

Senstech KZ-011-0400

Centered Force Sensor

With this compact force sensor, the force is applied to a round-head rivet in the center. The sensor can be mounted very easily in a blind hole with a diameter of 12 mm and a clearance. Flexible contacting and housing options make this sensor suitable for a wide variety of applications.

Dimensions and Mounting Options

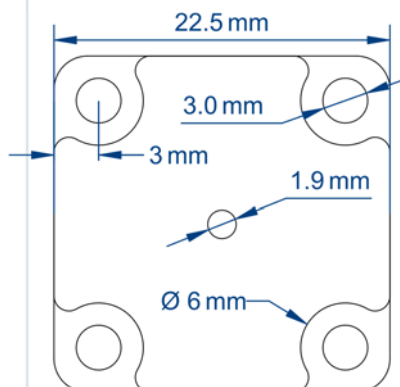
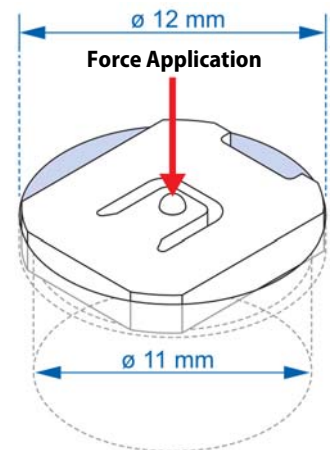
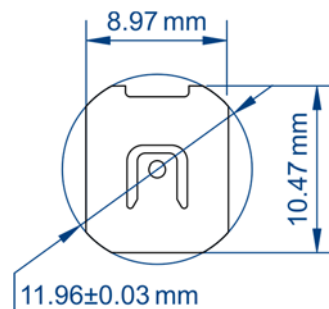


Features

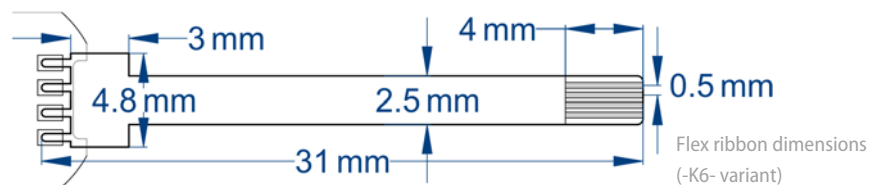
- Compact Design
- Easy Mounting in Blind Hole or with Optional Screw-On Enclosure
- 0-15 V Supply Voltage Range
- Differential Analog Output
- Available in Several Force Ranges

Application Examples

- Watchmaking Equipment
- Medical Devices
- Measuring and Testing Equipment
- Robotics



Screw-on housing dimensions (-G1 variant)



Flex ribbon dimensions (-K6-variant)

General Specifications

Measuring principle	Thin film strain gauges
Measuring parameter	Force [N] or displacement [μm]
Electrical contacting	Solder points, stranded wires, or flex ribbon
Mounting	Fits into a blind hole of D = 12 mm, with a clearance of 11 mm > d > 6 mm below sensor to allow for measuring path and protect against overload
Application of force	On round carbide rivet head, positioned in center of
Direction of force	Perpendicular on thin-film coated side or back side
Shielding	Sensor substrate is connected to supply ground

Environmental Specifications

	Min	Typ	Max	Units	Notes/Conditions
Temperature range					
- Operation	-20		125	°C	
- Storage	-40		125	°C	
Ambient humidity	0		95	%RH	Non-condensing
Ingress protection		IP44			Only valid for variant with housing (-G1)

Operating Specifications

	Min	Typ	Max	Units	Notes/Conditions
Supply voltage	0		15	V	
Supply current	1.5		2.5	mA	at 10 V
Output signal span		0..3.0		mV/V	The output voltage is given by $V_{out} = V_{cc} \cdot F_{sensor} \cdot s$ where V_{out} Output Voltage [μ V] F_{sensor} Force Applied [N] V_{cc} Supply Voltage [V] s Sensitivity [μ V/V/N] - see Ordering Information section
Bridge resistance	4.0		6.0	k Ω	
Zero offset	-0.1		0.1	mV/V	Signal without load, variance between specimens
Zero repeatability	-0.02		0.02	%FS	Variance between measurements (FS = Full Scale)
Sensitivity tolerance	-10		10	%	Variance of sensitivity between specimens
Sensitivity repeatability	-0.3		0.3	%	Variance of sensitivity between measurements
Linearity error	-0.2		0.2	%FS	
Thermal shift for zero	-0.02		0.02	%FS/°C	
Thermal shift for sensitivity	0.02	0.025	0.03	%/°C	

Specifications can be customized in case of larger order quantities. The values listed here often do not represent the best achievable performance.

Variants and Ordering Information

KZ-011-0400-xxxN-Ex-Kx-Gx

Application of Force

Code	Force Application Aid
<u>E0</u>	None (hole only)
<u>E1</u>	Rivet on top side
<u>E2</u>	Rivet on bottom side

Contacting

Code	Contacting Variant
<u>K0</u>	Tinned solder pads only
<u>K1</u>	Stranded wires, 20 cm
<u>K6</u>	Flex ribbon «Antlia»

Housing

Code	Housing Variant
<u>G0</u>	None
<u>G1</u>	Screw-on metal housing

Force Range

Code	Full Scale Range	Allowable Overload	Substrate Thickness	Sensitivity
<u>50N</u>	0 N - 50 N	75 N	0.8 mm	54 μ V/V/N
<u>80N</u>	0 N - 80 N	120 N	1.0 mm	37 μ V/V/N
<u>200N</u>	0 N - 200 N	300 N	1.6 mm	15 μ V/V/N
<u>300N</u>	0 N - 300 N	450 N	2.0 mm	10 μ V/V/N

Wire Color Code

Color	Pin Assignment
Red	Supply Voltage
Black	Supply Ground
Blue	Output Signal +
White	Output Signal -