

Throttle Position Sensor in Hall Effect Technology Hollow and D-Shaft Versions



FEATURES

- Accurate linearity down to: $\pm 0.5\%$
- Easy mounting principle
- Non contacting technology: Hall effect
- Model dedicated to all applications in harsh environments
- Spring loaded types available



RoHS
COMPLIANT

ELECTRICAL SPECIFICATIONS		
PARAMETER	STANDARD	SPECIAL
Electrical Angle	90°, 120°, 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 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 (D-Shaft Version)		< 0.3°

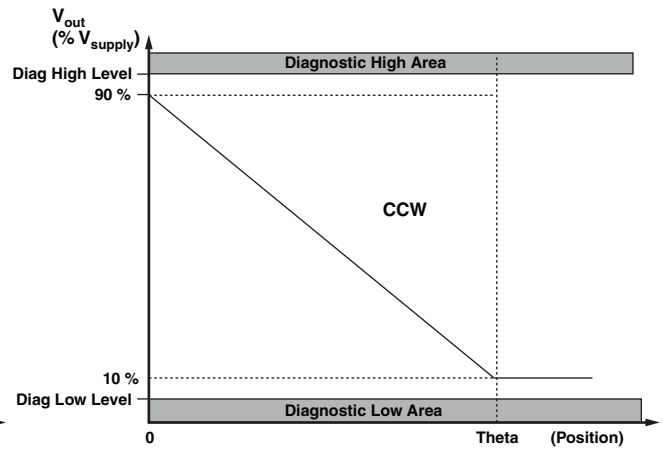
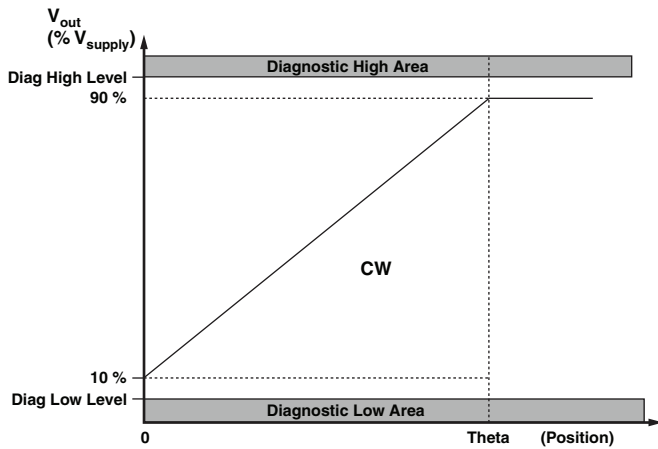
MECHANICAL SPECIFICATIONS	
PARAMETER	
Mechanical travel	360° continuous, stops upon request: 124° \pm 3°
Bearing type	Sleeve bearing
Standard	IP 50; other on request
Weight	19 g \pm 2 g Hollow shaft model/22 g \pm 2 g D-Shaft model

ORDERING INFORMATION/DESCRIPTION									
981HE	0	A	1	W	A	1F16	XXXX	BO 10	e1
MODEL	FEATURES	LINEARITY	ELECTRICAL ANGLE	OUTPUT TYPE	OUTPUT SIGNAL	SHAFT TYPE	SPECIAL REQUEST	PACKAGING	LEAD FINISH
0:	Continuous rotation	A: $\pm 1\%$	1: 90°	W: Wires	A: Analog CW	1: 6.35 mm		Box of 10 pieces	
1:	Mechanical stops	B: $\pm 0.5\%$	2: 180°	Z: Custom	B: Analog CCW	9: Special			
2:	Spring return CW		3: 270°		C: PWM CW	P: Plain			
3:	Spring return CCW		4: 360°		D: PWM CCW	F: Flatted			
			5: 120°		Z: Other output	S: Slotted			
			9: Other angles			Z: Other type			
						Shaft length from mounting face (Standard: 16 mm)			
						8H00 Hollow shaft			
						8H01 Hollow D-Shaft			

