Single-Turn Continuous Rotation Analog Displacement Sensor

FEATURES

- Conductive plastic potentiometer technology, infinite resolution
- Servo mount anodized light alloy housing
- Precious metal contacts
- Stainless steel shaft and bearings
- Applicable standards: NFC 93255, MIL R 39023

QUICK REFERENCE DATA	
Sensor type	ROTATIONAL, conductive plastic
Output type	Output by turrets
Market appliance	Industrial, avionics
Dimensions	1 1/16" (27 mm)

ELECTRICAL SPECIFICATIONS													
PARAMETER													
Theoretical electrical travel (TET)	345° ± 3°												
Theoretical electrical travel (TET) - on request	30°	60°	90°	100°	120°	140°	170°	180°	210°	308°	308°	348°	333° 20’
Useful electrical travel (UET) - on request	30°	44°	70°	90°	120°	140°	170°	100°	210°	140°	180°	342°	300°
Independent linearity standard	± 1 %												
Independent linearity optional	± 0.8 %, ± 0.5 %, ± 0.25 %, ± 0.2 %, ± 0.1 %												
Total resistance (R_n)	4.7 kΩ or 10 kΩ												
Tolerance on R_n	± 20 %												
Output smoothness	≤ 0.1 % (≤ 0.05 % on request)												
Power rating at 70 °C	1.25 W (see “Power Rating Chart”)												
Temperature coefficient	-300 ± 300 ppm/°C												
Wiper current	≤ 1 mA												
Recommended load impedance	≥ 100 R_n for linearity = 1 % ≥ 1000 R_n for linearity ≤ 0.1 %												
Insulation resistance	≥ 1 GΩ at 500 V_{DC} (≥ 10 GΩ at 500 V_{DC} on request)												
Dielectric strength	750 V_{RMS}, 50 Hz, 1 min												

MECHANICAL SPECIFICATIONS	
PARAMETER	
Mechanical rotation	360° continuous
Moment of inertia	≤ 0.4 g cm^2 (for 1 stage), ≤ 0.2 g cm^2 (per additional stage)
Mounting	Standard
Running and starting torque	≤ 12 cN cm (for 1 stage), ≤ 10 cN cm (per additional stage)
Protection class	IP 50
Weight	< 18 g (for 1 stage), < 6 g (per additional stage)

PERFORMANCE	
PARAMETER	
Operating temperature range	-55 °C to +125 °C
Life	25M cycles
Rotation speed (max.)	600 rpm

Note

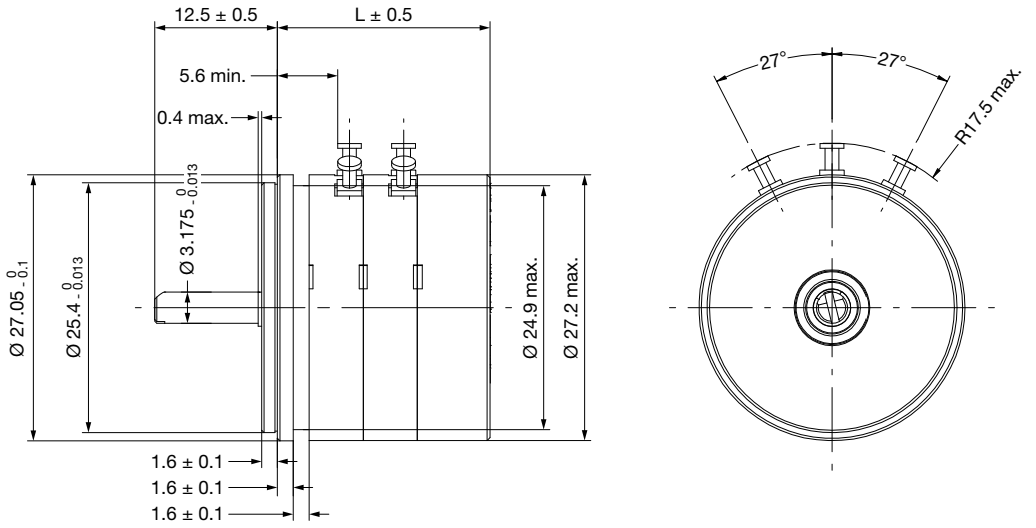
- Nothing stated herein shall be construed as a guarantee of quality or durability.

