Single Turn Servo Mount Hall Effect Sensor in Size 05 (12.7 mm)



FEATURES

- Accurate linearity down to: ± 0.5 %
- All electrical angles available up to: 360° (no dead band)
- Long life: Greater than 50M cycles
- Non contacting technology: Hall effect
- Smallest size available
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

RoHS COMPLIANT

QUICK REFERENCE DATA

Sensor type	ROTATIONAL, single turn hall effect
Output type	Wires
Market appliance	Professional
Dimensions	½" (12.7 mm) dia.

ELECTRICAL SPECIFICATIONS

PARAMETER	STANDARD	SPECIAL
Electrical angle	90°, 180°, 270°, 360°	Any other angle upon request
Linearity	± 1 %	± 0.5 %
Supply voltage	5 V_{DC} ± 10 %	Other upon request
Supply current	10 mA typical/16 mA max.	16 mA for PWM output
Output signal	Analog ratiometric 10 % to 90 % of V_{supply} or PWM 1 kHz, 10 % to 90 % duty cycle	Other upon request
Over voltage protection	+20 V_{DC}	
Reverse voltage protection	-10 V_{DC}	
Load resistance recommended	Min. 1 kΩ for analog output and PWM output	
Hysteresis static	< 0.2° max.	

MECHANICAL SPECIFICATIONS

PARAMETER	
Mechanical travel	360° continuous
Bearing type	2 ball bearings
Standard	IP 51; other on request

ORDERING INFORMATION/DESCRIPTION

50 SHE	1	A	1	W	A	2S13	XXXX	BO 10	e1
MODEL	NUMBER OF CUP	LINEARITY	ELECTRICAL ANGLE	OUTPUT TYPE	OUTPUT SIGNAL	SHAFT TYPE	SPECIAL REQUEST	PACKAGING	LEAD FINISH
	1:1 Cup	**A:** ± 1 % **B:** ± 0.5 %	**1:** 90° **2:** 180° **3:** 270° **4:** 360° **9:** Other angles	**W:** Wires **Z:** Custom	**A:** Analog CW **B:** Analog CCW **C:** PWM CW **D:** PWM CCW **Z:** Other output	**2:** 3.175 mm **9:** Special **P:** Plain **S:** Slotted **Z:** Other type		Box of 10 pieces	

Shaft length from mounting face, standard: 13 mm

SAP PART NUMBERINGGUIDELINES

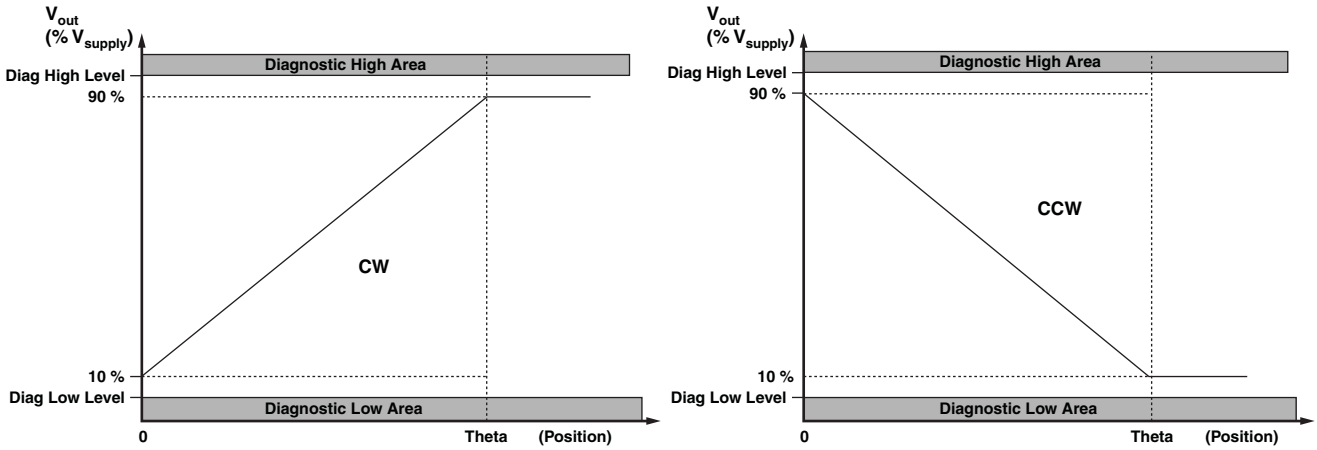
50 SHE	1	B	9	Z	C	2P22	XXXX
MODEL	**1:** 1 cup OUTPUT SIGNAL	LINEARITY	ELECTRICAL ANGLE	OUTPUT TYPE	OUTPUT SIGNAL	SHAFT TYPE	SPECIAL REQUEST

For technical questions, contact: sferprecisionpot@vishay.com

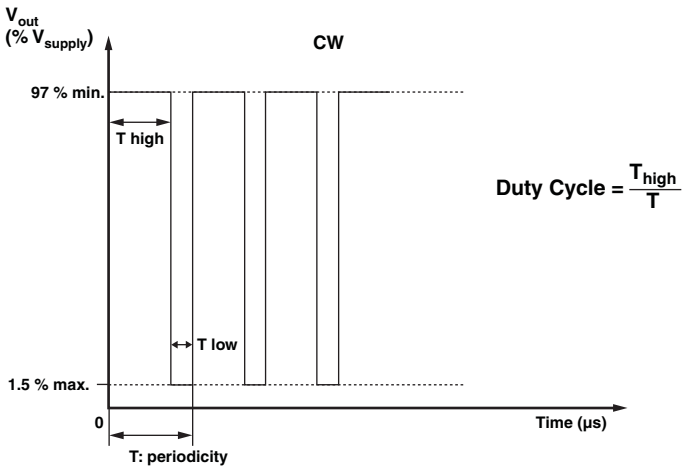
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V_{OUT} ANALOG

Operating temperature	85 °C	125 °C
Diagnostic high level	96 % min.	96 % min.
Diagnostic low level	2 % max.	4 % max.



