

Single Turn Servo 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)
- Very long life: Greater than 50M cycles
- Non contacting technology: Hall effect
- Model dedicated to high quality applications
- 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 | Professional |
| 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 typ./16 mA max. | 16 mA for PWM output |
| Output signal | Analog ratiometric 10 % to 90 % of V_{supply} or PWM 1 kHz, 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 static | | 0.2° max. |

MECHANICAL SPECIFICATIONS

| PARAMETER | |
|-------------------|--|
| Mechanical travel | 360° continuous, stops upon request |
| Bearing type | 2 ball bearings |
| Standard | IP 50; other on request |

ORDERING INFORMATION/DESCRIPTION

| 78 SHE | 1 | A | 1 | W | A | 1S16 | XXXX | BO 1 | e1 |
|---|---|--------------------------------|--|-------------------------------------|---|---|-----------------|----------------|-------------|
| MODEL | NUMBER OF CUPS | LINEARITY | ELECTRICAL ANGLE | OUTPUT TYPE | OUTPUT SIGNAL | SHAFT TYPE | SPECIAL REQUEST | PACKAGING | LEAD FINISH |
| | 1: 1 Cup 2: 2 Cups 3: 3 Cups 4: 4 Cups | A: $\pm 1\%$ B: $\pm 0.5\%$ | 1: 90° 2: 180° 3: 270° 4: 360° 9: Other angles | T: Turrets 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 1 piece | |
| Shaft length from mounting face standard: 16 mm | | | | | | | | | |

SAP PART NUMBERING GUIDELINES

| 78 SHE | 4 | B | 9 | T | C | 2P22 | XXXX |
|--------|--------------------------|-----------|------------------|-------------|---------------|------------|-----------------|
| MODEL | NUMBER OF CUPS (Signals) | LINEARITY | ELECTRICAL ANGLE | OUTPUT TYPE | OUTPUT SIGNAL | SHAFT TYPE | SPECIAL REQUEST |

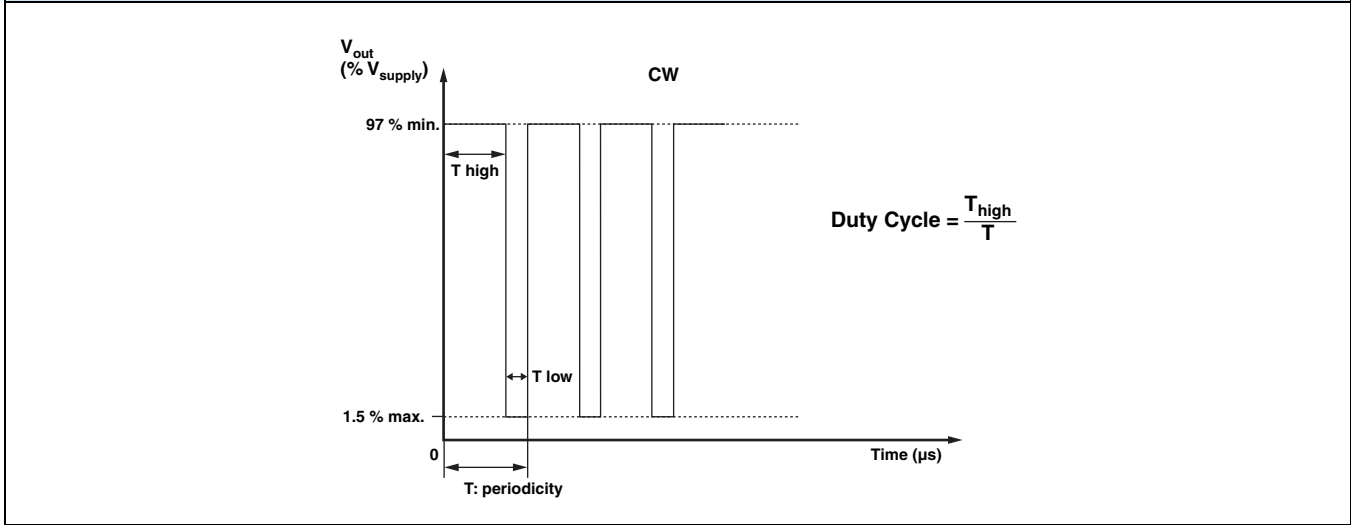


V_{OUT} ANALOG

| | | |
|-----------------------|-----------|-----------|
| 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 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}

