Analog Displacement Sensors for Transportation Applications

FEATURES

- Conductive plastic potentiometer technology
- Use in engine compartment
- Lever drive with return spring
- Wire outputs
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

RoHS COMPLIANT

LINKS TO ADDITIONAL RESOURCES

3D Models

QUICK REFERENCE DATA	
Sensor type	ROTATIONAL, conductive plastic
Output type	Output by wires
Market appliance	Transportation
Dimensions	39.2 mm (or 42 mm, or 47 mm) x 31.5 mm (or 34.2 mm) x 23.37 mm

ELECTRICAL SPECIFICATIONS	
PARAMETER	
Total electrical travel	94° ± 2°
Independent linearity standard	± 1.5 %
Total resistance (R_n)	3.85 kΩ ± 20 %
Output smoothness	< 0.1 % (NFC 93255)
Power rating at +40 °C	0.5 W
Power rating at +125 °C	0.05 W
Wiper current limiting resistance (R_p)	1.7 kΩ ± 20 %
Recommended wiper current	< 100 µA
Maximum wiper current	15 mA for 1 min
Recommended load impedance	≥ 100 R_n

MECHANICAL SPECIFICATIONS	
PARAMETER	
Mechanical travel	125° ± 4°
Lever return torque at start of travel	≥ 1 N cm
Lever return torque at end of travel	≤ 10 N cm
Stop strength	60 N cm
Lever return	Counterclockwise
Protection class	See “Specific Characteristics” table
Mounting screw tightening torque	1.2 N m maximum

PERFORMANCE	
PARAMETER	
Operating temperature range	-40 °C to +125 °C
Storage temperature range	-55 °C to +135 °C
Vibrations	Severity 10 Hz to 2000 Hz, 10 mm or 50 *g*
Life	See “Specific Characteristics” table
Micro-movements (dither stroke)	> 50M cycles

For technical questions, contact: mcbprecisionpot@vishay.com

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SAP PART NUMBERING GUIDELINES

MODEL	TYPE	LEVER TYPE	VALUE	ANGLE	LEADS	PACKAGING
PMR4	03 23 02 22 04 24 01 21 11 31 12 16 26 18 28 (see “Specific Characteristics)	A = lever A C = lever C	392 = 3K9	094	W = wire	C = 20 pcs G = 100 pcs P = 500 pcs

SPECIFIC CHARACTERISTICS

SENSOR TYPE	LIFE		PROTECTION CLASS	PACKAGE TYPE (1)
	MICRO-MOVEMENTS (dither stroke)	NUMBER OF CYCLES ELECTRICAL TRAVEL		
403	10×10^6	5×10^6	IP64	1
423	10×10^6	5×10^6	IP64	2
402	10×10^6	5×10^6	IP64	3
422	10×10^6	5×10^6	IP64	4
404	10×10^6	5×10^6	IP66	1
424	10×10^6	5×10^6	IP66	2
401	10×10^6	5×10^6	IP66	3
421	10×10^6	5×10^6	IP66	4
411	50×10^6	5×10^6	IP64	1
431	50×10^6	5×10^6	IP64	2
412	50×10^6	5×10^6	IP64	3
416	50×10^6	5×10^6	IP66	1
426	50×10^6	5×10^6	IP66	2
418	50×10^6	5×10^6	IP66	3
428	50×10^6	5×10^6	IP66	4

Notes

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

(1) Package types

1: Little ears Fixation: 2 screws M4 with Ø: 31.5 mm
2: Little tightened ears Fixation: 2 screws M4 with Ø: 31.5 mm
3: Big ears Fixation: 2 screws M4 with Ø: 34 mm
4: Big tightened ears Fixation: 2 screws M4 with Ø: 34 mm

