KISTLER
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INTERVIEW WITH PRODUCT MANAGER MAX SACKENREUTHER

MINIATURIZATION MEETS PRECISION: SETTING NEW STANDARDS IN VIBRATION MEASUREMENT

Max Sackenreuther
Product Manager for acceleration at Kistler

New KiVibe Miniature triaxial IEPE accelerometer raises the bar in vibration measurement

Kistler has just launched its KiVibe Miniature: the latest and most advanced triaxial IEPE accelerometer designed specifically for high-precision vibration measurements. As a tiny 6 mm cube weighing only 0.9 grams, this innovative sensor is setting new standards in the industry. We spoke with Max Sackenreuther, Product Manager at Kistler, to discuss KiVibe Miniature's key benefits and applications, and to learn why customers should opt for this groundbreaking sensor.

Hi Max! Could you start by outlining the KiVibe Miniature's features and benefits?

Max Sackenreuther: Sure! Our KiVibe Miniature family offers customers a choice of four measurement ranges: 100 g, 250 g, 500 g and 1,000 g – and all of them deliver exceptional performance. Each KiVibe Miniature is only the size of a 6 mm cube – and with a weight of just 0.9 grams, it's the lightest triaxial Integrated Electronics Piezo-Electric (IEPE) accelerometer on the market. The variant with the lowest measuring range of 100 g delivers signal output of 50 mV/g, which is five times more than the previous market standard. KiVibe Miniature features a completely case-isolated design, so it's immune to electro-magnetic interference. What's more, all the materials used are low outgassing, making them ideal for aerospace applications. And to round out the benefits, this sensor offers a very broad frequency range of up to 10,900 Hz on the main axis.

MINIATURE TRIAXIAL IEPE ACCELEROMETER

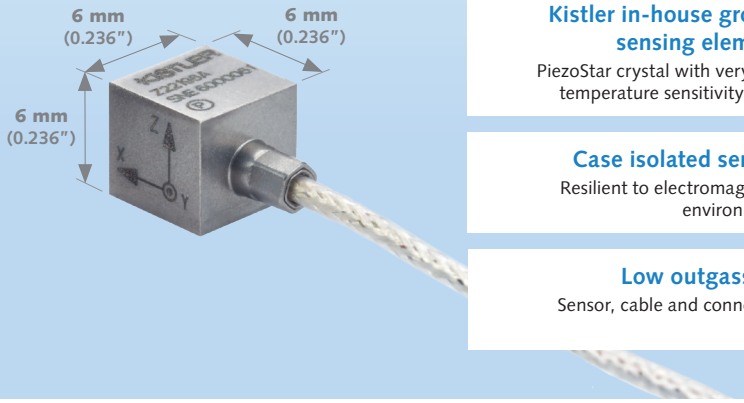
KiVibe Miniature: The perfect fit for tight spaces and lightweight structures

Broad frequency bandwidth
0.3 to 10,900 Hz (±5%) on main axis

Easy handling
Flexible cable with very small bending radius and specifically engineered connector design

Small and lightweight
6 mm cube with total mass of 0.9 grams

TEDS – Transducer Electronic Data Sheet
IEEE 1451.1 – V1.0 Template 25



Acceleration range
100 g and 250 g are unique; 500 g, 1,000 g

Kistler in-house grown sensing element
PiezoStar crystal with very low temperature sensitivity shift

Case isolated sensor
Resilient to electromagnetic environment

Low outgassing
Sensor, cable and connector

The KiVibe Miniature triaxial IEPE accelerometer from Kistler is the perfect fit for tight spaces and lightweight structures. With its outstanding range of benefits, KiVibe Miniature is setting the new industry benchmark in vibration testing.

KiVibe Miniature was innovated in Winterthur – what can you tell us about its development?

We developed the new triaxial IEPE accelerometer in response to growing market demand for miniaturization, robustness, and high-quality performance. Kistler has really pushed the boundaries of precision vibration measurement here, thanks to our innovative PiezoStar crystal technology combined with advanced electronics that were newly developed for this product . Because of the innovative sensor design, we needed to create new production capabilities at Kistler's headquarters in Winterthur, Switzerland – reinforcing our company's commitment to Swiss engineering excellence.

The new KiVibe Miniature triaxial IEPE accelerometer from Kistler features very low weight (0.9 grams), extremely compact dimensions, and low outgassing components throughout.

What are the main applications for this ultra-compact accelerometer?

