

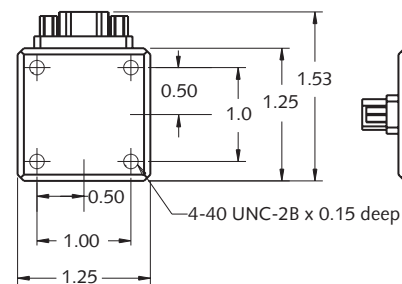
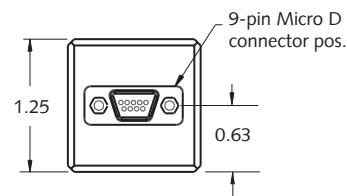
K-Beam® Accelerometer

Type 8393B...

Cube Shape, Capacitive, Triaxial Accelerometers

High sensitivity triaxial accelerometers that simultaneously measure static acceleration or low-level, low-frequency vibration in three mutually perpendicular axis (x, y, z). Featuring excellent frequency response, an insensitivity to thermal transients and transverse acceleration, the 8393B... is available in two measuring ranges and ground isolated configuration.

- Measures three axes simultaneously
- Wide supply voltage range up to +32VDC
- 6000 gpk shock rated
- Excellent thermal performance
- Frequency response 0 ... 250Hz
- Conforming to CE



Description

The 8393B... triaxial accelerometer series utilizes a silicon micro-machined variable capacitance sensing element. The sensing element of each axis, consists of a very small inertial mass and a flexure element cantilever positioned between two plates. As the mass deflects under acceleration, the capacitance between these plates changes. AC excitation and synchronous amplitude demodulation circuitry contained in the accelerometer's signal conditioner provides an analog output signal proportional to the applied acceleration. The output signal format is bipolar at $0 \pm 2V$ and the unit is powered by a single regulated supply between +3.8 and +32 V DC.

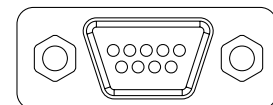
The sensing element and electronics are contained in light-weight, aluminum housing environmentally protected by an epoxy seal. Ground isolation is provided by a hard anodized finish.

Application

These high performance, solid state sensors are ideally suited for applications requiring low level acceleration measurement in a steady-state or low frequency environment. Vehicle stability control and ride analysis; automotive vibration, structural analysis; robotics and/or platform motion control systems, building & bridge vibration, human motion studies and seismic ground measurements are but a few areas of application.

PIN CONNECTIONS

Pin #	Function
1	+Power
2	Ground
3	X DC Output
4	Y DC Output
5	Z DC Output
6	Ground
7	N/C
8	N/C
9	N/C



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Technical Data

Type	Units	8393B2	8393B10
Acceleration Range	g	± 2	± 10
Sensitivity ±5%	mV/g	1000	200
Zero g Output ±30mV	V	0	0
Resolution (Threshold) typ.	µg	540	2830
Noise typ. (0 ... 100Hz)	µg _{rms}	380	2000
Noise Density typ. (0 ... 100Hz)	µg _{rms} /√ Hz	38	200
Resonant Frequency nom.	kHz	1.4	2.7
Phase Shift max.			
@ 0 Hz	degree	0	0
@ 10 Hz	degree	2	2
@ 100 Hz	degree	20	20
Frequency Response ±5%	Hz	0 ... 250	0 ... 180
Amplitude Non-linearity	%FSO	± 0.8	± 0.8
Transverse Sensitivity typ. (max. 3%)	%	1	1
Sensitive Axis Misalignment typ. (max. ≤ 30)	mrاد	≤10	≤10
Environmental:			
Random Vibration 20 ... 2000Hz	g _{rms}	20	20
Shock half sine, 700 µs	g _{pk}	6000	6000
Temperature Coefficient of Sensitivity typ. (max. 0.06)	%/°F	0.01	0.01
Temperature Coefficient of Bias Shift typ. (max.)	mg/°F	0.11 (0.56)	0.56 (2.8)
Temperature Range Operating	°F	-40 ... 185	-40 ... 185
Temperature Range Storage	°F	-65 ... 250	-65 ... 250
Output:			
Impedance max.	Ω	350	350
Capacitive Load max.	µF	0.5	0.5
Operating Load Resistance min.	kΩ	30	30
Supply:			
Voltage	VDC	3.8 ... 32	3.8 ... 32
Current nom.	mA	4	4
Construction:			
Sensing Element	type	capacitive	capacitive
Housing	material	Al. Hard Anodized	Al. Hard Anodized
Sealing-Housing Connector	type	epoxy	epoxy
Connector	type	9-pin micro D	9-pin micro D
Ground Isolation min.	Ω	>10 ¹⁰	>10 ¹⁰
Weight	grams	60	60

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

Mounting

Reliable and accurate measurements require that the mounting surface be clean and flat. The accelerometer can be attached to the test structure with the supplied screws either directly to the tapped holes in the housing of the accelerometer or the accelerometer can first be fastened to the supplied mounting plate (654-0524-001) and the latter bolted to the structure. The Operating Instruction Manual for the 8393B... provides detailed information regarding mounting surface preparation.

Accessories Included

- | | |
|---|--------------|
| • hex wrench, 0.062 inch | 440-9014-02 |
| • (8) 4-40 UNC x 0.19 BTHD cap screw | 431-0478-003 |
| • mounting plate,
(L x W x H) 1.94 x 1.25 x 0.14 | 654-0524-001 |
| • 9-pin micro D neg. mating connector
to 9-pin D pos. sub connector (male),
2m long | 1790A2 |

Optional Accessories

- | | |
|---|----------|
| • breakout cable, 9-pin neg. D-Sub to
(3x) BNC pos., (2x) male banana plug
specify length in meters | 1794A... |
|---|----------|

Ordering Key

Measuring Range

±2g	2
±10g	10

8393B