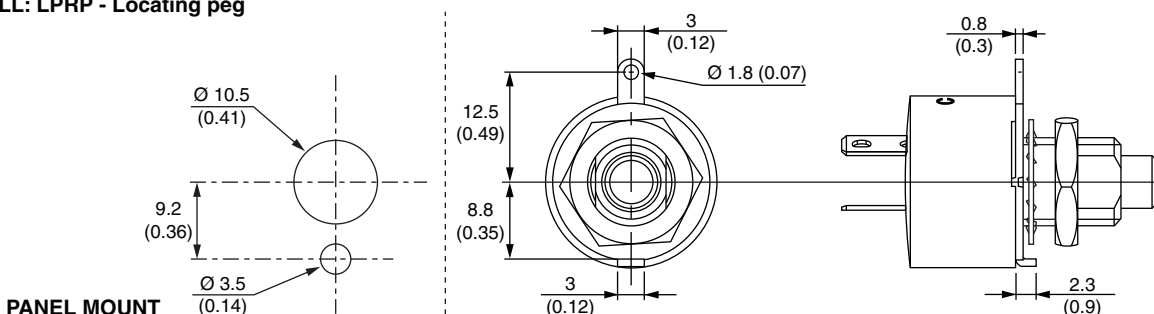
Multiple module	No
Switch module	n/a
Detent module	n/a
Special electrical laws	A: linear, L: logarithmic, F: reverse logarithmic
Sealing level	IP 67
Lifespan	2M cycles

DIMENSIONS in millimeters (inches) ± 0.5 mm (± 0.02 ")

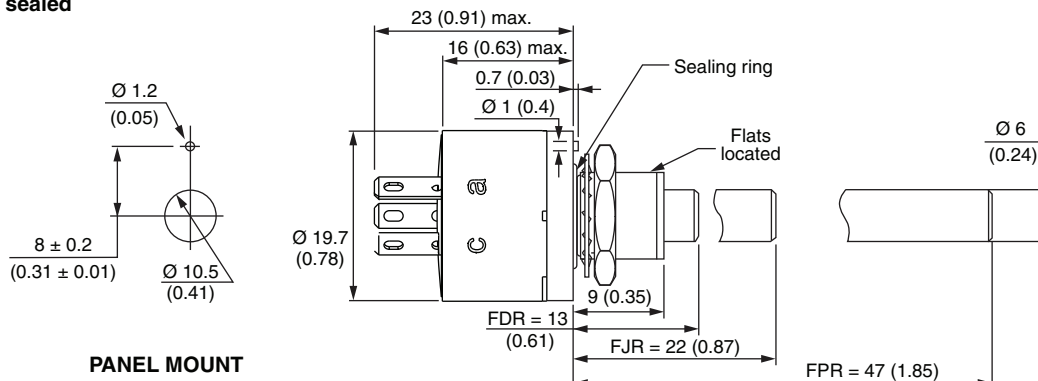
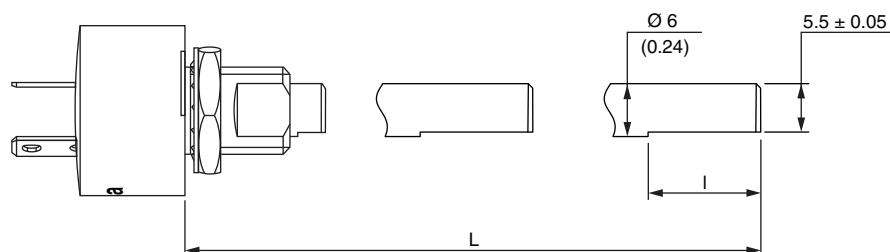
P30LL



