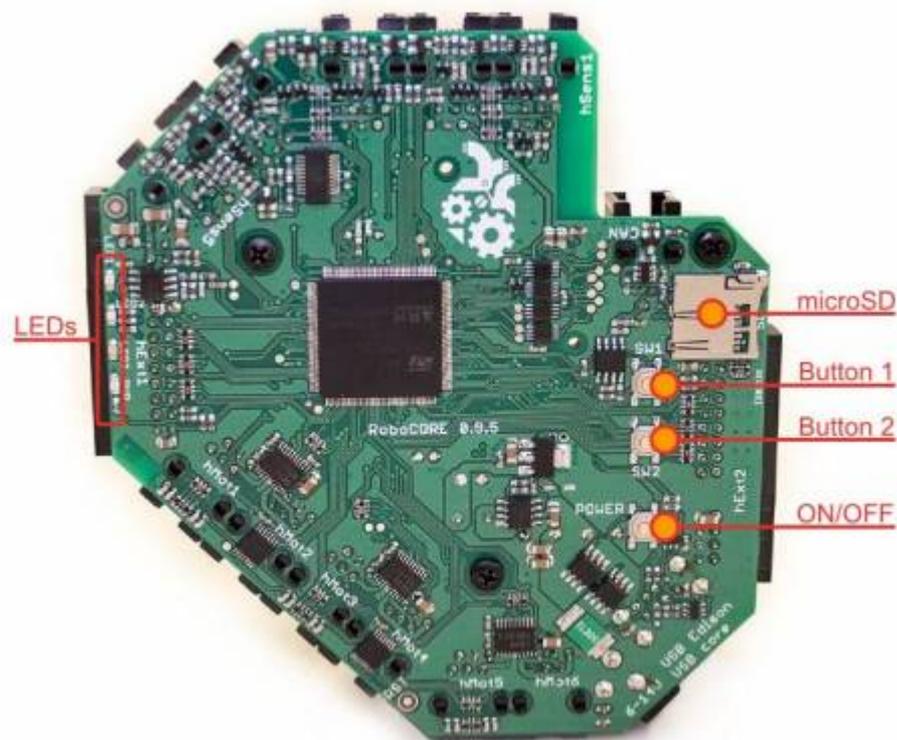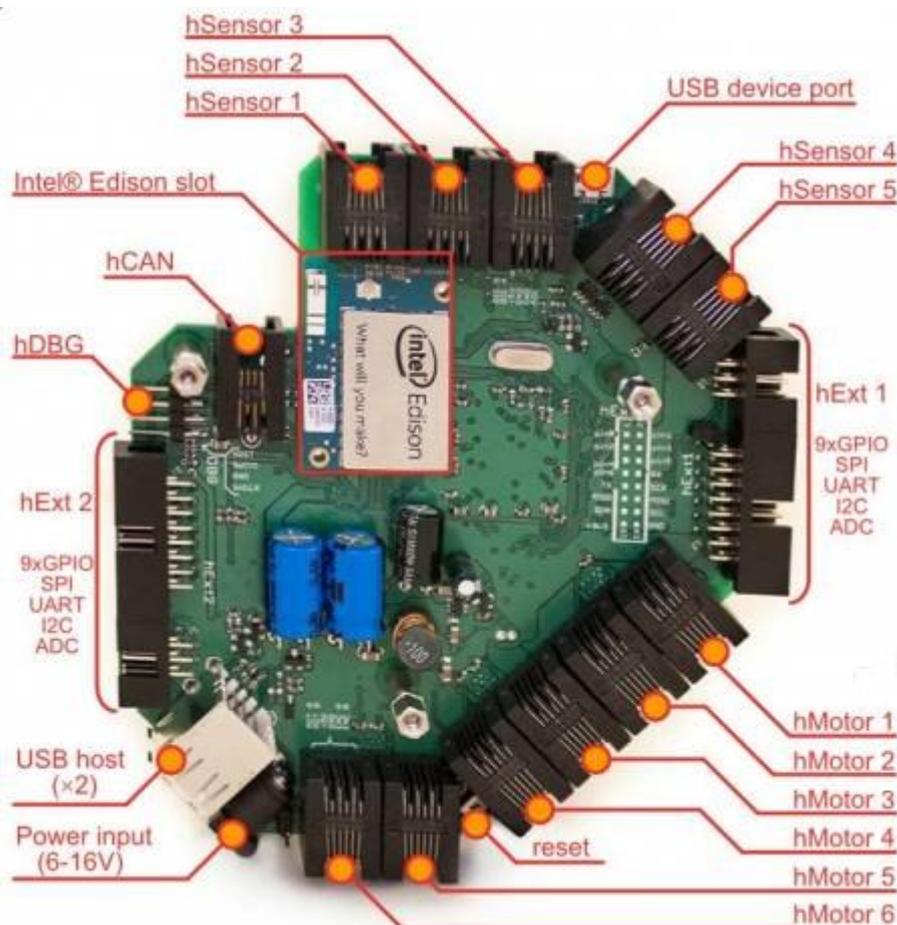# Hardware description