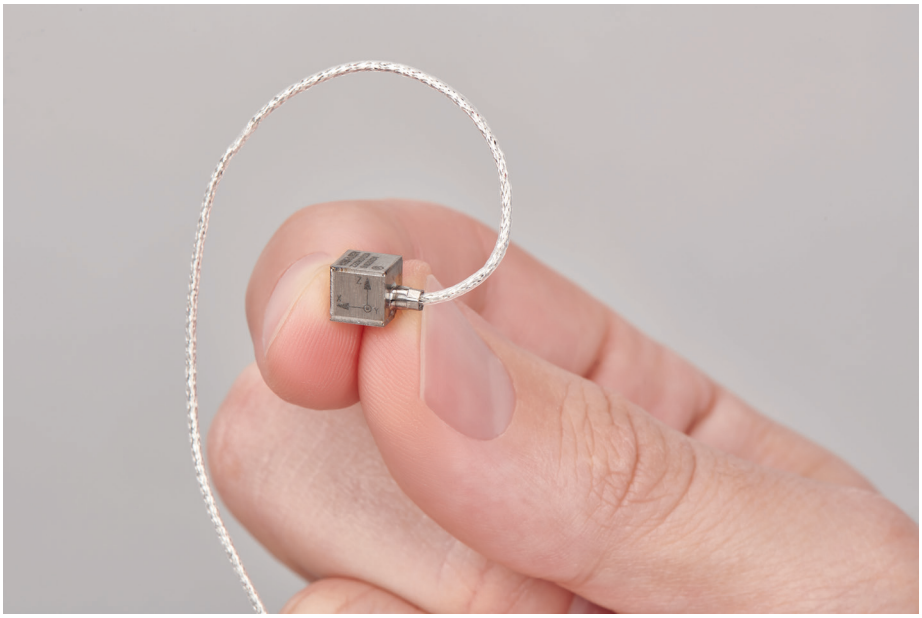
We specifically designed the KiVibe Miniature triaxial accelerometer for R&D vibration analysis across multiple industries: the aerospace, aviation, and automotive sectors, to name but a few. Other applications include semiconductor research and production monitoring. KiVibe Miniature's precision and compact dimensions make it ideal for structural dynamic testing of space components – nanosatellites, for example – as well as vibration analysis and Noise, Vibration, and Harshness (NVH) testing. It could also play a key role in battery package testing and monitoring, as well as Environmental Stress Screening (ESS) in aerospace applications.

Why is it so crucial to have such a small and lightweight accelerometer?

One reason is that many industries face space constraints when mounting sensors – so compact solutions are essential. Also, a sensor must not significantly alter the component or system being tested: to ensure this condition is met, our KiVibe Miniature triaxial accelerometer minimizes mass loading effects thanks to its extremely low mass. This is a particularly critical factor in precision testing environments, where even the slightest interference can compromise the results.

As regards installing the new sensor, are there any particular points you'd like to highlight?

KiVibe Miniature features a durable cable attachment that allows flexible installation of the sensor itself as well as the cable. The case-isolated sensor design means that engineers need have no concerns about electromagnetic interference affecting measurement accuracy. Each triaxial IEPE accelerometer is equipped with a Transducer Electronic Data Sheet (TEDS) for quick and efficient sensitivity readings: this streamlines the measurement process. The PiezoStar crystal sensing element ensures unmatched temperature stability, so sensitivity shifts are



The new triaxial IEPE accelerometers in the KiVibe Miniature series are equipped with a durable and lightweight cable that ensures flexibility in tight spaces thanks to a small bending radius and a specially developed cable attachment.

minimized and precise results are guaranteed even in demanding conditions. And to ensure an even smoother user experience, Kistler offers a comprehensive range of accessories that make it simpler to install and remove the sensor – so it's an even more practical choice for engineers.

To conclude, please could you summarize the reasons why customers should opt for this new triaxial IEPE accelerometer?

Our new KiVibe Miniature delivers unmatched precision, providing a very high output signal (50 mV/g). We designed this innovation in compliance with Kistler's rigorous development standards, which ensure reliable engineering of the highest quality. KiVibe Miniature users – like all our customers – will benefit from our strong global support network, ensuring access to expert assistance whenever needed. In short, our KiVibe Miniature triaxial IEPE accelerometer is the ultimate solution for engineers facing the challenge of high-precision vibration measurements that require a very compact and lightweight form factor. Thanks to its cutting-edge technology, robust Swiss engineering and industry-leading performance, KiVibe Miniature is about to set a new standard in vibration testing.

Thank you very much, Max, for this wide-ranging interview! ■

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