For technical questions, contact: mcbprecisionpot@vishay.com

SAP PART NUMBERING GUIDELINES

MODEL	SIZE (mm)	GANG	VALUE	LINEARITY	ANGLE	PACKAGING
POPR	27	1 2 3 4 5 6	472 = 4K7 103 = 10K	A = 1 % B = 0.5 % C = 0.25 % D = 0.1 %	345	B = box

DIMENSIONS in millimeters

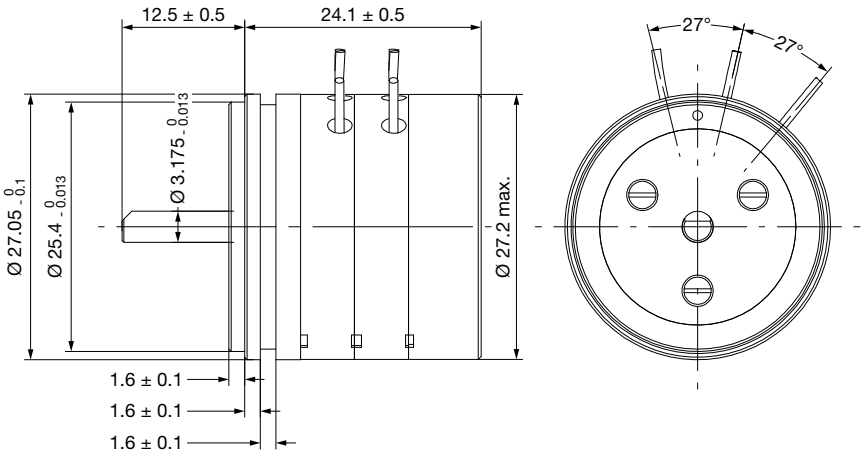


Number of cups	1	2	3	4	5	6
L	16	21.5	27	32.5	38	43.5

DESIGNS ON REQUEST

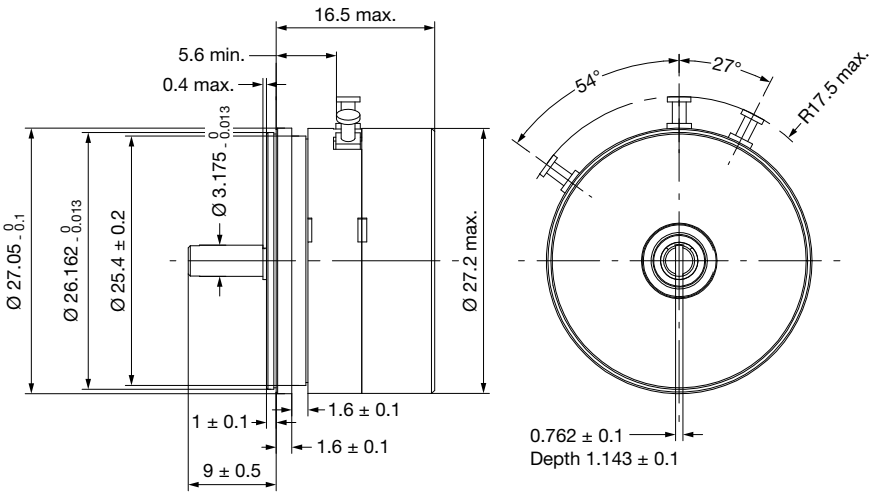
DIMENSIONS in millimeters

OPTION 1

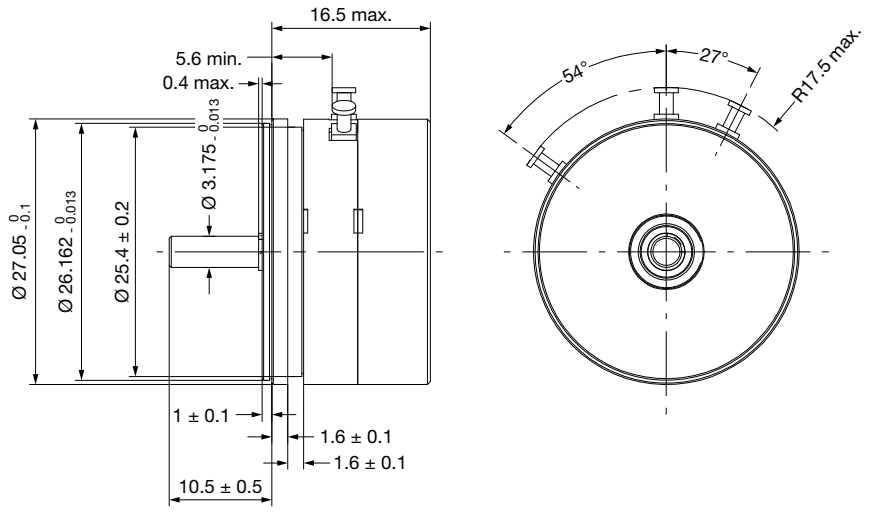


