



## Contactless vital sign measurement with Murata BCG

### The challenge:

Affordable, easy to use and contactless monitoring of vital signs for various purposes, ranging from sleep analysis to patient monitoring in elderly care.

### Customer challenges:

Vital signs convey a plethora of information from a person's wellbeing. Long-term monitoring is often hindered due to uncomfortable and cumbersome measurements.

In elderly care, fall prevention is the primary concern. While multiple solutions exist, simultaneous monitoring of vital signs such as heart rate, respiration rate and activity can be used to provide insight into the person's wellbeing, while providing fall prevention alarms for nurses.

Polysomnographic studies are the golden standard method for sleep analysis. However, in recent years, sleep analysis has been brought into consumer markets through various activity trackers and similar. These, however, do not produce detailed enough vitals data for PSG-like sleep analysis.



### The Murata Solution:

#### The product:

BCGMCU/SCA11H Accelerometer-based ballistocardiographic (BCG) sensor (\*).

#### How it works:

- The sensor is attached to a bed.
- The blood flow from a person's heart causes a small movement of the whole body, called the ballistocardiographic signal.
- When the bed is occupied, this BCG signal is transferred to the bed
- Murata accelerometer captures these vibrations, and our proprietary algorithm converts this accelerometer data to vital signs data



### Product features:

- Reports once per second:
  - Heart rate (bpm)
  - Heart rate variability (ms)
  - Respiration rate (1/min)
  - Stroke volume (A.U.)
  - Activity indication
  - Accurate beat-to-beat times of previous detected beats
  - Bed occupancy status
- WiFi connectivity with cloud interface support
- Support software & simple interfacing for ease of integration
- Sleep analysis algorithm developed for use with BCGMCU/SCA11H data
  - Contact Murata sales for details

### Example applications:

- Fall prevention & bed occupancy detection
- Long term screening for physiological conditions
- Sleep analysis
- Physical recovery

### Contact info:

[info@murata.com](mailto:info@murata.com)

### More info:

For further information about Murata solutions, please contact your local sales manager.

Data sheets and application notes for Murata products can be found at:

[www.murata.com](http://www.murata.com)