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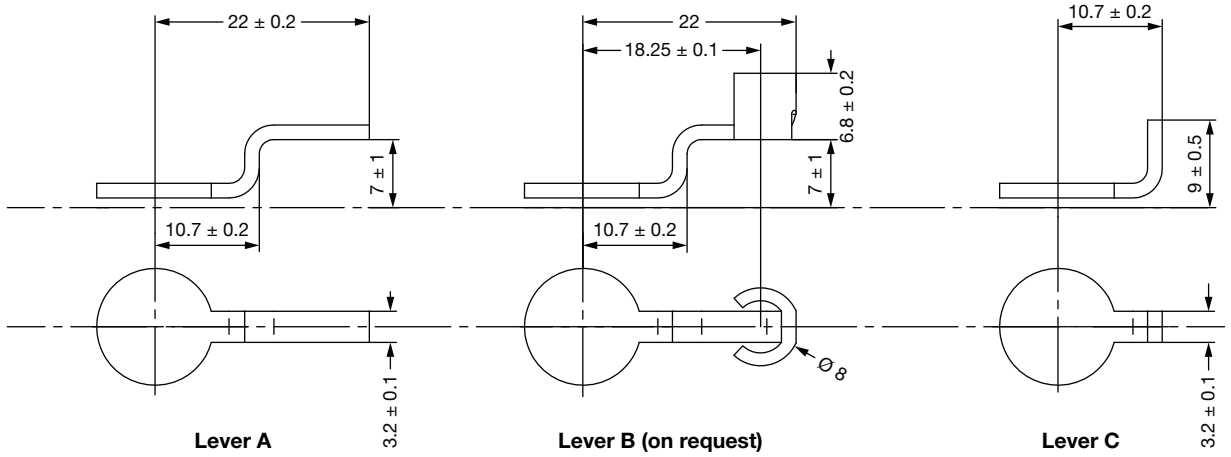
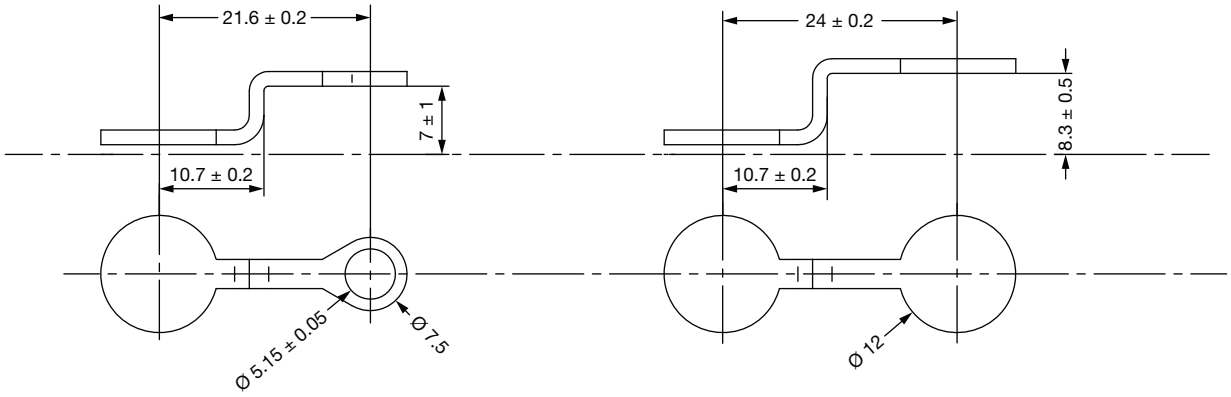
LEVER OPTIONS



Lever A **Lever B (on request)** **Lever C**



Lever D (on request) **Lever E (on request)**

CONNECTIONS

Wire Outputs: -40 °C to +105 °C (3 x 0.93 mm^2 length 300 mm)
Sheathed Wire Outputs: -40 °C to +125 °C optional