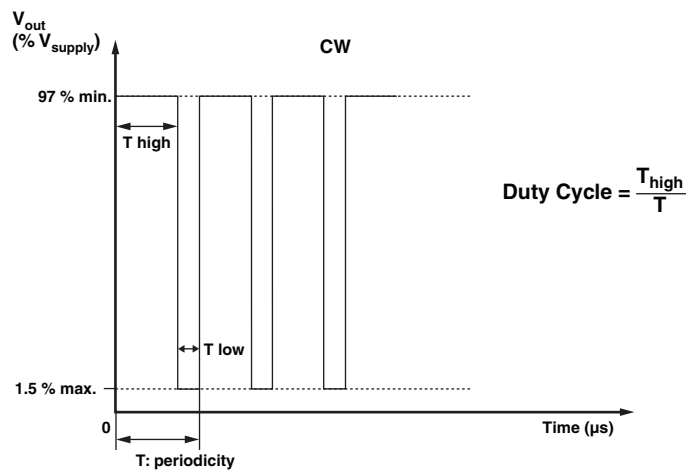
SAP PART NUMBERING GUIDELINES							
981HE	1	B	9	Z	C	8H01	XXXX
MODEL	MECHANICAL FEATURES	LINEARITY	ELECTRICAL ANGLE	OUTPUT TYPE	OUTPUT SIGNAL	SHAFT TYPE	SPECIAL REQUEST



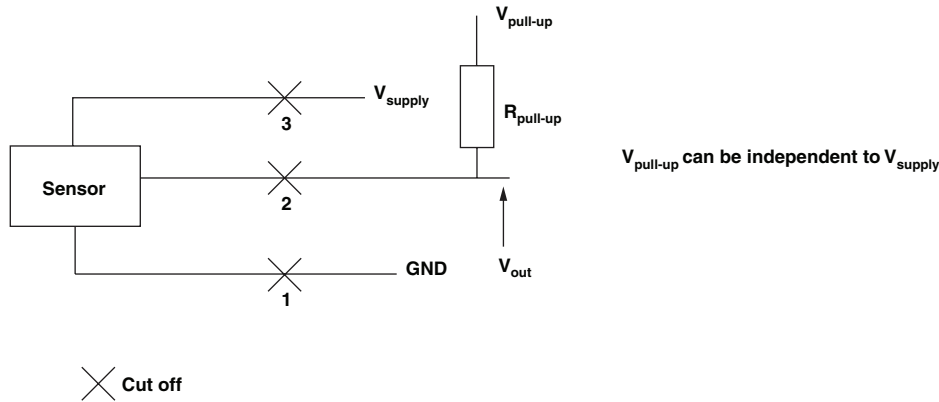
V_{OUT} ANALOG



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

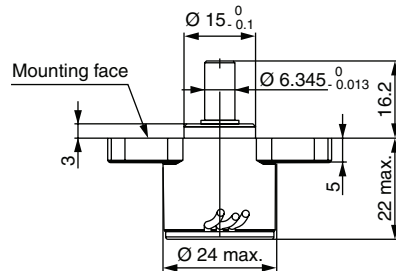
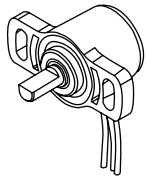


ENVIRONMENTAL SPECIFICATIONS	
Vibrations	20 G from 10 Hz to 2000 Hz, EN 60068-2-6
Shocks	3 shocks/axis; 50 G half a sine 11 ms, EN 60068-2-7
Operating Temperature Range	- 45 °C; + 125 °C
Life (in cycles)	$> 5\text{ M}$ for hollow shaft model/ $> 10\text{ M}$ for D-Shaft model
Rotational Speed (max.)	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 $< 30\text{ dB}\mu\text{V/m}$, EN 61000-6-4 (Level A)
Electrostatic Discharges	Contact discharges: $\pm 8\text{ kV}$ Air discharges: $\pm 15\text{ kV}$, EN 61000-4-2
Materials	
Housing	Thermoplastic housing
Shaft	Stainless steel
Output	3 lead wires

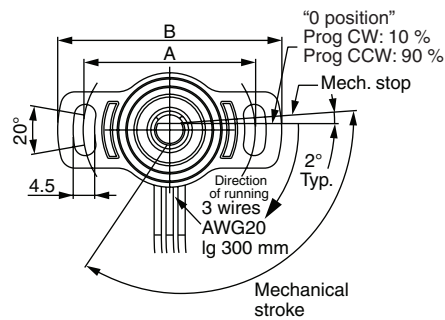
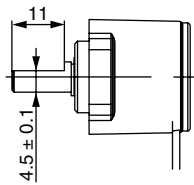
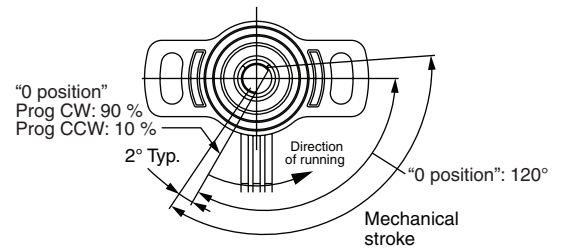
DIMENSIONS in millimeters

