



Knob Potentiometer



LINKS TO ADDITIONAL RESOURCES



3D Models



Capabilities and Custom Options



Infographics

The P16F 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

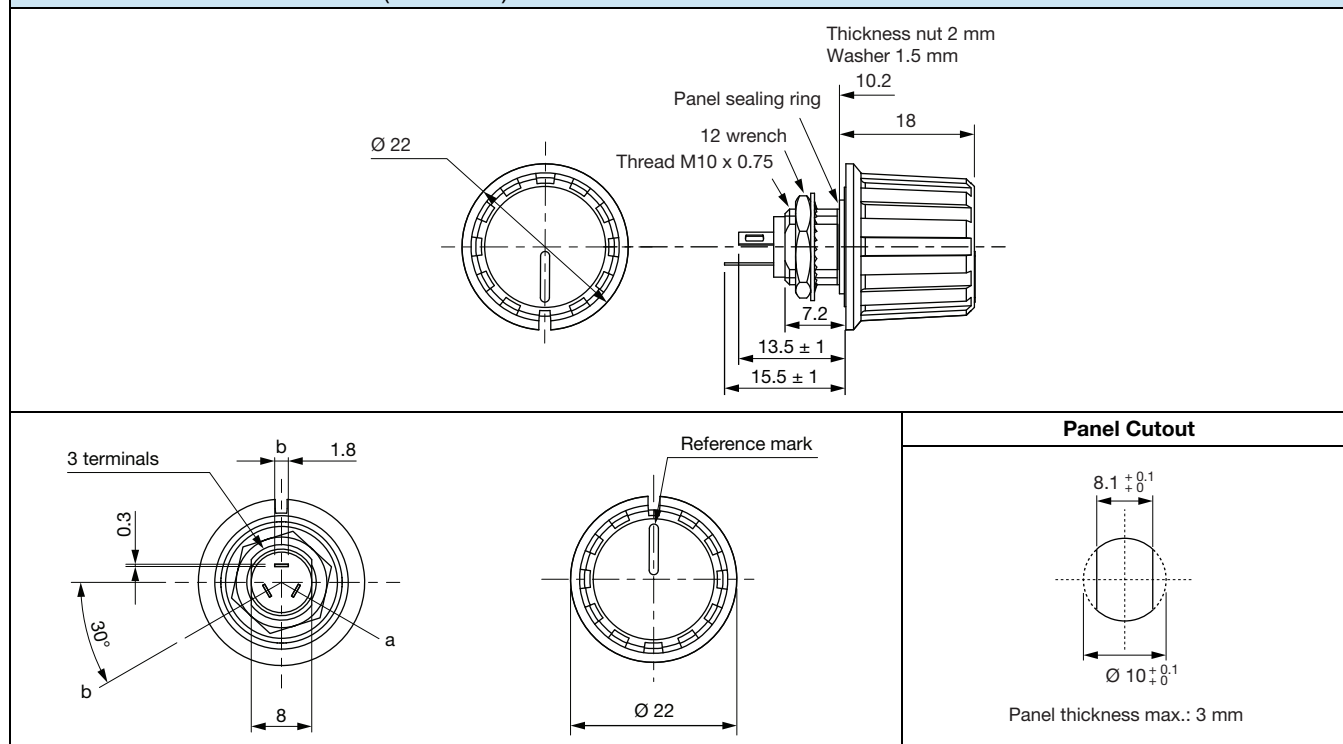
- Test according to CECC 41000 or IEC 60393-1
- **P16F** - version for professional and industrial applications (cermet)
1 W at 40 °C
- **PA16F** - version for professional audio applications (conductive plastic)
0.5 W at 40 °C
- Compact (integrated)
- High dielectric strength: 5000 V_{AC}
- Metallic knob, special marking, or custom knob on request
- Custom knob and marking on request
- Detent option on request (haptic technology)
- Construction: fully sealed
- Professional grade
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

RoHS
COMPLIANT

QUICK REFERENCE DATA

Multiple module	No
Switch module	Yes
Detent module	Yes
Special electrical laws	A: linear, L: logarithmic, F: reverse logarithmic
Sealing level	IP 67
Lifespan	10K cycles (switch), 200K cycles (track)

DIMENSIONS in millimeters (± 0.5 mm)





ELECTRICAL SPECIFICATIONS			
		P16F	PA16F: VERSION FOR AUDIO PROFESSIONAL APPLICATION
Resistive element		Cermet	Conductive plastic
Electrical travel		270° ± 10°	270° ± 10°
	Linear	1 W at +40 °C	0.5 W at +40 °C
	Logarithmic	0.5 W at +40 °C	0.25 W at +40 °C
Power rating			
Circuit diagram			
Taper			
Resistance range	Linear taper	22 Ω to 10 MΩ	1 kΩ to 1 MΩ
	Logarithmic taper	100 Ω to 2.2 MΩ	470 Ω to 500 kΩ
Standard series E3		1 - 2.2 - 4.7 and on request 1 - 2 - 5	1 - 2.2 - 4.7
Tolerance	Standard	± 20 %	± 20 %
	On request	± 10 %	± 10 % (1 kΩ to 100 kΩ)
Temperature coefficient (typical)		± 150 ppm/°C	± 500 ppm/°C
Dielectric strength (RMS)		5000 V _{AC}	5000 V _{AC}
Limiting element voltage (linear law)		350 V	350 V
Contact resistance variation		3 % R _n or 3 Ω	2 % R _n or 3 Ω
End resistance (typical)		1 Ω	1 Ω
Insulation resistance (500 V _{DC})		10 ⁶ MΩ	10 ⁶ MΩ



MECHANICAL SPECIFICATIONS

Mechanical travel	300° ± 5°
Operating torque	3 Ncm typical
End stop torque	25 Ncm maximum
Max. tightening torque of mounting nut	180 Ncm maximum
Unit weight	10 g typical

ENVIRONMENTAL SPECIFICATIONS

	METALLIC KNOB (on request)	PLASTIC KNOB
Temperature range	-40 °C to +85 °C	
Climatic category	40 / 85 / 56	
Sealing	Sealed container and panel sealed	
Protection grades	IP67	

MARKING

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

CONTROL KNOB

Black metallic knob (NM). On request, please consult Vishay.
Black plastic knob (NP).

