

First Integrated Environmental Unit opens broad range of applications

January 6, 2013  
PI 8368 BST TH/Ho

## **Bosch Sensortec's BME280 sensor combines pressure, humidity and temperature measurement** High accuracy and versatility, very small footprint

- ▶ Fastest temperature and humidity measurement in the market
- ▶ Supports many emerging smartphone applications such as home automation control and innovative sport and fitness use cases
- ▶ Adds floor level tracking to indoor navigation

Bosch Sensortec announces a world first in sensor technology: the BME280 Integrated Environmental Unit combines sensors for pressure, humidity and temperature in a single package. This unique sensor has been developed to support a broad range of emerging high performance applications such as indoor navigation, home automation control, personalized weather stations and innovative sport and fitness applications. The precise altitude measurement function of the BME280 is a key requirement in applications such as indoor navigation with floor tracking where exceptional accuracy, low temperature drift and high resolution are needed. Additionally, the BME280 has a best-in-class response time of just one second for humidity determination, excellent ambient temperature measurement and low energy consumption.

### **More precise measurement at lowest power consumption**

With a small footprint of just 2.5 x 2.5 mm<sup>2</sup> and a height of 0.93 mm in a space-saving 8-pin LGA package, the sensor offers high design flexibility and is ideally suited for mobile devices with limited space such as smartphones, tablets, smart watches and electronic wristbands. Very low current consumption of only 3.6 µA (at 1 Hz) makes the BME280 Integrated Environmental Unit particularly suitable for battery-driven applications. Three power modes and separately configurable oversampling rates for pressure and temperature measurements allow designers to adapt the BME280 to a wide range of use cases.

The humidity sensor within the Integrated Environmental Unit measures relative humidity (0% to 100%) across a wide temperature range from -40°C to +85°C with a fast response time of less than 1 second. The humidity measurement accuracy is  $\pm 3\%$  with a hysteresis of 2% or better, and the temperature reading accuracy is within 0.5°C.

The BME280 offers excellent overall precision. The relative accuracy of pressure readings is  $\pm 0.12$  hPa, which equates to  $\pm 1$  m (3.28 ft) of altitude difference at a resolution of 1.5 cm (0.59 inches). As a result, the BME280 is ideal for enhanced high performance GPS applications where it can be used to achieve more precise and faster position determination.

BME280 pressure measurement is very stable over temperature: The low temperature coefficient of 1.5 Pa/K, translates into an altitude stability over temperature measure of 12.6 cm/K (5.0 inches/K). This precision, along with its versatility and compactness, makes the BME280 ideal not only for innovative new applications but also to improve the exactness of existing ones. A few examples: the sensor can be used to implement indoor climate control applications for smartphones; it allows altitude profiling to be integrated into sports applications, enabling better training performance monitoring, and much more. As a connected sensor in the Internet of Things, the BME280 enables a host of further applications in home automation, smart energy, smart transportation and elderly care.

Bosch Sensortec also provides support software. The BSH1.0 algorithm enables developers to implement a precise temperature compensation function.

First samples of the BME280 to key development customers are available now.

### **Features and properties**

Relative humidity range: 0 to 100 % at temperatures from -40°C to +85°C

Response time for humidity measurements: 1s

Humidity accuracy tolerance:  $\pm 3$  % relative humidity

Hysteresis:  $\leq 2$  % relative humidity

Pressure range: 300 to 1100 hPa

Absolute pressure accuracy: typ  $\pm 1$ hPa after soldering

Absolute temperature accuracy  $\pm 0.5$ °C at 25°C

Communication interfaces: I<sup>2</sup>C, SPI

**Press photo:** 1-BST-19653

**Contact:**

Tina, Horstmann,  
phone: +49 7121 35-35924

**Contact person for press inquiries:**

Christian, Hoenicke,  
phone: +49 711 811-6285

*Bosch Sensortec GmbH is a fully owned subsidiary of Robert Bosch GmbH. It develops and markets micro-mechanical sensors for consumer electronics, mobile phones, safety systems, industrial technology and logistics. The product portfolio includes triaxial geomagnetic and acceleration sensors, triaxial gyroscopes, barometric pressure sensors and a comprehensive software portfolio for various applications. Since its foundation in 2005 Bosch Sensortec emerged as the technology leader in the addressed markets. The Bosch Group has been the global market leader for MEMS sensors since 1998 and has to date sold more than 3 billion MEMS sensors.*

For more information, go to [www.bosch-sensortec.com](http://www.bosch-sensortec.com)

*The Bosch Group is a leading global supplier of technology and services. In fiscal 2012, its roughly 306,000 associates generated sales of 52.5 billion euros. Since the beginning of 2013, its operations have been divided into four business sectors: Automotive Technology, Industrial Technology, Consumer Goods, and Energy and Building Technology. The Bosch Group comprises Robert Bosch GmbH and its roughly 360 subsidiaries and regional companies in some 50 countries. If its sales and service partners are included, then Bosch is represented in roughly 150 countries. This worldwide development, manufacturing, and sales network is the foundation for further growth. Bosch spent some 4.8 billion euros for research and development in 2012, and applied for nearly 4,800 patents worldwide. The Bosch Group's products and services are designed to fascinate, and to improve the quality of life by providing solutions which are both innovative and beneficial. In this way, the company offers technology worldwide that is "Invented for life."*

Additional information is available online at [www.bosch.com](http://www.bosch.com), [www.bosch-press.com](http://www.bosch-press.com) and <http://twitter.com/BoschPresse>