DIMENSIONS in millimeters

OPTION 2

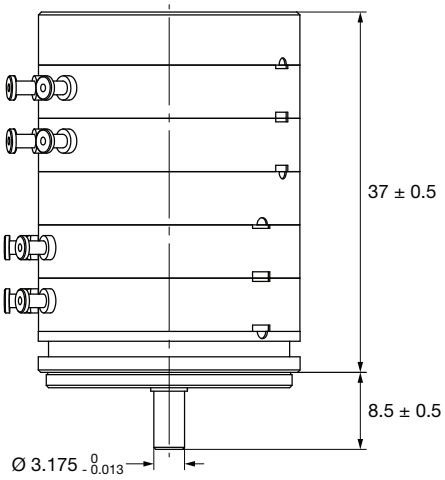


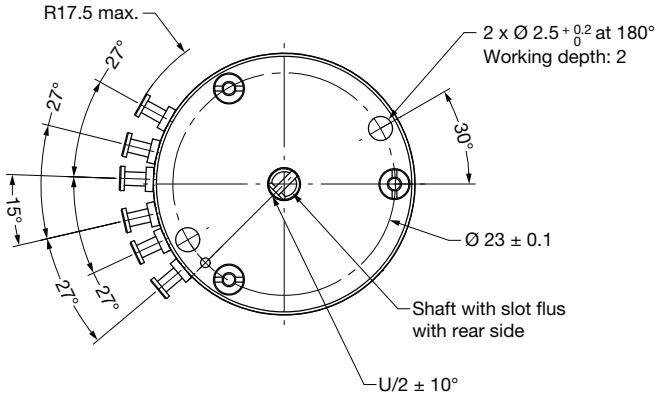
OPTION 3



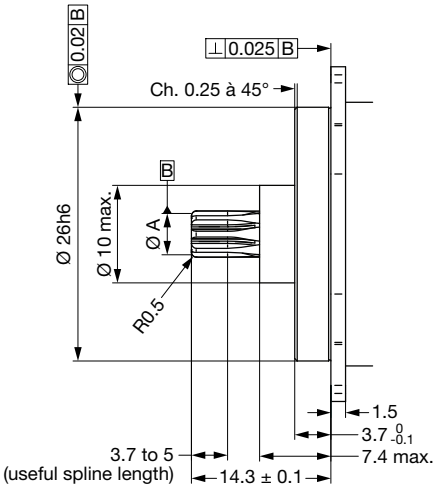
DIMENSIONS in millimeters

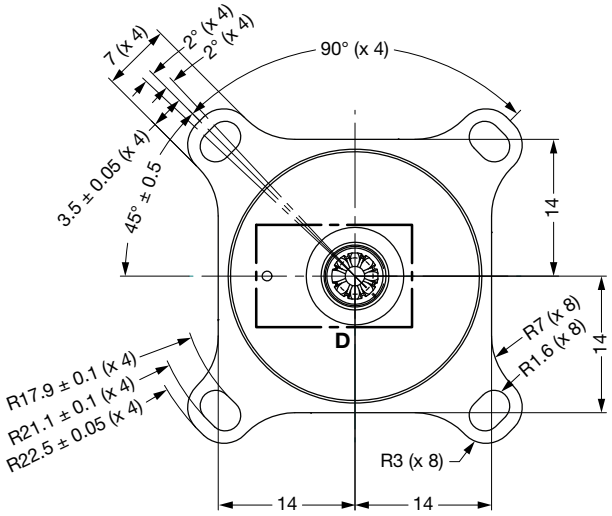
OPTION 4: 4 CUPS WITH INTERMEDIATE HOUSING





OPTION 5: FLANGE 4 EARS AND SHAFT OF COUPLING (EXAMPLE OF CUSTOMIZATION, OTHER VARIANTS ALSO FEASIBLE)



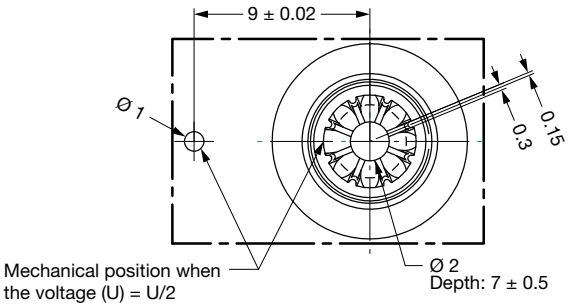


External involute spline data per ANSI B92.1A