VARIOUS POSSIBLE TYPES OF MODEL 981 HE IN D-SHAFT VERSION

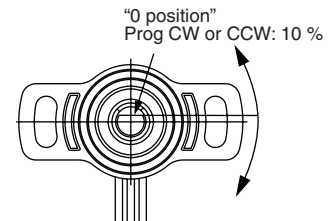
① 981 HE D-Shaft
Spring return CCW
Shaft: \varnothing 6.35 flatted length 16 mm FMF
Model: 981HE-3-x-x-W-x-1F16



② 981 HE D-Shaft
Spring return CW
Shaft: \varnothing 6.35 flatted 16 mm FMF
Model: 981HE-2-x-x-W-x-1F16



③ 981 HE D-Shaft
Continuous rotation
Shaft: \varnothing 6.35 flatted 16 mm FMF
Model: 981HE-0-x-x-W-x-1F16

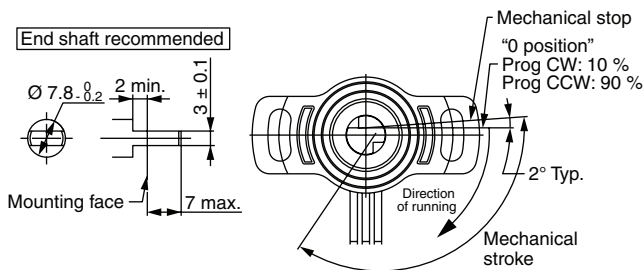


Dimension	Standard	Option	Wires
A	36	38	Yellow GND (-) Red Signal
B	47	48	Green V _{CC} (+)

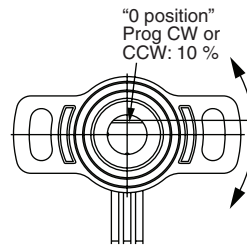
DIMENSIONS in millimeters

**VARIOUS POSSIBLE TYPES OF MODEL 981 HE
IN HOLLOW SHAFT VERSION**

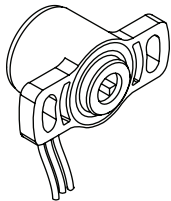
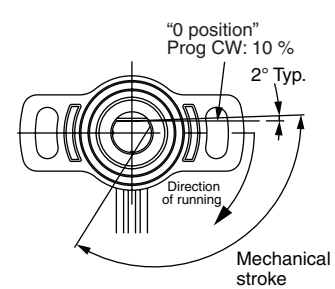
④ 981 HE Hollow shaft
Spring return CCW
Shaft: Ø 8
Model: 981HE-3-x-x-W-x-8H00



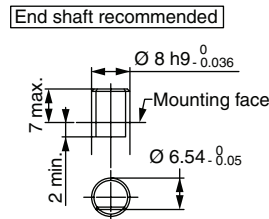
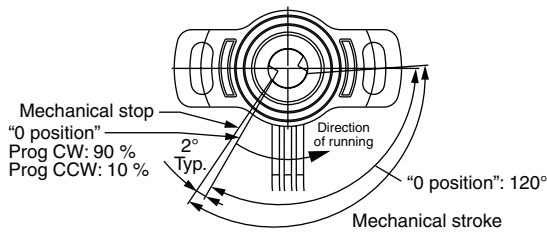
⑥ 981 HE Hollow D-Shaft
Continuous rotation
Shaft: Ø 8
Model: 981HE-0-x-x-W-x-8H01



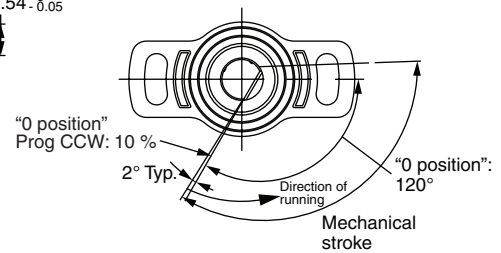
⑦ 981 HE Hollow D-Shaft
CW
Shaft: Ø 8
Model: 981HE-1-x-x-W-x-8H01



⑤ 981 HE Hollow shaft
Spring return CW
Shaft: Ø 8
Model: 981HE-2-x-x-W-x-8H00



⑧ 981 HE Hollow D-Shaft
CCW
Shaft: Ø 8
Model: 981HE-1-x-x-W-x-8H01





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