

MEMS Sensors

TDK launches the SmartAutomotive™ 6-axis IMU with extended operating temperature range to worldwide distribution

- IAM-20680HV 6-axis motion tracking device for cost-effective automotive in-cabin applications*
- Proven operating temperature range up to +125 °C with specification guaranteed up to +105 °C
- Leading low-noise performance and sensitivity tolerance for accurate positioning
- Gyroscope offers a ± 125 dps full-scale for enhanced navigation precision

June 24, 2025

TDK Corporation (TSE:6762) today announced global distribution availability of the InvenSense SmartAutomotive™ IAM-20680HV, a high-value 6-axis IMU for a variety of in-cabin applications that also require the component to survive in harsh conditions up to +125 °C, with performance guaranteed up to +105 °C. It relies on robust TDK technology and design that are widely adopted in the automotive market, setting a quality benchmark for non-safety applications.

The IAM-20680HV integrates a 3-axis gyroscope and a 3-axis accelerometer within a compact 3 x 3 x 0.75 mm³ (16-pin LGA) package, offering pin-to-pin and register compatibility with all other TDK SmartAutomotive™ MEMS sensors in LGA packages. Featuring a selectable ± 125 dps gyroscope full-scale, the IAM-20680HV provides higher resolution for a seamless user navigation experience. Complementing other products in the same SmartAutomotive™ family, the IAM-20680HV enriches the IMU product portfolio offering the best trade-off to address cost-effective automotive applications.

With industry-leading low-noise performance, sensitivity tolerance, and high reliability, the product empowers engineers to scale a diverse range of automotive applications, including but not limited to telematics, heads-up displays, navigation systems, door control, and crash-recording.*

“In a fast-evolving automotive industry where high performance must meet affordability; innovation, scalability, and efficiency are no longer options,” said Alberto Marinoni, Senior Director Product Marketing Automotive at InvenSense, a TDK Group company. “Our technology empowers Tier 1s and OEMs to develop cutting-edge solutions in a cost-sensitive environment without compromising on quality or performance.”

Glossary

- IMU: Inertial measurement unit
- 6-axis: 3-axis gyroscope + 3-axis accelerometer
- MEMS: Micro-electro-mechanical systems
- LGA: Land Grid Array. Surface-mount package with a grid of flat contact pads for board connection.

Main applications*

- GNSS modules & positioning
- Heads-up displays
- Cockpit domain controllers
- Navigation systems
- E-calls
- Telematic box positioning
- Door control
- Driving-style recording

Main features and benefits**

- Automotive-qualified based on AEC Q100 Grade 2
- Extended operating temperature range up to +125 °C
- 16-bit digital-output for both gyroscope and accelerometer
- Gyroscope: X-, Y-, and Z-axis angular rate sensors with a user-programmable full-scale range of ± 125 dps, ± 250 dps, ± 500 dps, ± 1000 dps
- Accelerometer: X-, Y-, and Z-axis accelerometer with a programmable full-scale range of ± 2 g, ± 4 g, ± 8 g, ± 16 g
- User-programmable digital filters for gyroscope, accelerometer, and temperature sensor
- Embedded self-test
- Two embedded and configurable interrupt lines
- Reliability testing performed according to AEC-Q100: PPAP and qualification data available upon request
- Final test over temperature up to 105 °C

Products	Package	Measurement Range	Number of Axis	ADC Resolution	Current Consumption	Digital Interface
IAM-20680HV	LGA 3 x 3 x 0.75 mm ³	Acceleration up to 16 g Angular velocity up to 1000 dps	6-axis IMU (3-axis gyroscope + 3-axis accelerometer)	16-bits	Typ. 3mA	I ² C, SPI

* Any mention of target applications for our products are made without a claim for fit for purpose as this has to be checked at system level.

** All operating parameters must be validated for each customer application by customers' technical experts.

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. 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, software 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 2025, TDK posted total sales of USD 14.4 billion and employed about 105,000 people worldwide.

About InvenSense

InvenSense, a TDK group company, is a world-leading provider of custom sensing solutions for consumer electronics, industrial, and automotive applications. InvenSense solutions integrate MEMS and magnetic sensors, such as IMUs, accelerometers, gyroscopes, compasses, microphones, TMR, and ultrasonic time-of-flight sensors, with proprietary algorithms and firmware that intelligently process, synthesize, and calibrate the output of sensors for maximized performance and accuracy. InvenSense solutions empower leading technology in smartphones, wearables, hearables, smart home, gaming, IoT, robotics, drones, industrial, automotive, and other applications. Headquartered in San Jose, California and with offices worldwide, InvenSense became part of the Sensor Systems Business Company of TDK Corporation in 2017.

For additional information and links to purchase from distributors, please visit invensense.tdk.com/smartautomotive or contact InvenSense Sales at sales.us@tdk.com.

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