



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



### DESIGN SUPPORT TOOLS

[click logo to get started](#)

三维图形设计文件

### FEATURES

- 线性精度:  $\pm 0.5\%$
- 容易安装 Easy mounting principle
- 非接触式霍尔效应技术 Hall effect
- 可以适合应用于恶劣肮脏的工况环境
- 可选择弹簧自复位旋杆
- 材料分类认证: 认证规格定义和体系, 产品标签说明, 详见 [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)

RoHS  
COMPLIANT

### QUICK REFERENCE DATA

传感器类型 Sensor type	旋转单圈角度传感器, 霍尔原理 ROTATIONAL, single turn hall effect
信号输出 Output type	导线 Wires
应用市场 Market appliance	工业级 Industrial
尺寸 公制 Dimensions	47 mm x 22 mm

### 电气参数 ELECTRICAL SPECIFICATIONS

PARAMETER	STANDARD	SPECIAL
测量电气角度 Electrical angle	90°, 120°, 180°, 270°, 360°	任意角度可定制
线性精度 Linearity	$\pm 1\%$	$\pm 0.5\%$
供电电压 Supply voltage	5 V <sub>DC</sub> $\pm 10\%$	可客户定制 Other upon request
供电电流 Supply current	10 mA typical / 16 mA max.	16 mA PWM 输出
输出信号 Output signal	Analog ratiometric 10 % to 90 % 的 V <sub>supply</sub> 或 PWM 1 kHz, 10 % to 90 % duty cycle	可客户定制 on request
过载保护正电压 Over voltage protection		+20 V <sub>DC</sub>
过载保护负电压 Reverse voltage protection		-10 V <sub>DC</sub>
推荐负载电阻 Load resistance recom.	最小 1 k $\Omega$	模拟 analog 和 脉宽调制 PWM 输出
静态磁滞 Hysteresis static (D-shaft version)		< 0.3°

### 机械参数 MECHANICAL SPECIFICATIONS

PARAMETER	
机械行程 Mechanical travel	360° 连续 continuous, 可停止限位 stops upon request: 124° $\pm 3^\circ$
旋杆轴承方式 Bearing type	轴套 Sleeve bearing
防护等级 标准的 Standard	IP 50; 其他可客户定制 other on request
重量 Weight	19 g $\pm 2$ g 中空 hollow shaft model/22 g $\pm 2$ g D型旋杆 D-shaft model

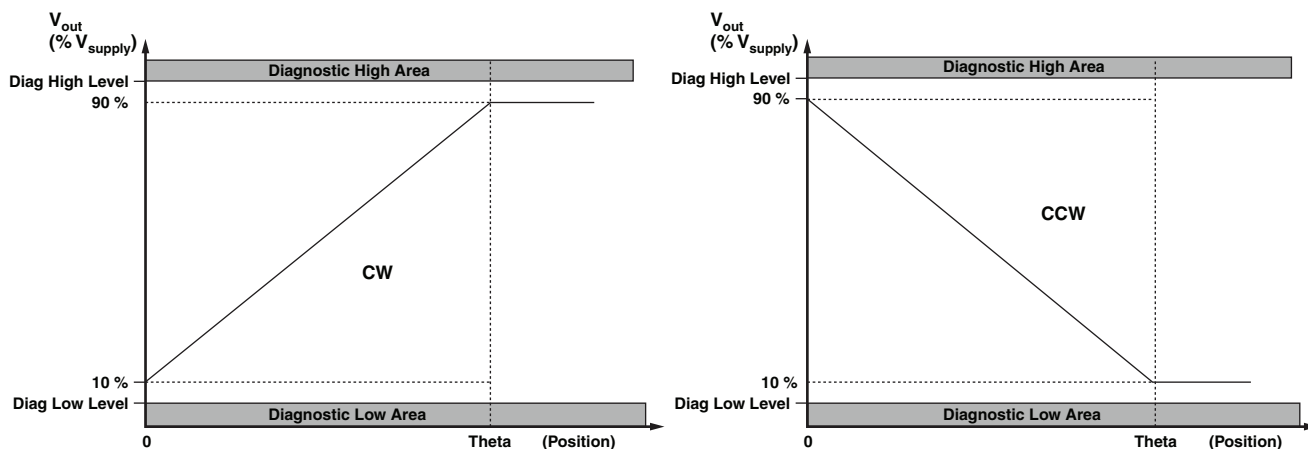
### 订购型号说明 ORDERING INFORMATION/DESCRIPTION

981HE	0	A	1	W	A	1F16	XXXX	BO 10	e1
MODEL	旋转特性	线性精度	测量角度	信号引出	信号输出	旋杆类型	客户定制 代码SPECIAL	包装	LEAD FINISH
	0: 连续旋转	A: $\pm 1\%$	1: 90°	W: wires 导线	A: analog CW	1: $\phi$ 6.35 mm			
	1: 机械限制停止位	B: $\pm 0.5\%$	2: 180°		B: analog CCW	9: 特殊special		Box of 10 pieces	
	2: 弹簧自复位 CW		3: 270°	Z: custom 客户定制	C: PWM CW	P: plain 平			
	3: 弹簧自复位 CCW		4: 360°		D: PWM CCW	F: flatted 平面的			
	1, 2, 3: 最大测量电气 角度: 120°		5: 120°		Z: other output	S: slotted 有沟槽			
			9: other angles			Z: 其他类型 other type			
						基于面板伸出的旋转杆长度 (标准: 16 mm)			
						8H00 中空旋杆 hollow shaft,			
						8H01 D-型旋杆 hollow D-shaft			

