

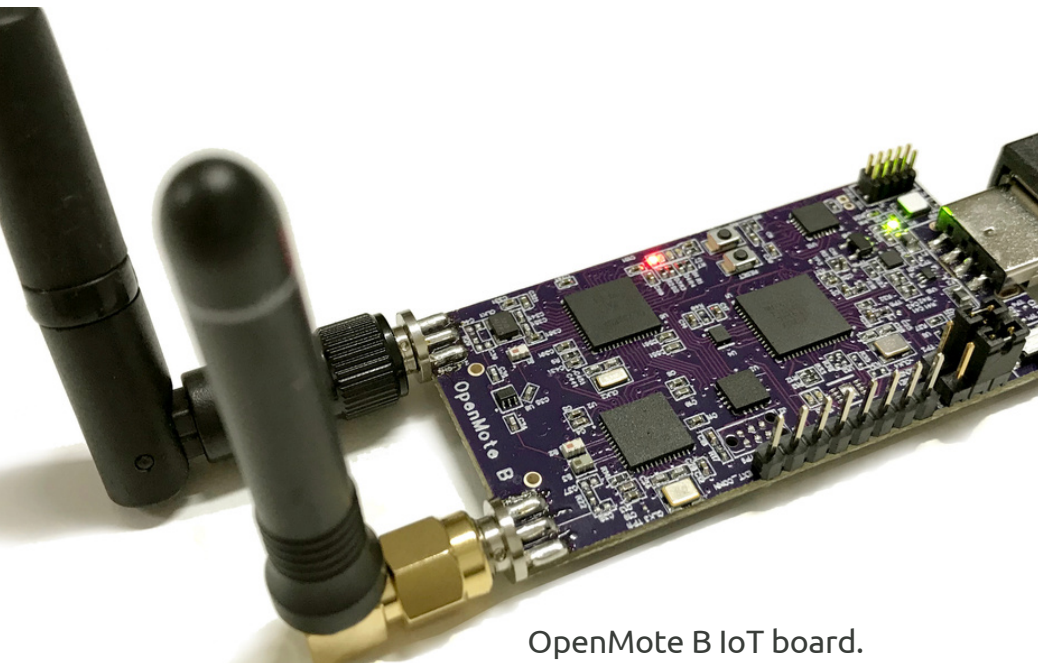
OPENMOTE B

Ultra Low-power board to develop IoT applications in the industrial space.



Industrial Shields

All kind of industries.
Multiple monitoring solutions.
Expand your communications.



OpenMote B IoT board.
Two antennas - 2.4GHz // SubGHz.



Platform Characteristics

- **Human interface:** Include 4 LEDs (Green, Yellow, Orange and Red), a user button intended for debugging purposes. A hardware reset button.
- **Serial communications:** With a computer using a UART port on the CC2538. Solution based on the FTDI FT232H chip, a Serial-to-USB converter to communicate with a computer using a standard UART port. In addition, the FTDI chip allows to program the CC2538 directly using the internal bootloader and the cc2538-bsl Python script.
- **Board expansion:** Expansion port (8 pins with 2.54 mm spacing) for debugging or to connect daughter boards. The expansion board includes a VCC (2.5V) and a GND pin, and six configurable pins.
- **Extended security:** Hardware-accelerated support for cryptographic functions using SHA2, AES-128/256, ECC-128/256 and RSA algorithms.
- **Antenna connectors:** Two SMA antenna connectors for the Sub-GHz and 2.4 GHz antennas. The Sub-GHz is directly connected to the Sub-GHz radio on the AT86RF215. The 2.4 GHz antenna is multiplexed using an RF switch to the CC2558 and the AT86RF215 radio transceivers. The direction of the RF switch can be controlled using two CC2538 pins.
- **Power:** Can be powered from a USB port (5V) through an A male plug connector, or from two AA batteries (3V). Auto-switching mechanism that selects the USB source whenever it is available and seamlessly transitions to the AA batteries when disconnected. On/off button to disconnect the two AA batteries when not used.
- **Current sensing:** Two ports (3 pins with 2.54 mm spacing) to measure current consumption during operation. The first port measures the CC2538 chip, whereas the second port measures AT86RF215 chip.
- **JTAG port:** Includes a 10-pin ARM connector that allows to load and debug code using an external JTAG probe. The interface is compatible with the main toolchains: Code Composer Studio, IAR Embedded Workbench and ARM.

Specifications

Micro-Controller (Texas Instruments, CC2538)

- ARM Cortex-M3 with code pre-fetch
 - Running at 16 MHz or 32 MHz
 - 32 Kbytes RAM
 - 512 Kbytes FLASH
- On-chip peripherals:
 - 4x general purpose, 1x sleep timer
 - 1x 12 bit ADC with 8 channels
 - 2x SPI, 2x UART, 1x I2C
- Security hardware acceleration:
 - AES-128/256/SHA2 encryption
 - ECC-128/256 secure key exchange
- Low-power operation:
 - Active mode: 7/13mA (16/32 MHz)
 - LPM1: 600uA (full retention, 4us wake-up)
 - LPM2: 1.3 uA (16 Kbyte RAM retention, 128us wake-up, wake-up from RTC)
 - LPM3: 0.4 uA (16 Kbyte RAM retention, 128us wake-up, wake-up from GPIO)

Transceiver 1 (Texas Instruments, CC2538)

- Operates in the 2.4 GHz ISM band with support for IEEE 802.15.4-2006
 - Modulation: OQPSK with DSSS
 - Data rate: 250 kbps
 - Receiver sensitivity: -97 dBm
 - Transmit power: 7 dBm
 - Transmit current: 24 mA at 0 dBm
 - Receive current: 20 mA

Transceiver 2 (ATMEL, AT86RF215)

- Operates in the 868/915MHz and 2.4 GHz ISM bands with support for IEEE 802.15.4g-2012
 - Modulation: MR-FSK/OFDM/O-QPSK
 - Data rate: 6.25 kbps to 2400 kbps
 - Receiver sensitivity: -123 dBm
 - Transmit power: 14.5dBm
 - Transmit current: 62 mA at 14 dBm
 - Receive current: 28 mA

Our company's goal is to provide low cost solutions for automation in industrial environments.

The **Open Source Hardware** solutions are still not widely introduced in the industrial sector, it is a growing market and we are its pioneers.

The balance between **quality and cost is very important** for us and so for the market, using Open Source solutions we can provide more specifications at a better price.

Even more, the Open Source solutions are **more flexible and accessible** than the standard industrial solutions, and furthermore, **the software is free of licences**.

Industrial Shields are convinced with a perspective focused on **Industry 4.0 and the Internet of Things**.

Contact with us, let's **get in touch**



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