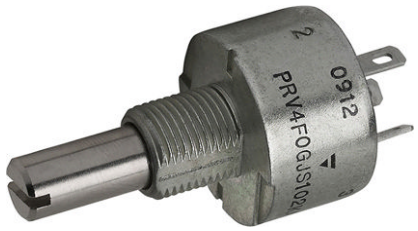
Industrial Potentiometer



FEATURES

- High power rating 2 W at 70 °C
- Low contact resistance variation (1 % typical)
- Robust nickel plated brass shaft
- Use of faston 2.86 connections
- Cermet element
- Center detent option (haptic technology)
- Test according to CECC 41000 or IEC 60393-1
- Electrical performance in accordance with MIL-PRF-94 standards
- Construction: fully sealed
- Industrial grade
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

RoHS COMPLIANT

LINKS TO ADDITIONAL RESOURCES

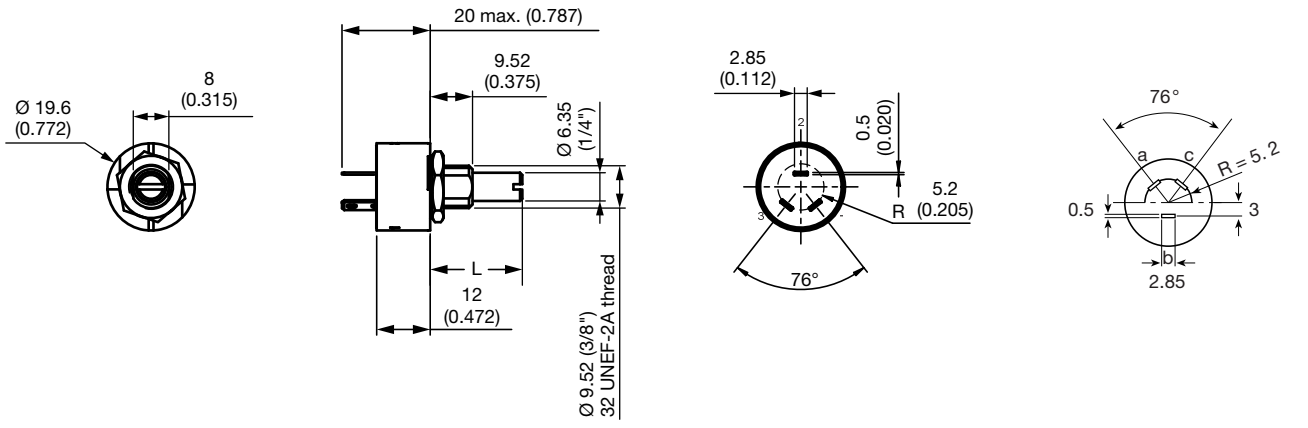
3D Models

Capabilities and Custom Options

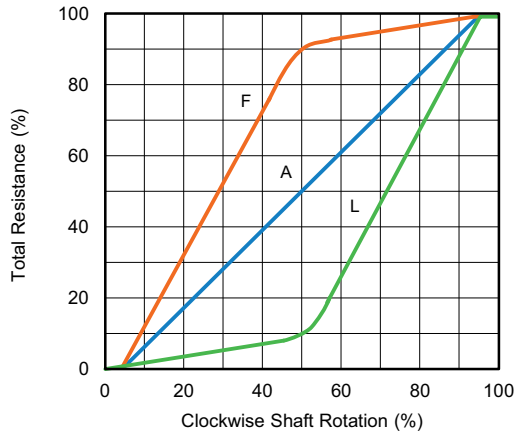
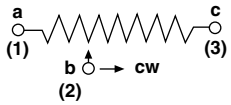
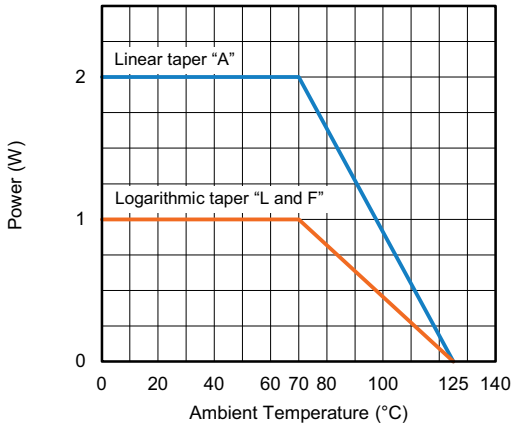
QUICK REFERENCE DATA	
Multiple module	No
Switch module	n/a
Detent module	Yes
Special electrical laws	A: linear, L: logarithmic, F: reverse logarithmic
Sealing level	IP 67
Lifespan	25K cycle

