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ScioSense today introduced the ENS161

a low-power multi-gas sensor that enables wearable and portable devices with a small battery to perform continuous air quality monitoring.

ENS161 multi-gas sensor draws average current of 700µA to enable continuous high-performance operation in devices with a small battery

Sensor offers designers wide range of air-quality monitoring outputs, including eCO2 and eTVOC measurements and multiple AQI scores

Easy to integrate, the ENS161 performs on-chip heater drive control and provides fully computed measurements over I2C or SPI

The ENS161 draws average operating current of 700µA in a new low-power mode that duty-cycles its heated metal-oxide (MOX) sensing elements. This reduces power consumption by as much as 30 times compared to sensors that require their sensing elements to be permanently heated.

The ENS161 is on display at the ScioSense booth 1.433 at Sensor+Test (Nuremberg, Germany, 9-11 May 2023).

The ENS161 sets new standards in performance and versatility. It provides a broad range of computed outputs via a simple I2C or SPI interface, including useful air quality signals that are not available from competing devices. The ENS161 measures:

- Equivalent carbon dioxide concentration (eCO2)
- Equivalent total volatile organic compound concentration (eTVOC)
- AQI-U, an air quality index on a 1-5 scale, equivalent to the index specified by the UBA (German Federal Environmental Agency)
- A new AQI-S index of air quality on a 0-500 scale

While maintaining high performance and application flexibility, ScioSense has dramatically reduced power consumption in the ENS161. Operating at 1.8V and a sampling rate of 1/minute in low-power mode, the ENS161 draws an average

current of just 700µA.

This means that air quality monitoring can be offered as a feature in wearable devices that have a small battery, such as activity trackers and sports wristbands, smart watches and smart glasses. It is also ideal for battery-powered smart home and building automation products including thermostats and heating and ventilation controls, as well as home automation hubs such as smart speakers.

Rolf Pauly, Product Manager for Environmental Sensing at ScioSense, said:

‘Featuring adaptive baselining and a new low-power mode, the ENS161 for the first time enables low power mobile air quality monitoring, for instance in a sports wristband.’

‘Now manufacturers that want to benefit from ScioSense performance and reliability can implement air quality monitoring in a wide range of wearable and portable devices without compromising battery run-time between charges.’

Compact package and easy integration

The ENS161 is supplied in a surface-mount package which has a footprint of 3mm x 3mm and is 0.9mm high. It is highly immune to degradation caused by humidity or ozone. The device includes a high-performance ASIC that converts raw gas measurements to computed index scores and a variety of widely used air quality signals. This helps save power in the application, as the host processor is not required to execute complex conversion algorithms. Samples of the ENS161 are available now and the product is due to go into mass production in the third quarter of 2023.