

Single Turn Bushing Mount Hall Effect Sensor in Size 09 (22.2 mm)



FEATURES

- Accurate linearity down to: $\pm 0.5\%$
- All electrical angles available up to: 360° (no dead band)
- Long life: greater than 10M cycles
- Non contacting technology: Hall effect
- Model dedicated to all applications in harsh environments
- 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	Industrial
Dimensions	7/8" (22.2 mm)

ELECTRICAL SPECIFICATIONS

PARAMETER	STANDARD	SPECIAL
Electrical angle	$90^\circ, 180^\circ, 270^\circ, 360^\circ$	Any other angle upon request
Linearity	$\pm 1\%$	$\pm 0.5\%$
Supply voltage	$5 V_{DC} \pm 10\%$	Other upon request
Supply current	10 mA typical	16 mA for PWM output
Output signal	Analog ratiometric 10 % to 90 % of V_{supply} or PWM 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 k Ω for analog output and PWM output	
Hysteresis	$< 0.35^\circ$	

MECHANICAL SPECIFICATIONS

PARAMETER	
Mechanical travel	360° continuous, stops upon request: $340^\circ \pm 3^\circ$
Bearing type	Sleeve bearing
Standard	IP 50; other on request
Weight	20 g $\pm$ 2 g

ORDERING INFORMATION/DESCRIPTION

351HE	0	A	1	W	A	1S22	XXXX	BO 10	e1
MODEL	FEATURES	LINEARITY	ELECTRICAL ANGLE	OUTPUT TYPE	OUTPUT SIGNAL	SHAFT TYPE	SPECIAL REQUEST	PACKAGING	LEAD FINISH
0:	Continuous rotation and antirotation pin	A: $\pm 1\%$ B: $\pm 0.5\%$	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	0: 6 mm 1: 6.35 mm 2: 3.175 mm 9: Special P: Plain S: Slotted Z: Other type		Box of 10 pieces	
1:	Continuous rotation and no antirotation pin								
2:	Stops at 330° and antirotation pin								
3:	Stops at 330° and no antirotation pin								

Shaft length from mounting face 22 mm to 72 mm max. per step of 5 mm

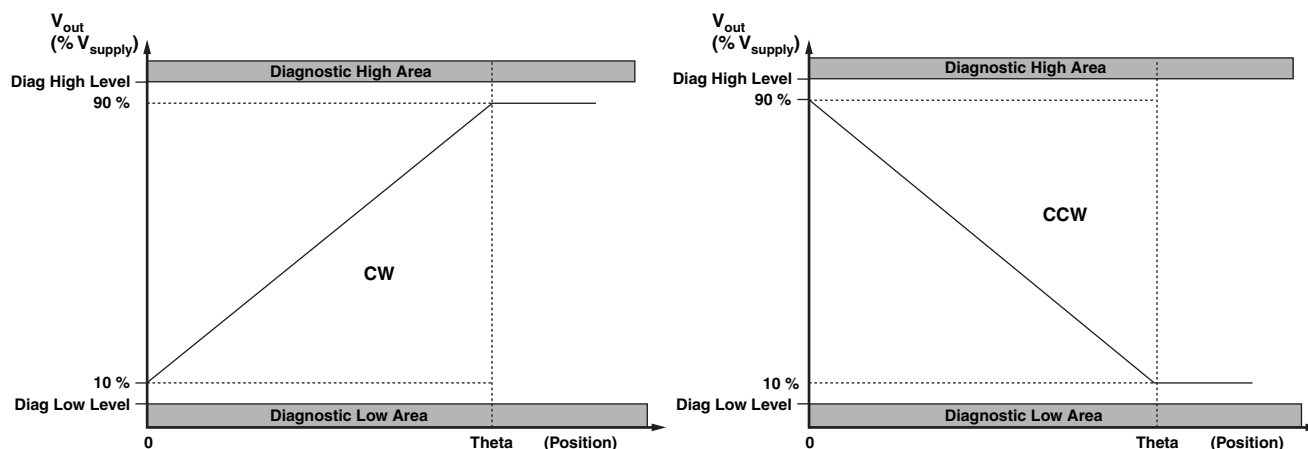
SAP PART NUMBERING GUIDELINES

351HE	1	B	9	Z	C	0P27	XXXX
MODEL	MECHANICAL FEATURES	LINEARITY	ELECTRICAL TYPE	OUTPUT ANGLE	OUTPUT SIGNAL	SHAFT TYPE	SPECIAL REQUEST

