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

FEATURES

- Accurate linearity down to: ± 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°, 180°, 270°, 360°	Any other angle upon request
Linearity	± 1 %	± 0.5 %
Supply voltage	5 V_{DC} ± 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 kΩ 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:** ± 1 % **B:** ± 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	

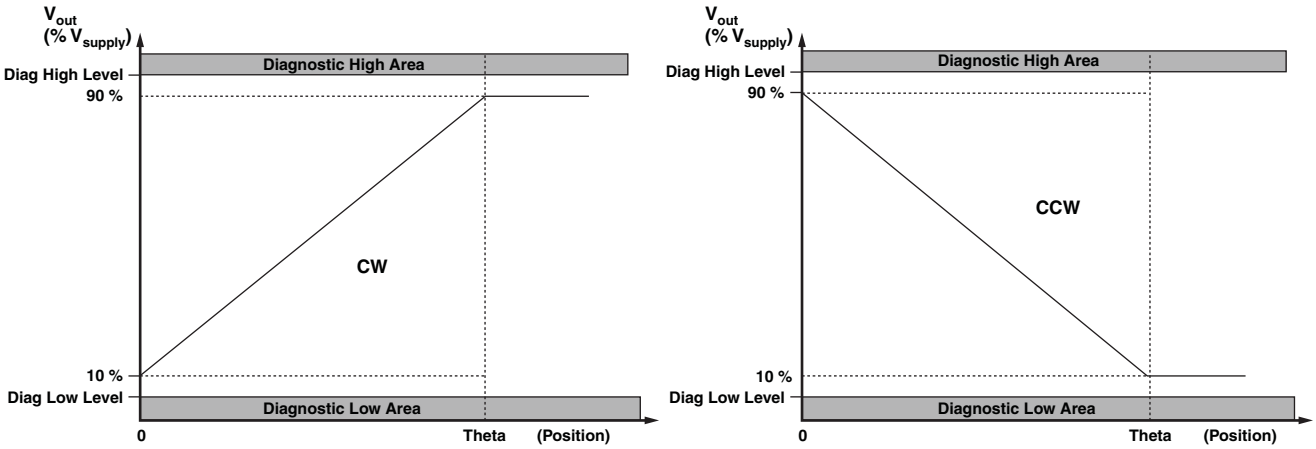
Shaft length from mounting face standard: 16 mm

SAP PART NUMBERING GUIDELINES

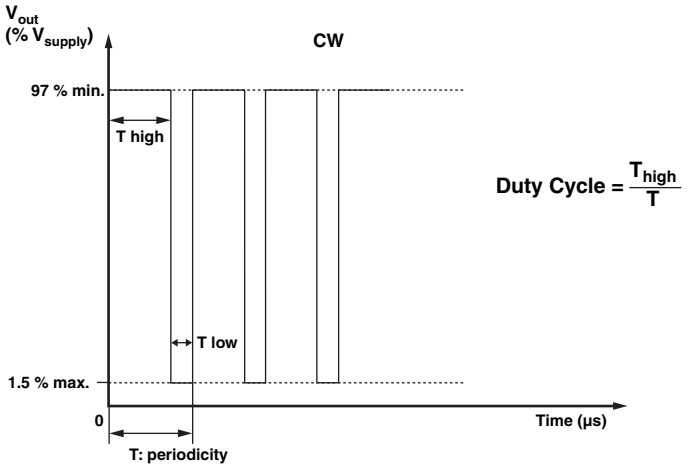
78 SHE	4	B	9	T	C	2P22	XXXX
MODEL	NUMBER OF CUPS (Signals)	LINEARITY	ELECTRICAL ANGLE	OUTPUT TYPE	OUTPUT SIGNAL	SHAFT TYPE	SPECIAL REQUEST

