

Compact Accelerometer: for Dynamic Measurement of Acceleration or Vibration in Frequency Ranges 1Hz to 1.5kHz.



Description

BDK sensors are dynamic accelerometers that are capacitive spring-mass based, with incorporated sensor electronics. Resonance peaks are minimised by means of a special gas-dynamic damping in the primary transformer. With very low power consumption, these sensors are characterised by very low drift (or error) and long-term stability.

Applications

These accelerometers are used for applications requiring high overload tolerance, high long-term stability, small lower cut-off frequency, light weight and low power consumption.

Typical applications include:

- measurements on vehicles, machinery, buildings, and plants for process control and error diagnosis
- seismic measurements
- vibration measurements
- safety engineering
- dynamic measurement of position & velocity

Features

- Compact housing, less than 1" diameter
- Light weight
- Very high overload resistance
- Insensitive to interference by magnetic and electric fields
- Low cut-off frequency
- Linear frequency response with little or no resonant peak at upper cut-off frequency
- Low non-linearity
- High signal-to-noise ratio
- Very low cross-axis sensitivity
- Hermetically sealed
- High long-term stability
- Small temperature drift
- Integrated sensor electronics
- Long connection leads available
- Multiple housing options

MECHANICAL CHARACTERISTICS		
Housing	Type 1	Stainless Steel, M6 Mounting Stud
	Type 2	Nickel Plated Brass
Dimensions	Type 1	Ø 0.87" (Ø 22mm) X 0.39" (10mm) h
	Type 2	Ø 0.80" (Ø 20mm) X 0.30" (7,5mm) h
Weight	Type 1	Approx. 0.60 ounces (17 grams)
	Type 2	Approx. 0.25 ounces (7 grams)
Protection Degree		IP65
Mounting		See "Figure 1"
Mounting Plane		See "Figure 1"
Electrical Connection	Standard	3 highly flexible, color-coded wires Ø 0.04" (Ø 1.0mm) x 7.0" (18cm)
	Optional	Type 1 Housing: Shielded cable Ø 0.083" (Ø 2.1mm) x 1.65' (0.5m)
Operating Temperature		-40°F to +185°F (-40° to +85°C)
Storage temperature		-49°F to +194°F (-45° to +90°C)

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MODEL	BDK3	BDK10	BDK100
Measuring Range	±3g (Approx. ±30m/s ²)	±10g (Approx. ±100m/s ²)	±100g (Approx. ±1000m/s ²)
Resolution	<10 ⁻³ g	<5*10 ⁻³ g	<5*10 ⁻² g
Frequency Range	1...300Hz	1...800Hz	1...1500Hz
Max. Non-linearity	<0.5%		
Cross Axis Sensitivity	<1%		
Mechanical Overloading in Measuring Direction	10,000g (Approx. 100,000m/s ²)		
Power Supply U _{BN} (Regulated)	5 Volt		
Min ... Max. Supply U _{BZ}	2 ... 6 Volt		
Current Consumption U _B =5Volt	BD: Approx. 250uA (optional 30uA), BDK: Approx. 2mA		
ANALOG VOLTAGE OUTPUT MODEL AT U _{BN} =5VOLT			
Sensitivity	Approx. 150mV/g	Approx. 60mV/g	Approx. 10mV/g
Temperature Drift of Sensitivity	< +0.06%/°C		
Temperature Drift of Zero	< 0.1mV/°C		
Zero Offset at U _B =5V	2.5 ±0.1 Volt - generally: 0.5U _B ±4%		
Output Impedance	100 Ohm		
<i>Digital pulse-width modulated output signal - linear to the degree of angle - available upon request.</i>			
CABLE WIRING TABLE:			
3-WIRE (standard)		SHIELDED CABLE (optional for Housing Type 1)	
RED	+5VDC Stable	RED	+5VDC Stable
WHITE	Output Signal	BLUE	Output Signal
BLUE	GND (housing)	SHIELD	GND (housing)
ATTENTION! Do not reverse voltage operating polarity!			

Figure 1: Dimensions and Mounting Position ([mm])

