KISTLER

Type 8310A2 ... 8310A25,
8310A2M11SP ... 8310A25M11SP

8310A K-BEAM® CAPACITIVE ACCELEROMETERS

The Kistler Type 8310A K-Beam accelerometer series utilizes a silicon micro-machined variable capacitance sensing element. This high performance, solid state sensor is ideally suited for applications requiring the measurement of low level acceleration in a steady-state or low frequency environment. In addition to the acceleration signal, the sensor provides an output signal proportional to temperature for performance compensation. K-BEAM performance is similar to larger servo accelerometers at a substantially lower price. These sensors are insensitive to thermal transients and transverse acceleration. They can be mounted with adhesives or by screw fasteners. The sensor and conditioning electronics are integrated into a single lightweight, hermetically sealed titanium housing. Ground isolation is provided by an insulator plate permanently bonded to the housing . The 4-pin receptacle installed on the basic model provides the convenience of a detachable extension cable. The 8310A...M11 variation contains an integral 6 meter four conductor cable terminated in pigtails. The accelerometer's output signal format is bipolar at 0 ±2V. The unit is powered by a single

Continued

- Available in 2 *g*, 10 *g* and 25 *g* ranges
- Low power, 1.3 mA
- Frequency response 0 ... 300 Hz (± 5%)
- Threshold 380 µ*g* (2 *g* version, 0…100 Hz)
- Bipolar output: ± 2 VFS, single supply
- High shock resistance, 6000 *g*
- Conforming to CE

Technical Data	Units	8310A2 8310A2M11SP	8310A10 8310A10M11SP	8310A25 8310A25M11SP
Acceleration Range	***g***	±2	±10	±25
Sensitivity ±5 %	mV/***g***	1000	200	80
Zero *g* Output ±30 mV	V	0	0	0
Resolution (Threshold)	µ***g***	540	2830	8060
Amplitude Non-linearity	%FS	±0.8	±0.8	±0.8
Resonant Frequency nom.	Hz	1400	2700	5100
Frequency Response ±5%	Hz	0 ... 300	0 ... 180	0 ... 100
Noise typ. (0 ... 100Hz)	µg_{rms}	380	2000	5700
Noise Density (0…100 Hz) typ.	µg_{rms} / $\sqrt{Hz}$	38	200	570
Phase Shift max.				
@ 0 Hz	degree	0	0	0
@ 10 Hz	degree	2	2	2
@100 Hz	degree	20	20	20
Sensitive Axis Misalignment typ. (max.)	mrad	<10 (30)	<10 (30)	<10 (30)
Transverse Sensitivity typ. (max.)	%	1 (3)	1 (3)	1 (3)
Environmental:				
Random Vibration 20… 2000 Hz	g_{rms}	20	20	20
Shock half sine, 700µs	g_{pk}	6000	6000	6000
Temperature Coeffecient Sensitivity typ. (max.)	%/°F	0.01 (0.018)	0.01 (0.018)	0.01 (0.018)
	%/°C	0.02 (0.032)	0.02 (0.032)	0.02 (0.032)
Bias typ. (max.)	m***g***/°F	0.11 (0.56)	0.56 (2.8)	1.5 (6.9)
	m***g***/°C	0.2 (1)	1 (5)	2.7 (12.5)
Temperature Range Operating	° F		-40…185	
	°C		-40…85	
Storage	°F		-65…255	
	°C		- 55 …125	
Output Impedance max.	Ω		350	
Load Resistance min.	kΩ		30	
Capacitive Load max.	µF		0.5	
Supply:				
Voltage	VDC		3.8 ... 16	
Current nom.	mA		1.3	

1 ***g*** = 9.80665 m/s², 1 inch = 25.4 mm, 1 gram = 0.03527 oz, 1 lbf-in = 0.1129 Nm

000-218e-07.02 (DBK8.8310e)

Kistler Instrument Corporation reserves the right to discontinue or change specifications, designs or materials without notice consistent with sound engineering principles and quality practices.

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Technical Data	Units	8310A..., M11SP
Construction		
Sensing Element	type	capacitive
Housing / Base	material	titanium/ Al. hard anodize
Sealing - housing / connector	type	hermetic
Connector	type	4-pin Microtech pos
Ground Isolation min.	MΩ	10
Weight	g	17

supply between +3.8 and +16 V DC. The sensor's low power consumption, will provide approximately 2,000 hours of operation from a single 9 volt alkaline battery.

