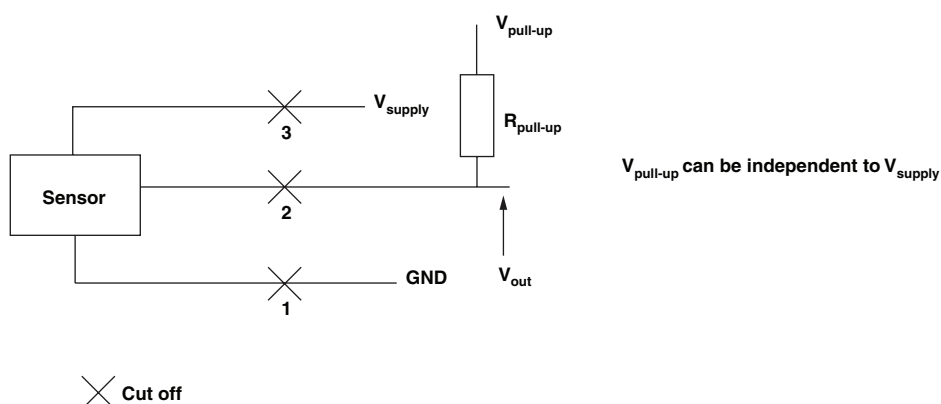


DIAGNOSTIC MODES

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



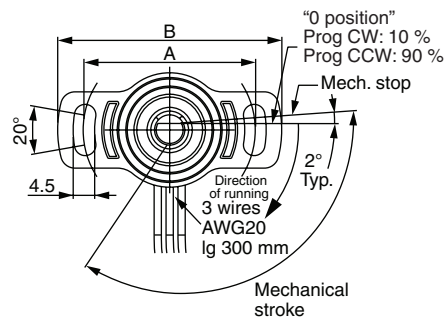
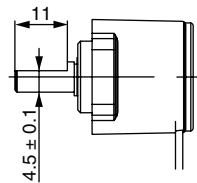
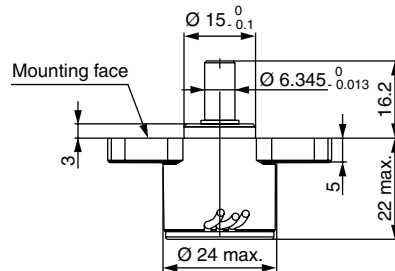
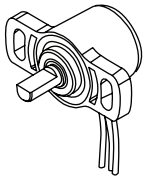
ENVIRONMENTAL SPECIFICATIONS

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

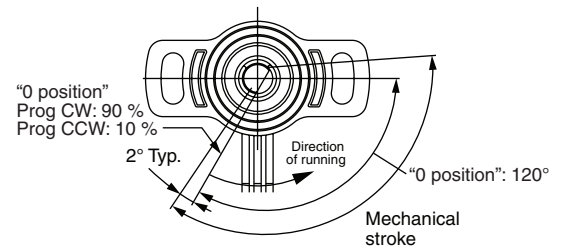
DIMENSIONS in millimeters

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

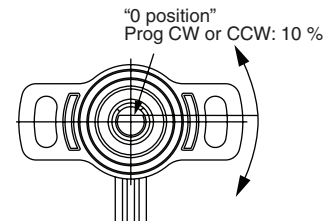
- ① 981 HE D-Shaft
Spring return CCW
Shaft: Ø 6.35 flatted length 16 mm FMF
Model: 981HE-3-x-x-W-x-1F16



- 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} (+)