KISTLER

Type 8393A2 ... 8393A25

8393A K-BEAM® TRIAXIAL CAPACITIVE ACCELEROMETERS

Kistler Type 8393A is a precision capacitive silicon micromachined accelerometer for measuring low level, low frequency (or static) acceleration in three orthogonal axes, simultaneously. Its highly stable operation makes it possible to measure slow-changing events with a high degree of accuracy and repeatability. The small package allows for convenient mounting on the test article. The unit is constructed in a rugged, ground isolated hard anodized aluminum package.

This unit is ideal for precision laboratory measurements or field-testing. The accelerometer will operate with most data acquisition and analysis equipment without added signal conditioning. The output signals from the three mutually perpendicular axes are directly proportional to the acceleration levels being measured . A DC regulated supply is required to power the unit.

- Measures three axes simultaneously
- 6000 g_{pk} shock rated
- Excellent thermal performance
- Frequency response 0 ... 300Hz
- Operates from 3.8 to 16VDC
- Conforming to CE

Technical Data	Units	8393A2	8393A10	8393A25
Acceleration Range	*g*	±2	±10	±25
Sensitivity ±5%.	mV/*g*	1000	200	80
Zero *g* Output ±30mV	V	0	0	0
Resolution (Threshold) typ.	µ*g*	540	2830	8060
Noise typ. (0 ... 100Hz)	μg_{rms}	380	2000	5700
Noise Density typ. (0 ... 100Hz)	$\mu g_{rms} / \sqrt{Hz}$	38	200	570
Resonant Frequency nom.	kHz	1.4	2.7	5.1
Phase Shift max. @ 0 Hz	degree	0	0	0
@ 10 Hz	degree	2	2	2
@ 100 Hz	degree	20	20	20
Frequency Response ±5% (100 Hz Ref.)	Hz	0 ... 300	0 ... 180	0 ... 100
Amplitude Non-linearity	%FSO	±0.8	±0.8	±0.8
Transverse Sensitivity typ. (max.)	%	1 (3)	1 (3)	1 (3)
Sensitive Axis Misalignment typ. (max.)	mrad	10 (30)	10 (30)	10 (30)
Environmental:				
Random Vibration 20 ... 2000Hz	g_{rms}	20	20	20
Shock half sine, 700 µs	g_{pk}	6000	6000	6000
Temperature Coefficient of Sensitivity typ. (max.)	%/°F	0.011 (0.018)	0.011 (0.018)	0.011 (0.018)
	%/°C	0.02 (0.032)	0.02 (0.032)	0.02 (0.032)
Bias Shift typ. (max.)	m*g*/°F	0.11 (0.56)	0.56 (2.8)	1.4 (6.9)
	m*g*/°C	0.2 (1.0)	1.0 (5.0)	2.5 (12.5)
Temperature Range Operating	°F		–40 ... 185	
	°C		–40 ... 85	

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

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000-224e-10.02 (DBK8.8393e)

Technical Data	Units	8393A
Temperature Range Storage	°F	–65 ... 250
	°C	–55 ... 120
Cable Length max.	meters	30
Capacitive Load max.	µF	0.5
Operating Load Resistance min.	kΩ	30
Output Impedance max.	Ω	350
Supply		
Voltage	VDC	3.8 16
Current nom.	mA	4
Construction		
Sensing Element	type	capacitive
Housing	material	Al./hard anodized
Sealing-Housing Connector	NEMA	12 (IP65)
Connector	type	9-pin micro D pos.
Ground Isolation min.	MΩ	10
Weight	grams	60

Principles of Operation

The accelerometer's three sensing elements are micromachined from silicon. Seismic masses are suspended between two fixed plates of each element that act as electrodes. As the mass deflects under acceleration, the capacitance between these plates changes. This seismic system coupled with the unit's electronics produce electrical signals proportional to acceleration.

Applications

Ideal for testing low frequency structural dynamics for bridges and buildings; transportation testing and control, robotics, human motion studies and seismic ground measurements.

Ordering Information

8393A(X) triaxial accelerometer, specify range (X = 2,10, 25 *g*)

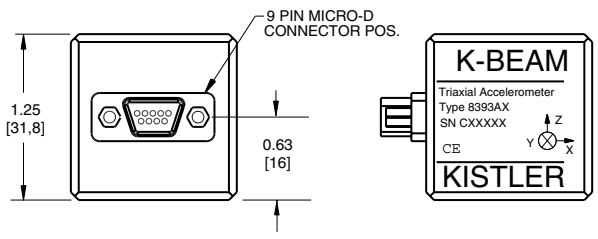
Supplied Accessories

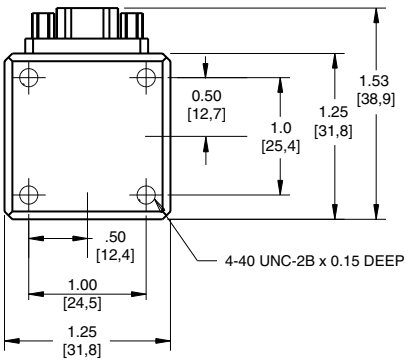
1790A2	9-pin micro D neg. mating connector to 9-pin D pos. sub connector (male), 2m long
431-0478-003	4-40 UNC x 0.19 BTHD cap screw, quantity 8
654-0524-001	mounting plate, L 1.94 [49,3] x W 1.25 [31,7] x H 0.14 [3,6]
440-9014-002	hex wrench, 0.062 inch

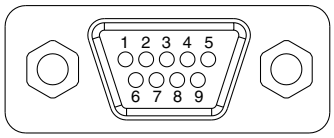
Optional Accessory

1788	breakout cable

Dimensions in inches [mm]







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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