

# Qualcomm® Bluetooth Low Energy Environmental Sensor Board

Designed to help developers create next generation MEMS-enabled Bluetooth low energy devices.

The Environmental Sensor Board is a plug-in expansion board for the CSR1011 development kit or the CSR101x Starter development kit and provides Gyroscopic, Magnetic, Temperature, Pressure, Humidity and Acceleration MEMS sensors.

The Environmental Sensor Board is for evaluation with the CSR1011 development board or the CSR101x Starter development kit. The CSR101x Bluetooth low energy platform has been optimized for easy development and low cost designs with minimal external components. It provides a built-in processor to run the customer application as well as the qualified Bluetooth single-mode stack and radio. The plug-in board is used in conjunction with the Bluetooth low energy Software Development Kit (SDK) to build the Environmental Sensor Application.

MEMS (micro electromechanical systems) are submillimeter devices able to sense mechanical information in their surroundings to enable the measurement of temperature, pressure, acceleration, etc., and pass this to a microprocessor for processing. MEMS sensors are a key component in a vast array of consumer electronic devices, such as mobile handsets and tablets, games consoles, and wearable gadgets. These devices are designed to provide the crucial input of data to make it possible to create a wide range of connected products that enable the Internet of Things (IoT).

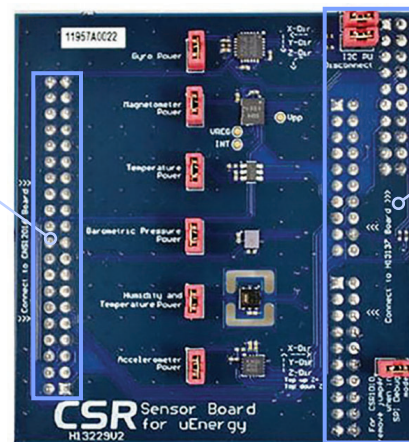
Qualcomm Technologies International, Ltd. (QTI) is an industry leader in high quality connectivity experiences that help differentiate devices in the IoT. More than singular solutions, we develop flexible, robust product platforms combining silicon, software, and services to provide customers a complete connectivity platform for success.

## Environmental Sensor Board

The plug-in board features the following six sensors:

- Accelerometer sensor
- Temperature sensor
- Pressure sensor
- Magnetometer sensor
- Humidity sensor
- Gyro/angular rate sensor

CSR1011  
Dev Board  
Interface



CSR101x  
Starter Dev Kit  
Interface

The Environmental Sensor Board is an expansion board for development with the following target boards:

- CSR1011 development board
- CSR101x Starter development board

Qualcomm

CSR1011

## Bluetooth Low Energy Applications

- Gaming Accessories
- Fitness Trackers
- Smart Watches
- Heating Controllers
- Medical Biosensors
- Agriculture



## Developing Applications

The Bluetooth Low Energy SDK is used to build the Environmental Sensor Application and download it to the board. This fulfills the role of the Environmental Sensor in the Environmental Sensor Profile and allows environmental data to be exposed. Once downloaded, the application executes and pressing the button on the target board puts the sensor into discoverable mode.

The environmental data is received by the Environmental Collector, part of the Environmental Profile which is supported by the Profile Demonstrator application that runs on a Windows PC. This is included as a part of the SDK.

A Bluetooth low energy dongle connected to the PC allows the Profile demonstrator to discover the Environmental Sensor and connect to it. Once the connection is established the Profile Demonstrator can be used to read data from each of the sensors on the board.

The user can experiment with the sensors to verify that data is being collected. Full source code for the Environmental Sensor is provided and it is possible to customize the software for further evaluation, or use these examples as the basis for further development of a new application to suit your needs.

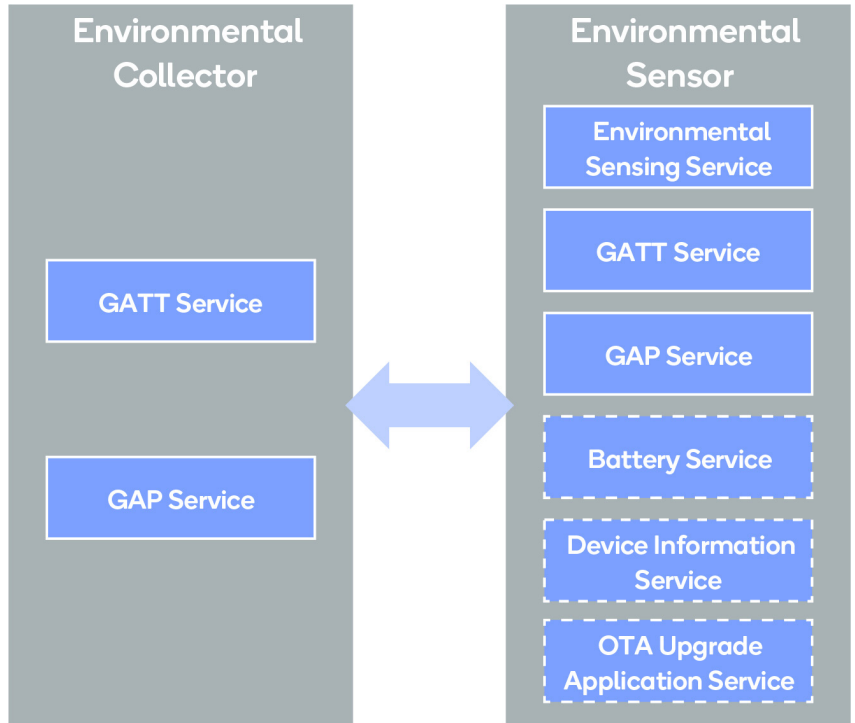
The board is attached via a set of header sockets on the board. Once physically connected, power is provided from the development board which can be fitted with either a coin-cell battery or USB power cable.

Product	Part Number
Environmental Sensor Board	DK-ENV_SENS-10224-1A
CSR1011 Dev Board	DB-CSR1011-10139
CSR101x Starter Dev Kit	DK-CSR1010-10169
CSR1011 Dev Kit	DK-CSR1011-10138

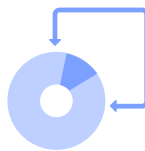
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## Environmental Sensor – Primary Services



## SDK



Once you purchase the Starter Development Kit or CSR1011 Development board, you can download the latest Bluetooth Low Energy SDK with a valid activation code.

The SDK provides a complete graphical code development environment for the Bluetooth Low Energy IC products using its xIDE environment with breakpoint, variable viewing, memory viewing, etc.

The SDK is based on a GCC compiler tool chain, and command line build and make tools are available for reducing development time and regression builds.

