

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 | | | | | | | | | |

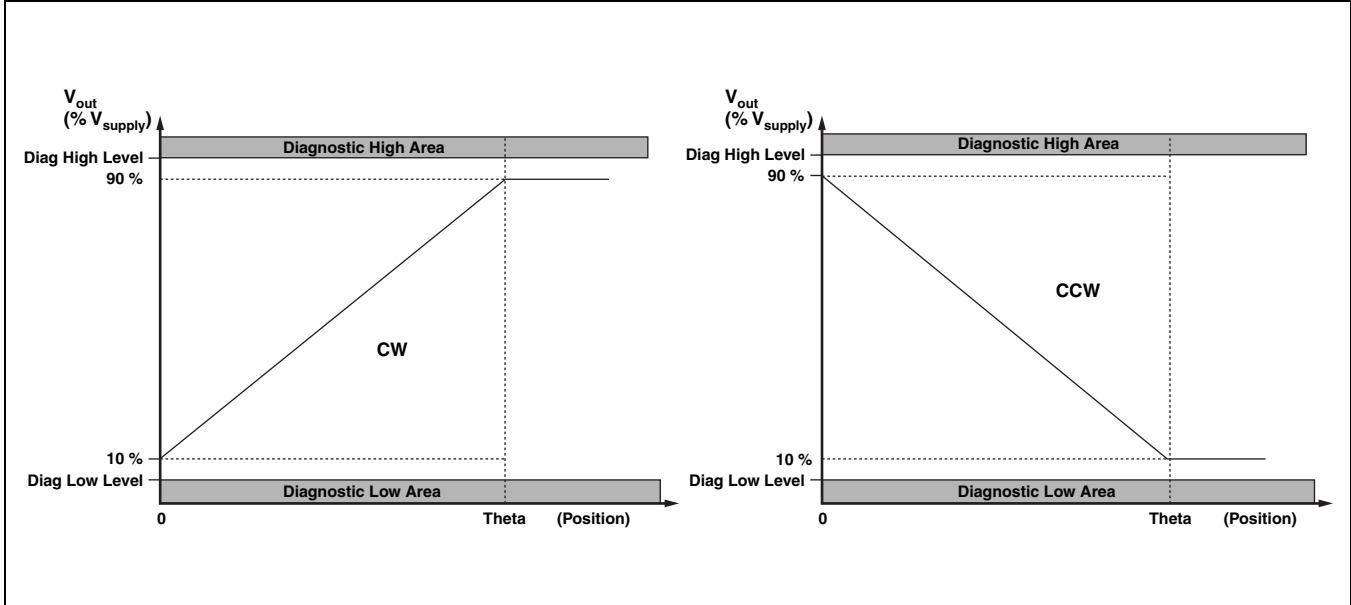
SAP PART NUMBERING GUIDELINES

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

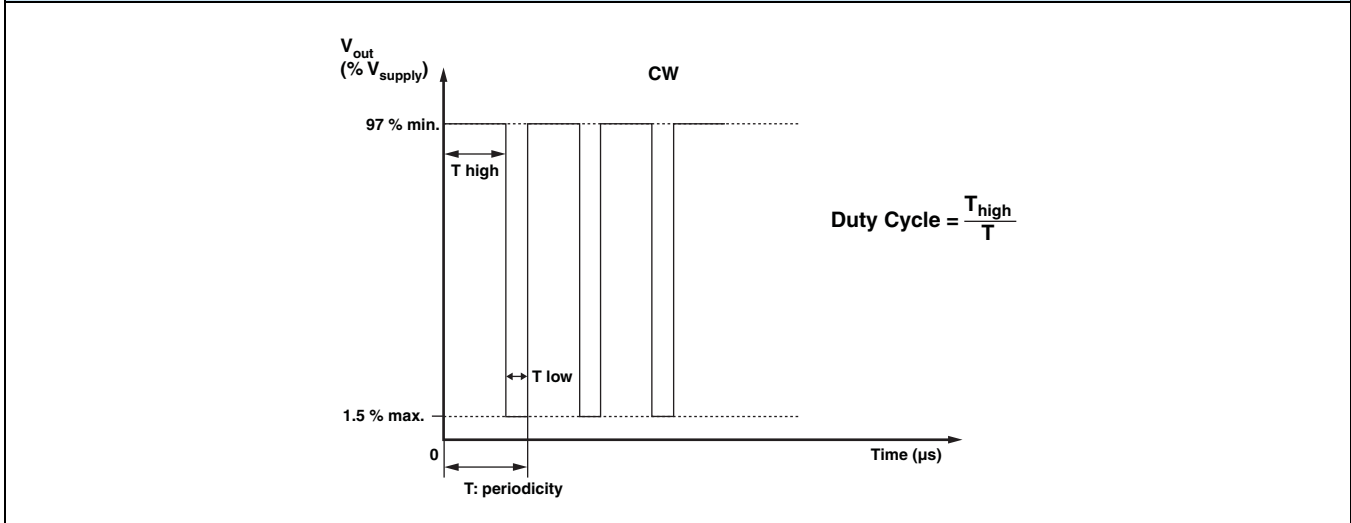


V_{OUT} ANALOG

| | | |
|-----------------------|-----------|-----------|
| 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 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 |

