

Magnetic Sensors

Latest Micronas controller with NewTec's production-ready firmware enables cost-efficient realization of compact high-performance motor control

- Highly flexible peripherals and firmware for direct control of electric motors (stepper/BLDC/BDC)
- Co-marketing by TDK-Micronas and NewTec GmbH

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TDK Corporation announces that TDK-Micronas, recognized vendor of fully integrated Embedded Motor Control devices, and NewTec GmbH, specialized in safety-related electronic systems start co-marketing the new motor controller HVC 4223F flex servo-drive. The HVC 4223F permits the direct control of brush-type, stepper, or brushless motors without the need for external driver components. NewTec contributed by developing a production-ready and highly flexible, parameterizable firmware with sophisticated communication, monitoring and power management functions (ASIL A ready) as well as a configuration tool.

The new HVC 4223F is part of the Micronas high-voltage controller family (HVC) for smart actuators. The HVC family combines an ARM[®] standard microcontroller core with a wide range of additional functions in order to enable particularly compact and cost-efficient system designs for use in automotive applications and beyond. Powered by a 32-bit CPU core (ARM[®] Cortex[®]-M3) with 32 kB flash memory, the HVC 4223F contains, amongst others, timers/counters, interrupt controllers, multichannel ADC, SPI, and enhanced PWMs with diagnosis functions, relevant for utilization in ISO26262 applications. An advanced LIN UART with a LIN 2.x transceiver as well as voltage regulators to connect the device directly to the automotive board net (5.4 V – 18 V) do round up the all-in-one approach. Several power management modes help in reducing the current consumption. Various integrated digital and analog circuit units, such as comparators with virtual star point reference, current scaling and an embedded programmable gain amplifier allow users to minimize the number of external components.

Due to its high processing power, the HVC 4223F allows complex motor control algorithms such as Space Vector Modulation (SVM) for permanent magnet synchronous motors (PMSM), six-step commutation with sensor feedback or sensorless control, as well as various stepper configurations.

“Our approach to software development provides users with the highest flexibility possible in terms of code development, ramp-up, and in-system firmware updates,” says Thomas Mack, senior safety consultant and product manager at NewTec. “At the same time, we are particularly proud of not having been forced to compromise on safety. Our software complies with the requirements of the Automotive Safety Integrity Level (ASIL) A classification. Hence, we are able to offer flexibility, cost cutting and future-proofing all in one stroke.”

“This strategic partnership in the field of embedded motor control enables us to take full advantage of HVC 4223F’s performance and flexibility in smart actuating applications. Our customers can now develop application software, based on the production-ready firmware, that is both more efficient and effective and thus optimally design the combination of motor and control by gaining significant reduction in their time to market. It is also possible now to flexibly use the software for different types of applications and motors. As one of the target requirements was the firmware support of the HVC 4223F ISO26262-related features, our customers in addition can take advantage of this winning combination and develop their ASIL-compliant application on a ready-to-go basis. For TDK-Micronas, this opens up new business in application fields where developers have so far refrained from substituting classical brush-type DC motors with BLCD motors. Supported by the HVC family concept, the amount of applications for HVC 4223F will therefore be extended considerably,” explains Ruediger Laschewski, Product Manager of embedded motor controllers at TDK-Micronas.

About TDK Corporation

TDK Corporation is a leading electronics company based in Tokyo, Japan. It was established in 1935 to commercialize ferrite, a key material in electronic and magnetic products. TDK’s portfolio includes passive components, such as ceramic, aluminum electrolytic and film capacitors, ferrites and inductors, high-frequency products, and piezo and protection components, as well as sensors and sensor systems and power supplies. These products are marketed under the product brands TDK, EPCOS, InvenSense, Micronas, Tronics and TDK-Lambda. TDK’s further main product groups include magnetic application products, energy devices, and flash memory application devices. TDK focuses on demanding markets in the areas of information and communication technology and automotive, industrial and consumer electronics. The company has a network of design and manufacturing locations and sales offices in Asia, Europe, and in North and South America. In fiscal 2017, TDK posted total sales of USD 10.5 billion and employed about 100,000 people worldwide.

About TDK-Micronas

TDK-Micronas, a TDK group company, is the most preferred partner for sensing and control. TDK-Micronas serves all major automotive electronics customers worldwide, many of them in long-term partnerships for lasting success. Operational headquarters are based in Freiburg (Germany). Currently, the TDK-Micronas Group employs around 900 persons. For more information about TDK-Micronas and its products, please visit www.micronas.com.

About NewTec

Newtec GmbH specializes in safety-related electronic systems in the industries automotive/transportation, industrial, and medical technologies. NewTec designs and develops electronics, application software as well as software and hardware with high demands on safety and reliability. A special focus lies on the interplay of highly complex, increasingly networked technical structures.

It is NewTec’s claim to ensure at all times a system’s safety-related functionality as well as the security of embedded systems with regard to outside sabotage and manipulation.

Founded in 1986, NewTec today employs more than 160 people at five locations in Germany: Pfaffenhofen a. d. Roth, Freiburg, Mannheim, Friedrichshafen and Bremen.

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Further information on the company renaming can be found under: www.micronas.com

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