# BMK – Sensor Board Technical Specifications

BytePoster Master Kit (BMK) is a rapid prototyping kit developed for enterprises and researchers to realize Industrial IoT applications, Real Time Asset Monitoring solutions, Environmental Monitoring and other edge computing applications at a faster pace. BMK is a Microsoft Azure certified hardware platform which has an edge computing capability and communicates to cloud vendors in a secure communication using WiFi, BLE or LTE.
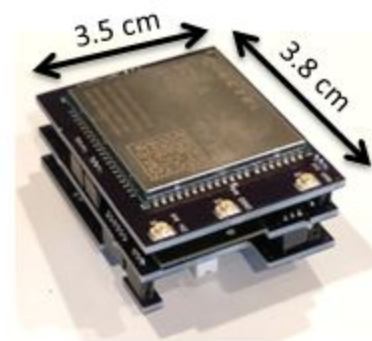

1. BytePoster Master Kit stack

BMK Sensor Board:

Sensor Board mainly consists of :

1. Humidity and Temperature sensor (Si7021)
2. High Accuracy Temperature (MCP9808)
3. Ambient Light Sensor (TSL25911)
4. 3D Accelerometer and 3D Magnetometer (LSM303AGR)
5. ZeroPower Microphone (VM1010) connected to 12 bit ADC(MCP3021)
6. Always-on 3D Accelerometer and 3D Gyroscope (LSMDSL)
7. Additional Sensor Input (ESP32 ADC)

Top side Bottom side
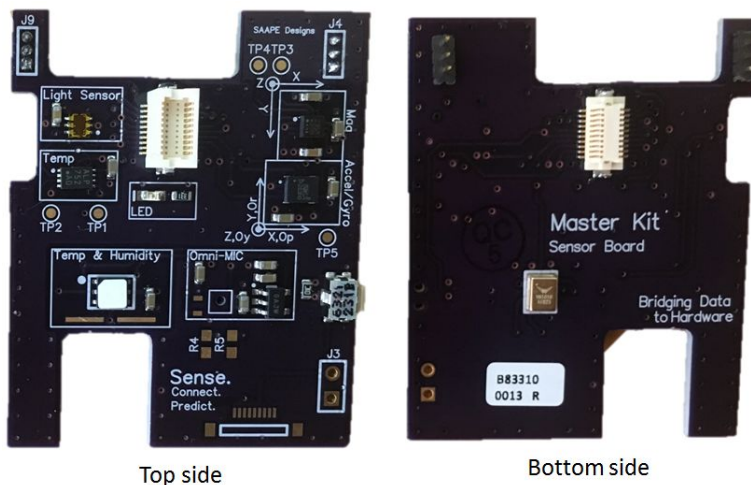
Master Kit - Sensor Board

1. Si7021 - HUMIDITY AND TEMPERATURE SENSOR

The Si7021 I2C Humidity and Temperature Sensor is a monolithic CMOS IC integrating humidity and temperature sensor elements, an analog-to-digital converter, signal processing, calibration data, and an I2C Interface. The patented use of industry-standard, low-K polymeric dielectrics for sensing humidity enables the construction of low-power, monolithic CMOS Sensor ICs with low drift and hysteresis, and excellent long term stability.

More Info: https://www.silabs.com/documents/public/data-sheets/Si7021-A20.pdf

2. MCP9808 - HIGH ACCURACY TEMPERATURE

The MCP9808 digital temperature sensor converts temperatures between -20°C and +100°C to a digital word with ±0.25°C/±0.5°C (typical/maximum) accuracy.
More Info: http://ww1.microchip.com/downloads/en/DeviceDoc/25095A.pdf

3. TSL25911 - LIGHT-TO-DIGITAL CONVERTER

The TSL2591 is a very-high sensitivity light-to-digital converter that transforms light intensity into a digital signal output capable of direct I²C interface. The device combines one broadband photodiode (visible plus infrared) and one infrared-responding photodiode on a single CMOS integrated circuit.
More Info: http://ams.com/documents/20143/36005/TSL2591_DS000338_6-00.pdf

4. LSM303AGR - ULTRA-LOW POWER 3D ACCELEROMETER and 3D MAGNETOMETER

The LSM303AGR is an ultra-low-power high performance system-in-package featuring a 3D digital linear acceleration sensor and a 3D digital magnetic sensor.
More Info: https://www.st.com/resource/en/datasheet/lsm303agr.pdf

