



Force sensor Gabelhorn



Datasheet KB-011-1600

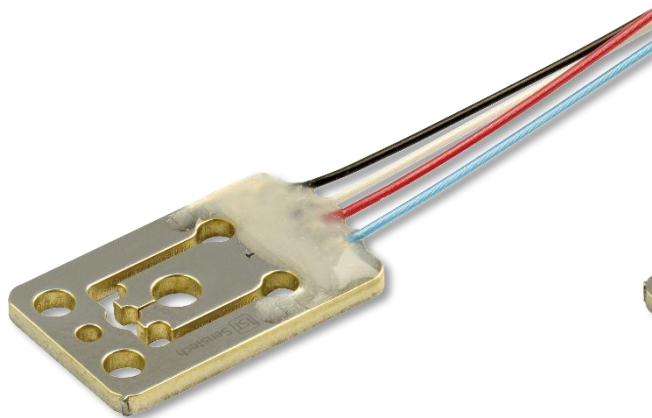
Force is applied on the bracket of the sensor



Benefits & characteristics

- Measurement ranges: $\pm 5 \text{ N}$ to $\pm 50 \text{ N}$
- Force is applied to the sensor bracket
- Compact and robust design
- Mounting of sensor by a M2 screw or by welding
- Available in several force ranges and variants