V_{OUT} ANALOG

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



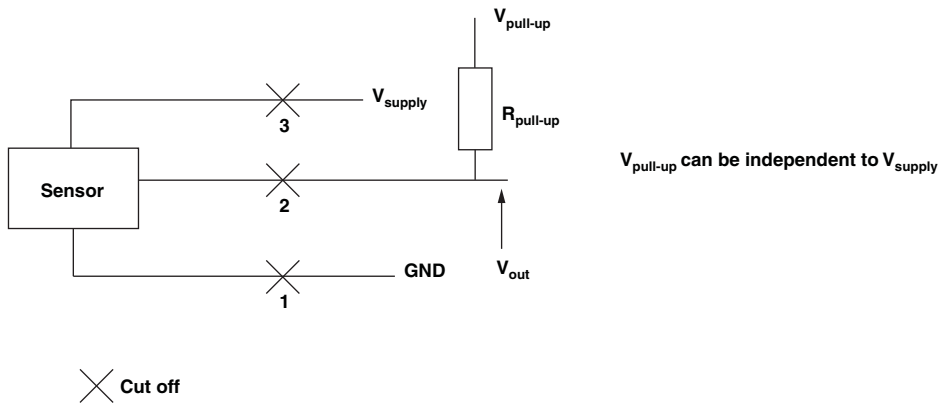
V_{OUT} PWM



$$\text{Duty Cycle} = \frac{T_{high}}{T}$$

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



ENVIRONMENTAL SPECIFICATIONS

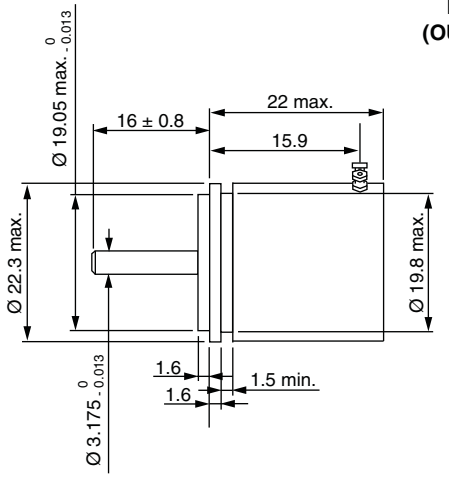
Vibrations	20 *g* from 10 Hz to 2000 Hz, EN 60068-2-6
Shocks	3 shocks/axis; 50 *g* half a sine 11 ms, EN 60068-2-7
Operating temperature range	-45 °C; +125 °C
Life	> 50M of cycles
Rotational speed (max.)	120 rpm
Immunity to radiated electromagnetic disturbances	200 V/m 150 kHz/1 GHz, IEC 62132-2 part 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.

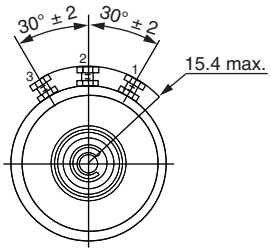
DIMENSIONS in millimeters

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

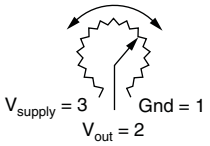


General tolerance: ± 0.5 mm

78 SHE (1 signal)

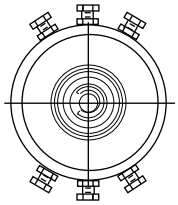


CW or CCW according to output mode choice

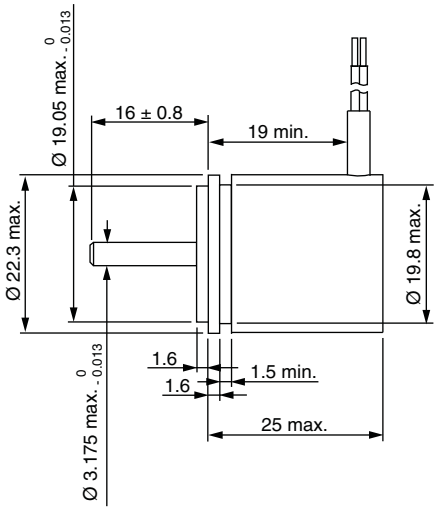


View from shaft side

78 SHE (Redundant: 2 signals)



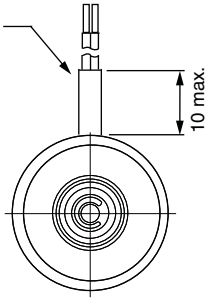
MODEL 78 SHE ...W
(OUTPUT BY WIRES)



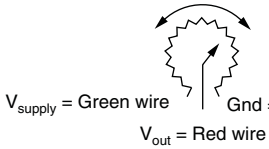
General tolerance: ± 0.5 mm

78 SHE (1 signal)

Shrink tubing
gaine thermoformable

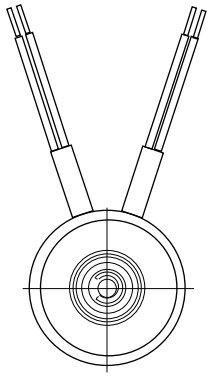


CW or CCW according to output mode choice



View from shaft side

78 SHE (Redundant: 2 signals)



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