



Knob Potentiometer



LINKS TO ADDITIONAL RESOURCES





The P16 is a revolutionary concept in panel mounted potentiometers. This unique design consists of a knob driving and incorporating a cermet potentiometer. Only the mounting hardware and terminals are situated on the back side of the panel reducing to a minimum the required clearance.

FEATURES

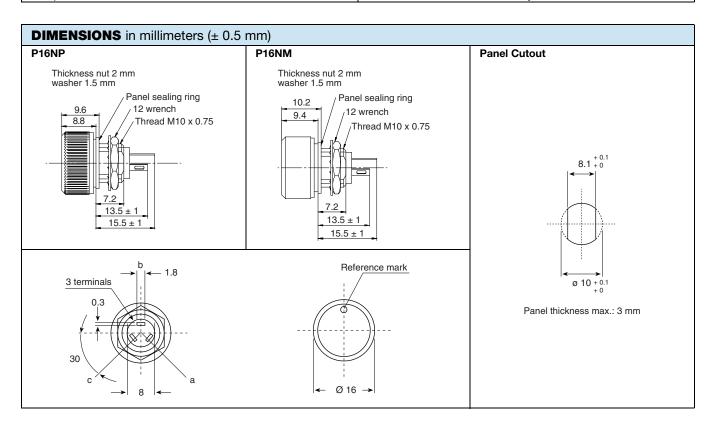




 P16 - version for professional and industrial applications (cermet)
 1 W at 40 °C RoHS COMPLIANT

- PA16 version for professional audio applications (conductive plastic)
 0.5 W at 40 °C
- Compact (integrated)
- High dielectric strength: 2500 V_{RMS}
- Fully sealed and panel sealed
- Metallic or plastic knob options
- · Custom knob on request
- Material categorization: for definitions of compliance please see <u>www.vishay.com/doc?99912</u>

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	50K cycles





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ELECTRICAL SPECIFICATIONS						
	P16	P16 PA16				
Resistive element	Cermet	Conductive plastic				
Electrical travel	270° ± 10°	270° ± 10°				
Power rating chart	1.25 P16 LIN. TAPER "A" 1.00 P16 LOG. TAPER "L & F" & PA16 LIN. TAPER 0.25 PA16 LOG. TAPER 0 20 40 AMBIE	140 NT TEMPERATURE IN °C				
Circuit diagram	a O (1) b (2)	V CW (3)				
Taper		80 F A L L L L L L L L L L L L L L L L L L				
Resistance range Logarithmic	taper $22~\Omega$ to 10 M Ω taper $100~\Omega$ to 2.2 M Ω	1 k Ω to 1 M Ω 470 Ω to 500 k Ω				
Standard series E3	1 - 2.2 - 4.7 and on request 1 - 2 - 5	5 1 - 2.2 - 4.7				
Tolerance Sta	ndard ± 20 %	± 20 %				
On r	equest ± 10 %	± 10 % (1 kΩ to 100 kΩ)				
Power rating	Linear 1 W at +40 °C ithmic 0.5 W at +40 °C	0.5 W at +40 °C 0.25 W at +40 °C				
Temperature coefficient (typical)	± 150 ppm/°C	± 500 ppm/°C				
Dielectric strength (RMS)	2500 V	2500 V				
Limiting element voltage (linear law)	350 V	350 V				
Contact resistance variation	3 % Rn or 3 Ω	2 % Rn or 3 Ω				
End resistance (typical)	1 Ω	1 Ω				
Insulation resistance (500 V _{DC})	10 ⁶ MΩ	10 ⁶ MΩ				



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MECHANICAL SPECIFICATIONS				
Mechanical travel	300° ± 5°			
Operating torque	2 Ncm typical			
End stop torque	25 Ncm maximum			
Max. tightening torque of mounting nut	180 Ncm maximum			
Unit Weight	4.5 g typical			

ENVIRONMENTAL SPECIFICATIONS				
	METALLIC KNOB	PLASTIC KNOB		
Temperature range	-40 °C to +125 °C	-40 °C to +85 °C		
Climatic category	40/100/56	40/85/56		
Sealing	Sealed container and panel sealed			
Protection grades	IP67			

MARKING

- · Ohmic value code, tolerance code and taper
- Manufacturing date code

PACKAGING

47K

100K

220K

470K

1M

2.2M

4.7M

10M

1

1

0.56

0.26

0.12

0.05

0.02

0.01

217

316

350

350

350

350

350

350

Carton box of 20 pieces

Hardware: nuts, washer, and O-ring are separately supplied (not mounted on the potentiometer), in a small bag placed in the packaging.

