



# POTENTIOMETERS



## P10L

Long-Life (500,000 Cycles) Panel Potentiometer

### FEATURES

- Long life of 500,000 cycles
- Low temperature coefficient of  $\pm 150$  ppm/ $^{\circ}$  C typical
- Plastic shaft and bushing
- 1,000 V<sub>RMS</sub> dielectric strength
- Ultra-small 9.6-mm size
- Fully sealed IP67 package

### APPLICATIONS

- Control panels
- Actuation proportional pedals
- Air conditioning units
- Hospital bed audio systems
- White goods
- Lighting controls/dimmers

Datasheet is available on our web site at [www.vishay.com](http://www.vishay.com)  
for P10L - <http://www.vishay.com/doc?51057>

### Long Life Potentiometer - 500 000 Cycles Miniature - Cermet - Fully Sealed

ELECTRICAL SPECIFICATIONS																
Resistive Element	CERMET															
Electrical Travel	250° ± 15°															
Standard Resistance Values	1 kΩ - 5 kΩ - 10 kΩ - 50 kΩ															
Tolerance	20% - 10% on request															
Varation Law	<p>Linear</p> <p><b>CIRCUIT DIAGRAM</b></p>															
Power Rating	<p>0.1 W at 70 °C</p>															
Standard Resistance Element Data	<table border="1"> <thead> <tr> <th>Resistance Value (kΩ)</th> <th>Max. Power at 70 °C (W)</th> <th>Max. Working Voltage (V)</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>0.1</td> <td>10</td> </tr> <tr> <td>5</td> <td>0.1</td> <td>22.3</td> </tr> <tr> <td>10</td> <td>0.1</td> <td>31.6</td> </tr> <tr> <td>50</td> <td>0.1</td> <td>70.7</td> </tr> </tbody> </table>	Resistance Value (kΩ)	Max. Power at 70 °C (W)	Max. Working Voltage (V)	1	0.1	10	5	0.1	22.3	10	0.1	31.6	50	0.1	70.7
Resistance Value (kΩ)	Max. Power at 70 °C (W)	Max. Working Voltage (V)														
1	0.1	10														
5	0.1	22.3														
10	0.1	31.6														
50	0.1	70.7														
Temperature Coefficient (Typical)	± 150 ppm/°C															
Limiting Element Voltage	75 V															
Contact Resistance Variation	1% Rn or 2 Ω															
End Resistance (Typical)	1 Ω															
Dielectric Strength (RMS)	1000 V															
Insulation Resistance (300 VDC)	10 <sup>8</sup> MΩ															
Independent Linearity (Typical)	± 5%															

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PERFORMANCES		TYPICAL VALUES AND DRIFTS		
TESTS	CONDITIONS	ΔR <sub>1</sub> /R <sub>1</sub> (%)	ΔR <sub>1+2</sub> /R <sub>1+2</sub> (%)	OTHER
Climatic Sequence	Phase A dry heat 100 °C Phase B damp heat Phase C cold -40 °C Phase D damp heat 5 cycles	± 1 %	± 2 %	-
Long Term Damp Heat	56 days 40 °C 93 % HR	± 1 %	± 2 %	Insulation resistance > 10 <sup>4</sup> MΩ
Rotational Life	500 000 cycles at rated power Turn angle: ± 50° 33 cycles per min Temperature: 20 °C	± 20 %	-	Contact resistance variation max. 35 % Independent linearity ± 20 %
Load Life	1000 h at rated power Ambient temperature 70 °C	± 20 %	± 20 %	Contact resistance variation max. 30 %
Rapid Temperature Change	5 cycles - 40 °C at 100 °C	± 1 %	< ± 2 %	-
Shock	50 g at 11 ms 3 successive shocks in 3 directions	± 0.5 %	± 1 %	-
Vibration	10 - 55 Hz 0.75 mm or 10 g in 3 directions	± 0.5 %	< ± 1 %	-

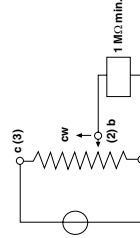
#### SAP ORDERING INFORMATION (Part Number: 18 digits)

P	1	0	L	X	X	A	G	1	0	2	M	B	4				
MODEL	P10L	STYLE	XC XX YE YM YP	SHAFT	AG = Ø 3 - 16 mm AI = Ø 3 - 20 mm	RESISTANCE CODE	102 = 1 kΩ 502 = 5 kΩ 103 = 10 kΩ 503 = 50 kΩ	TOLERANCE CODE	M = 20 % On request K = 10 %	PACKAGING CODE	B4 = Box 100 pieces	SPECIAL NUMBER	(if applicable) Given by VISHAY for custom design				

#### APPLICATION NOTE

The potentiometer shall be used in voltage divider with an impedance load at least 100 times higher than the total potentiometer nominal resistance value.

Advised load impedance:  
1 MΩ min. for resistance range of 1kΩ to 50 kΩ



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