



## OpenSensIOT platform BASIC

### What is it?

- State of the art HW and SW Open platform used for various IOT purposes

### HW specifications

- ARM Cortex-M4 Core 32 bit
- Full 3D-axis inertial system
- Pressure sensor
- Temperature sensor
- Strain gauge (optional)
- Pulse-Oximeter
- Infrared Thermopile Sensor
- ECG and Respiratory Sensor (optional)
- GPS
- 2G 3G modem
- USB
- BT (optional)
- EEPROM (optional)
- NAND FLASH (optional)
- E Paper E-Ink (optional)

### SW specifications

- IDE TrueStudio
- C programming language
- FreeRTOS (optional)
- HAL drivers
- RTC, WDG, Sleep (optional)



## OpenSensIoT platform DETAILED

### HW specifications

- **Core**
  - High-performance 180 MHz CPU, ARM Cortex-M4 core, DSP and FPU, 1 MB FLASH, 256+64kB RAM
- **Ready for Lilon batteries supply**
- **Sensorics:**
  - Full 3D-axis inertial system
    - Accelerometer  $\pm 2g/\pm 4g/\pm 6g/\pm 8g/\pm 16g$ , Gyroscope  $\pm 245/\pm 500/\pm 2000$  dps, Magnetometer  $\pm 2/\pm 4/\pm 8/\pm 12$  gauss
  - Pressure sensor
    - 260-1260 hPa absolute pressure range, 0.01 hPa resolution
  - Temperature sensor
    - from -30 to 105 degrees, Accuracy  $\pm 2$ degrees C
  - Strain gauge
    - Dedicated 24 bit high precision AD component for Wheatstone bridge
  - Pulse-Oximeter (optional)
    - Integrated Analog Front-End with 22bit AD, LED transmit section, diagnostics for sensor and LED fault detection
  - Infrared Thermopile Sensor
    - Integrated Math Engine ( $\pm 1^\circ\text{C}$  from  $0^\circ\text{C}$  to  $+60^\circ\text{C}$ ;  $\pm 1.5^\circ\text{C}$  from  $-40^\circ\text{C}$  to  $+125^\circ\text{C}$ )
  - ECG and Respiratory Sensor (optional)
    - Data Rate: 125 SPS to 8000 SPS; Built-In Right Leg Drive Amplifier, Lead-Off Detection
  - GPS
    - Supports autonomous GPS C/A, SBAS function (including WAAS and EGNOS) and AGPS (EASY function). Standard NMEA 0183 commands
- **Connectivity**
  - 2G 3G modem
    - EHS5-US (850/1900 MHz) for North America, and EHS5-E (900/2100 MHz) rest of the world. USB, Embedded TCP/IP with TLS 1.2
  - USB device
    - Standard communication device class - virtual serial
  - BT
    - SPP 2.0 and LE 4.0 (optional)
- **Storage**
  - EEPROM 64kb (optional)
  - NAND FLASH 8Gb (optional)
- **GUI**
  - one button (optional)
  - EPaper E-Ink connection (optional)



### **Software specifications (Open platform)**

- IDE TrueStudio
  - Free to use on commercial projects
- C programming language
- FreeRTOS (optional)
- HAL drivers
- "Well-tried" programming approaches/coding rules; Modular task based system
- RTC, WDG, Sleep (optional)
- SW prepared for Test Equipment (self tests and complete extern access to connectivits and sensor module)
- Capability to implement security features cryptography AES, TDES, TLS1.2, ... (optional)
- capability to implement various IOT protocols, TCP/IP, HTTPS, MQTT, AMQP,..(optional)
- Lots of space (RAM, FLASH) to implement user application specific code

### **EMC Electromagnetic compatibility**

- performed all tests at lab to check if final product capable of receiving residential CE certificate