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

FEATURES

- Accurate linearity down to: ± 0.5 %
- Easy mounting principle
- Non contacting technology: Hall effect
- Model dedicated to all applications in harsh environments
- Spring loaded types available
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

RoHS COMPLIANT

DESIGN SUPPORT TOOLS

click logo to get started

3D Models Available

QUICK REFERENCE DATA

Sensor type	ROTATIONAL, single turn hall effect
Output type	Wires
Market appliance	Industrial
Dimensions	47 mm x 22 mm

ELECTRICAL SPECIFICATIONS

PARAMETER	STANDARD	SPECIAL
Electrical angle	90°, 120°, 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 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 kΩ for analog output and PWM output	
Hysteresis static (D-shaft version)	< 0.3°	

MECHANICAL SPECIFICATIONS

PARAMETER	
Mechanical travel	360° continuous, stops upon request: 124° ± 3°
Bearing type	Sleeve bearing
Standard	IP 50; other on request
Weight	19 g ± 2 g hollow shaft model/22 g ± 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 **1:** mechanical stops **2:** spring return CW **3:** spring return CCW For 1, 2, 3: max. electrical angle is: 120°	**A:** ± 1 % **B:** ± 0.5 %	**1:** 90° **2:** 180° **3:** 270° **4:** 360° **5:** 120° **9:** other angles	**W:** wires **Z:** custom	**A:** analog CW **B:** analog CCW **C:** PWM CW **D:** PWM CCW **Z:** other output	**1:** 6.35 mm **9:** special **P:** plain **F:** flatted **S:** slotted **Z:** other type Shaft length from mounting face (standard: 16 mm) 8H00 hollow shaft 8H01 hollow D-shaft		Box of 10 pieces	

SAP PART NUMBERING GUIDELINES

981HE	1	B	9	Z	C	8H01	XXXX
MODEL	MECHANICAL FEATURES	LINEARITY	ELECTICAL ANGLE	OUTPUT TYPE	OUTPUT SIGNAL	SHAFT TYPE	SPECIAL REQUEST

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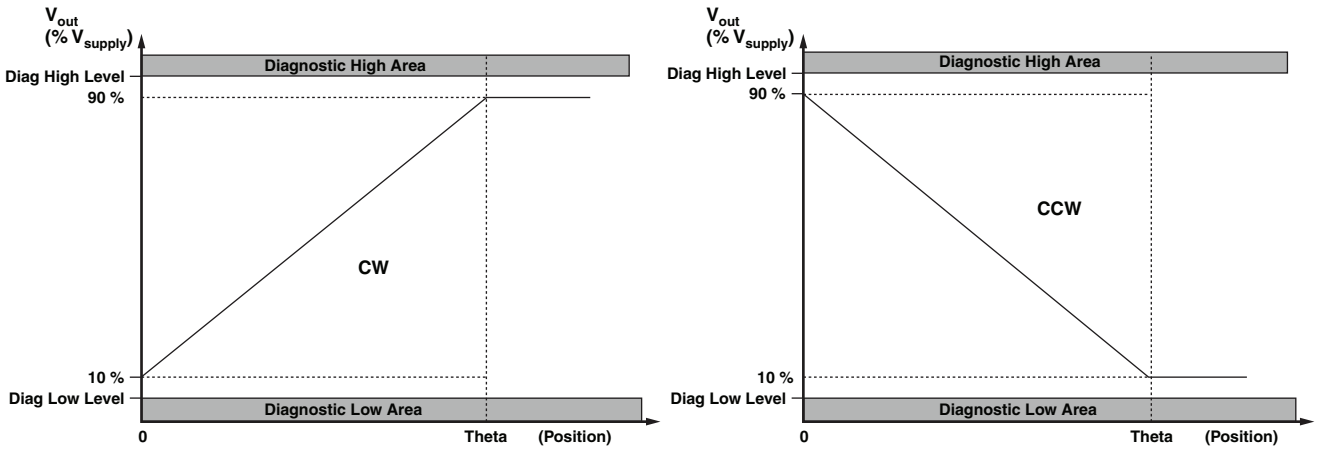
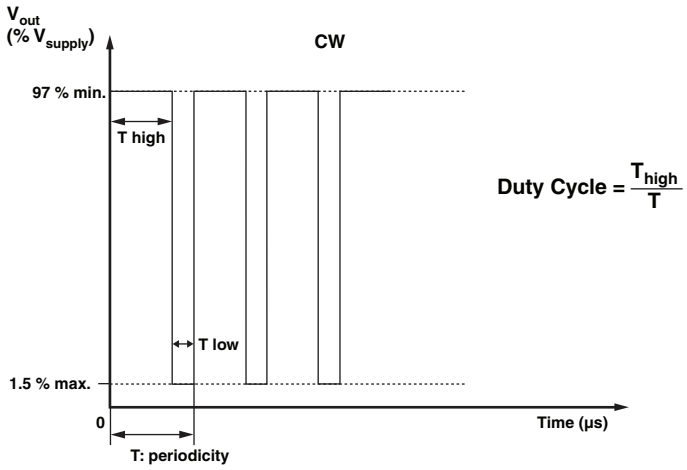
V_{OUT} ANALOG



