

Ten Turns Servo or Bushing Mount Hall Effect Sensor in Size 09 (22.2 mm)



FEATURES

- All electrical angles available up to: 3600°
- Accurate linearity down to: $\pm 0.5\%$
- Very long life: 50M cycles for servo, 10M cycles for bushing
- Non contacting technology: Hall effect; true power on sensor
- Model dedicated to applications requiring long life
- Material categorization: For definitions of compliance please see www.vishay.com/doc?99912


RoHS
COMPLIANT

| QUICK REFERENCE DATA | |
|----------------------|------------------------------------|
| Sensor type | Multi Turn ROTATIONAL, hall effect |
| Output type | Wires or rear turrets |
| Market appliance | Industrial |
| Dimensions | 7/8" (22.2 mm) |

| ELECTRICAL SPECIFICATIONS | | |
|-----------------------------|--|------------------------------|
| PARAMETER | STANDARD | SPECIAL |
| Electrical angle | 10 turns 3600° | Any other angle upon request |
| Linearity | $\pm 1\%$ | $\pm 0.5\%$ |
| Supply voltage | 5 V _{DC} $\pm 10\%$ | Other upon request |
| Supply current | < 16 mA for single | < 32 mA for redundant |
| Output signal | Analog ratiometric 1 % to 99 % of V _{supply} (other on request) or PWM 1 kHz, 10 % to 90 % duty cycle or SPI binary on 5 V or binary on 3.3 V | |
| 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 static | 10° on drive shaft | |

| MECHANICAL SPECIFICATIONS | |
|---------------------------|--|
| PARAMETER | |
| Mechanical travel | 3600° continuous |
| Bearing type | A sleeve bearing for bushing model/2 ball bearings for servo model |
| Standard | IP 50; other on request |
| Resolution | 12 bits for analog and PWM, 14 bits for SPI |

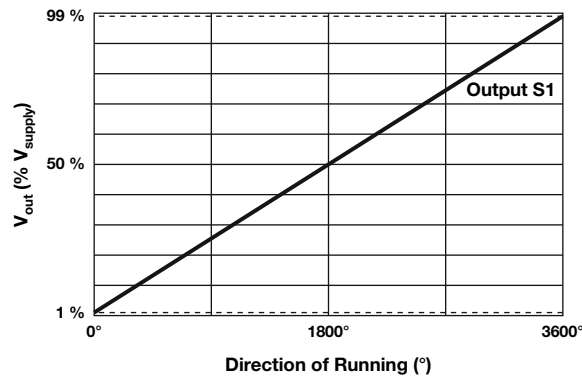
| ORDERING INFORMATION/DESCRIPTION | | | | | | | | | |
|---|------------------------|---------------------------|--------------------------------|-------------------------------------|---|--|-----------------|----------------|-------------|
| 34 THE | B | 1 | A | T | A | 2S22 | XXXX | BO 1 | e1 |
| MODEL | MOUNTING TYPE | NUMBER OF SIGNALS | LINEARITY | OUTPUT TYPE | OUTPUT SIGNAL | SHAFT TYPE | SPECIAL REQUEST | PACKAGING | LEAD FINISH |
| | B: Bushing S: Servo | 1: Single 2: Redundant | A: $\pm 1\%$ B: $\pm 0.5\%$ | T: Turrets Z: Custom W: Wires | A: Analog CW B: Analog CCW C: PWM CW D: PWM CCW E: SPI CW ⁽¹⁾ F: SPI CCW ⁽¹⁾ G: Analog inverted slope H: PWM inverted slope K: SPI inverted slope ⁽¹⁾ Z: Other output | 2: 3.175 mm 9: Special P: Plain S: Slotted Z: Other type | | Box of 1 piece | |
| Shaft length from mounting face standard: 22 mm | | | | | | | | | |

Note
⁽¹⁾ SPI output → output type: Wires

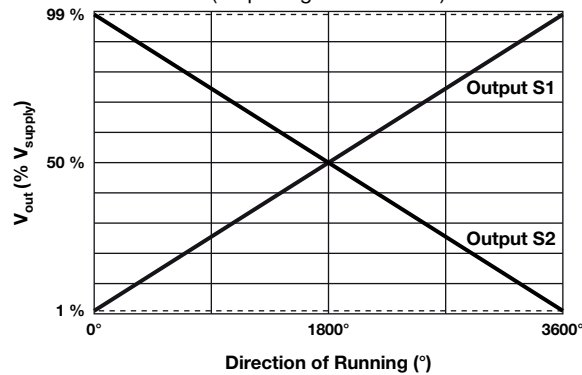
| SAP PART NUMBERING GUIDELINES | | | | | | | |
|-------------------------------|------------|------------------|----------------|-------------|---------------|------------|-----------------|
| 34 THE | S | 2 | B | T | C | 2P12 | XXXX |
| MODEL | SERVO TYPE | 2 OUTPUT SIGNALS | LINEARITY | OUTPUT TYPE | OUTPUT SIGNAL | SHAFT TYPE | SPECIAL REQUEST |
| | | | B: $\pm 0.5\%$ | | | | |