Fillet root side fit table 38
Number of teeth: 8 (-1)
Spline pitch: 48/96
Pressure angle: 30°
Base diameter: 3.6661852
Pitch diameter (A): 4.23333
Major diameter: 4.7244 / 4.7752
Form diameter: 3.81
Minor diameter: 2.921 min.
Circular tooth thickness
- Maximum effective: 0.8910
- Minimum actual: 0.8525
- Maximum actual: 0.8694

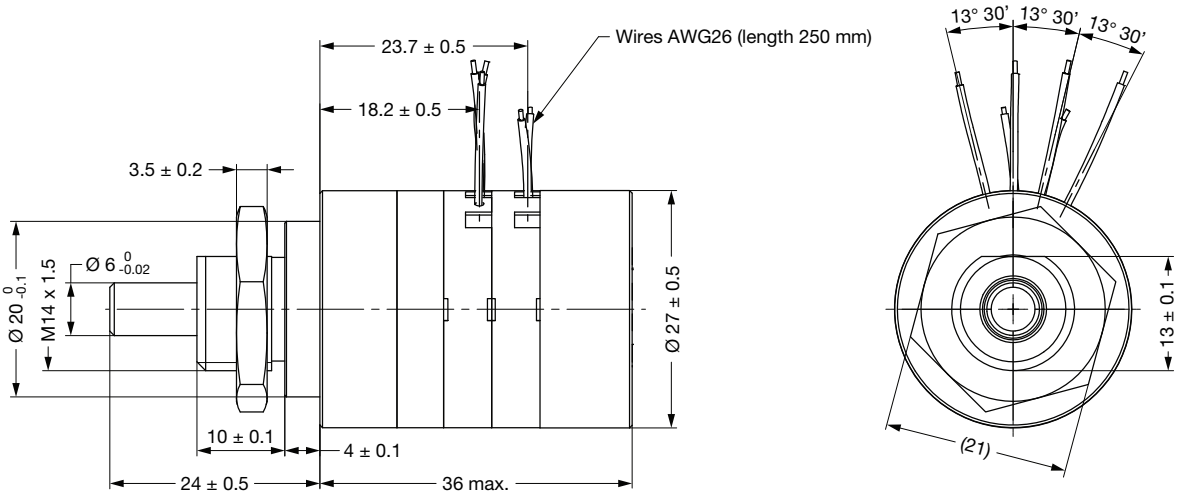
Minimum measurements over pins: 5.79374 / 5.8166
Pin diameter: 1.016 (ref.)
Fillet radius minimum: 0.1778

