

Battery Operated IoT Sensor System with Bluetooth® Low Energy.



| Model | Wireless | Freq. / Power | Processor, Memory | Sensor Systems |
|----------------|------------------|----------------------------------|---|--|
| SmartTAG B400R | Bluetooth LE 4.2 | 2.4GHz TX: +8dBm RX: +9dBm | 32-bit ARM® Cortex®-M4, 40MHz, 32kB RAM, 256kB Flash | - Temperature - Acceleration/Motion - Ambient Light - RGB-LED |

Overview

The conbee BLE **SmartTAG B400R** is ideally suited for IoT applications.

With its stable and ruggedized case and protection class IP69K it could be used for tracking scenarios in an industrial environment. At containers, load carriers, trailers, boxes and construction equipment it adds value to logistics and production processes.

It combines Bluetooth Low Energy with a set of sensors. The configurable TAG provides authentication features, is fraud-resistant and comes with a 3D-acceleration sensor, which can detect motion and orientation.

Regular advertisement packets are transmitted at a configurable interval and provide device status and sensor data. The data contains device identification, temperature and battery status.



Wireless

Bluetooth Low Energy (LE) 4.2 is a powerful radio interface. Live sensor data can be visualized on our smartphone/tablet app or can be forwarded to an IoT cloud platform. The **SmartTAG B400R** can also be parameterized through BLE and firmware updates can be performed over-the-air.

Operation

The **SmartTAG B400R** has no external control elements and is being shipped fully functional. The default advertising is a unique ID and temperature at a 3 sec interval.

Payload Structure

The Smart TAG B400R uses BLE advertising packets to send the following information at a default 3 second advertising rate.

- 6 byte serial number
- 2 byte temperature value
- 1 byte battery indicator

The payload data format is standardized among all conbee SmartTAGs. A detailed description is available on request.

Technical Data

Electrical Characteristics

| Symbol | Parameter | Condition | Min | Typ | Max | Unit |
|--------|--|------------------------------------|------|-----|-----|------|
| Vcc | Battery Voltage | 2xAA Li-Thionyl | | 3.6 | | V |
| Icc | Power Consumption (The power consumption strongly depends on CPU activity, as well as on active sensor systems, measurement and radio transmission intervals, etc. The values given are for reference only and can differ from practical application values.) | Active Mode | 0.05 | | 5 | mA |
| | | Sleep Mode | | 1.6 | | µA |
| T | Temperature Range | Standard Batteries | -20 | | +70 | °C |
| | | max. working range -40° to +85° C. | | | | |

Sensor Parameters

| | |
|----------------|---|
| Accelerometer | Range: +/-2g to +/-16g Interval: 1Hz to 5.3kHz Sensitivity: up to 1mg |
| Temperature | Range: -40°C bis +85°C Accuracy: ~ +/-3°C (+/-0.4°C opt.) |
| Ambient Light | Range: 0 lux to 120000 lux Resolution: 0.0036 lux |
| Magnetic Field | Range: +/-4 gauss to +/-16 gauss Sensitivity: up to 0.1 mgauss |

Note: The sensor parameters are data sheet values provided by the sensor manufacturer and might not be achieved in operation.

Mechanical Characteristics

Dimensions: 147mm(w) x 46mm(l) x 19.5mm(h) Protection Class: up to IP69K

Battery Lifetime

The battery lifetime is strongly depending on the use case of the device. Measurement interval as well as BLE advertising rate and TX power heavily influences internal battery current consumption. Environmental parameters like ambient temperature heavily influences available battery capacity. The following estimation is based on a "standard" use case:

- advertising interval of 3 seconds
- power output of 8dBm
- temperature measurement interval of 60 seconds
- ambient room temperature

==> Battery lifetime is up to 7.5 years.

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