

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



DESIGN SUPPORT TOOLS AVAILABLE



QUICK REFERENCE DATA

Sensor type	ROTATIONAL, single turn hall effect
Output type	Wires
Market appliance	Industrial
Dimensions	7/8" (22.2 mm)

FEATURES

- Accurate linearity down to: $\pm 0.5\%$
- All electrical angles available up to: 360° (no dead band)
- Long life: over 20M cycles
- Non contacting technology: Hall effect
- Model dedicated to all applications in harsh environments
- Robust tool machined aluminum housing
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912



RoHS
COMPLIANT

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 ratio metric 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	$< 0.2\%$	

MECHANICAL SPECIFICATIONS

PARAMETER	
Mechanical travel	360° continuous
Bearing type	Sleeve bearing Ball bearing upon request
Standard	IP 50; other on request
Weight	20 g \pm 2 g

ORDERING INFORMATION/DESCRIPTION

631HE	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	
Shaft length from mounting face 22 mm to 72 mm max. per step of 5 mm									

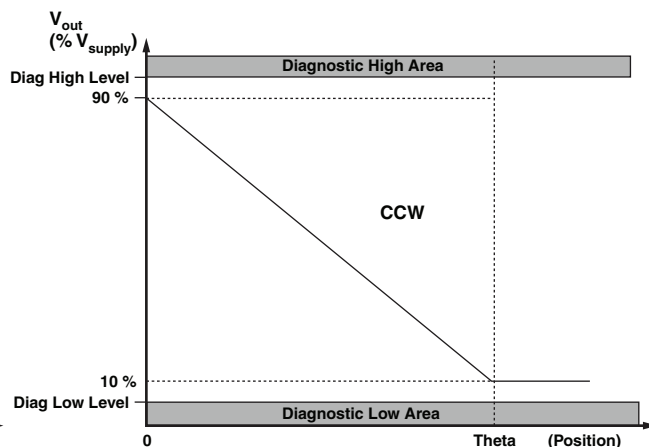
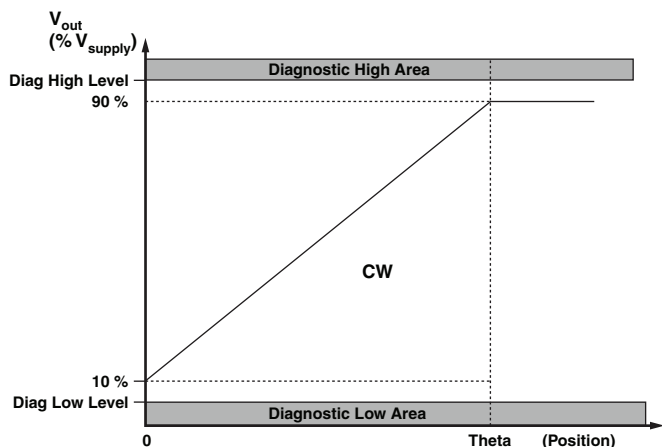
SAP PART NUMBERING GUIDELINES

631HE	1	B	9	Z	C	0P27	XXXX
MODEL	MECHANICAL FEATURES	LINEARITY	ELECTRICAL ANGLE	OUTPUT TYPE	OUTPUT SIGNAL	SHAFT TYPE	SPECIAL REQUEST