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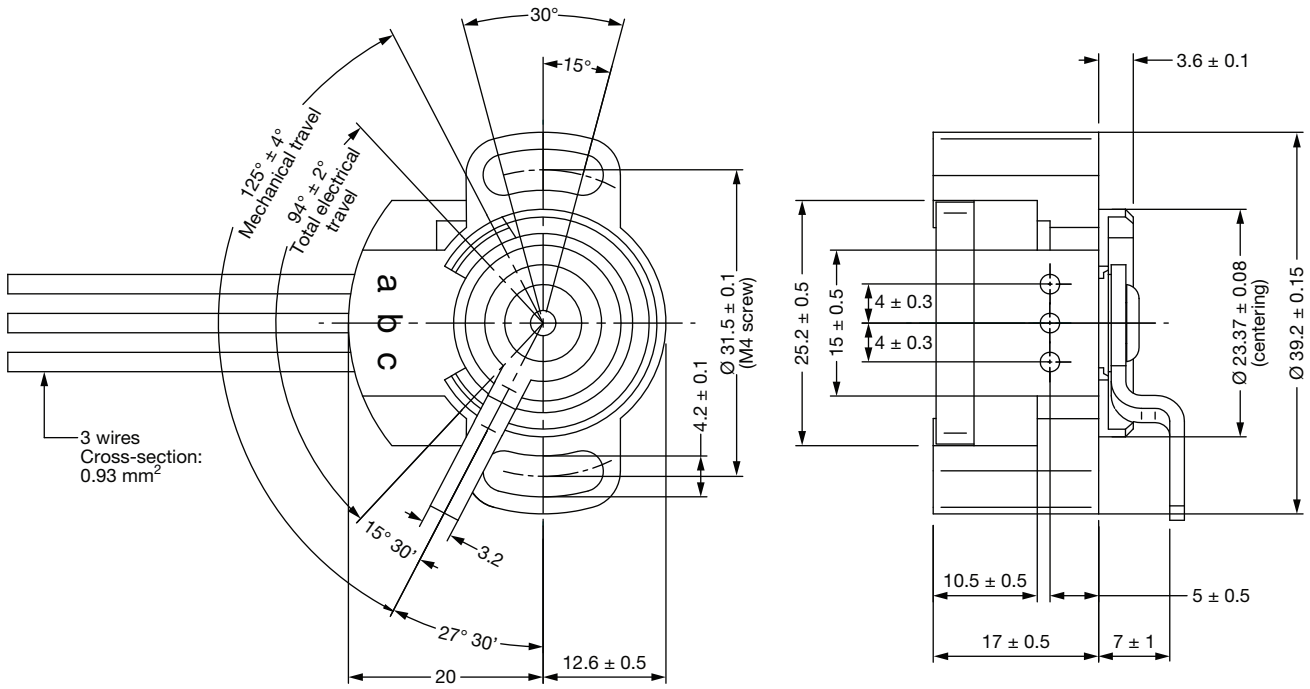
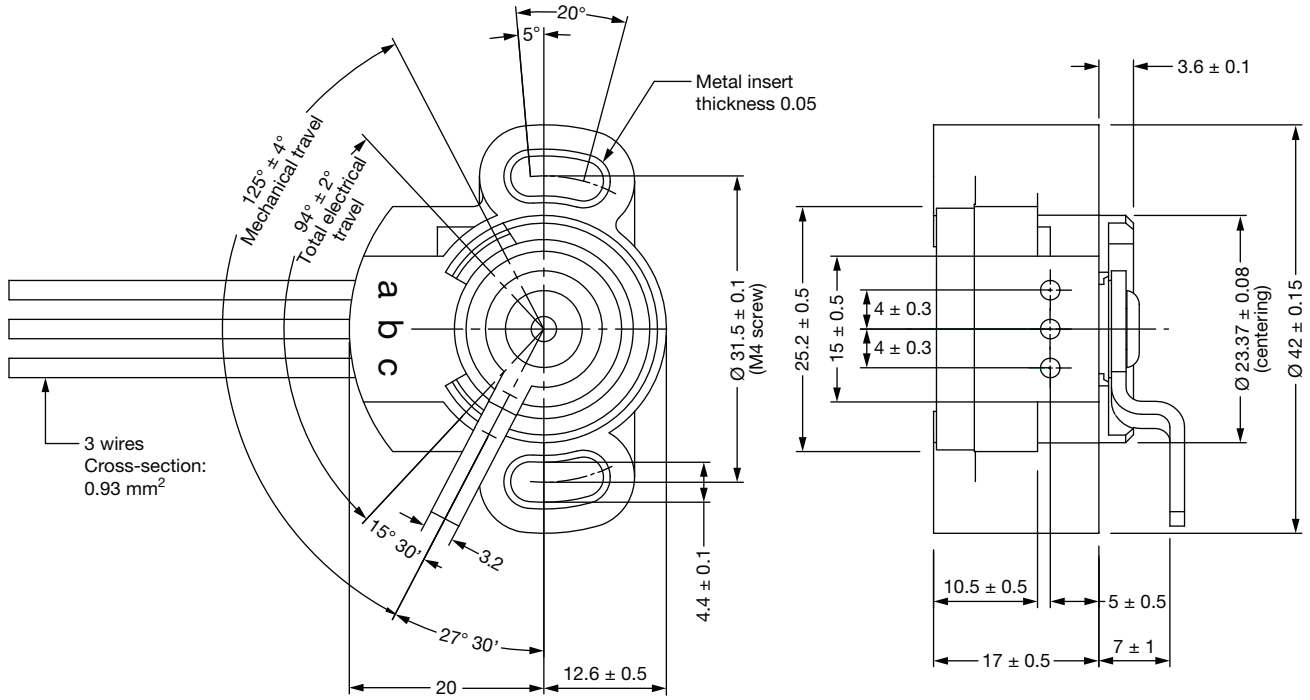
DIMENSIONS in millimeters