The 8310A has an internal temperature sensor with output transfer function. Temp (°C) = (Vt - 0.424) / 0.00625 where Vt is the measured voltage from the unit's temperature output. The temperature output can be used to externally compensate operation of the accelerometer. Accuracy of temperature sensor output is ±4°C.

Applications

- Vehicle ride analysis
- Structural analysis
- Building and bridge vibration
- Motion/stability control systems, steady-state and low level, low frequency acceleration measurements.

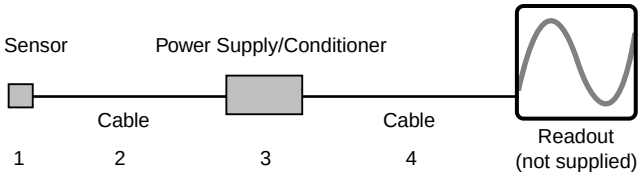
Suggested Measuring Chain

The 5210 provides a convenient power supply and signal interface for the 8310A accelerometer and features a panel-mounted DC offset adjustment with internal gain and filtering options.

Related Products

8305A K-BEAM accelerometer series
8312A K-BEAM accelerometer series
8324A K-BEAM accelerometer series, high ***g*** range
8393A Triaxial K-BEAM accelerometer series

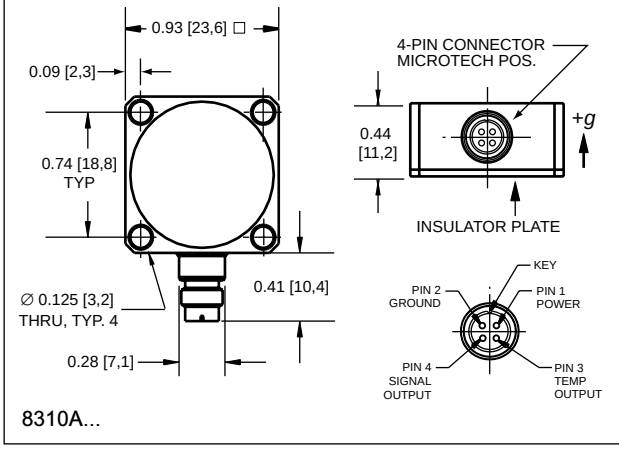
Ordering Information



Specify:

1-	8310A…	accelerometer, specify range
	8310A... M11	accelerometer, cable with pigtails, specify range and cable length
2-	1592A	2-meter output cable (4-pin neg. to 4-pin neg.) or
	1592M1	2-meter output cable, 4-pin Microtech (neg. to pigtails)
3-	5210	single channel power/output adaptor
4	-1511...	output cable, BNC pos. to BNC pos., specify length in meters

Dimensions in inches [mm]



8310A...

8310A...M11SP

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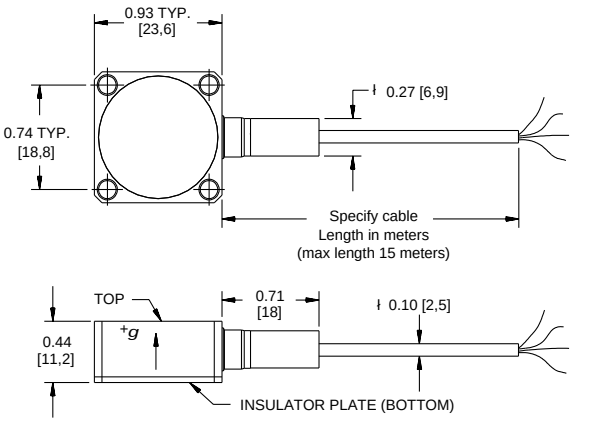

WIRE	CONNECTION
RED	POWER
BLACK	GROUND
WHITE	OUTPUT
YELLOW	TEMPERATURE

Supplied Accessories

431-0491-001	(4) mounting screws, 4-40 UNC-2A x 5/8" long
431-0492-001	(4) mounting screws, M3 x 16mm long
8432	(1) mounting wax

Optional Accessory

8518 triaxial mounting cube

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