



New digital triaxial accelerometer **The BMA120 from Bosch Sensortec automatically recognizes the spatial position and positional changes of mobile devices**

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For basic applications in modern mobile phones

- ▶ The programmable interrupt controller directs mobile phone functions according to targeted movements of the device
- ▶ No external microcontroller is required for movement detection
- ▶ Integrated power management supports energy-saving operation

Bosch Sensortec introduced the new, digital, triaxial BMA120 acceleration sensor. The particular feature of this new sensor is the integrated programmable interrupt controller within the minimal dimensions (3 mm x 3 mm x 0.9 mm) of the BMA120's LGA housing. The interrupt controller automatically checks the internal incoming measuring signals for the trigger conditions linked to four characteristic movement sequences. If a condition is met, the controller signals the evaluation electronics. An external controller for constant signal evaluation is no longer necessary, which recommends the BMA120 in particular for applications in which the focus is on less complicated recognitions of movements.

The interrupt-controller enables new functions

Application examples include pedometers, the detection of tap patterns comparable to fingertips on notebook touch pads, and the recognition of the position of hand held devices in three-dimensional space, such as is necessary for game controllers, or to automatically rotate the display contents (vertical/horizontal) on modern mobile telephones. The new acceleration sensor has four programmable measuring ranges from ± 2 g to ± 16 g; the two SPI and I²C digital interfaces and an interrupt output handle the data output.

The interrupt controller's job is to classify the various movements, to which a mobile device can be subjected, into 4 movement categories:

- **Random movement:** Usually used to "wake up" a mobile device from the stand-by mode

- **Rotational movement:** Effects targeted rotation of displayed contents according to whether the mobile device is held vertically or horizontally in the user's hand (Portrait/landscape)
- **Tapping:** Single or double taps on the mobile device trigger various functions, for example, muting a ring tone
- **Fast/slow:** Optional control functions according to the speed of a movement, for example, automatic emergency call in response to vigorous shaking of a mobile phone

Important parameters for this for movement categories can be programmed by the user. One example is the threshold value at which a movement is no longer slow but is fast, another is the temporal distance between events, i.e. at which point two taps are evaluated as a double tap. When the interrupt controller recognizes a programmed movement, it sets the interrupt output from logical "0" to "1". Details about the recognized pattern can be queried through the digital interfaces. Tools are already available for the development of necessary applications, as are drivers for the various operating systems: Windows Mobile, Linux, and Android.

To extend battery life, the BMA120 can operate using the low-power mode in which it only becomes momentarily active at certain intervals, every two seconds, for example. A sleep mode can also be programmed, from which the sensor "wakes up" (self wake up), which takes less than a millisecond from when the movement is recorded by the sensor. Like all Bosch Sensortec g-sensors, this new product also offers programmable low-pass filters for signal conditioning, compliance with the RoHS guidelines, as well as a housing that is halogen-free and therefore environmentally friendly.

The sensors are available immediately in quantity.

About Bosch Sensortec

Bosch Sensortec GmbH, a 100 percent subsidiary of Robert Bosch GmbH, offers micromechanical sensors and their application for consumer electronics, security systems and logistics. Its product portfolio to date includes triaxial acceleration sensors as well as pressure sensors. The company was founded in early 2005 and is headquartered near Reutlingen to the south of Stuttgart (Germany). For more information about Bosch Sensortec, visit www.bosch-sensortec.com.

About Bosch

Bosch has been active in the field of MEMS since 1988, being one of the

pioneers in this technology. Today, hundreds of engineers of the Bosch Group work in the field of MEMS. A wide selection of products – from pressure and acceleration sensors to yaw-rate sensors – is manufactured for the automotive industry. Annual production at Bosch is more than 200 million sensors.

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Contact:

Julia Patzelt

phone: +49 7121 3535921

Contact person for press inquiries:

Ulf-Malte Wünsch

phone: +49 711 811-7204

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Additional information can be accessed at www.bosch.com.