V_{OUT} ANALOG

Single Output (output signal code: "A")



Redundant Output: with inverted slope
(output signal code: "G")



V_{OUT} PWM

Single Output: (output signal code: "C")



V_{OUT} SPI

Notice on demand

Output signal code: "E" if CW (single or redundant identical)

Output signal code: "F" if CCW (single or redundant identical)

Output signal code: "K" if CW (if redundant but inverted slope)



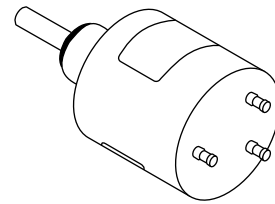
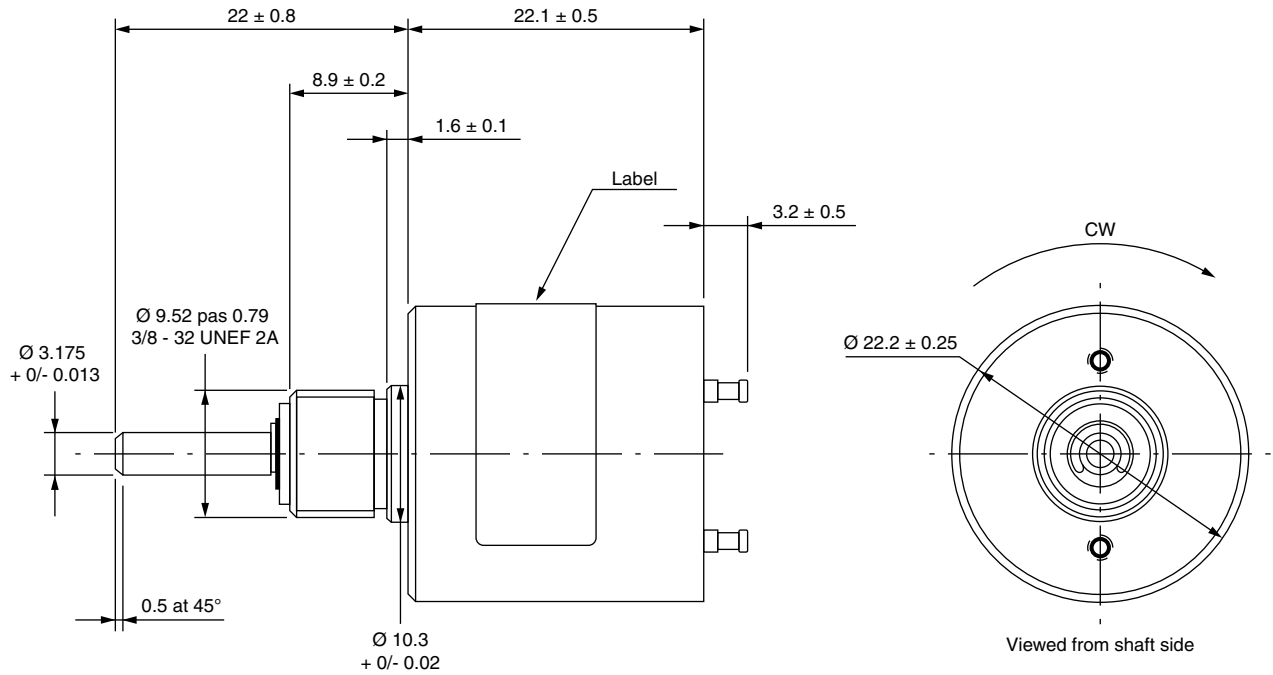
| MECHANICAL SPECIFICATIONS | | |
|---------------------------|--|------------------|
| PARAMETER | STANDARD | SPECIAL |
| Mounting type | Servo mounting type or bushing mount (delivered with nut and washer) | |
| Housing | Anodized aluminum | |
| Shaft guiding | 2 ball bearings for servo and sleeve bearing for bushing | |
| Shaft | Stainless steel Ø 3.175 | Other on request |
| Outputs | Turrets | Other on request |
| Mechanical travel | 3600° and no stop | |

| ENVIRONMENTAL SPECIFICATIONS | |
|---|--|
| Operating temperature range | - 40 °C; + 85 °C |
| Life | > 10M of cycles for bushing > 50M of cycles for servo |
| Rotational speed (max.) | 1200 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 |
| Sine vibration on 3 axes | 1.5 mm or 20 g from 10 Hz to 2000 Hz |
| Mechanical shocks on 3 axes | 50 g, 11 ms, half sine |