P30LLL: LPRP - Locating peg

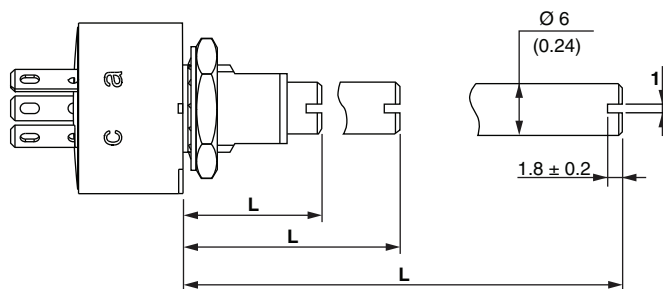


DIMENSIONS in millimeters (inches) ± 0.5 mm (± 0.02 ")

P30LME: Panel sealed

PANEL MOUNT
Standard shaft style F (flatted)


Model	Shaft codification	L (mm)	I (mm)
P30LL	FGF	16	3.17
	FLF	25	12
	FRF	50	12
P30LM	FDF	13	3.17
	FJF	22	12
	FPF	47	12

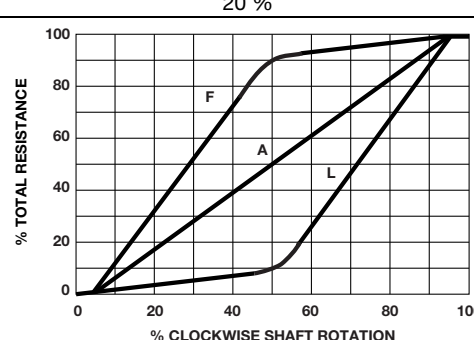
Shaft shown at center position
Flat opposite to the wiper

Standard shaft style S (slotted)


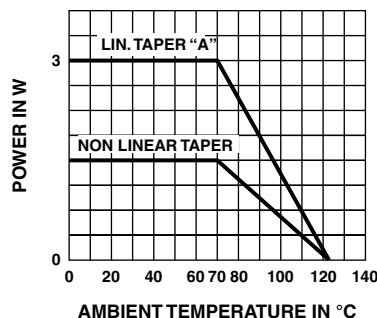
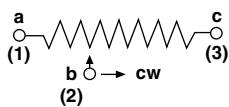
Model	Shaft codification	L (mm)
P30LL	FGS	16
	FLS	25
	FRS	50
P30LM	FDS	13
	FJS	22
	FPS	47

Slot aligned to the wiper at $\pm 10^\circ$

ELECTRICAL SPECIFICATIONS

Resistive element	Cermet
Electrical travel	$270^\circ \pm 10^\circ$
Standard resistance values	1 k Ω - 5 k Ω - 10 k Ω - 50 k Ω
Tolerance	20 %
Taper	 <p>Graph showing % Total Resistance vs % Clockwise Shaft Rotation for F, A, and L shaft styles. The graph shows three curves: F (Flatted), A (Flatted), and L (Slotted). The F curve shows a sharp increase in resistance starting around 40% rotation. The A curve shows a more gradual increase. The L curve shows a linear increase in resistance.</p>