Detail D

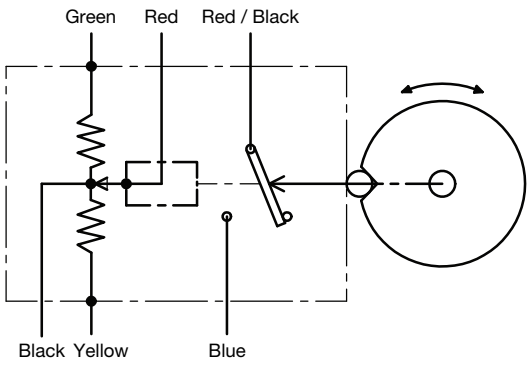


DIMENSIONS in millimeters

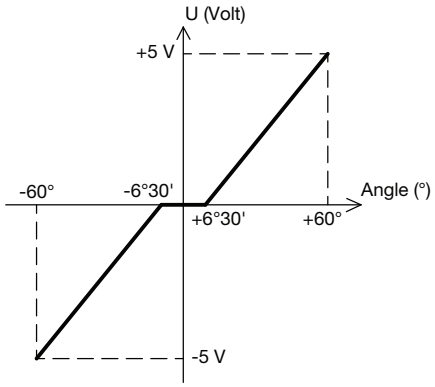
OPTION 6: DOUBLE FUNCTIONS (POTENTIOMETER FUNCTION AND SWITCH) WITH RETURN SPRING



