

This data sheet primarily concerns applications using the on board sensors.
This data sheet primarily concerns the BLE010 hardware.
For performance figures refer to the firmware documentation.

Bluetooth Low Energy CC2640S1 Sensor

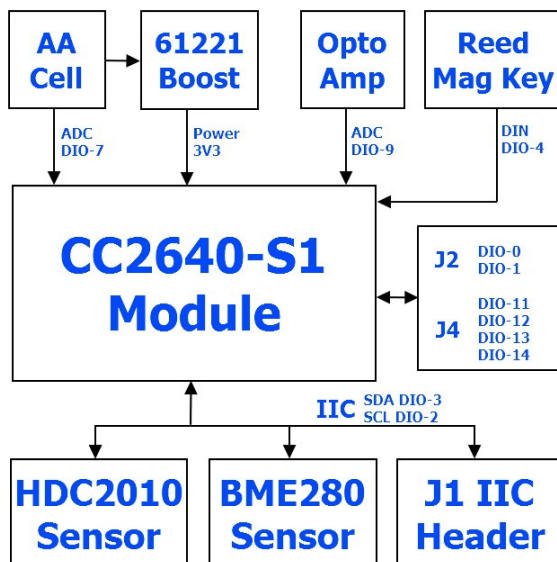
Features

- Wireless Sensor
- Long Operating Period
- AA Alkaline or Lithium cell
- Temperature
- Humidity
- Pressure (BME280 sensor)
- Ambient light
- Magnetic Key for behavior setup
- BLE protocol – not propriety

Example Installation

Typically a system of several sensors (data sources) and one or more gateways (data collectors) are used in combination to gather data from a location, the data collected by the gateway is then forwarded for consumption (eg data processing / reporting / control).

Block Diagram



Applications

- Ambient Conditions Monitoring
- Facilities Management
- Sensing for VHAC
- Commercial and Domestic environments
- IOT data collection for business management

Description

The BLE010 is a sensor that makes a wireless connection to a system using Bluetooth Low Energy.

The sensor is powered by a single AA size cell, no wiring is required, after behavior setup the sensor can simply be fixed in location.

The sensor can be optionally fitted with a Texas Instruments HDC2010 Temperature and Humidity Sensor, and/or with a Bosch BME280 Temperature, Humidity and Pressure Sensor.

The sensors are well specified by Texas Instruments and Bosch, and the reader is referred to their data sheets.

The CC2640 is well specified by Texas Instruments, and the reader is referred to the data sheet.

An optical sensor is also included. It is intended for simple functions, such as determining if the lights are on in a room.

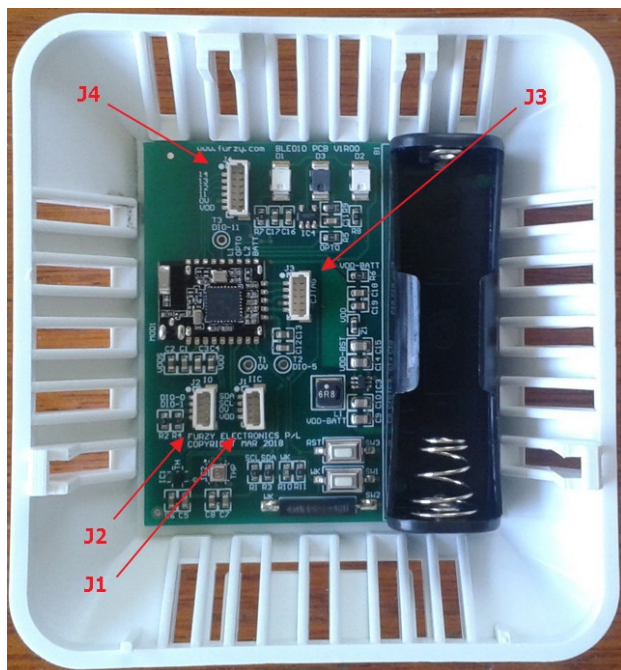
A magnetic actuated reed switch can be used as a key to enter behavior setup mode. In behavior setup it is possible to change to operating parameters such as time between transmissions, refer to the firmware documentation.

Expected operating period on a single AA Alkaline cell depends on setup, frequency of advertising, if used as a broadcast beacon or as a connected device.

A typical installation would operate as a broadcast beacon for several years.

An on board boost regulator TPS61221 provides a 3.3V supply for the system, and predictable sensor operation during discharge of the cell.

The IO & PCB



The BLE010 PCB has the option to fit 3 connectors for other IO and sensor connections (see the data sheets and case studies for the BLE010 with external sensors, refer to the schematic for details on pinouts and connections to the CC2640S1)

J1 * – IIC connector

J2 * – UART / IO connector

J4 * – IO with Analog Capabilities

* not required for on board sensors

The BLE010 PCB uses connector J3 for programming firmware onto the CC2640S1, refer to the programming guide for further information.

The connectors are JST SH 1mm pitch headers. Pre-crimped wires in housing for these connectors are readily available from online market places.

The Enclosure

The enclosure for the Indoor Environmental Sensor application is a SZOMK AK-N-13.



The enclosure has excellent ventilation for air exchange, a base with mounting holes, and the lid simply clips onto the base.