ELECTRICAL SPECIFICATIONS

Power rating	linear non-linear taper	3 W at 70 °C 1.5 W at 70 °C																															
Circuit diagram																																	
Standard resistance element data	<table><tr><th rowspan="2">Resistance Value (kΩ)</th><th colspan="2">Linear Taper</th><th colspan="2">Non-linear Taper</th></tr><tr><th>Max. Power at 70 °C (W)</th><th>Max. Working Voltage (V)</th><th>Max. Power at 70 °C (W)</th><th>Max. Working Voltage (V)</th></tr><tr><td>1</td><td>3</td><td>54.8</td><td>1.5</td><td>38.7</td></tr><tr><td>5</td><td>3</td><td>122</td><td>1.5</td><td>86.6</td></tr><tr><td>10</td><td>3</td><td>173</td><td>1.5</td><td>122</td></tr><tr><td>50</td><td>1.8</td><td>300</td><td>1.5</td><td>274</td></tr></table>				Resistance Value (kΩ)	Linear Taper		Non-linear Taper		Max. Power at 70 °C (W)	Max. Working Voltage (V)	Max. Power at 70 °C (W)	Max. Working Voltage (V)	1	3	54.8	1.5	38.7	5	3	122	1.5	86.6	10	3	173	1.5	122	50	1.8	300	1.5	274
Resistance Value (kΩ)	Linear Taper		Non-linear Taper																														
	Max. Power at 70 °C (W)	Max. Working Voltage (V)	Max. Power at 70 °C (W)	Max. Working Voltage (V)																													
1	3	54.8	1.5	38.7																													
5	3	122	1.5	86.6																													
10	3	173	1.5	122																													
50	1.8	300	1.5	274																													
Temperature coefficient (typical)	± 150 ppm/°C																																
Limiting element voltage	300 V																																
End resistance (typical)	1 Ω																																
Dielectric strength (RMS)	2500 V																																
Insulation resistance (300 V _{DC})	10 ⁵ MΩ																																
Independent linearity (typical)	± 5 %																																

MECHANICAL SPECIFICATIONS

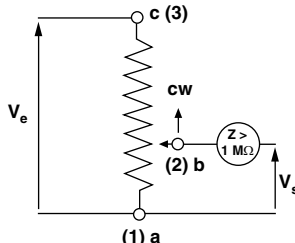
Mechanical travel	300° ± 5°	
Operating torque / typical value	3 Ncm	4.25 oz.-inch
End stop torque	70 Ncm max.	99 oz.-inch max.
Tightening torque of mounting nut	250 Ncm max.	22.13 lb.-inch max.
Unit weight	23 g to 32 g max.	0.8 oz. to 1.13 oz.
Terminals	e3: Pure Sn	

ENVIRONMENTAL SPECIFICATIONS

Temperature range	-55 °C to +125 °C
Climatic category	55/125/56
Sealing	Fully sealed - container IP67

OPTIONS	
Special feature command shaft	Length is measured from the mounting surface to the free end of the shaft. The screwdriver slot is aligned with the wiper within $\pm 10^\circ$. Special shafts are available, in accordance to drawings supplied by customers. We recommend that customers should not machine tool shafts, in order to avoid damage. Bending or torsion of terminals should also be avoided.
Panel sealing	The panel sealing device consists of a ring located in a groove on the potentiometer face. Sealing is obtained by tightening the ring against the panel when mounting the potentiometer.
Locating peg	Location is obtained by fitting a special washer on the mounting face of the potentiometer.

MARKING
<ul style="list-style-type: none"> Vishay trademark Part number (including model, ohmic value code, tolerance code) Manufacturing date code Marking of terminals 3, and a, b, c

APPLICATION NOTE	
<p>The potentiometer shall be used in voltage divider with an impedance load at least 100 times higher than the total potentiometer nominal resistance value.</p> <p>Advised load impedance: 1 MΩ min. for resistance range of 1kΩ to 50 kΩ</p>	

PERFORMANCE				
TESTS	CONDITIONS	TYPICAL VALUES AND DRIFTS		
		$\Delta R_T/R_T$ (%)	$\Delta R_{1-2}/R_{1-2}$ (%)	OTHER
Electrical endurance	1000 h at rated power 90°/30° - ambient temp. 70 °C	± 20 %	± 20 %	-
Climatic sequence	Phase A dry heat 125 °C Phase B damp heat Phase C cold -55 °C Phase D damp heat 5 cycles	± 0.5 %	± 1 %	-
Damp heat, steady state	56 days 40 °C 93 % HR	± 0.5 %	± 1 %	Insulation resistance: > 100 M Ω
Change of temperature	5 cycles -55 °C at +125 °C	± 0.5 %	-	-
Mechanical endurance	2 000 000 cycles at rated power Turn angle: $\pm 60^\circ$ Temperature: 20 °C	± 20 %	-	Independent linearity: ± 10 %
Shock	50 g's at 11 ms 3 successive shocks in 3 directions	± 0.1 %	± 0.2 %	-
Vibration	10 Hz to 55 Hz 0.75 mm or 10 g's during 6 h	± 0.1 %	± 0.2 %	-

