

MEMS Sensors

TDK launches next-gen TWS solution VibeSense360™ enabling premium immersive sound

- The next-gen VibeSense360™ TWS solution includes motion sensor hardware and software
- Running on the latest SmartMotion® ICM-45606 IMU, the next-gen VibeSense360 enables concurrent features of spatial audio, keyword assist, transparency for talk, head/UI gestures, and machine learning
- The 220 μA @ 50 Hz 6-Axis IMU delivers industry-leading performance and battery life for TWS applications

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TDK Corporation (TSE:6762) announces the enhanced next-generation InvenSense VibeSense360™ solution for state-of-the-art spatial audio head tracking. Samples are available via direct inquiry with InvenSense sales.

VibeSense360™ enables concurrent execution of multiple features, including:

- **Spatial Audio:** Provides the most immersive and ultra-low-power spatial audio solution with TDK's lowest-power 6-axis IMU, with the addition of a head tracking solution at 280 μA with industry-leading accuracy
- **Transparency For Talk:** Detects when the user is speaking through bone conduction and can automatically shift from noise cancellation to transparency mode, as well as pause any audio that may be playing
- **Keyword Assist:** Assists with always-on microphones in detecting human voice activity through bone conduction, ensuring more secure, accurate and ultra-low-power keyword detection while avoiding false triggers – even in noisy environments
- **UI Gestures/Activity Detection:** Enables a smooth user experience through always-on gesture detections like tap, double tap, triple tap, wide-area tap, head gestures like shake and nod, and activity/inactivity detection to trigger fitness/health monitoring
- **Machine Learning:** Using TDK's machine learning algorithms built to run inside the IMU, VibeSense360™ can train the device to recognize certain customized activities and gestures, assigning commands or actions to allow the user's head motion to control the TWS system

The VibeSense360™ solution is based on the InvenSense lowest-power SmartMotion® IMU, which has seen tremendous customer adoption since it was first announced at CES 2023.

“The next-gen VibeSense360™ solution gives customers more design flexibility by adding more UI gestures specially designed for TWS applications. Plus, it offers further system power savings by running multiple features including machine learning concurrently on the IMU,” said Pankaj Aggarwal, VP and GM of Consumer and Industrial Motion business unit at InvenSense, a TDK group company. “VibeSense360™ sets new standards for premium audio experiences in the TWS market.”

For additional information or to request a sample of the VibeSense360™ solution, please visit www.invensense.tdk.com/tws or email inv.sales.us@tdk.com.

Glossary

- TWS: True wireless stereo
- TFT: Transparency for talk
- ANC: Active noise cancellation
- IMU: Inertial measurement unit
- 6-axis: 3-axis gyroscope + 3-axis accelerometer
- MEMS: Micro-Electro-Mechanical Systems

Main applications

- In-ear buds
- Over-ear headphones
- Wearables

Main features and benefits

- Lowest-power 6-axis IMU enables accurate head tracking for spatial audio
- On-chip accelerometer captures vocal vibration from user to remove ambient audio disruption to enable keyword assist or TFT mode
- On-chip always-on gesture detections including tap, double tap, triple tap, wide-area tap, and head gestures such as shake and nod for smooth user control
- On-chip activity and inactivity detection for fitness/wellness monitoring
- Machine learning on-chip with significant power savings over on processor/MCU

About TDK Corporation

TDK Corporation is a world leader in electronic solutions for the smart society based in Tokyo, Japan. Built on a foundation of material sciences mastery, TDK welcomes societal transformation by resolutely remaining at the forefront of technological evolution and deliberately “Attracting Tomorrow.” It was established in 1935 to commercialize ferrite, a key material in electronic and magnetic products. TDK’s comprehensive, innovation-driven portfolio features passive components such as ceramic, aluminum electrolytic and film capacitors, as well as magnetics, high-frequency, and piezo and protection devices. The product spectrum also includes sensors and sensor systems such as temperature and pressure, magnetic, and MEMS sensors. In addition, TDK provides power supplies and energy devices, magnetic heads and more. These products are marketed under the product brands TDK, EPCOS, InvenSense, Micronas, Tronics and TDK-Lambda. TDK focuses on demanding markets in automotive, industrial and consumer electronics, and information and communication technology. The company has a network of design and manufacturing locations and sales offices in Asia, Europe, and in North and South America. In fiscal 2024, TDK posted total sales of USD 14.6 billion and employed about 101,000 people worldwide.

About InvenSense

InvenSense, a TDK group company, is a world-leading provider of Sensing Solutions. InvenSense’s vision of Sensing Everything® targets the consumer electronics and industrial areas with integrated Motion, Sound, Pressure, and Ultrasonic solutions. InvenSense’s solutions combine MEMS (micro electrical mechanical systems) sensors, such as accelerometers, gyroscopes, compasses, microphones, barometric pressure sensors, and ultrasonic time-of-flight sensors with proprietary algorithms and firmware that intelligently process, synthesize, and calibrate the output of sensors, maximizing performance and accuracy. InvenSense’s motion tracking, ultrasonic, audio, fingerprint, location platforms and services can be found in Mobile, Wearables, Smart Home, Industrial, Automotive, IoT, Robotics, and many more types of products. InvenSense became part of the MEMS Sensors Business Group within the Sensor Systems Business Company of TDK Corporation in 2017. In April of 2022, Chirp Microsystems formally merged with InvenSense. InvenSense is headquartered in San Jose, California and has offices worldwide.

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