DIMENSIONS in millimeters (inches) ± 0.5 mm (± 0.02")

PRV4F



Length L	1/2"	7/8"	2"
Shaft code	GBS	GJS	GRS

ELECTRICAL SPECIFICATIONS		
Resistive element		Cermet
Electrical travel		270° ± 10°
Resistance range	Linear taper	20 Ω to 10 MΩ
	Logarithmic taper	100 Ω to 2.5 MΩ
Standard series		1 - 2 - 2.5 - 5
Tolerance	Standard	± 20 %
	On request	± 10 %
Taper		
Circuit diagram		
Power rating	Linear	2 W at 70 °C
	Logarithmic	1 W at 70 °C
		
Temperature coefficient (typical)		± 300 ppm/°C
Limiting element voltage (linear law)		500 V
Contact resistance variation (typical)		1 % Rn or 3 Ω
End resistance		4 Ω
Dielectric strength (RMS)		1500 V
Insulation resistance (500 V_{DC})		10^4 MΩ
Independent linearity (typical)		5 %

STANDARD RESISTANCE ELEMENT DATA

RESISTANCE CODE	STANDARD RESISTANCE VALUES	LINEAR TAPER			LOGARITHMIC TAPER		
		MAX. POWER AT 70 °C	MAX. WORKING VOLTAGE	MAX. CUR. THROUGH ELEMENT WIPER	MAX. POWER AT 70 °C	MAX. WORKING VOLTAGE	MAX. CUR. THROUGH ELEMENT WIPER
	Ω	W	V	mA	W	V	mA
200	20	2	6.32	316			
250	25	2	7.07	283			
500	50	2	10.00	200			
101	100	2	14.14	141	1	10.0	100
201	200	2	20.00	100.0	1	14.1	70.7
251	250	2	22.36	89.4	1	15.8	53.2
501	500	2	31.62	53.2	1	22.4	44.7
102	1K	2	44.72	44.7	1	31.5	31.6
202	2K	2	63.25	31.6	1	44.7	22.4
252	2.5K	2	70.71	28.3	1	50.0	20.0
502	5K	2	100	20.00	1	70.7	14.1
103	10K	2	141	14.14	1	100	10.0
203	20K	2	200	10.00	1	141	7.07
253	25K	2	224	6.04	1	158	6.32
503	50K	2	315	6.32	1	224	4.47
104	100K	2	447	4.47	1	315	3.16
204	200K	1.25	500	2.50	1	447	2.24
254	250K	1.00	500	2.00	1	499	2.00
504	500K	0.50	500	1.00	0.50	500	1.00
105	1M	0.25	500	0.50	0.25	500	0.50
205	2M	0.13	500	0.25	0.13	500	0.25
255	2.5M	0.10	500	0.20	0.10	500	0.20
505	5M	0.05	500				
106	10M	0.03	500				

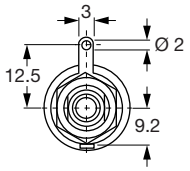
MECHANICAL SPECIFICATIONS

Mechanical travel	300° ± 5°
Operating torque / typical value	2 Ncm (2.83 oz.-inch)
End stop torque	70 Ncm max. (6 lb-inch max.)
Tightening torque of mounting nut	200 Ncm max. (17.3 lb-inch max.)
Unit weight	23 g to 32 g max. (0.82 oz. to 1.14 oz.)