V_{OUT} PWM



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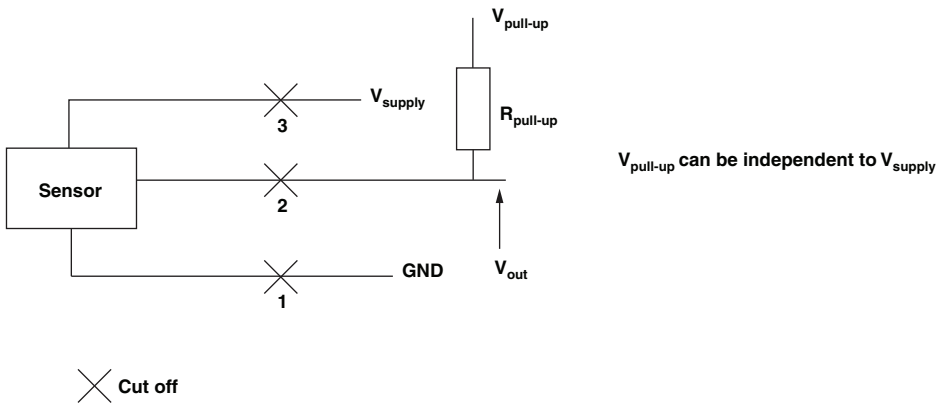
DIAGNOSTIC MODES			
FAILURE	**V_{out} ANALOG $R_{pull-up}$**	**V_{out} ANALOG $R_{pull-down}$**	**V_{out} PWM $R_{pull-up}$ = 1 kΩ $V_{pull-up}$ = V_{supply} = 5 V**
1: Broken GND	Diagnostic high area	Diagnostic low area	> 97 % V_{supply} without modulation
2: Broken V_{out}	Diagnostic high area	Diagnostic 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 to +125 °C
Life (in cycles)	> 5M for hollow shaft model / > 10M 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 dBµV/m, EN 61000-6-4 (level A)
Electrostatic discharges	Contact discharges: ± 8 kV Air discharges: ± 15 kV, EN 61000-4-2
MATERIALS	
Housing	Thermoplastic housing
Shaft	Stainless steel
Output	3 lead wires

Note

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

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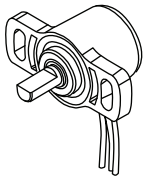
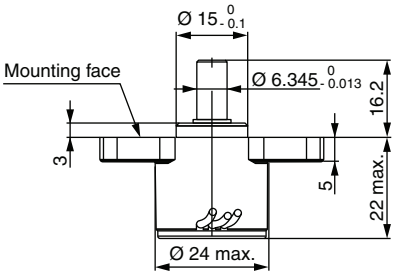
DIMENSIONS in millimeters

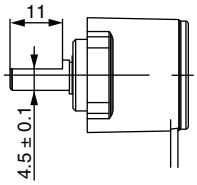
VARIOUS POSSIBLE TYPES OF MODEL 981 HE IN D-SHAFT VERSION

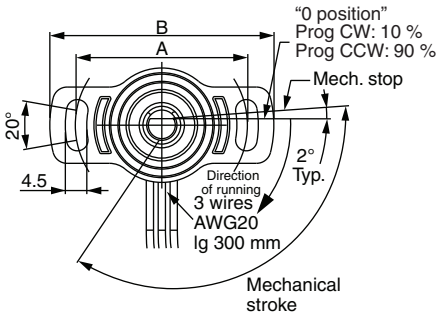
① 981 HE D-Shaft
Spring return CCW
Shaft: Ø 6.35 flatted length 16 mm FMF

