Force sensor Gabelhorn

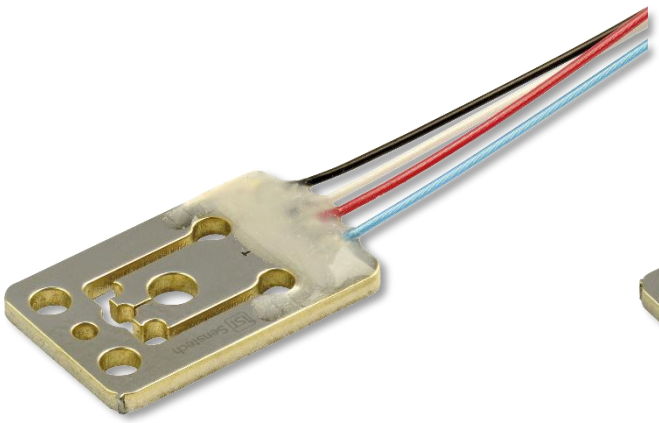
Datasheet KB-011-1600

Force is applied on the bracket of the sensor

Benefits & characteristics

- Measurement ranges: **± 5 N to ± 50 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

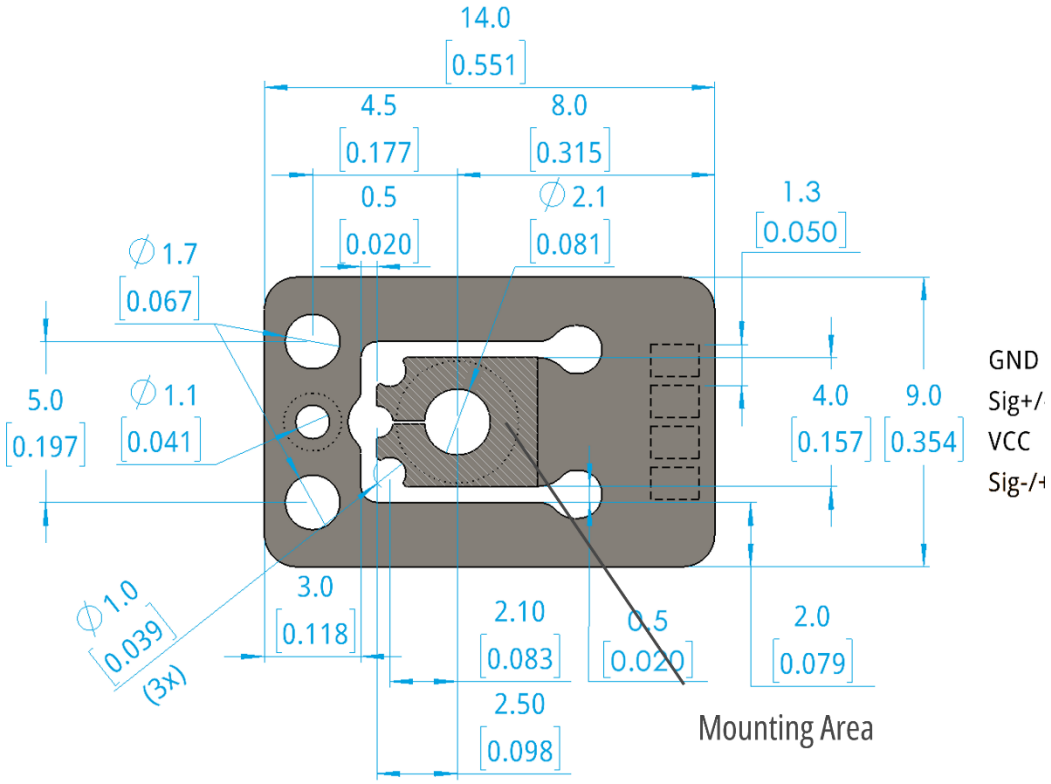
50N-E0-K0-A0

Applications

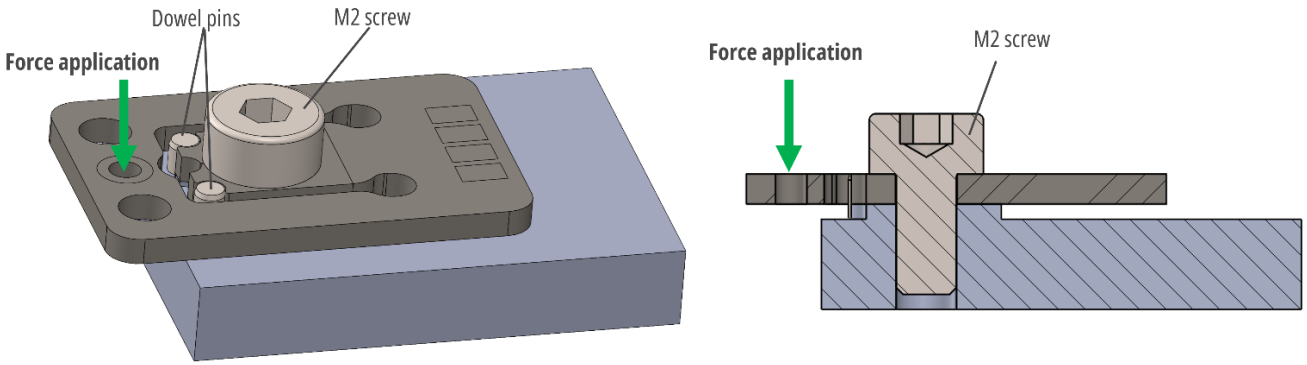
- Medical devices
- Measuring and testing equipment
- Robotics
- Textile industry

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

Senstech AG • Allmendstrasse 9 • 8320 Fehraltorf • Switzerland
+41 44 955 04 55 • info.senstech@ist-ag.com • www.ist-senstech.com

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