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

X Cut off

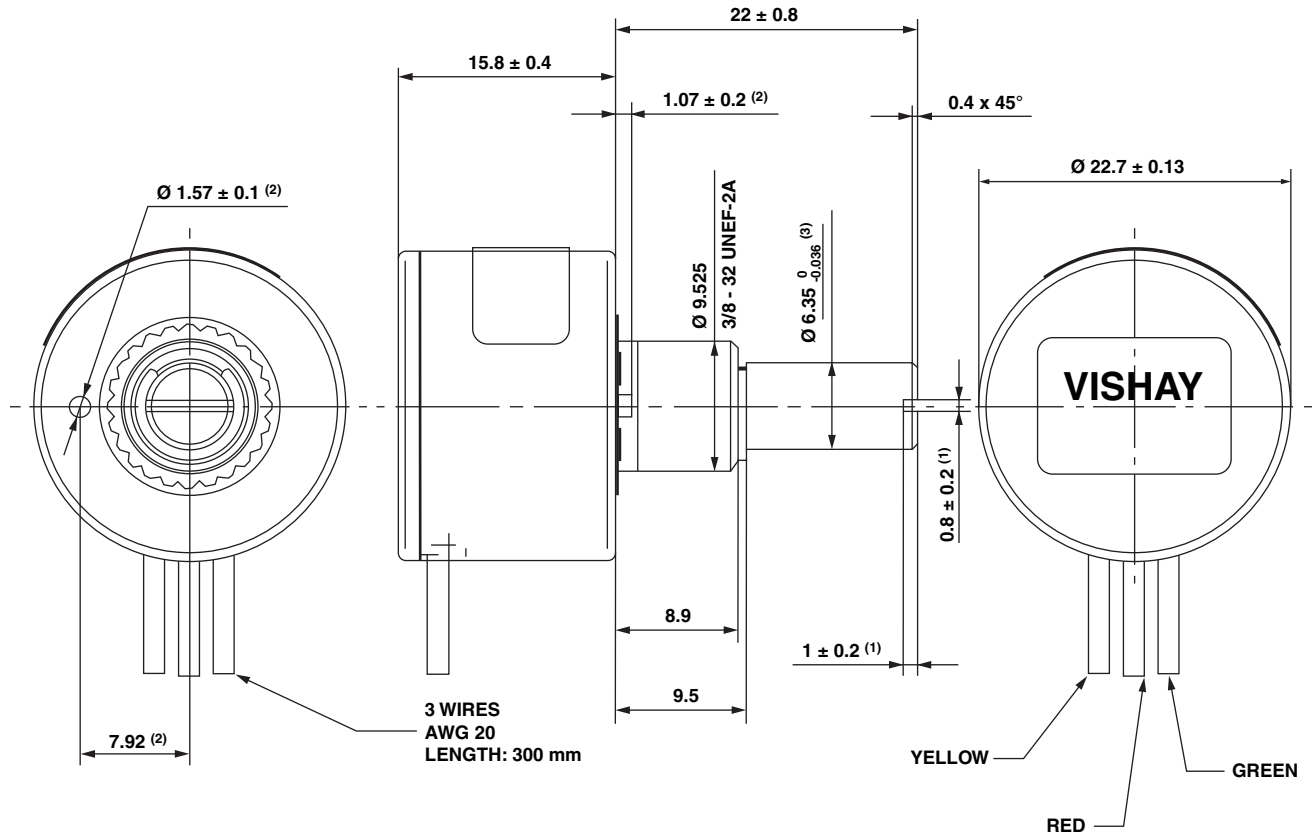
| ENVIRONMENTAL SPECIFICATIONS | |
|---|--|
| Vibrations | 20 g from 10 Hz to 2000 Hz |
| Shocks | 3 shocks/axis; 50 g half a sine 11 ms |
| Operating temperature range | -45 °C; +125 °C |
| Life | > 10M of cycles |
| Rotational speed (max.) | 120 rpm |
| Immunity to radiated electromagnetic disturbances | 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: ± 4 kV Air discharges: ± 8 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

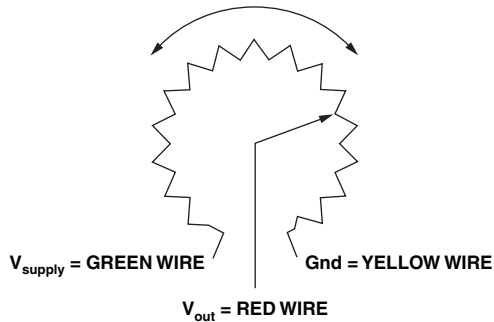
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DIMENSIONS in millimeters



**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 correspondance: colors versus connections. |



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