Model: 981HE-3-x-x-W-x-1F16



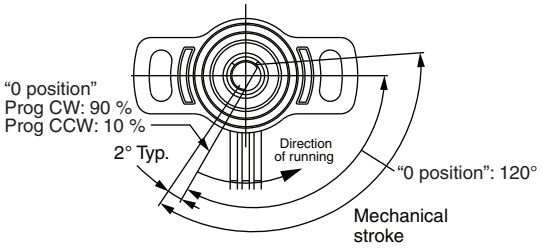






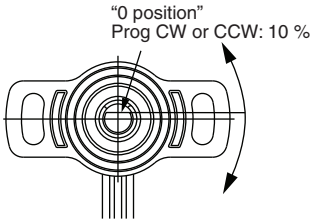
② 981 HE D-Shaft
Spring return CW
Shaft: Ø 6.35 flatted 16 mm FMF

Model: 981HE-2-x-x-W-x-1F16



③ 981 HE D-Shaft
Continuous rotation
Shaft: Ø 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} (+)

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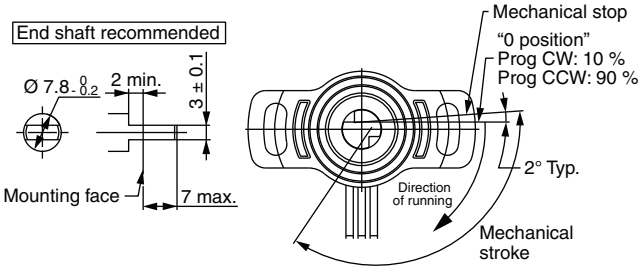
DIMENSIONS in millimeters

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

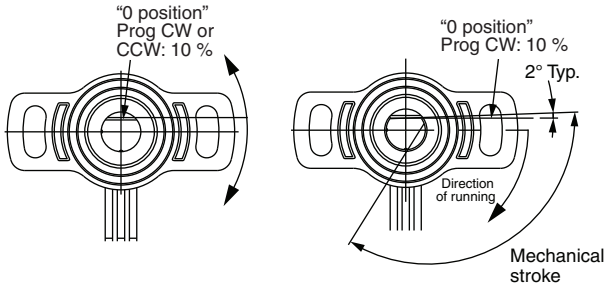


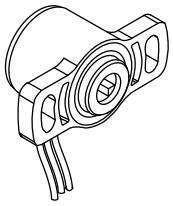
⑥ 981 HE Hollow D-Shaft
Continuous rotation
Shaft: Ø 8

Model: 981HE-0-x-x-W-x-8H01

⑦ 981 HE Hollow D-Shaft
CW
Shaft: Ø 8

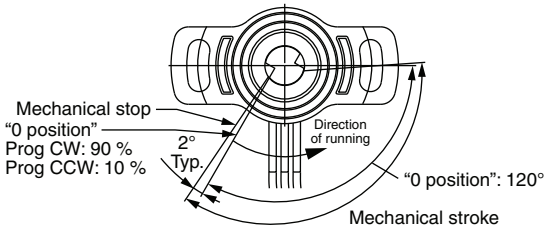
Model: 981HE-1-x-x-W-x-8H01



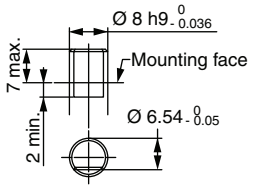


⑤ 981 HE Hollow shaft
Spring return CW
Shaft: Ø 8

Model: 981HE-2-x-x-W-x-8H00

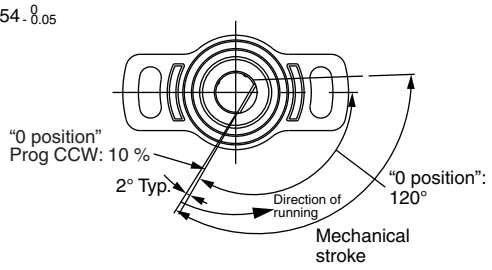


End shaft recommended



⑧ 981 HE Hollow D-Shaft
CCW
Shaft: Ø 8

Model: 981HE-1-x-x-W-x-8H01



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