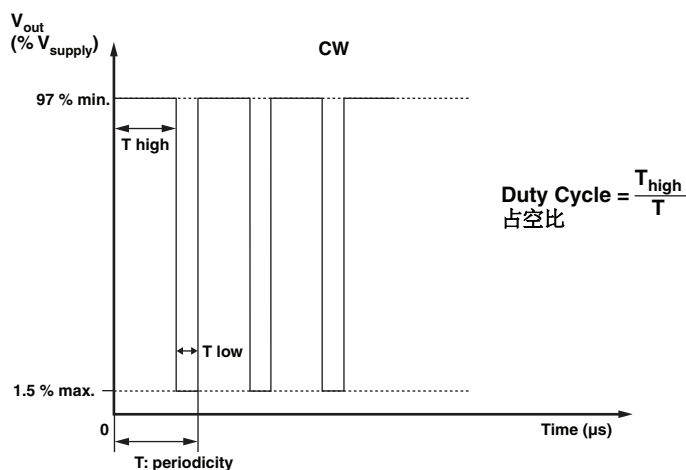
### SAP 订购型号说明 SAP PART NUMBERING GUIDELINES

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

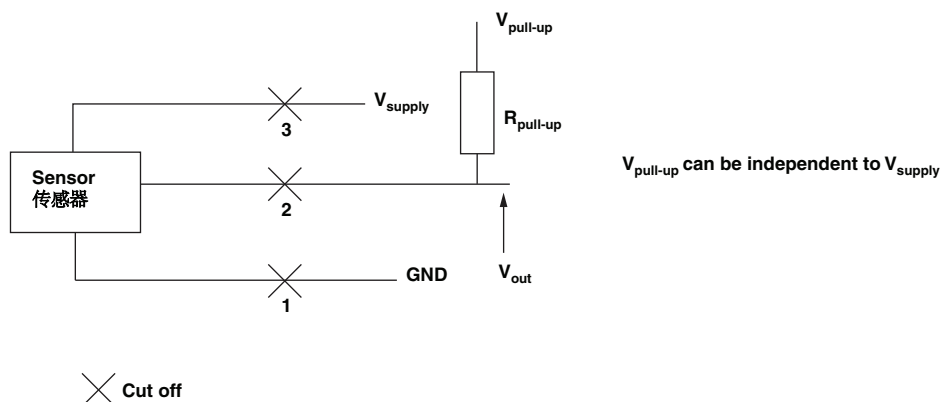
## V<sub>OUT</sub> ANALOG 模拟输出



## V<sub>OUT</sub> PWM 脉宽调制输出



DIAGNOSTIC MODES 诊断方式			
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



环境参数 ENVIRONMENTAL SPECIFICATIONS	
振动 Vibrations	20 g 在 10 Hz ~ 2000 Hz之间, EN 60068-2-6
冲击 Shocks	3 shocks/axis; 50 g half a sine 11 ms, EN 60068-2-7
工作温度 Operating temperature range	-45 °C ~ +125 °C
使用寿命 (周期) Life (in cycles)	> 5百万次 中空旋杆 hollow shaft / > 1千万次 D-性旋杆
最大旋转速度 Rotational speed (max.)	120 rpm
抗电磁场辐射干扰 Immunity to radiated electromagnetic disturbances	200 V/m 150 kHz/1 GHz, IEC 62132-2 part 2 (level A)
抗工频磁场干扰 Immunity to power frequency magnetic field	200 A/m 50 Hz / 60 Hz, EN 61000-4-8 (level A)
电磁辐射 Radiated electromagnetic emissions	30 MHz / 1 GHz < 30 dBμV/m, EN 61000-6-4 (level A)
静电放电 Electrostatic discharges	Contact discharges: $\pm 8\text{ kV}$ Air discharges: $\pm 15\text{ kV}$ , EN 61000-4-2
MATERIALS 材质	
壳体 Housing	热塑性 Thermoplastic housing
旋转杆 Shaft	不锈钢 Stainless steel
信号输出 Output	引出三根导线 3 lead wires

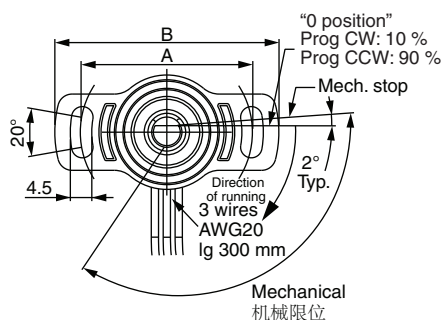
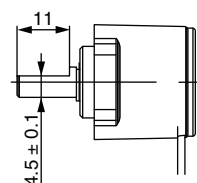
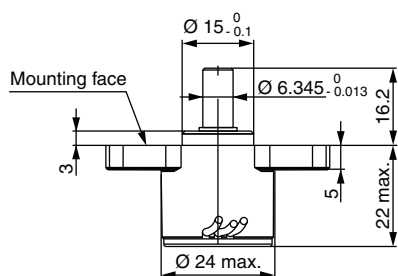
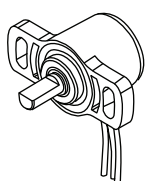
### Note