Schematic Diagram

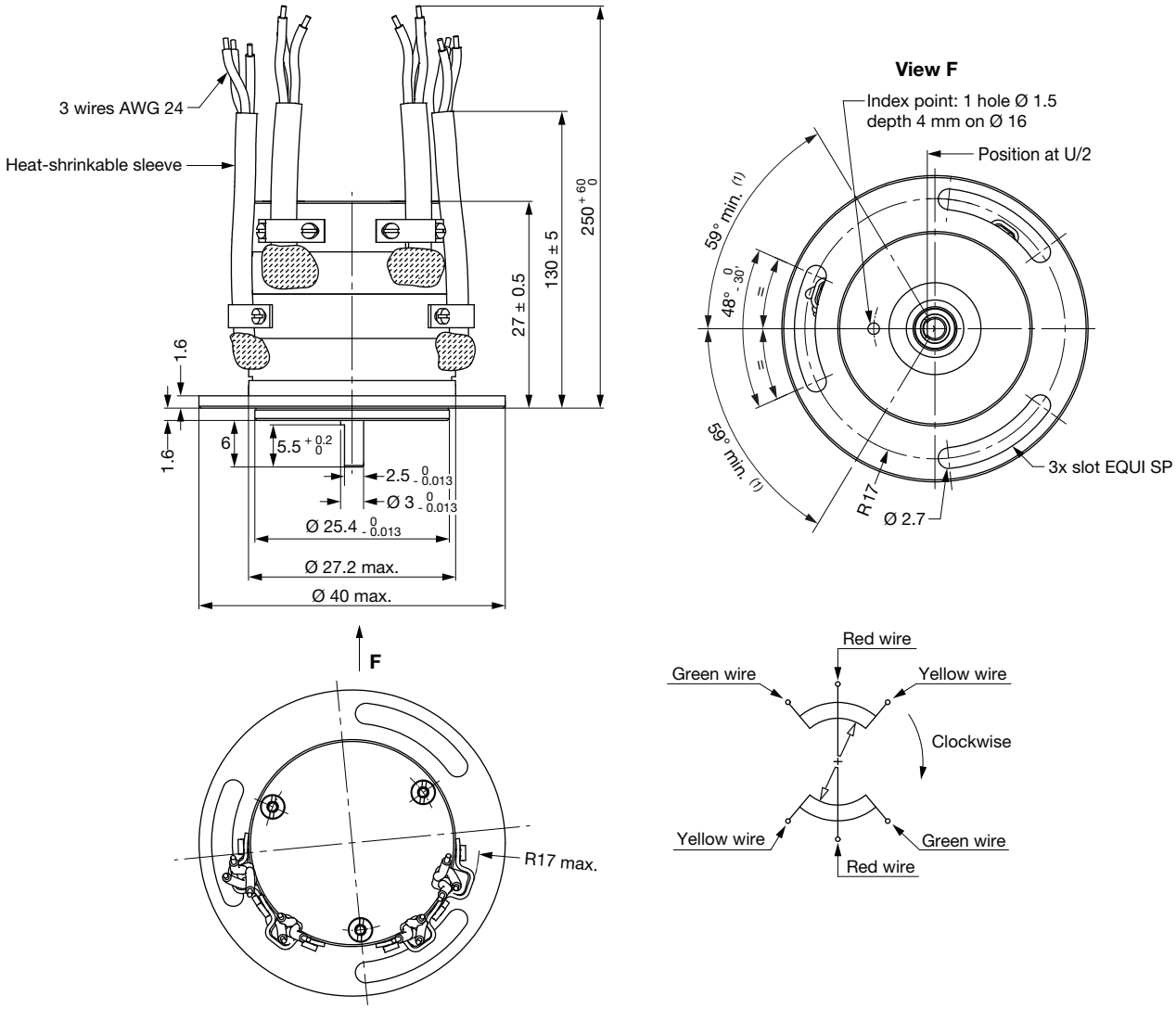


Electrical Function



DIMENSIONS in millimeters

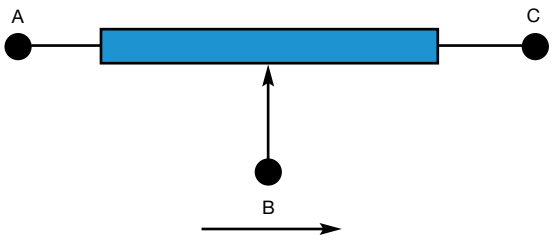
OPTION 7: 4 FUNCTIONS (INCLUDING 2 FUNCTIONS/CUP AND FLANGE ALLOWING AN EASY ASSEMBLY ON CUSTOMER DEVICE)



Note

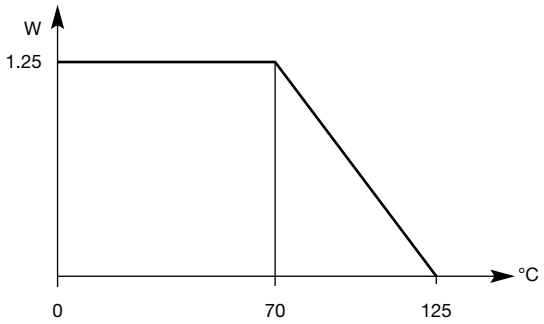
(1) Angle before mechanical stop

ELECTRICAL DIAGRAM



Clockwise direction viewed from control shaft side

POWER RATING CHART



OPTIONS (on request)

- Other ohmic value: 1.5 kΩ; 2 kΩ; 5 kΩ; 50 kΩ
- Other tolerances on R_n: ± 10 %
- Other linearities: ± 0.065 %
- Other theoretical electrical travel
- Connectors (center tap)
- Through shaft
- Insulating resistance: ≥ 10 GΩ at 500 V_{DC}
- Shaft: without flat surface (without D shape), other specific design feasible (e.g. lamella design)
- Total length (old model with one gang): 14 mm in place of 16 mm
- Type of wiper: 5 strands or 2 or 3 lamellas
- Protection class: IP 65 (front flange)
- Electrical reference: 0.5 U ± 0.1 % U
- Electrical phasing between cups: ± 0.1 % or 0.03 % at U/2
- Mechanical reference: U/2 printing flange / shaft at ± 10° (by printing or machined hole on the flange)
- Intensity accidental = 5 mA
- Function: sine and / or cosine with accuracy ± 1 %
- Flange: with ears in place of synchro mechanical fixation

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