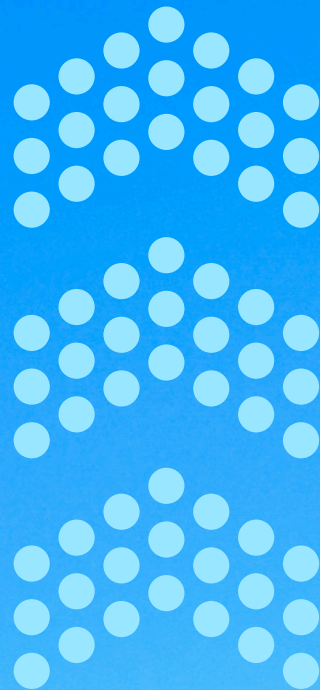




# Piezoelectric IEPE Accelerometers

For your Vibration Needs



## OVERVIEW:

Piezoelectric accelerometers are sensors used to measure dynamic changes in mechanical variables such as vibration, shock, and acceleration.

Benefits and uniqueness:

- Cost effective offering
- Customisable to user requirement
- Meets Industry benchmarks
- Developed and made in India
- Mounting studs, cables, carrying box and calibration certificate included with every accelerometer.

They operate based on the piezoelectric effect, which occurs when piezoelectric materials generate an electric charge in response to mechanical stress.

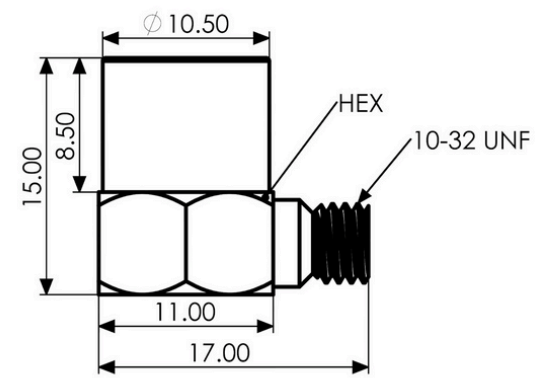


**Accelerometer**

The sensing elements are arranged in a triangular configuration and secured with a ring, which pre-stresses the piezoelectric components. This configuration enhances better linearity in sensitivity across the entire frequency range.

## Features:

- High-fidelity signal-integrity amplifier
- Rugged construction
- Wide frequency range
- Quick setup and measurement
- Low Transverse Sensitivity
- Stable sensitivity in all environments
- Light weight base and body
- Defence and Aerospace grade alloys



**KNM Systems** under the mentorship of **Acoustics Lab, IIT Hyderabad** has made this **accelerometer** possible!





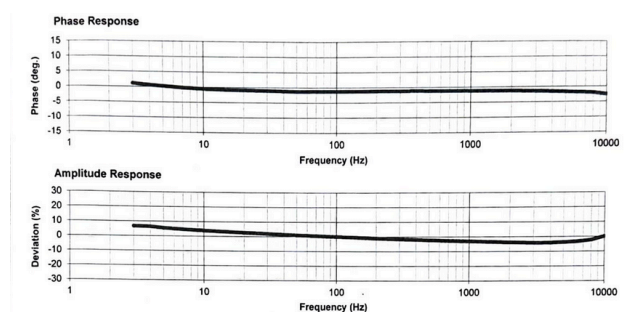
## General dynamic measurement:

IEPE accelerometers are Dynamic in nature meaning it can only measure AC signals.

Lowest frequency within 10% sensitivity deviation is determined by pre-amplifier low pass frequency.

High frequency within 10% sensitivity deviation is determined by resonance of transducer.

The construction is optimised during production individually to reduce sensitivity distortion across frequency.



**Typical Frequency & Phase Characteristics**

Type	Value	Technicity
Lowest frequency	< 1Hz	Pre-amplifier low pass circuit
Highest Frequency	> 10,000 Hz	0.3 times resonance Frequency

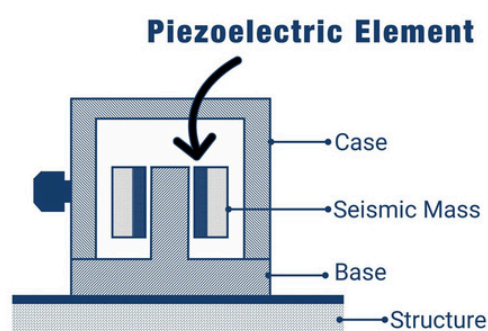
## Environment:

Hermetically sealed to protect against aging due to atmosphere.