- Nothing stated herein shall be construed as a guarantee of quality or durability 本文所述内容不得解释为质量或耐久性的保证。

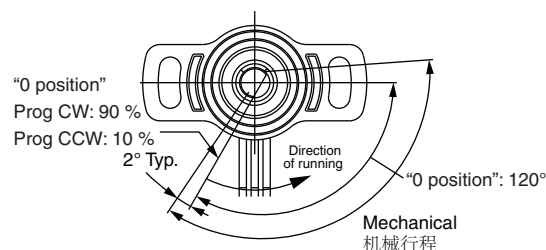
**DIMENSIONS** in millimeters (公制 mm)

### VARIOUS POSSIBLE TYPES OF MODEL 981 HE IN D-SHAFT VERSION (各种D型旋杆方式)

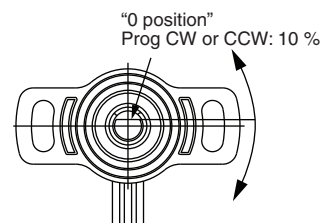
- ① 981 HE D-Shaft  
Spring return CCW  
Shaft: Ø 6.35 flatted length 16 mm FMF  
Model: 981HE-3-x-x-W-x-1F16



- 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 连续旋转  
Shaft: Ø 6.35 flatted 16 mm FMF  
Model: 981HE-0-x-x-W-x-1F16

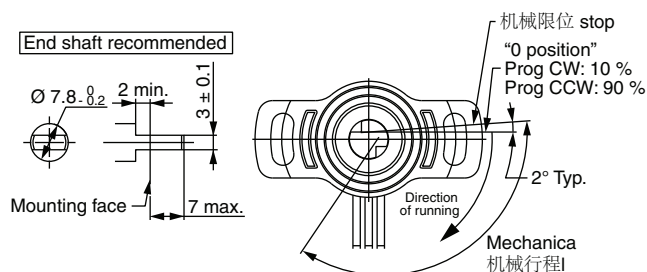


尺寸	标准	可选项	导线颜色Wires
A	36	38	黄 GND (-)
B	47	48	红 信号Signal
			绿 V <sub>CC</sub> (+)

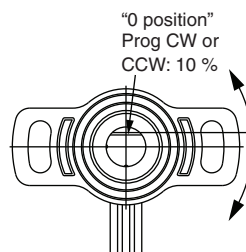
**DIMENSIONS** in millimeters 公制 mm

## VARIOUS POSSIBLE TYPES OF MODEL 981 HE IN HOLLOW SHAFT VERSION (各种中空旋转方式)

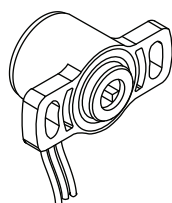
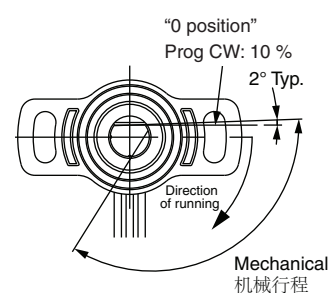
- ④ 981 HE Hollow shaft  
Spring return CCW  
Shaft: Ø 8  
Model: 981HE-3-x-x-W-x-8H00



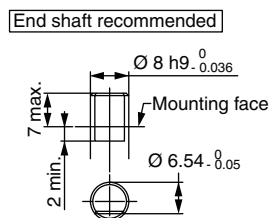
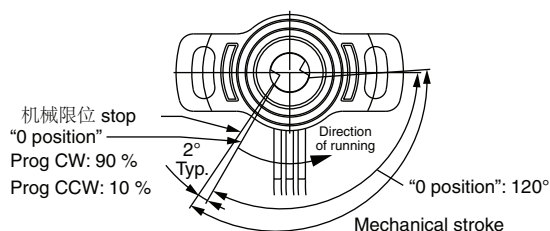
- ⑥ 981 HE Hollow D-Shaft  
Continuous rotation  
Shaft: Ø 8  
Model: 981HE-0-x-x-W-x-8H01



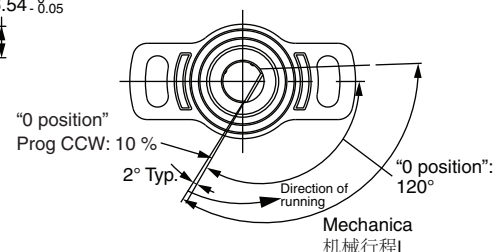
- ⑦ 981 HE Hollow D-Shaft  
CW  
Shaft: Ø 8  
Model: 981HE-1-x-x-W-x-8H01



- 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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