

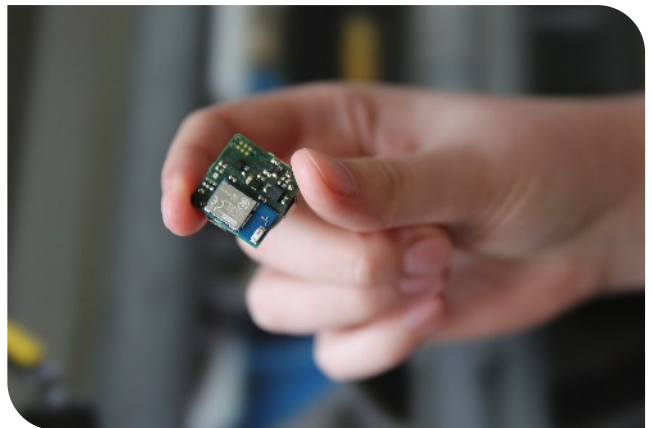
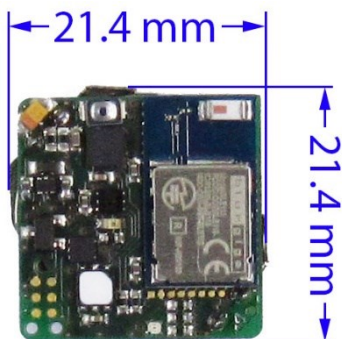
## bPart: Bluetooth Low Energy Sensor Particle

### General Description

The bPart is a highly integrated Bluetooth Low Energy sensor node. It includes several sensors, battery, processing unit and wireless transceiver in a volume of less than 1cm<sup>3</sup>. In addition a push button and a multicolor RGB-led is included for user interaction, as well an infrared led for camera assisted tracking.

The use of Bluetooth LE, onboard power-conversion and low-power sleep modes enables runtimes of several years. In contrast to other established low-power wireless communication standards, it is supported on nearly all modern desktop and mobile operating systems, facilitating the connection to existing software.

The small size and energy consumption make the bPart suitable for long-term monitoring applications, where existing equipment needs to be retrofitted with unobtrusive sensors. Sensor modalities include acceleration in all three axes, ambient light level and ambient air temperature and humidity. This is supported by configurable sampling and transmission intervals.



### Characteristics



#### General:

Bluetooth Low Energy Smart Device  
Transmission range ~10m indoors  
Small size 21.4mm x 21.4mm x 7.2mm  
Push button, infrared and RGB leds

#### Operation:

Standard CR2023 lithium coin cell  
Runtime up to several years  
Configurable sampling interval  
Maximum supported rate 100Hz

#### 3-axes accelerometer:

$\pm 2g/\pm 4g/\pm 8g/\pm 16g$  selectable fullscale  
Low power motion detection

#### Ambient light sensor:

Wide range from 0.045 to 188,000Lux  
Near human eye response

#### Temperature and relative humidity sensor:

Samples ambient air parameters  
Sensitivity of 0.1°C and 0.1%rH

#### Magnetic switch

Hall effect non-contact input