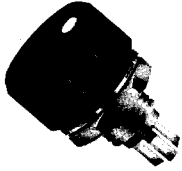
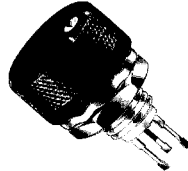


1 W at 40°C
GAM-T-1

P16 PA16

potentiometer knob

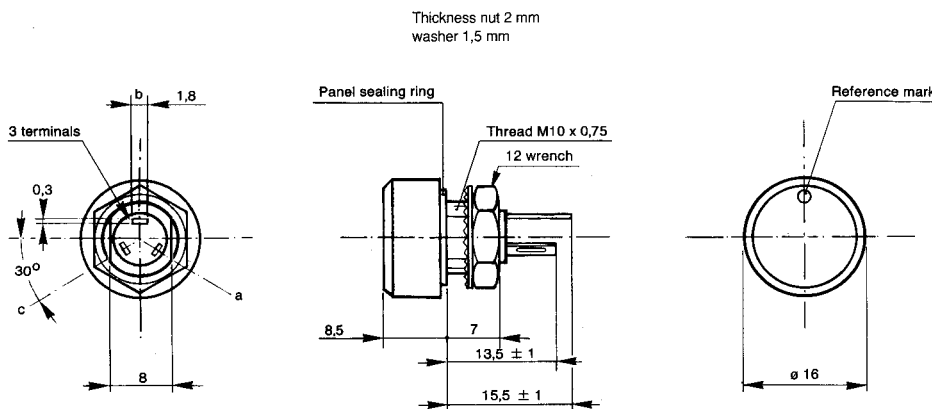
- The P16 - P16P version for professional and industrial applications
- The PA16 - PA16P version for professional audio applications

P16P - PA16P
Plastic knobP16 - PA16
Metallic knob

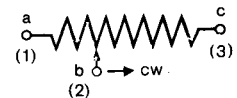
The P16 is a revolutionary concept in panel mounted potentiometers. This unique design consists of a knob driving and embodying a cermet potentiometer. Only the mounting hardware and terminals are situated on the back side of the panel reducing to a minimum the required clearance.

- **COMPACT (integrated knob)**
- **MINIMUM CLEARANCE REQUIREMENT**
- **SAFETY IN USE DUE TO GOOD INSULATION:**
≥10⁴ MΩ 500 V DC
- **HIGH DIELECTRIC STRENGTH: 2500 V RMS**
- **HERMETICALLY SEALED AND PANEL SEALED**

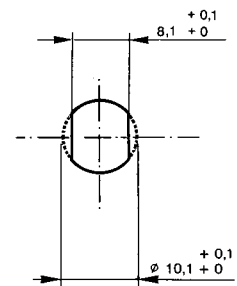
P16 - PA16



CIRCUIT DIAGRAM



PANEL CUTOUT



P16 - P16P CHARACTERISTICS

MECHANICAL

MECHANICAL TRAVEL...	300° ±5°
OPERATING TORQUE (Ncm)...	2 typical
END STOP TORQUE (max. Ncm)...	25
MAX. TIGHTENING TORQUE OF MOUNTING NUT (Ncm)...	250
UNIT WEIGHT...	4,5 g typical

ENVIRONMENTAL

TEMPERATURE RANGE	
P16...	-55°C + 125°C
P16P...	-55°C + 85°C
CLIMATIC CATEGORY	
P16...	55 / 100 / 56
P16P...	55 / 70 / 56
SEALING...	sealed container and panel sealed
PROTECTION GRADES...	IP67

ELECTRICAL

RESISTIVE ELEMENT...	cermet
ELECTRICAL TRAVEL...	270° ±10°
RESISTANCE RANGE	
linear law...	22 Ω... 10 MΩ
logarithmic laws...	1 kΩ... 1 MΩ
Standard series E3 (1 - 2,2 - 4,7)	
on request series...	1 - 2 - 5
TOLERANCE standard...	±20%
on request...	±10%
POWER RATING linear...	1 W at 40°C
logarithmic...	0,5 W at 40°C
TYPICAL TEMP. COEFFICIENT (for R _n ≥ 100 Ω)...	±100 ppm/°C
DIELECTRIC STRENGTH (RMS)...	2500 V
LIMITING ELEMENT VOLTAGE (linear law)...	350 V
INSULATION RESISTANCE (500 V DC)...	≥10 ⁴ MΩ
CONTACT RESISTANCE VARIATION ...	3% R _n or 3 Ω
END RESISTANCE (typical)...	1 Ω
INSULATION RESISTANCE (500 V DC)...	10 ⁶ MΩ

