BOSCH
Invented for life

Bosch Sensortec

Bosch sensors inside

Bosch Sensortec's technology enables state-of-the art drones

A GAME OF DRONES

For drone enthusiasts, there is nothing more exciting than watching their designs take life and fly into the sky. The newest evolutions in drone development are soaring in, enabled by the 9-axis motion sensor BMF055 from Bosch Sensortec. Maker and drone enthusiast Lukas Blocher, a 21 year old computer science student, recently developed his own cutting-edge drone using the BMF055 sensor, stated that this sensor "makes creating your own drones easier than ever".

A CREATIVE MIND

Lukas has been an avid creator since he was a child, always taking apart and putting back together various items around his house. Now operating from a workshop in his cellar, Lukas spends much of his free time developing drones. Building drones has been a passion of his for the last six years, but he says that the advancement of technology and lower cost of materials in the last few years has made his hobby even simpler and more enjoyable. Previously, Lukas had to use combinations of sensors to make his drone brainchild a reality. Now, the whole process is eased by an innovative, one-sensor solution from Bosch.

BOSCH MEMS TAKE FLIGHT

Traditionally, makers have had to focus extensively on the hardware aspects of their creations, leaving less time to create their important and unique software developments. Since the BMF055 provides a one-chip solution, innovators like Lukas can focus on more important factors, which in Lukas's case led a drone with the ability to fly at high speeds and even flip midair. With a reduced bill of materials and highly accurate output from the integrated gyroscope, drone development is greatly enhanced by this 9-axis sensor with an integrated microcontroller (MCU). Drone enthusiasts can focus on fun instead of time-consuming sensor selection and PCB design integrating the discrete sensor and application processor.

Lukas took his drone containing the BMF055 for a flight at the Bosch Sensortec headquarters in Kusterdingen, Germany.

Lukas with his drone at the Bosch Sensortec headquarters in Kusterdingen, Germany

ONE SENSOR, FOUR COMPONENTS

Critical to drone flight control is an excellent gyroscope signal. The BMF055 comprises the world's only CE gyroscope that is based on "closed-loop" technology, which is used in high-end automotive sensors. The sensor provides absolutely outstanding bias stability, even over temperature, and high vibration robustness, which is accompanied with a state-of-the-art accelerometer and magnetometer, making it a perfect fit for multicopter applications. The internal 32 bit Cortex M0+ microcontroller from Atmel deploys the complete control software into the device, including sensor readout, and controlling up to four motors via PWM signals. All of this functionality is housed in a tiny 5.2 x 3.8 x 1.1 mm^3 package, which in itself is significantly smaller than comparable discrete or system on-board solutions and drastically reduces the bill of materials.

Bosch Sensortec products have a strong tradition of excellence, which makes them the perfect choice for makers. Already known for its innovative capabilities, the BMF055 recently won the "Product of the Year" award for sensors from Elektronik magazine and received the Gold Level Innovation Award at the Sensors Expo 216. This sensor also has been awarded as the most accurate gyroscope in its class, which is an absolute necessity in drone racing and cases where speed is vital to the product.

IDEAL SOLUTIONS

While the BMF055 may be an outstanding choice for developers, Bosch Sensortec offers a variety of other sensor solutions that are optimal for use in drones, The 6-axis device BMI055 is also comprised of a gyroscope with the same closed-loop technology found in the BMF055. An additional product excellent for use in drones is the BMI160, which is also based on "open-loop" gyro technology, offers strong bias stability and comes with a sensortime feature, allowing for highly synchronized readout of gyro and accelerometer data. In addition to inertial sensors, Bosch Sensortec offers pressure sensors such as the BMP280, which can be used for height control.

SOARING INTO THE FUTURE

Lucky for drone enthusiasts, Lukas's state-of-the-art project is not simply for his personal use. This open source software and a reference design are now available to the public for integration. This and a video of Lukas's drone in flight are available through the links below.

Software download: Link
YouTube Video: Link

The BMF055 Sensor is the perfect solution for use in drones

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