



Knob Potentiometer



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.

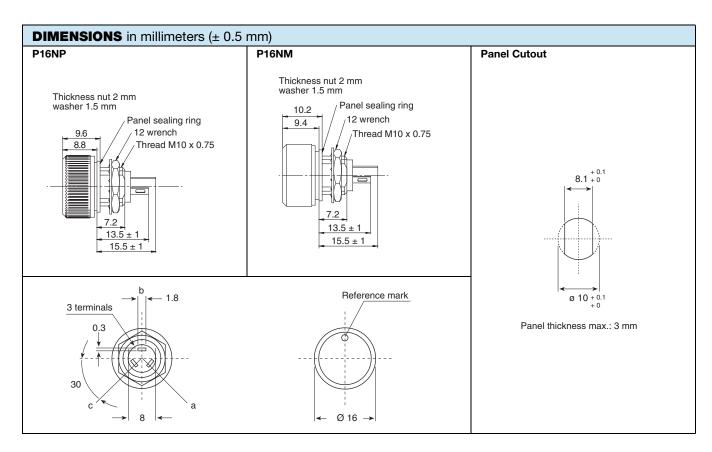
FEATURES





 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>





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| ELECTRICAL SPECIFI | CATIONS | | | | | |
|--|-----------------------------------|---|--|--|--|--|
| | | P16 | PA16 | | | |
| Resistive Element | | Cermet | Conductive plastic | | | |
| Electrical Travel | | 270° ± 10° | 270° ± 10° | | | |
| Power Rating Chart | | 0.25 PA16 LIN. TAPER 0.25 PA16 LOG. TAPER 0 20 40 60 | 80 100 120 140 MPERATURE IN °C | | | |
| Circuit Diagram | | $ \begin{array}{cccc} \overset{a}{\overset{\circ}{\overset{\circ}{\overset{\circ}{\overset{\circ}{\overset{\circ}{\overset{\circ}{\overset{\circ}{$ | | | | |
| Taper | Line - T | 20 0 20 40 % CLOCK | A L L 100 MISE SHAFT ROTATION | | | |
| Resistance Range | Linear Taper Logarithmic Taper | 22 Ω to 10 M Ω 100 Ω 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 | 1 - 2.2 - 4.7 | | | |
| Tolerance | Standard On Request | ± 20 % ± 10 % | ± 20 % ± 10 % (1 kΩ to 100 kΩ) | | | |
| Power Rating | Linear Logarithmic | | | | | |
| Temperature Coefficient (Typical) | | ± 150 ppm/°C | ± 500 ppm/°C | | | |
| Dielectric Strength (RMS) | | 2500 V | 2500 V | | | |
| Limiting Element Voltage (Linea | r 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}) | | $10^6\mathrm{M}\Omega$ | $10^6\mathrm{M}\Omega$ | | | |



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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 | 250 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

Carton box of 20 pieces

| P16 STANDARD RESISTANCE ELEMENT DATA | | | | | | | | |
|--|---|---|---|--|--|--|--|--|
| STAN- | LIN | EAR TAP | ER | LOG TAPER | | | | |
| 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 47 100 220 470 1K 2.2K 4.7K 10K 22K 47K 100K 220K 470K 1M 2.2M 4.7M | 1 1 1 1 1 1 1 1 1 1 1 0.56 0.26 0.12 0.05 0.02 | 4.69 6.85 10 14.8 21.7 31.6 46.9 68.5 100 148 217 316 350 350 350 350 350 | 213 146 100 67.4 46.1 31.6 21.3 14.6 10 6.74 4.61 3.16 1.59 0.75 0.35 0.16 0.07 | 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 | 7.1 10.5 15.3 22.4 33.2 48.5 70.7 105 153 224 332 350 350 350 | 71 48 32.6 22.4 15.1 10.3 7.07 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 and blue color see ordering information. Other dimensions, shapes, 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- | LI | LINEAR TAPER | | | LOG TAPER | | |
| DARD RESIS- TANCE VALUES | MAX. POWER AT 40 °C | MAX. VOLTAGE | | MAX. POWER AT 40 °C | MAX. VOLTAGE | MAX. CUR. THROUGH WIPER | |
| Ω | W | ٧ | mA | W | ٧ | 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 0.5 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 | |



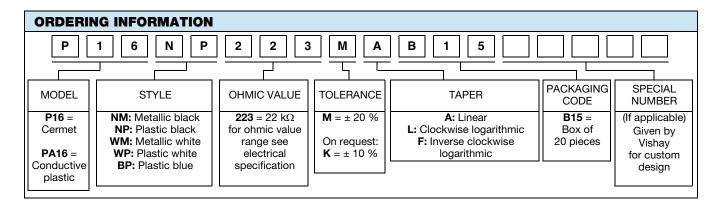
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| PERFORMANCE | | | | | | | |
|-------------------------|---|---------------------------|------------------------------|--|--|--|--|
| TESTS | CONDITIONS | TYPICAL VALUES AND DRIFTS | | | | | |
| 12313 | CONDITIONS | $\Delta R_{T}/R_{T}$ (%) | $\Delta R_{1-2}/R_{1-2}$ (%) | 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.



| PART NUMBER DESCRIPTION (for information only) | | | | | | | | |
|--|-------|-------|-----------|-------|---------|-----------|---------|-------------------|
| P16 NP 22 kΩ 20 % A BO e3 | | | | | | e3 | | |
| MODEL | STYLE | VALUE | TOLERANCE | TAPER | SPECIAL | PACKAGING | SPECIAL | LEAD (Pb)-FREE |



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