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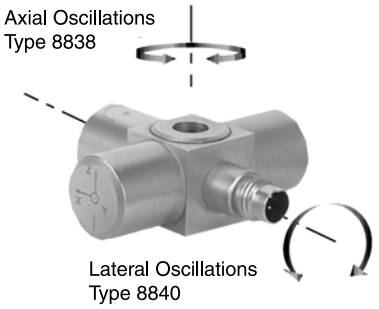
K-Shear®

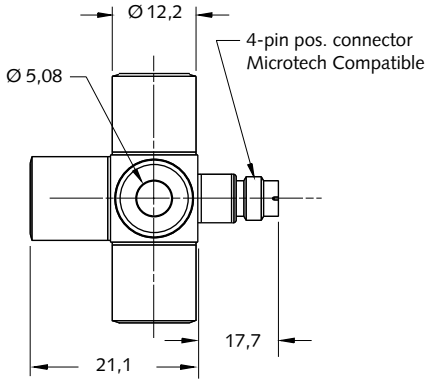
Types 8838
8840

Axial/Lateral Rotational Accelerometers

Uniquely configured shear-quartz sensing elements that enable the 8838 Axial Accelerometer to measure oscillations occurring about the mounting bolt axis and allow the 8840 Lateral Accelerometer to measure oscillations occurring about a centerline axis passing through the electrical connector.

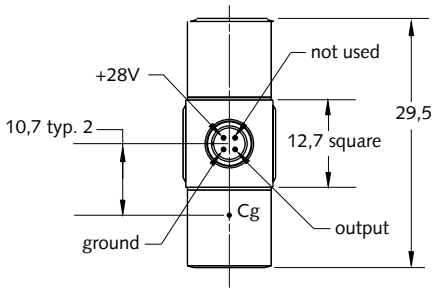


- Shear quartz piezoelectric principle
- Axial or Lateral oscillations
- Hermetic construction
- Lightweight and convenient thru hole mount
- Conforming to CE



Description

The 8838 and 8840 are a novel complement of shear mode sensors that are designed to respond to two distinctly different forms of induced oscillations. The internal orientation of the quartz elements enables the 8838 accelerometer to respond to oscillations occurring about the unit's mounting axis when installed in a non-rotating test application. The element structure of the 8840 accelerometer is such that the unit will accurately measure the acceleration magnitude of oscillations laterally induced to its mounting base.



Kistler's shear technology assures high immunity to base strain, thermal transients and transverse accelerations. Notable features include wide frequency response, lightweight titanium construction, hermetic, and ground isolated design. Included within both models are signal processing electronics that convert the charge generated by the mechanical system into a high voltage signal level at a low impedance output. These accelerometers do not use standard voltage mode piezoelectric sensor couplers but are powered by any commercially available (20 to 30 VDC) power supply.

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Technical Data

Type	Units	8838/8840
Acceleration Range	krad/s²	±150
Acceleration Limit	krad/s²	±200
Threshold (noise 130µVrms)	rad/s²	4
Sensitivity nom.	µV/rad/s²	34
Resonant Frequency mounted, nom.	kHz	23
Frequency Response, ±10%	Hz	1…2000
Amplitude Non-linearity	%FSO	1
Time Constant	s	1
Transverse Sensitivity typ. (max.)	%	1,5 (2)
Vibration max.	g	2000
Shock Limit (1ms pulse width) max.	g	5000
Base Strain Sensitivity @250µε	g/µε	0,005
Long Term Stability	%	±1
Temperature Coefficient of Sensitivity	%/°C	-0,06
Temperature Range Operating	°C	-55 ... 120
Temperature Range Storage	°C	-75 ... 150
Output:		
Voltage FS nom.	V	±5
Current	mA	2
Impedance	Ω	<100
Source:		
Voltage	VDC	20…30
Current	mA	4
Construction:		
Sealing-housing/connector	type	hermetic
Housing/base	material	titanium
Sensing Element	type	quartz/shear
Connector	type	4-pin pos. Microtech Equivalent
Weight	grams	18,5
Ground Isolation min.	MΩ	10
Mounting	type	cap screw
Mounting Torque	Nm	2

1 g = 9,80665 m/s², 1 inch = 25,4 mm, 1 gram = 0,03527 oz, 1 lbf-in = 0,1129 Nm

Application

- Axial or shaft type measurements on an oscillating but non-rotating specimen
- Active control of positioning systems; performance & compensation
- Frontal or lateral rotations encountered by instrumented crash test dummies

Mounting

Reliable and accurate measurements require that the mounting surface be clean and flat. The sensor can be attached to the structure by a single 10-32 socket head cap screw. The Operating Instruction Manual for the 8838/8840 provides detailed information regarding mounting surface preparation.

Accessories Included	Type
• socket head cap screw, 10-32 x 19,05mm long	431-0475-003
• socket head cap screw, M5 x 20mm long	431-0494-001

Optional Accessories	Type
• 4-pin Microtech neg to (2x) banana jacks, BNC pos	1786C…

Ordering Key

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Measuring Range/Direction	
±150 krad/s² axial acceleration	38
±150 krad/s² lateral acceleration	40

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