ENVIRONMENTAL SPECIFICATIONS

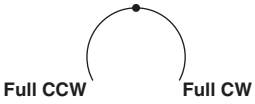
Temperature range	-55 °C to +125 °C
Climatic category	55/125/10
Sealing	Fully sealed - container IP 67

OPTIONS

Special feature command shaft	Length is measured from the mounting surface to the free end of the shaft. The screwdriver slot is aligned with the wiper within ± 10°. Special shafts are available, in accordance to drawings supplied by customers. We recommend that customers should not machine tool shafts, in order to avoid damage. Bending or torsion of terminals should also be avoided.
PRV4 LPRP - with locating peg	

CENTER DETENT (haptic technology)

- Positive tactile feedback with stable position in mid mechanical travel
- Output ratio 50 % ± 10 %
- Rotational life: 10 000 actuations



ORDERING INFORMATION (first order only)

CV1M

MARKING

- Vishay trademark
- Full ordering information (see Ordering Information table)
- Manufacturing date
- Marking of terminals 1, 2, 3

PERFORMANCE

TESTS	CONDITIONS	TYPICAL VALUES AND DRIFTS		
		$\Delta R_T/R_T$ (%)	$\Delta R_{1\text{-}2}/R_{1\text{-}2}$ (%)	OTHER
Electrical endurance	1000 h at rated power 90'/30' - ambient temp. 70 °C	± 3 %	± 5 %	Contact res. variation: < 5 %
Moisture resistance	MIL-STD-202 method 105 10 cycles of 24 h constituted with damp heat - cold - vibrations	± 2 %	± 3 %	Dielectric strength: 100 V_{RMS} Insulation resistance: > 10^4 MΩ
Damp heat, steady state	10 days 40 °C, 93 % HR	± 2 %	± 3 %	Dielectric strength: 100 V_{RMS} Insulation resistance: > 10^4 MΩ
Change of temperature	5 cycles -55 °C at +125 °C	± 1 %	-	$\Delta V_{1\text{-}2}/V_{1\text{-}3}$ < ± 2 %
Mechanical endurance	25 000 cycles	± 5 %	-	-
Shock	MIL-STD-202 method 213/1 100 *g*'s at 6 ms 3 successive shocks in 3 directions	± 1 %	-	$\Delta V_{1\text{-}2}/V_{1\text{-}3}$ < ± 1 %
Vibration	MIL-STD-202 method 204/D 20 *g*'s at 12 h	± 1 %	-	$\Delta V_{1\text{-}2}/V_{1\text{-}3}$ < ± 1 %

Note

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

OPTION RELATIVE TO APPLICATION

"K14" OPTION for AMS applications (avionics, military, and space)

"K17" OPTION for MEDICAL applications

Option guarantees:

- Reinforced incoming inspection on raw material
- Traceability of all materials used in the composition of the product
- 50-year traceability (AMS market) / 20-year traceability (MEDICAL market)
- Customer information for any process or product modification having an impact on the function, mountability, shape or reliability of the product
- Periodic product monitoring
- Dedicated technical specification

ORDERING INFORMATION (part number)

P	R	V	4	F	L	G	J	S	1	0	2	M	L				

MODEL	BUSHING	OPTION	SHAFT	SHAFT END	OHMIC VALUE	TOLERANCE	TAPER	SPECIAL
PRV4	F = Ø 3/8"	L = LPRP 0 = no option	GB GJ GR AP = custom shaft	S = slotted On request: R = round F = flatted D = knurled or C = custom	Linear from 20 Ω to 10 MΩ Logarithmic from 100 Ω to 2.5. MΩ 102 = 1 kΩ	M = 20 % On request: K = 10 %	A = linear L = clockwise logarithmic F = inverse clockwise logarithmic	CV1M = detent option or special code given by Vishay

PART NUMBER DESCRIPTION (for information only)

PRV4	F	L	GJ	S	1K	20 %	L		BO50			e3
MODEL	BUSHING	OPTION	SHAFT	SHAFT END	VALUE	TOLERANCE	TAPER	DETENT OPTION	PACKAGING	AP N°	SPECIAL	LEAD (Pb)-FREE

ACCESSORIES

Potentiometers are delivered with accessories (nut, washer...)	
Additional Accessories (to order separately)	www.vishay.com/doc?51051
Control knobs	www.vishay.com/doc?51101

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?48485

For technical questions, contact: sferpottrimmers@vishay.com

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