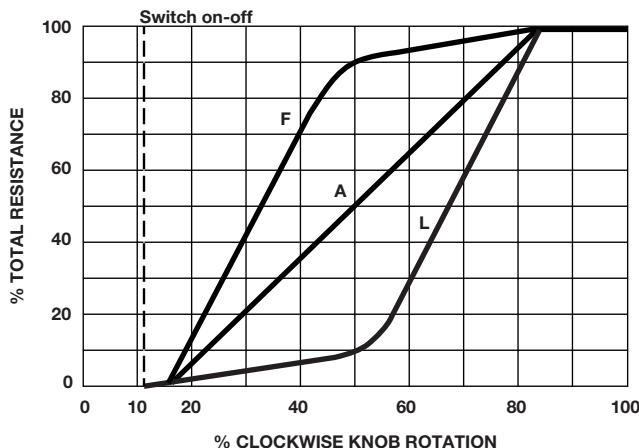
PACKAGING

- 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.

SWITCH OPTION

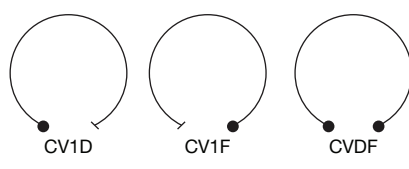
ON / OFF switch	Actuation in counter clockwise between terminal a and terminal b	
Switching current	P16F	100 mA max.
	P16AF, version for audio professional application	1 mA max.
Switching actuation torque	3 Ncm typical	
Switching actuation travel	30° ± 5°	
Dielectric strength terminal to terminal (RMS)	1000 V	
Insulation resistance between contacts	10 ⁶ MΩ	
Switch mechanical endurance	10 000 cycles	
1 cycle	ON - OFF - ON	
Ordering information (special code)	RSD	



KNOB MARKING OPTIONS		
SPECIAL NUMBER	MARKING	EXAMPLE IMAGES
On request: several marking options on the top face of the knob		
F2	10 graduations	
F3	5 graduations	
F4	Gradient	
F5	Light	
F6	Fan	
F7	Temperature	
F8	Volume	
(Special code)	Other on demand	

P16F STANDARD RESISTANCE ELEMENT DATA						
STAN- DARD RESIS- TANCE VALUES	LINEAR TAPER			LOG TAPER		
	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
22	1	4.69	213			
47	1	6.85	146			
100	1	10	100	0.5		
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
47K	1	217	4.61	0.5	105	4.77
100K	1	316	3.16	0.5	153	3.26
220K	0.56	350	1.59	0.5	224	2.24
470K	0.26	350	0.75	0.26	332	1.51
1M	0.12	350	0.35	0.12	350	0.74
2.2M	0.05	350	0.16	0.056	350	0.35
4.7M	0.02	350	0.07			0.16
10M	0.01	350	0.012			

PA16F STANDARD RESISTANCE ELEMENT						
STAN- DARD RESIS- TANCE VALUES	LINEAR TAPER			LOG TAPER		
	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				0.25	10.8	23.1
1K	0.5	22.4	22.4	0.25	15.8	16
2.2K	0.5	33.2	15.1	0.25	23.5	11
4.7K	0.5	48.5	10.3	0.25	34.3	7
10K	0.5	70.7	7.07	0.25	50.0	5.0
22K	0.5	105	4.77	0.25	74	3.4
47K	0.5	153	3.26	0.25	108	2.3
100K	0.5	224	2.24	0.25	158	1.6
220K	0.5	332	1.51	0.25	235	1.1
470K	0.26	350	0.74	0.25	343	0.7
1M	0.12	350	0.35			

DETENT OPTION (haptic technology)		
Detent option is a positive tactile feedback. On request: the detent mechanism is housed in the P16 Mechanical endurance: 10 000 cycles One detent in CCW position (CV1D) One detent in CW position (CV1F) One detent in CW position and CCW position (CVDF)	Ordering information (special code): CV1D One detent in CCW position CV1F Detent in CW position CVDF Detent in CW position and CCW position	



PART NUMBER DESCRIPTION (for information only)

P16F	NP	22 k Ω	20 %	A	
MODEL	STYLE	VALUE	TOLERANCE	TAPER	SPECIAL

ACCESSORIES

Potentiometers are delivered with accessories (nut, washer...)

Additional Accessories (to order separately)	www.vishay.com/doc?51051
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Control knobs	www.vishay.com/doc?51101
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RELATED DOCUMENTS

APPLICATION NOTES

Potentiometers and Trimmers	www.vishay.com/doc?51001
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Guidelines for Vishay Sfernice Resistive and Inductive Components	www.vishay.com/doc?52029
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Capabilities and Custom Options	www.vishay.com/doc?48493
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