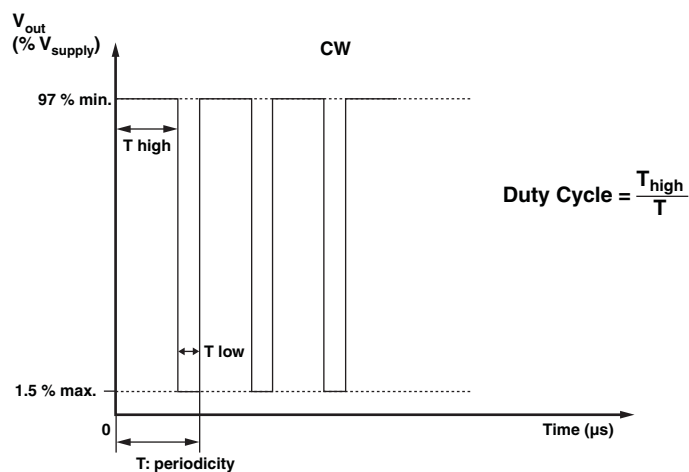


V_{OUT} ANALOG

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



V_{OUT} PWM



**DIAGNOSTIC MODES**

FAILURE	V_{out} ANALOG $R_{pull-up}$	V_{out} ANALOG $R_{pull-down}$	V_{out} PWM $R_{pull-up} = 1\text{ k}\Omega$ $V_{pull-up} = V_{supply} = 5\text{ V}$
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 $V_{supply} > 7\text{ V}$	Diagnostic high area	Diagnostic low area	$> 97\% V_{supply}$ without modulation
Under voltage $V_{supply} < 2.7\text{ V}$	Diagnostic high area	Diagnostic low area	$> 97\% V_{supply}$ without modulation

$\times$ Cut off

$V_{pull-up}$ can be independent to V_{supply}

ENVIRONMENTAL SPECIFICATIONS

Vibrations	20 g from 10 Hz to 2000 Hz
Shocks	3 shocks/axis; 50 g half a sine 11 ms
Operating temperature range	-45 °C; +125 °C
Life	> 10M of cycles
Rotational speed (max.)	120 rpm
Immunity to radiated electromagnetic disturbances	200 V/m 150 kHz/1 GHz
Immunity to power frequency magnetic field	200 A/m 50 Hz/60 Hz
Radiated electromagnetic emissions	30 MHz/1 GHz < 30 dBμV/m
Electrostatic discharges	Contact discharges: $\pm 4\text{ kV}$ Air discharges: $\pm 8\text{ kV}$

MATERIALS

Housing	Thermoplastic housing
Bushing	Brass nickel plated
Shaft	Stainless steel
Output	3 lead wires