✕ Cut off

| ENVIRONMENTAL SPECIFICATIONS | |
|---|--|
| Vibrations | 20 g from 10 Hz to 2000 Hz, EN 60068-2-6 |
| Shocks | 3 shocks/axis; 50 g half a sine 11 ms, EN 60068-2-7 |
| Operating temperature range | -45 °C; +125 °C |
| Life | > 50M of cycles |
| Rotational speed (max.) | 120 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 |
| MATERIALS | |
| Housing | Thermoplastic housing |
| Shaft | Stainless steel |
| Output | 3 turrets or 3 lead wires (AWG 22) |

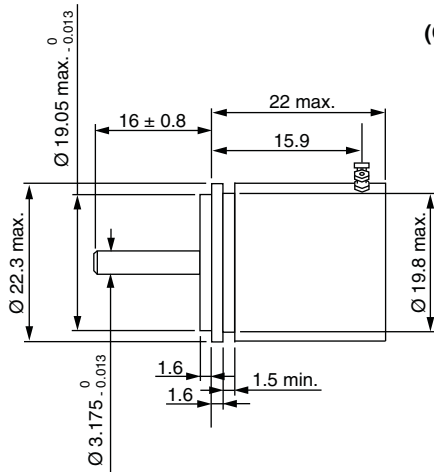
Note

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



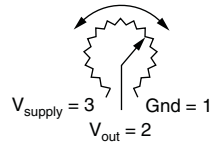
DIMENSIONS in millimeters

MODEL 78 SHE ...T (OUTPUT BY TURRETS)

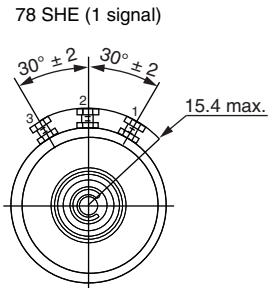


General tolerance: ± 0.5 mm

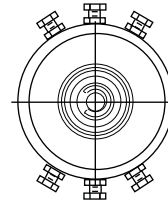
CW or CCW according to output mode choice



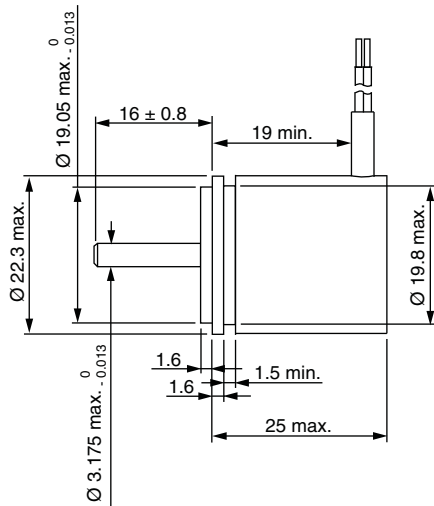
View from shaft side



78 SHE (Redundant: 2 signals)

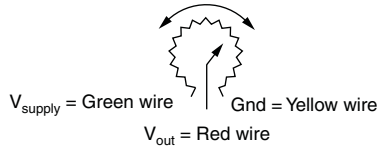


MODEL 78 SHE ...W (OUTPUT BY WIRES)

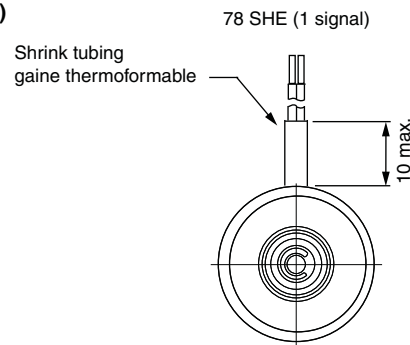


General tolerance: ± 0.5 mm

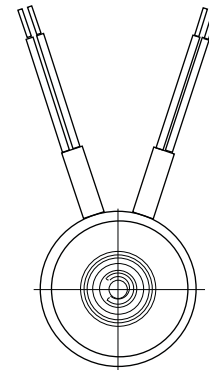
CW or CCW according to output mode choice



View from shaft side



78 SHE (Redundant: 2 signals)





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