PACKAGE TYPE 1 (FOR SENSOR TYPES 403, 404, 411, AND 416)



PACKAGE TYPE 2 (FOR SENSOR TYPES 423, 424, 426, AND 431)



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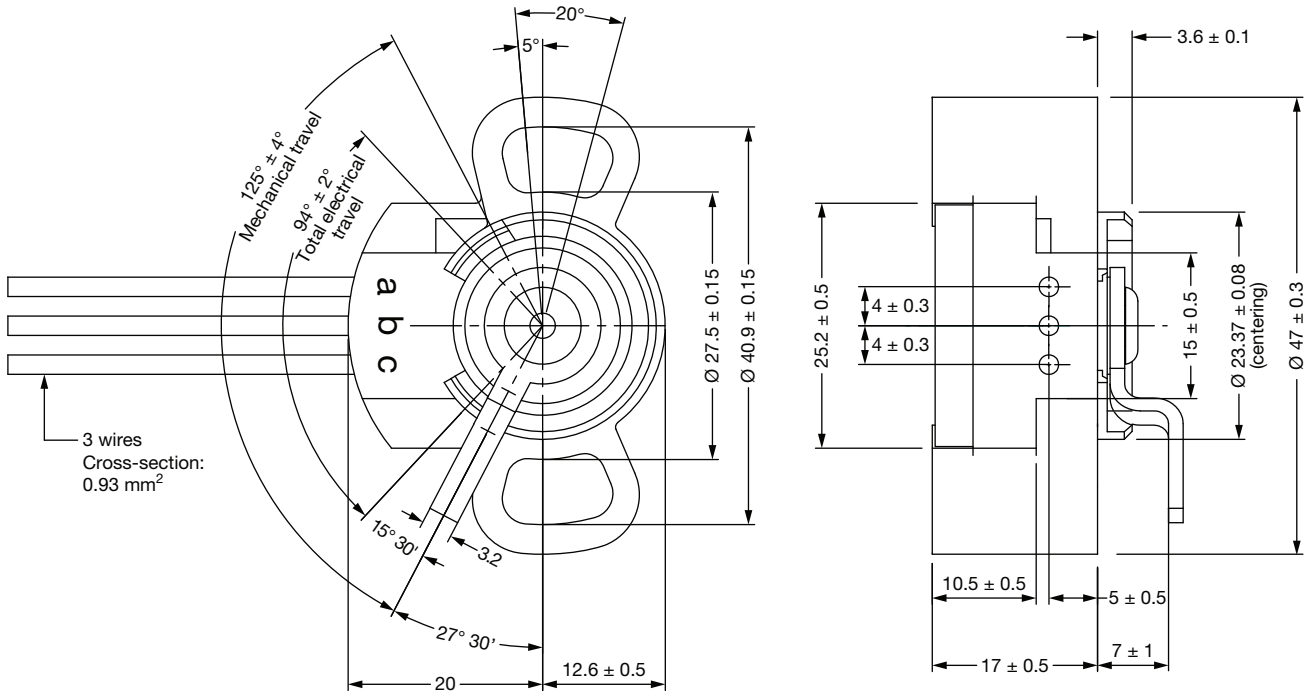
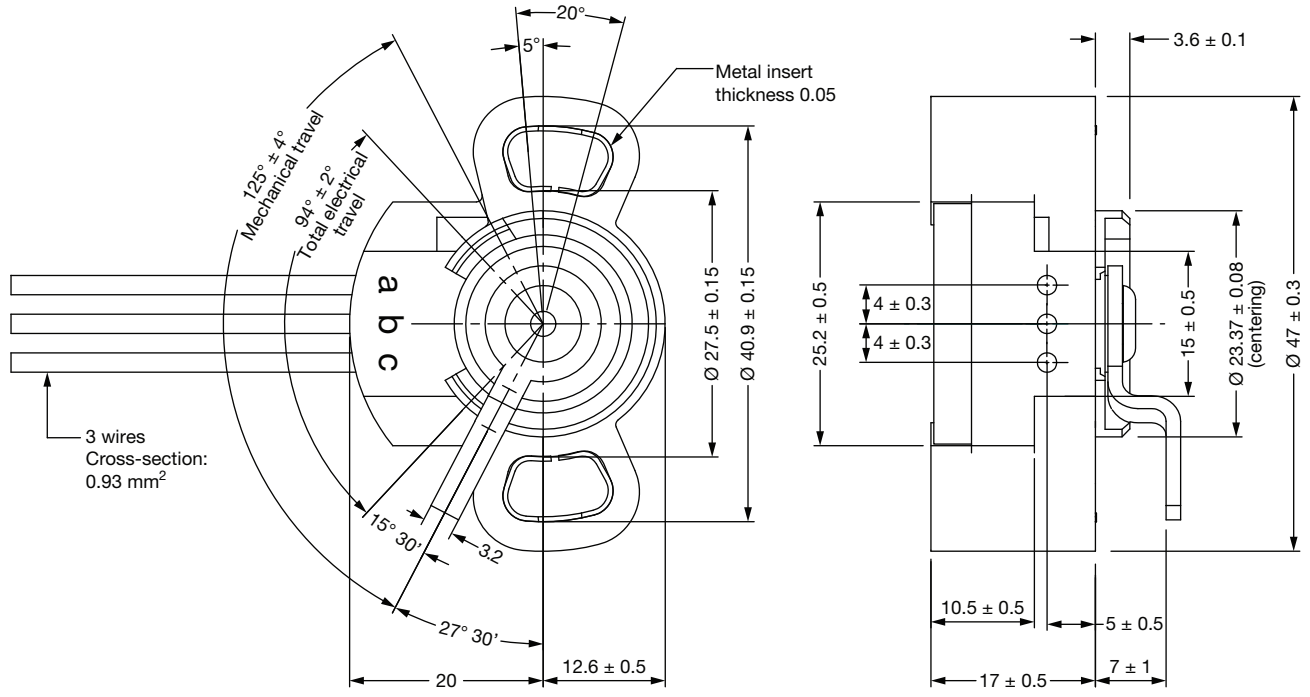
DIMENSIONS in millimeters