BUSHING MOUNT HARDWARE

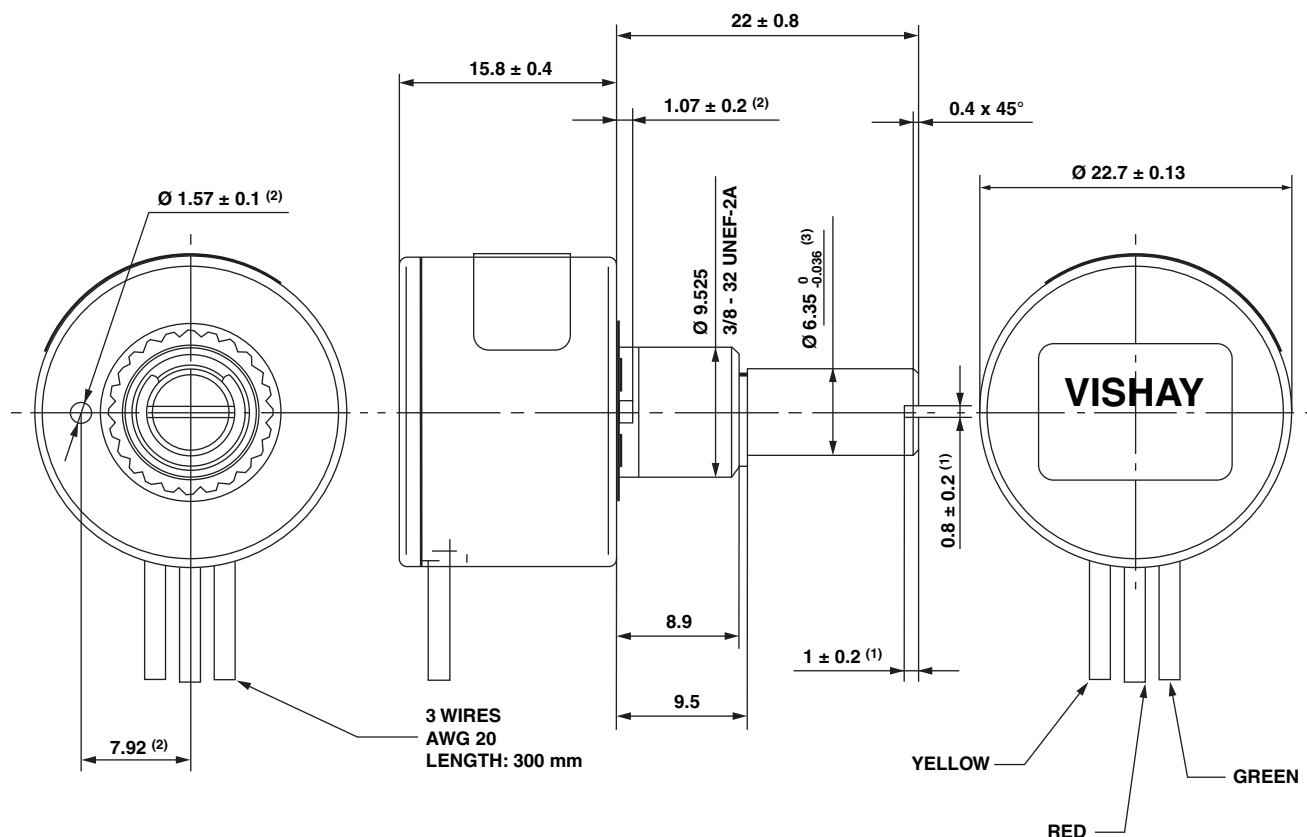
Lockwasher internal tooth	Steel nickel plated
Panel nut	Brass nickel plated

Note

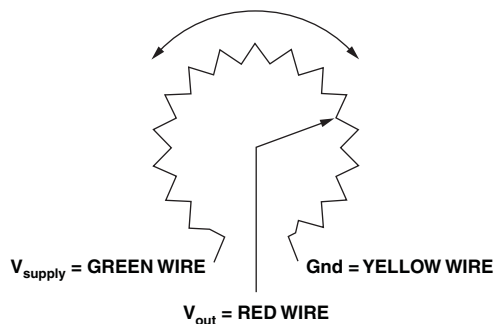
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DIMENSIONS in millimeters



CW OR CCW ACCORDING
OUTPUT MODE CHOICE



VIEWED FROM SHAFT

GENERAL TOLERANCE: $\pm 0.5 \text{ mm}$

Notes

- (1) For version slotted shaft
- (2) For version non turn pin
- (3) For shaft type "1"

MARKING

Unit Identification

Manufacturer's name and complete sap part reference, date code, and wiring correspondence: colors versus connections.



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