V_{OUT} PWM



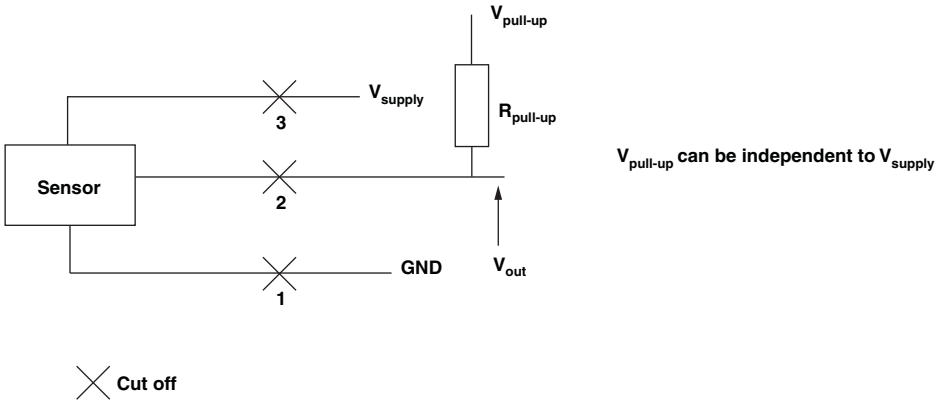
$$\text{Duty Cycle} = \frac{T_{high}}{T}$$

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DIAGNOSTIC MODES

FAILURE	V_{out} ANALOG $R_{pull-up}$	V_{out} ANALOG $R_{pull-down}$	V_{out} PWM $R_{pull-up}$ = 1 kΩ $V_{pull-up} = V_{supply}$ = 5 V
1: Broken GND	Diagnostic high area	Diagnostic low area	> 97 % V_{supply} without modulation
2: Broken V_{out}	Diagnostic high area	Diagnostic low area	> 97 % V_{supply} without modulation
3: Broken V_{supply}	Diagnostic high area	Diagnostic low area	> 97 % V_{supply} without modulation
Over Voltage V_{supply} > 7 V	Diagnostic high area	Diagnostic low area	> 97 % V_{supply} without modulation
Under Voltage V_{supply} < 2.7 V	Diagnostic high area	Diagnostic low area	> 97 % V_{supply} without modulation



ENVIRONMENTAL SPECIFICATIONS

Vibrations	20 *g* from 10 Hz to 2000 Hz, EN 60068-2-6
Shocks	3 shocks/axis; 50 *g* half a sine 11 ms, EN 60068-2-7
Operating temperature range	-40 °C; +125 °C
Life	> 50M of cycles
Rotational speed (max.)	120 rpm
Immunity to radiated electromagnetic disturbances	200 V/m 150 kHz/1 GHz, IEC 62132-2 part 2 (level A)
Immunity to power frequency magnetic field	200 A/m 50 Hz/60 Hz, EN 61000-4-8 (level A)
Radiated electromagnetic emissions	30 MHz/1 GHz < 30 dBµV/m, EN 61000-6-4 (level A)
Electrostatic discharges	Contact discharges: ± 4 kV Air discharges: ± 8 kV, EN 61000-4-2
MATERIALS	
Housing	Aluminum
Shaft	Stainless steel
Output	3 lead wires (AWG 24)

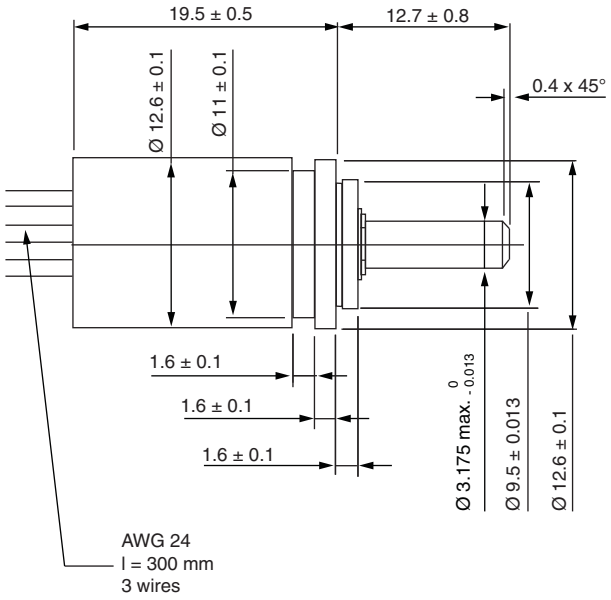
Note

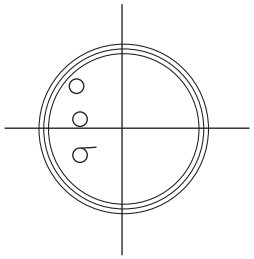
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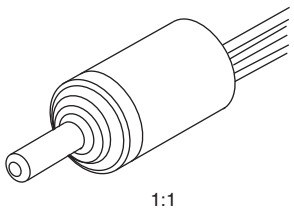
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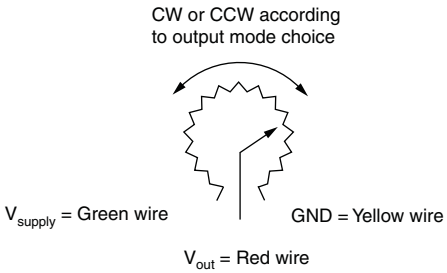
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DIMENSIONS in millimeters









General tolerance: ± 0.5 mm

View from shaft side

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