

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



| ELECTRICAL SPECIFICATIONS | | |
|-----------------------------|---|------------------------------|
| PARAMETER | STANDARD | SPECIAL |
| Electrical Angle | 90°, 180°, 270°, 360° | 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 | < 0.2 % | |

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

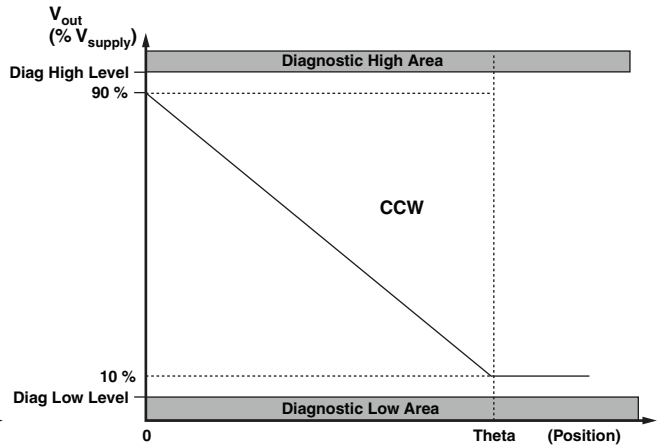
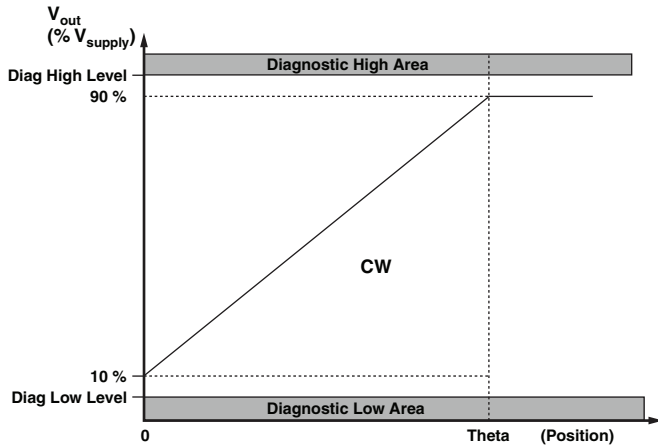
| ORDERING INFORMATION/DESCRIPTION | | | | | | | | | |
|--|---|--------------------------------|--|-----------------------|---|---|-----------------|------------------|-------------|
| 351HE | 0 | A | 1 | W | A | 1S22 | XXXX | BO 10 | e1 |
| MODEL | FEATURES | LINEARITY | ELECTRICAL ANGLE | OUTPUT TYPE | 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 340° and antirotation pin | | | | | | | | |
| 3: | Stops at 340° 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 ANGLE | OUTPUT TYPE | OUTPUT SIGNAL | SHAFT TYPE | SPECIAL REQUEST |
| | | | | | | | |

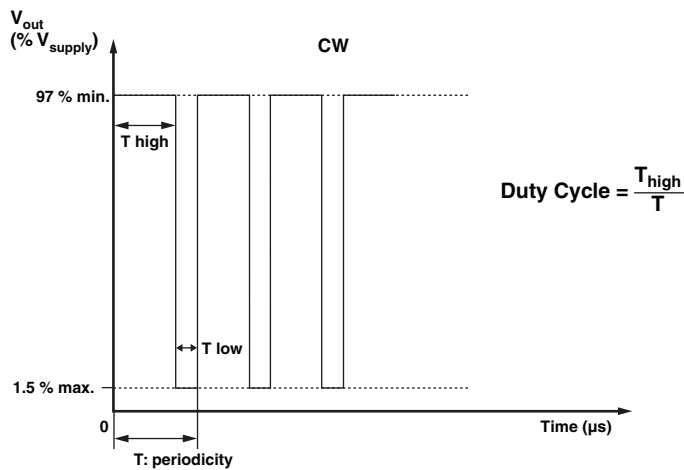


V_{OUT} ANALOG

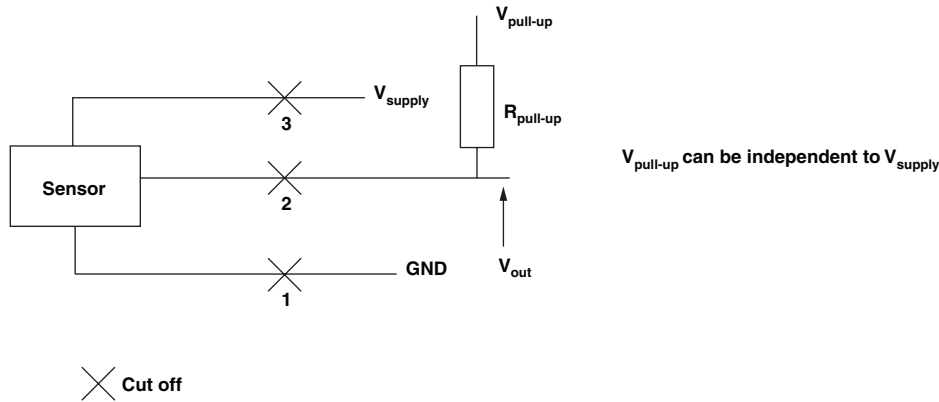
| | | |
|-----------------------|-----------|-----------|
| Operating Temperature | 85 °C | 125 °C |
| Diagnostic High Level | 96 % min. | 96 % min. |
| Diagnostic Low Level | 2 % max. | 4 % max. |