Humidity, dust and condensation has minimal affect signal due to low impedance output of accelerometer..

Small dependence to transient temperature due to capacitive feedback. Wide operating range.

Base Strain minimal due to triangular configuration,



Type	Value	Technicity
Min. Temperature	-50	ICP component limit
Max. Temperature	150	ICP component limit
Hermeticity	>10 <sup>-5</sup> cc/sec	Laser welding



## Uniaxial:

Technical specs:		KNMGPSA100M5	KNMGPSA050M5	KNMGPSA010M5
Voltage Sensitivity (@160 Hz and 4 mA constant current)		100mV/g $\pm$ 5%	50mV/g $\pm$ 5%	10mV/g $\pm$ 5%
Frequency Range	Amplitude $\pm$ <10%	1 Hz - 15 kHz		
	Amplitude $\pm$ 5%	5 Hz - 10 kHz		
	Phase $\pm$ 5%	5 - 5 kHz		
Resonance frequency	Axial	>30 kHz		
	Transverse	>15 kHz		
Transverse Sensitivity		< 1%		
Measuring Range (upto)		0.49 km/s-2	0.98 km/s-2	4.9 km/s-2
		50 g	100 g	500 g
Weight		< 5.5 gms		
Bias Voltage	@4mA and ambient temperature	12 $\pm$ 0.5 V		
	At full current and temperature range	8 to 15 V		
Power Supply	Unloaded Voltage	18 to 30 V		
	Constant current	2 to 20 mA		
Output impedance		< 200 $\Omega$		
Residual Noise (RMS across given frequency range)		< 30 $\mu$ V	< 15 $\mu$ V	< 3 $\mu$ V
		< 3000 $\mu$ g	< 150 $\mu$ g	< 300 $\mu$ g
Case Material		Titanium ASTM grade 2		
Electrical Connector		10-32 coaxial with side mount		
Mounting		10-32 UNF/M5 threaded hole**		
Mounting torque		0.02 to 0.06 Nm		
Magnetic Sensitivity		50 m/s-2/T		
Non destructive shock (Both transverse and longitudinal)		5000 g / 49 km/s2		

\*\*As per customer preference



## Triaxial:

Technical specs:		KNMGPTA100M5	KNMGPTA050M5	KNMGPTA010M5
Voltage Sensitivity (@160 Hz and 4 mA constant current)		100mV/g $\pm$ 10%	50mV/g $\pm$ 10%	10mV/g $\pm$ 10%
Frequency Range	Amplitude $\pm$ <10%	X,Y: 1 Hz - 10 kHz, Z: 1 Hz - 12 kHz		
	Amplitude $\pm$ 5%	X,Y : 5 Hz - 8 kHz, Z: 5 Hz to 10 kHz		
	Phase $\pm$ 5%	X,Y : 5 Hz - 10 kHz, Z: 5 Hz to 12 kHz		
Resonance frequency	X,Y	>30 kHz		
	Z	>40 kHz		
Transverse Sensitivity		< 5%		
Measuring Range (upto)		0.49 km/s-2	0.98 km/s-2	4.9 km/s-2
		50 g	100 g	500 g
Weight		< 6.5 gms		
Bias Voltage	@4mA and ambient temperature	12 $\pm$ 0.5 V		
	At full current and temperature range	8 to 13 V		
Power Supply	Unloaded Voltage	18 to 30 V		
	Constant current	2 to 20 mA		
Output impedance		< 200 $\Omega$		
Residual Noise (RMS across given frequency range)		< 30 $\mu$ V	< 15 $\mu$ V	< 5 $\mu$ V
		< 300 $\mu$ g	< 150 $\mu$ g	< 500 $\mu$ g
Case Material		Titanium ASTM grade 2		
Electrical Connector		1/4" - 28 UNF 4 - pin (Male)		
Mounting		M3 threaded hole		
Mounting torque		0.02 to 0.06 Nm		
Magnetic Sensitivity		50 m/s-2/T		
Non destructive shock (All axis)		5000 g / 49 km/s2		

\*\*As per customer preference



# GET YOUR QUOTATION NOW!



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