PLASTIC MATERIALS USED ARE UL 94 class VO

PERFORMANCES

Table 1

TESTS	CONDITIONS	TYPICAL VALUES AND DRIFTS	
		$\frac{\Delta R_T}{R_T}$ (%)	$\frac{\Delta R_{1-2}}{R_{1-2}}$ (%)
LOAD LIFE	1000 hours Pn 90/30' at 40°C	± 1% Contact resistance variation : < ±3% Rn	
CLIMATIC SEQUENCE	Phase A dry heat 85°C / 125°C Phase B damp heat Phase C cold -55°C Phase D damp heat 5 cycles	± 0,5 %	± 1 %
HUMIDITY	56 days	± 0,5 % Insulation resistance : > 10 ⁴ MΩ	
TEMPERATURE VARIATIONS	5 cycles -55°C to 85°C / 125°C	± 0,5 %	
SHOCKS	50 g 11 ms 3 successive shocks in 3 directions	± 0,1 %	± 0,2 %
VIBRATIONS	10 - 55 Hz 0,75 mm or 10 g during 6 hours	± 0,1 %	± 0,2 %
ROTATIONAL LIFE	25 000 cycles	± 3 % Contact resistance variation : < ±2% Rn	

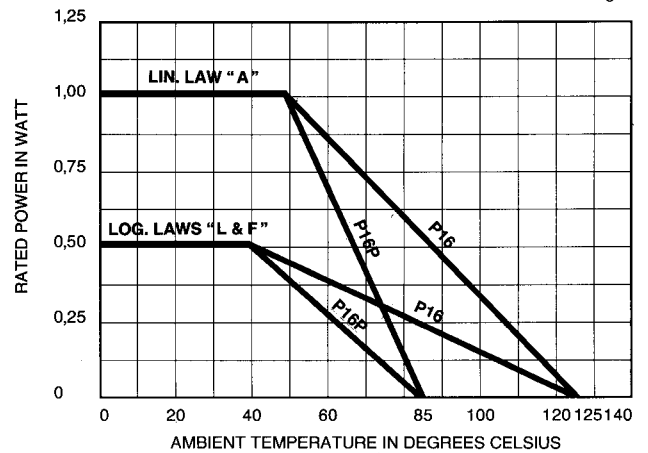
STANDARD RESISTANCE ELEMENT DATA

Table 2

Standard resistance values	LINEAR LAW (A)			LOG. LAW (L, F)			C.T. -40°C +85°C
	Max. power at 40°C	Max. working voltage	Max. cur. through element	Max. power at 40°C	Max. working voltage	Max. cur. through element	
Ω	P1 (W)	Um= $\sqrt{P1 \times Rn}$ ≤350Vdc	Im (mA)	P1 (W)	Um= $\sqrt{P1 \times Rn}$ ≤350Vdc	Im (mA)	10 ⁻⁶ °C
22 47	1	4,69 6,85	213,2 145,8				-50 +200
100 220 470		10 14,83 21,67	100 67,4 46,1				
1 k 2,2 k 4,7 k		31,62 46,90 68,55	31,6 21,32 14,58	0,5	22,4 33,2 48,5	22,4 15,1 10,3	
10 k 22 k 47 k		100 148,32 216,7	10 6,74 4,61		70,7 105 153	7,07 4,77 3,26	±100
100 k 220 k 470 k	1	316,23 350 350	3,16 1,59 0,75		224 332 350	2,24 1,51 0,74	
1 M 2,2 M 4,7 M 10 M	0,56 0,26 0,12 0,05 0,02 0,01	350 350 350 350 350 350	0,35 0,16 0,07 0,035 0,012	0,5 0,26 0,12	350 350 350	0,35	

POWER RATING CHART

Fig. 1



CONTROL KNOB

Black metallic knob (N).
 Black plastic knob (NP).
 Other dimensions, shapes, colours of control knobs are manufactured on request.
 Please consult SFERNICE.
 Other reference marks (shapes, colours) and legends can be printed on plastic knob on request.
 Please consult SFERNICE.