PACKAGE TYPE 3 (FOR SENSOR TYPES 401, 402, 412, AND 418)



PACKAGE TYPE 4 (FOR SENSOR TYPES 421, 422, AND 428)



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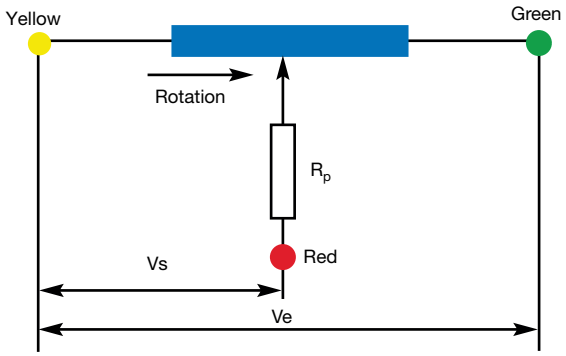
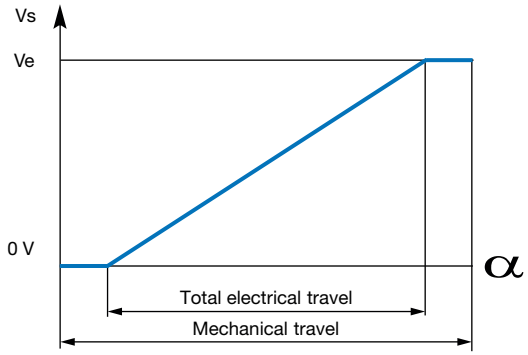
ELECTRICAL DIAGRAM





OPTIONS (on request)

- Other total electrical travel
- Other resistance values
- Other linearity
- No protection resistance (R_p)
- High temperature sheathed wire outputs
- Specific connections
- Clockwise spring lever direction
- Other lever

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