Note

- Nothing stated herein shall be construed as a guarantee of quality or durability

**ORDERING INFORMATION** (part number)

P	3	0	L	L	0	F	G	R	1	0	3	M	A				
MODEL	BUSHING	OPTION	SHAFT			RESISTANCE CODE/TOLERANCE CODE/TAPER			SPECIAL NUMBER								
P30L	L = M10 x 0.75 M = panel sealed M10 x 0.75	0 = none E = with locating peg (for M bushing only) L = LPRP	Diameter	Length	End Shaft Shape	Ohmic Value	Tolerance	Taper	(If applicable) Given by Vishay for custom design								
			F = Ø 6 mm AP = custom shaft	For L bushing G = 16 mm L = 25 mm R = 50 mm For M bushing D = 13 mm J = 22 mm P = 47 mm	R = round On request: S = slotted D = custom end shaft F = flatted	102 = 1 kΩ 502 = 5 kΩ 103 = 10 kΩ 503 = 50 kΩ	M = 20 %	A = linear L = logarithmic F = inverse clockwise logarithmic									

PART NUMBER DESCRIPTION (for information only)

P30L	L	0	FGR	10K	20 %	A		BO10			e3
MODEL	BUSHING	OPTION	SHAFT	VALUE	TOLERANCE	TAPER	SPECIAL	PACKAGING	SPECIAL	SPECIAL	LEAD (Pb)-FREE

RELATED DOCUMENTS**APPLICATION NOTES**

Potentiometers and Trimmers	www.vishay.com/doc?51001
Guidelines for Vishay Sfernice Resistive and Inductive Components	www.vishay.com/doc?52029



Disclaimer

ALL PRODUCT, PRODUCT SPECIFICATIONS AND DATA ARE SUBJECT TO CHANGE WITHOUT NOTICE TO IMPROVE RELIABILITY, FUNCTION OR DESIGN OR OTHERWISE.

Vishay Intertechnology, Inc., its affiliates, agents, and employees, and all persons acting on its or their behalf (collectively, "Vishay"), disclaim any and all liability for any errors, inaccuracies or incompleteness contained in any datasheet or in any other disclosure relating to any product.

Vishay makes no warranty, representation or guarantee regarding the suitability of the products for any particular purpose or the continuing production of any product. To the maximum extent permitted by applicable law, Vishay disclaims (i) any and all liability arising out of the application or use of any product, (ii) any and all liability, including without limitation special, consequential or incidental damages, and (iii) any and all implied warranties, including warranties of fitness for particular purpose, non-infringement and merchantability.

Statements regarding the suitability of products for certain types of applications are based on Vishay's knowledge of typical requirements that are often placed on Vishay products in generic applications. Such statements are not binding statements about the suitability of products for a particular application. It is the customer's responsibility to validate that a particular product with the properties described in the product specification is suitable for use in a particular application. Parameters provided in datasheets and / or specifications may vary in different applications and performance may vary over time. All operating parameters, including typical parameters, must be validated for each customer application by the customer's technical experts. Product specifications do not expand or otherwise modify Vishay's terms and conditions of purchase, including but not limited to the warranty expressed therein.

Except as expressly indicated in writing, Vishay products are not designed for use in medical, life-saving, or life-sustaining applications or for any other application in which the failure of the Vishay product could result in personal injury or death. Customers using or selling Vishay products not expressly indicated for use in such applications do so at their own risk. Please contact authorized Vishay personnel to obtain written terms and conditions regarding products designed for such applications.

No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted by this document or by any conduct of Vishay. Product names and markings noted herein may be trademarks of their respective owners.