P16 STANDARD RESISTANCE ELEMENT DATA

STAN-	LINEAR TAPER			L	OG TAPE	R
DARD RESIS- TANCE VALUES		MAX. VOLTAGE	MAX. CUR. THROUGH WIPER	MAX. POWER AT 40 °C	MAX. VOLTAGE	MAX. CUR. THROUGH WIPER
Ω	W	٧	mA	W	V	mA
22	1	4.69	213			
47	1	6.85	146			
100	1	10	100		7.4	74
220	1	14.8	67.4	0.5	7.1	71
470	1	21.7	46.1	0.5	10.5	48
1K	1	31.6	31.6	0.5	15.3	32.6
2.2K	1	46.9	21.3	0.5	22.4	22.4
4.7K	1	68.5	14.6	0.5	33.2	15.1
10K	1	100	10	0.5	48.5	10.3
22K	1	148	6.74	0.5	70.7	7.07

4.61

3.16

1.59

0.75

0.35

0.16

0.07

0.012

0.5

0.5

0.5

0.5

0.26

0.12

0.056

105

153

224

332

350

350

350

4.77

3.26

2.24

1.51

0.74

0.35

0.16

CONTROL KNOB

Black metallic knob (NM).

Black plastic knob (NP).

For white, blue, red, and yellow color see ordering information. Other dimensions, shape, marking, colors of control knobs are manufactured on request - please consult Vishay.

Other reference marks (shapes, colors) and legends can be printed on plastic knob on request - please consult Vishay.

PA16 STANDARD RESISTANCE ELEMENT DATA						
STAN-	LINEAR TAPER			LOG TAPER		
DARD RESIS- TANCE VALUES	MAX. POWER AT 40 °C	MAX. VOLTAGE	MAX. CUR. THROUGH WIPER	MAX. POWER AT 40 °C	MAX. VOLTAGE	MAX. CUR. THROUGH WIPER
Ω	W	V	mA	W	V	mA
470 1K 2.2K 4.7K 10K 22K 47K 100K 220K 470K 1M	0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.26 0.12	22.4 33.2 48.5 70.7 105 153 224 332 350 350	22.4 15.1 10.3 7.07 4.77 3.26 2.24 1.51 0.74 0.35	0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25	10.8 15.8 23.5 34.3 50.0 74 108 158 235 343	23.1 16 11 7 5.0 3.4 2.3 1.6 1.1



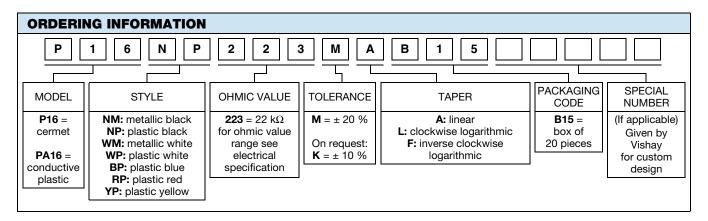
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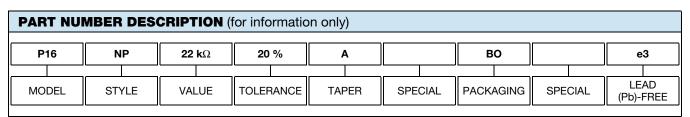
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PERFORMANCE					
TESTS	CONDITIONS	TYPICAL VALUES AND DRIFTS			
12313	CONDITIONS	∆R _T /R _T (%)	$\Delta R_{1-2}/R_{1-2}$ (%)	OTHER	
Electrical endurance	1000 h at rated power 90'/30' cycle at +40 °C	± 5 %	-	Insulation resistance: $> 10^4 \text{ M}\Omega$ Contact res. variation: $< 2 \% \text{ Rn}$	
Damp heat, steady state	56 days 40 °C, 93 % HR	± 2 %	± 1 %	Insulation resistance: $> 10^4 \text{ M}\Omega$	
Mechanical endurance	50 000 cycles	± 5 %	-	Contact res. variation: < 2 % Rn	
Shock	50 g's at 11 ms 3 successive shocks in 3 directions	± 0.2 %	± 0.5 %	-	
Vibration	10 Hz to 55 Hz 0.75 mm or 10 <i>g</i> 's during 6 h	± 0.2 %	-	$\Delta V_{1-2}/\Delta V_{1-3} \le \pm \ 0.5 \%$	

Note

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





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		
Capabilities and Custom Options	www.vishay.com/doc?48493		



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