5. VM1010 - ZERO POWER MICROPHONE

The VM1010 is the world's first ZeroPower Listening ™ piezoelectric MEMS microphone. It provides an ultra-low power always listening solution, bringing voice activation to battery-powered consumer devices.
More info: https://www.mouser.com/pdfdocs/VM1010-Brochure.pdf
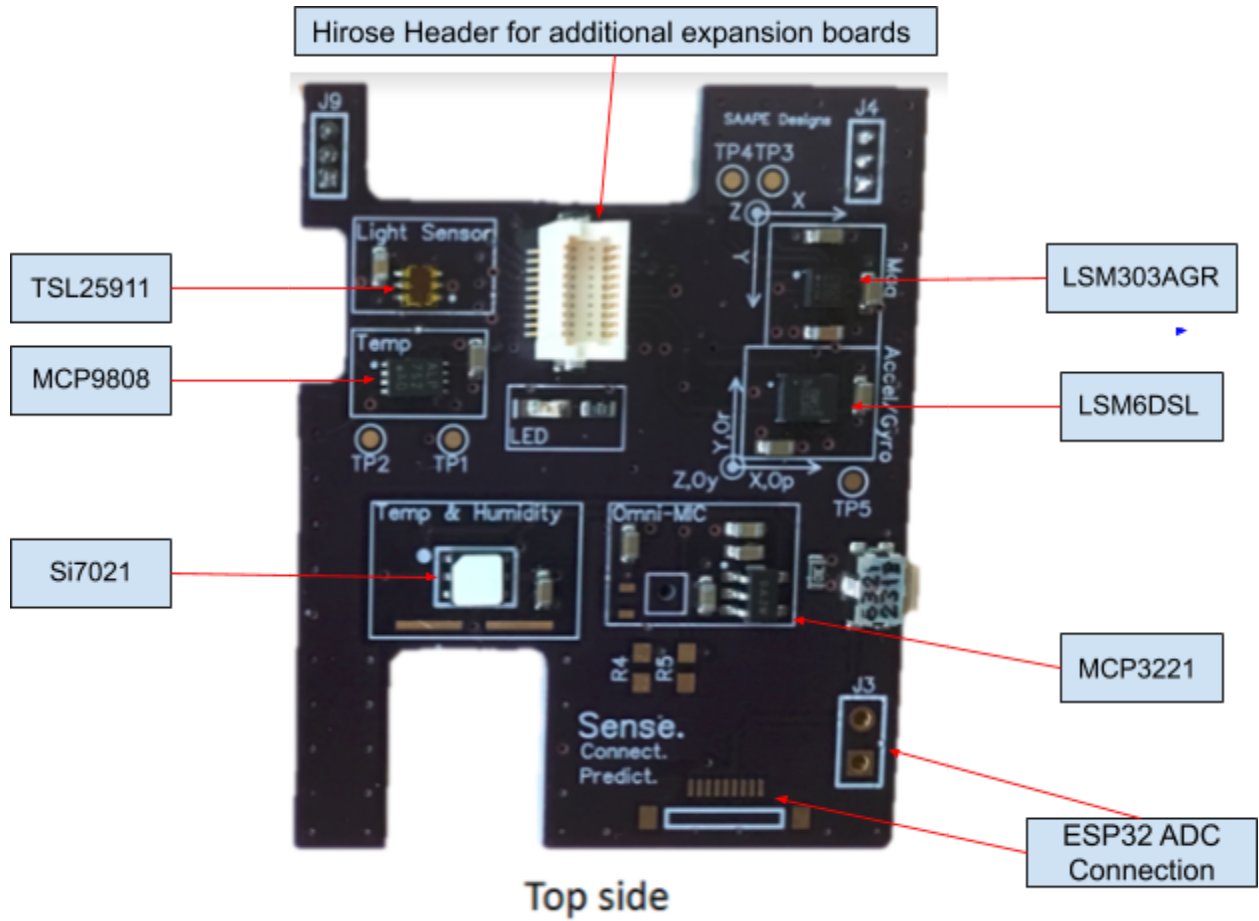
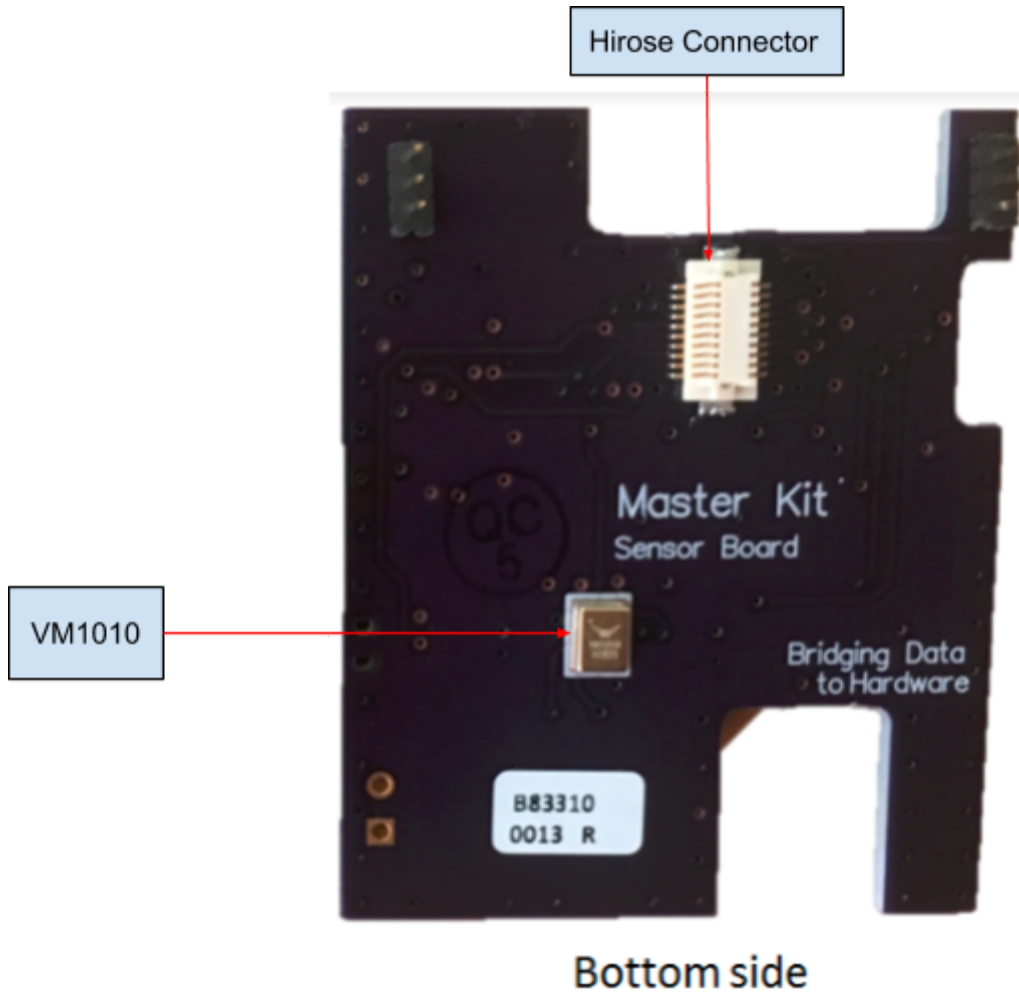## 6. LSM6DSL - ALWAYS-ON 3D ACCELEROMETER and 3D GYROSCOPE

The LSM6DSL is a system-in-package featuring a 3D digital accelerometer and a 3D digital gyroscope performing at 0.65 mA in high-performance mode and enabling always-on low-power features for an optimal motion experience for the consumer.
More Info: https://www.st.com/resource/en/datasheet/lsm6dsl.pdf

7. ESP32 - ADC

ESP32 integrates 12-bit SAR ADCs and supports measurements on 18 channels (analog-enabled pins). The ULPcoprocessor in ESP32 is also designed to measure voltage, while operating in the sleep mode, which enables low-power consumption. This ADC pin is brought out in the sensor board in the form of ZIF connector and test points at J3.

Hirose Header for additional expansion boards

TSL25911

MCP9808

Si7021

LSM303AGR

LSM6DSL

MCP3221

ESP32 ADC Connection

Top side

Hirose Connector

VM1010

Master Kit
Sensor Board

Bridging Data
to Hardware

B83310
0013 R

Bottom side

Revision:

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