Illustration



50N-E0-K1-A0



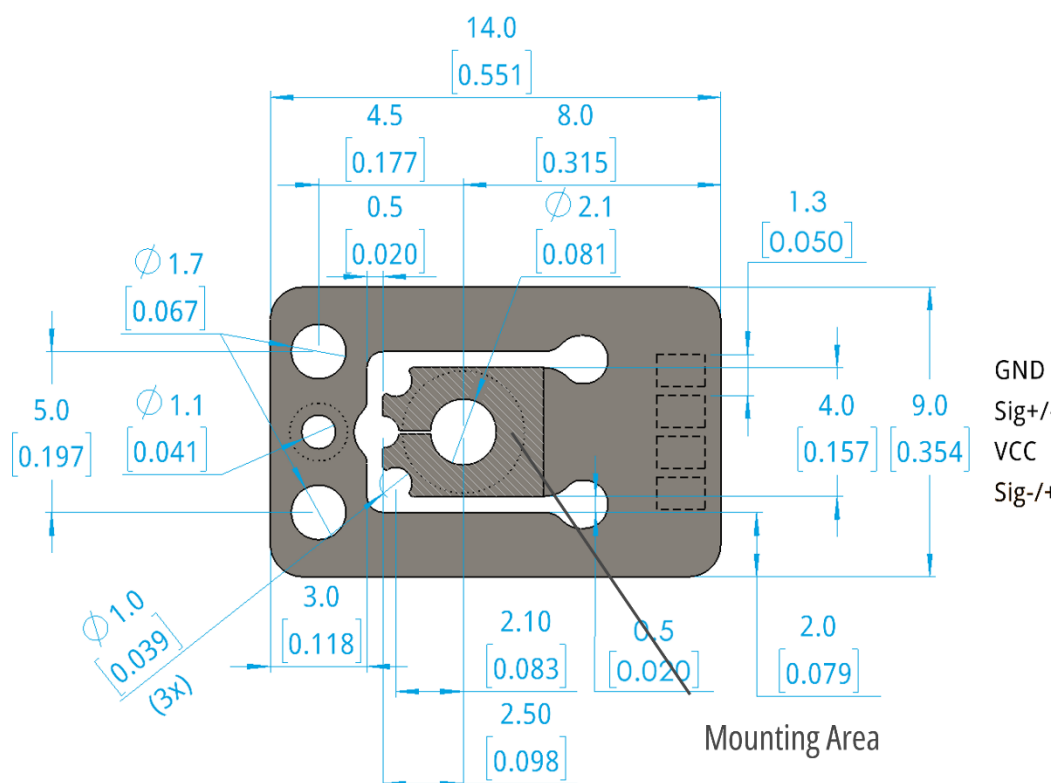
50N-E0-K0-A0

Applications

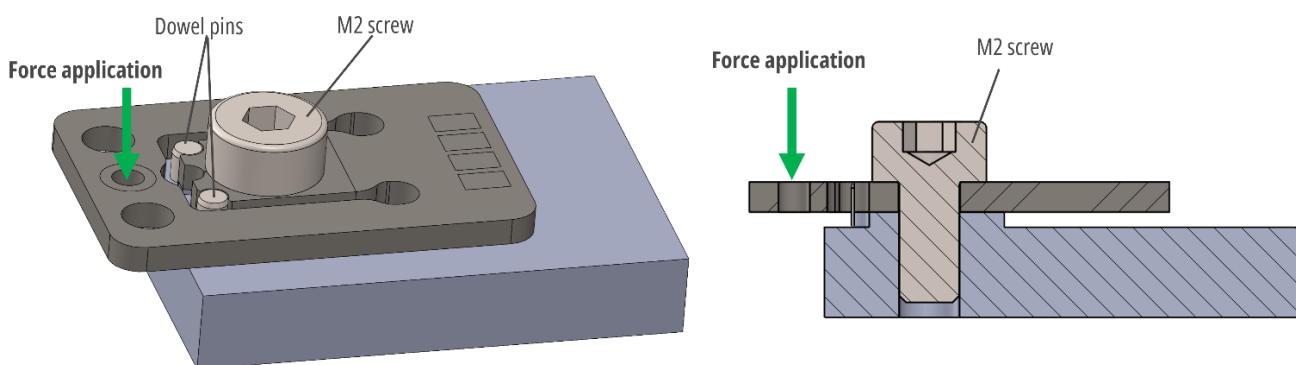
- Medical devices
- Measuring and testing equipment
- Robotics
- Textile industry

Dimensions and integration

All dimensions in millimeters / [inches]



Sensor element dimensions



Integration and force application

Technical specifications

Measurement principle	Thin film strain gauge (full Wheatstone bridge)		
Measurement parameter	Force [N]		
Measurement ranges	±5 to ±50 N, see order information. Custom force ranges available on request		
Electrical contacting	Solder points (variant -K0) or stranded wires (variant -K1)		
	Color scheme for stranded wire (-K1):	Red:	Supply voltage + (VCC)
		Black:	Supply voltage – (GND)
		White:	Signal voltage +/- *
		Blue:	Signal voltage -/+ *
	*) depending on force direction and desired sign of signal value		
Mounting	Attach with M2 screw via central hole, positioning via Ø1mm dowel pins		
Application of force	On sensor bracket (through holes for round-head rivet or 2x M1.6 screws)		
Direction of force	Perpendicular to sensor plane		
Shielding	Two variants: Substrate floating (-A0) or connected to GND (-A1)		
Substrate material	Stainless Steel 1.4542 / X5CrNiCuNb16-4 / 17-4 PH®		

Environmental specifications

	Min	Typ	Max	Unit	Notes/Conditions
Operating temperature range	-20		+125	°C	
Storage temperature range	-40		+125	°C	
Ambient humidity	0		95	%RH	Non-condensing; at VCC ≥ 10 V

Operating specifications

	Min	Typ	Max	Unit	Notes/Conditions
Supply voltage (VCC)	0		15	V	
Supply current	1.5		2.5	mA	At VCC = 10 V
Bridge resistance (R _B)	4		6	kΩ	
Zero signal	-0.25		0.25	mV/V	Output signal of the unloaded sensor
Rated characteristic value (FS) tolerance	-15		15	%	See order information for rated characteristic value (Full scale FS)
Relative linearity error		±0.3		%FS	
Temperature effect on zero signal	-0.02		0.02	%FS/°C	
Temperature effect on characteristic value	0.02	0.025	0.03	%/°C	

Order information

Force sensor Gabelhorn

Basic sensor element

KB-011-1600 = Force sensor Gabelhorn

Force range

Code	Rated force	Rated characteristic value (FS)	Substrate thickness	Sensitivity	Force limit
5	± 5 N	±2.33 mV/V	0.5 mm	466 µV/V/N	6 N
12	± 12 N	±2.00 mV/V	0.8 mm	167 µV/V/N	15 N
20	± 20 N	±2.16 mV/V	1.0 mm	108 µV/V/N	24 N
50	± 50 N	±2.05 mV/V	1.6 mm	41 µV/V/N	60 N

Application force

Code Force application aid

E0 None (hole only)

Connection

Code Variant

K0 Tinned solder pads only

K1 Stranded wires with open ends 200 mm

Shielding

Code Variant

A0 Substrate on floating potential

A1 Substrate connected to GND

KB-011-1600-

xxxN-

Ex-

Kx-

Ax

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