DIMENSIONS in millimeters

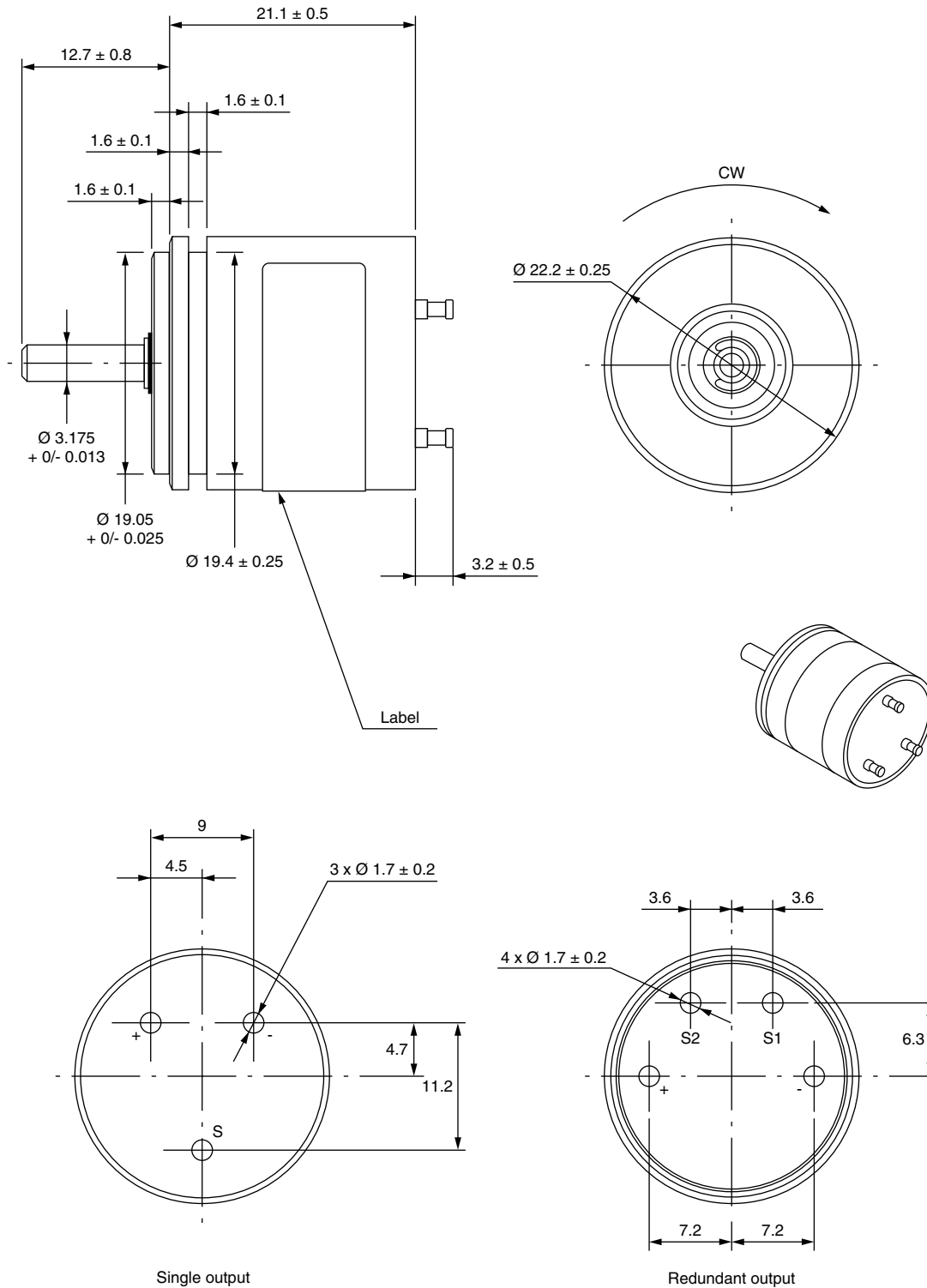
Drawing for bushing mount type: 34THEB...





DIMENSIONS in millimeters

Drawing for servo mount type: 34THES...

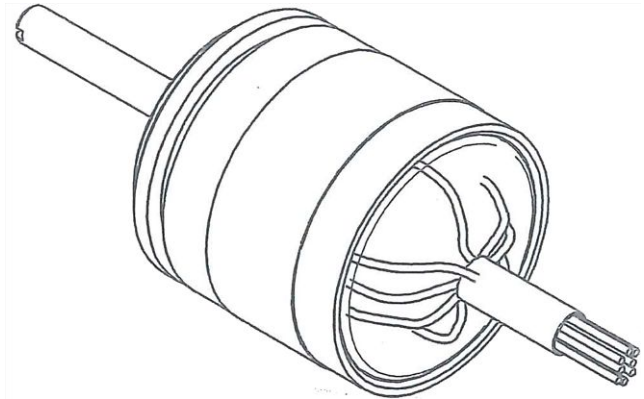


BUSHING AND SERVO TYPES

Output by wires for output signal “SPI” single and redundant



| SINGLE SPI OUTPUT (servo and bushing) | |
|---------------------------------------|---------------------|
| WIRE COLOR | OUTPUT |
| Yellow | GND (-) |
| Red | MOSI |
| Green | V _{CC} (+) |
| White | SS |
| Blue | SCLK |



| REDUNDANT SPI OUTPUT (servo and bushing) | |
|--|--------|
| WIRE COLOR | OUTPUT |
| Black | V- |
| Red | V+ |
| Yellow | O/I 1 |
| Blue | CLK 1 |
| White | /SS 1 |
| Green | O/I 2 |
| Violet | CLK 2 |
| Grey | /SS 2 |



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