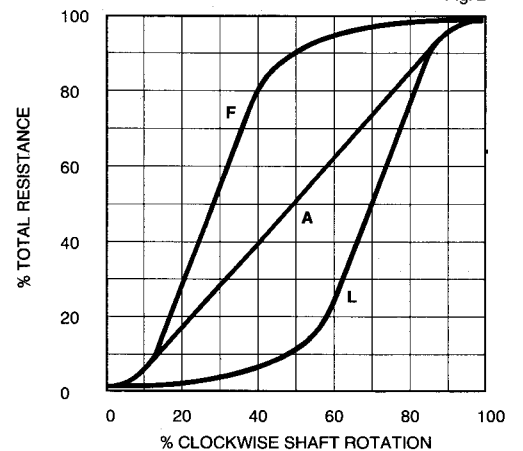
MARKING

Printed : SFERNICE trademark, ohmic value, tolerance (in %), resistance law, manufacturing date.

Carton box of 20 pieces.

RESISTANCE LAWS

Fig. 2



PROFESSIONAL AUDIO APPLICATIONS - PA16 - PA16P

The industrial cermet track is replaced by a **conductive plastic** track especially selected for its performance characteristics related to audio functions.

PA16 - PA16P

PARTICULAR CHARACTERISTICS

Table 3

Nominal resistance	LAWS A, L, F			Temperature coefficient -25°C +100°C
	Maximum dissipation at 40°C	Maximum voltage	Max. current through the wiper	
Ω	W	V	mA	ppm/°C
1 k	0,5 ↓ ↓ ↓ ↓ ↓ ↓	22,4	22,4	±1000
2,2 k		33,2	15,1	
4,7 k		48,5	10,3	
10 k		79,7	7,07	
22 k		105	4,77	
47 k		153	3,26	
100 k		224	2,24	
220 k	0,5	332	1,51	
470 k	0,26	350	0,74	

PA16 - PA16P SPECIFICATIONS

MECHANICAL

ROTATIONAL LIFE... 50,000 cycles

ELECTRICAL

RESISTIVE ELEMENT... **conductive plastic**

RESISTANCE RANGE PA16... A, L, F laws
1 kΩ to 500 kΩ

TOLERANCE standard... ± 20%
on request... ± 10% (1 kΩ to 100 kΩ)

POWER RATING... 0,5 W at 40°C

TEMPERATURE COEFFICIENT... ± 1000 ppm/°C

CONTACT RESISTANCE

VARIATION Law A... 2% Rn

LIMITING ELEMENT VOLTAGE... 350 V

ENVIRONMENTAL

TEMPERATURE RANGE... -25°C +85°C

CLIMATIC CATEGORY... 25 / 70 / 56

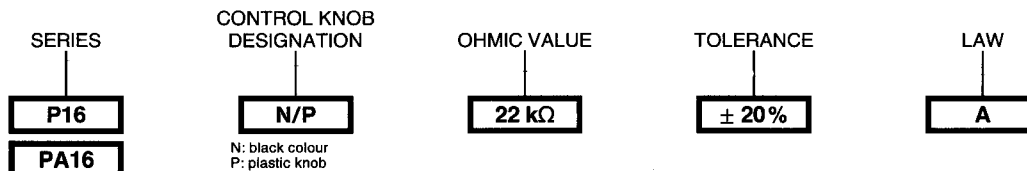
SEALING... sealed container
and panel sealed
IP67

PA16 PERFORMANCES

Table 4

TESTS	CONDITIONS	$\frac{\Delta R_{ac}}{R_{ac}}$ %	TYPICAL DRIFTS	$\frac{\Delta R_{ac}}{R_{ac}}$ %
LONG TERM DAMP HEAT	56 days	2%	Insulation resistance > 10 ⁴ MΩ	
LOAD LIFE	1000 hours at Pn 90°/30° cycle at +40°C	5%	Insulation resistance > 10 ⁴ MΩ Contact resistance variation < 2% of Rn	
SHOCKS	50 g - 11 ms 3 successive shocks in three axes	0,2%		0,5%
VIBRATIONS	10 to 55 Hz 0,75 mm or 10 g during 6 hours	0,2%		$\Delta \frac{V_{ab}}{V_{ac}}$ 0,5%
ROTATIONAL LIFE	50,000 cycles	5%	Contact resistance variation < 2% of Rn	

ORDERING PROCEDURE



VISHAY S.A.
International Department
199, Boulevard de la Madeleine
B.P. 1159
F 06003 NICE CEDEX 1
Tel. : (33) 04 93 37 27 27
Fax. : (33) 04 93 37 27 26