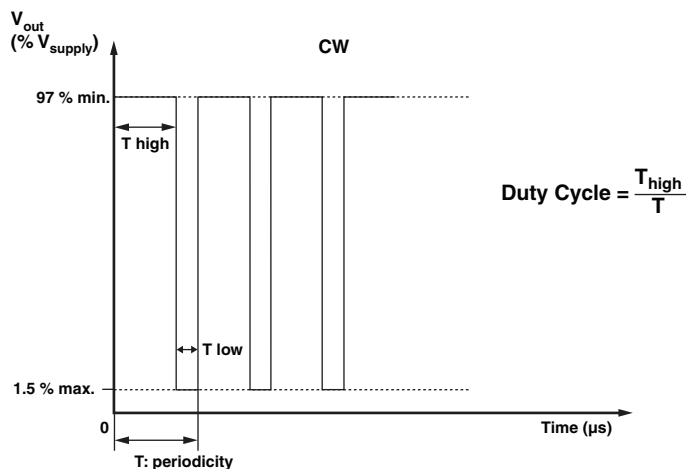


V_{OUT} ANALOG

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

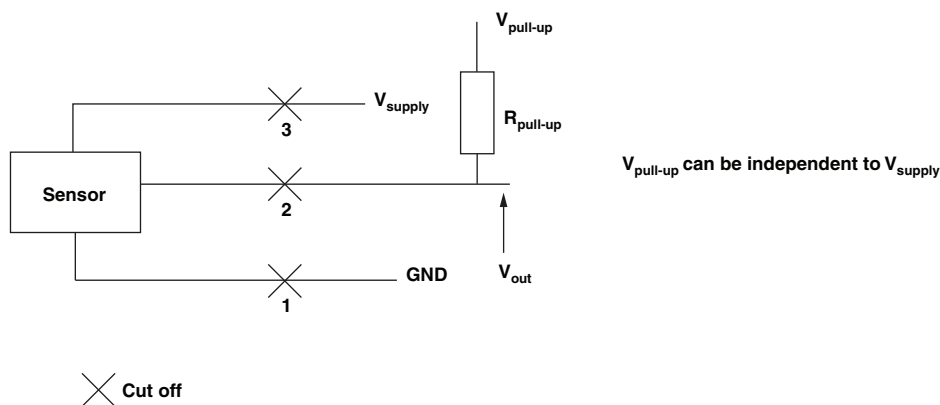


V_{OUT} PWM



**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

**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 to +125 °C
Life	20M 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 dB μ V/m
Electrostatic discharges	Contact discharges: $\pm 4\text{ kV}$ Air discharges: $\pm 8\text{ kV}$

MATERIALS

Housing	Aluminum anodized
Shaft	Stainless steel
Output	3 lead wires

BUSHING MOUNT HARDWARE

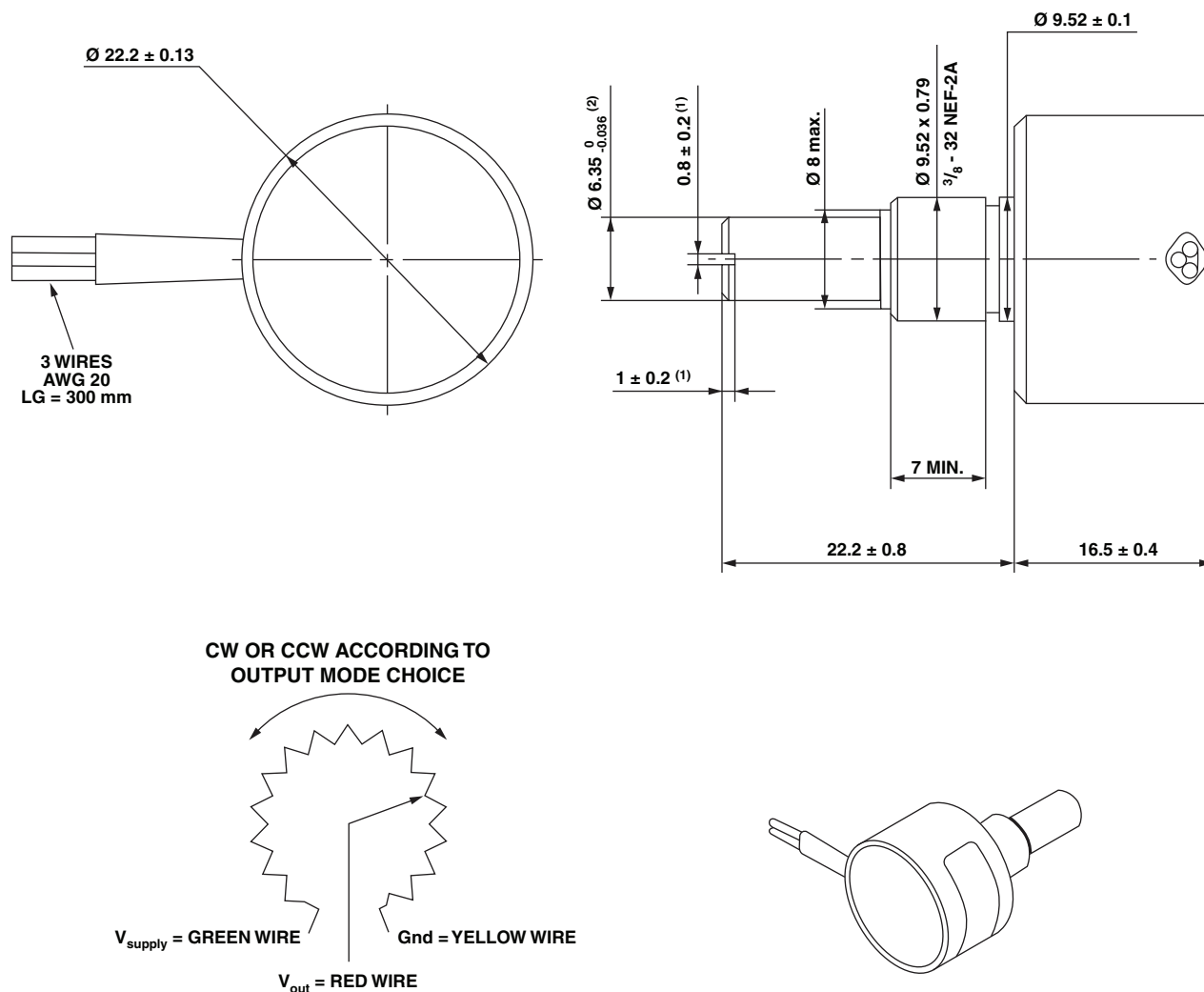
Lockwasher internal tooth	Steel nickel plated
Panel nut	Brass nickel plated

Note

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



DIMENSIONS in millimeters



VIEWED FROM SHAFT

Dimensions in millimeter
Delivered with nut and washer

Notes

- (1) For version slotted shaft
- (2) 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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