V_{OUT} PWM



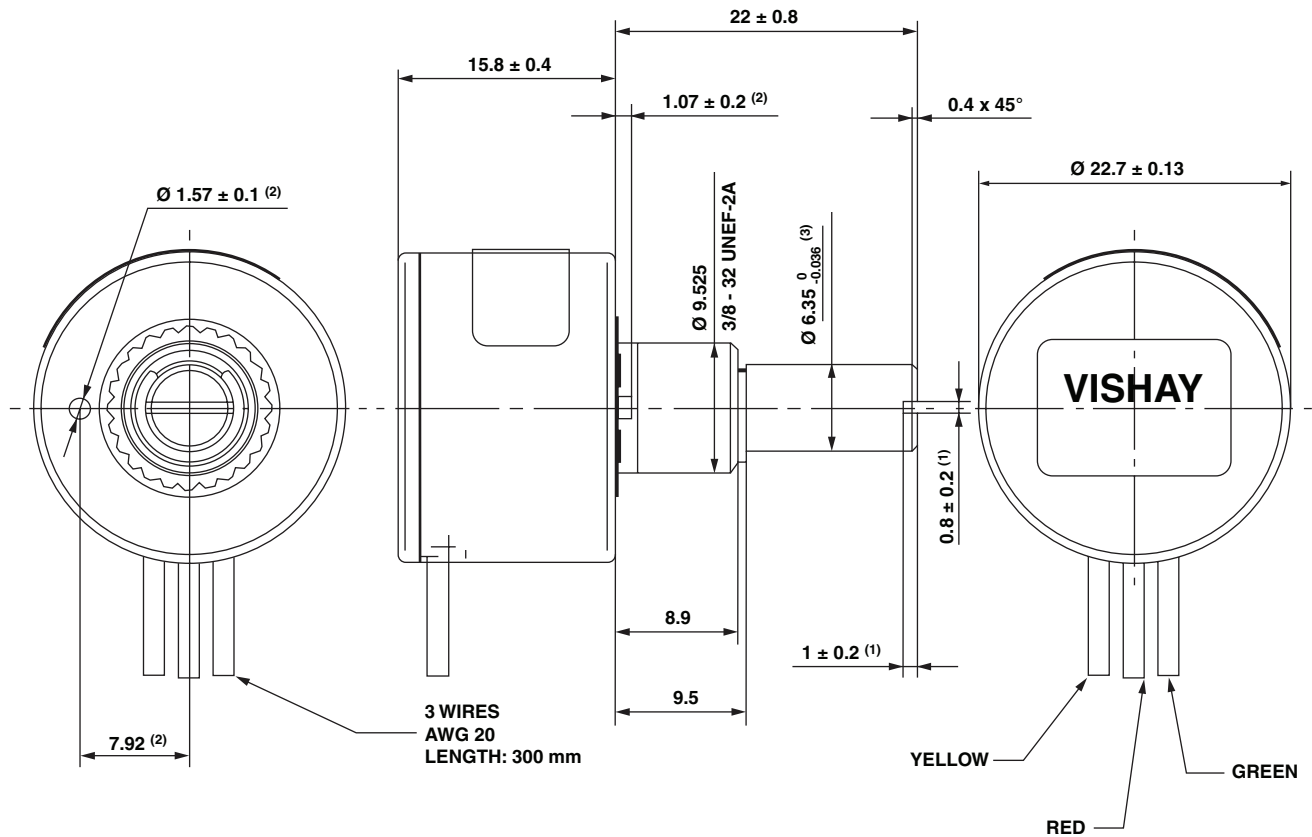
| DIAGNOSTIC MODES | | | |
|---|-----------------------------------|-------------------------------------|--|
| FAILURE | V_{out} Analog $R_{pull-up}$ | V_{out} Analog $R_{pull-down}$ | V_{out} PWM $R_{pull-up} = 1\text{ k}\Omega$ $V_{pull-up} = V_{supply} = 5\text{ V}$ |
| 1: Broken GND | Diagnostic 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; + 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 dB μ V/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 |

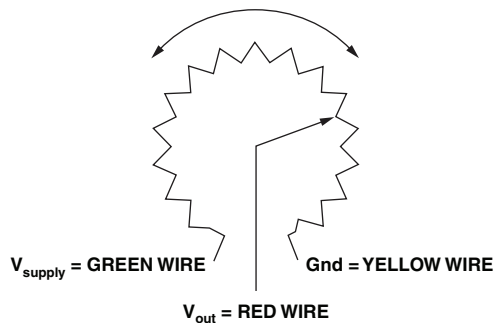


DIMENSIONS in millimeters

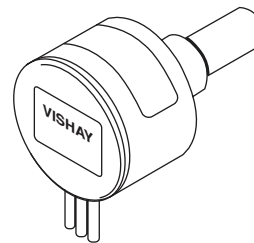


GENERAL TOLERANCE: ± 0.5 mm

CW OR CCW ACCORDING
OUTPUT MODE CHOICE



VIEWED FROM SHAFT



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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