RoboCORE 1.0 - top and bottom view

Specification

You can see the details by clicking link in the first column in the table below

Function/port	Quantity	Description
supply voltage	1	6 - 16V
hMotor	6	Port for DC motors with encoder interface
hSensor	5	Port for Sensors
USB host	1 (2*)	USB host port
USB device	1	USB device port (FTDI)
SD card	1	microSD card connector
hDBG	1	Hardware programmer/debugger port
hExt	2	Extension port - 9*GPIO, UART, SPI, I2C, ADC, exti
hCAN	1	CAN port
Wi-Fi	1*	Wi-Fi transmitter available with Intel® Edison module
Bluetooth 4.0	1*	Bluetooth transmitter available with Intel® Edison module
hLED	4	Power LED + 3 programmable LEDs
hButton	3	ON/OFF button + 2 programmable buttons

* only with Intel(R) Edison module

See also more general specification.

Power Supply

Before powering the RoboCORE you should know something about **power supply input**.

The RoboCORE input voltage (VIN) must be in the range 6 - 16 V. The recommended input voltage range is 7 - 15V. The power connector is a standard DC 5.5/2.1 (centre-positive) type.

The RoboCORE power supply input has overvoltage (>16V), reverse-polarity and overcurrent protection.

You can supply the RoboCORE with:

- 5 - 10 AA/AAA cells;
- 6 - 11 NiCd/NiMH cells;
- 2 or 3 Li-Ion/Li-Poly cells;
- an AC-to-DC wall adapter;
- a 12 V lead-acid battery.

RoboCORE cannot be supplied from the USB port of your laptop. Why? This is a robotic controller and has motor drivers on its board. Motors cannot be supplied from USB due to the current and voltage requirements. To avoid the risk of damaging the USB port we decided to supply RoboCORE separately. RoboCORE is designed to be programmed wirelessly and USB connection is not the basic way to program or supply the controller.

How much current does it need? This strongly depends on the robot configuration. A RoboCORE without any devices connected needs up to 80mA (180mA with Intel® Edison). When you connect

certain motors, current peaks can reach several amperes. The average current should not exceed 4 A, otherwise the overcurrent protection will be triggered and unexpected resets will occur. Remember this when you are designing your robot.

RoboCORE has two internal voltage regulators. The input voltage VIN is converted to 5 V by a switching regulator, and then to 3.3 V by a linear voltage regulator. Be aware of the current limits – the total current must not exceed 2 A through the 5 V line and 800 mA through the 3.3 V line. We will also remind you about power limitations in the description of individual interfaces.

Power supply alternatives

In most cases, the 6*AA battery holders are provided with RoboCORE. If you are not willing to use alkaline batteries, the first alternative is to use NiCd or NiMH rechargeable batteries - but they have much lower nominal voltage. The better alternative are Li-Ion or Li-Poly batteries. Fortunately, these are available in the same shape as AA batteries and they are called "14500". The name comes from dimension 14x50mm.

Some examples:
14500 reachargeable battery on AliExpress
Of course, you also need a charger for them.

Remebmer that Li-Ion and Li-Poly batteries have higher nominal voltage and you have to use 3 cells instead of 6 cells. To do that, you can:

- use one 3*AA battery holder with 3 Li-Ion/Poly batteries,
- use 6*AA battery holder with 3 "dummy" batteries and 3 Li-Ion/Poly batteries.

The "dummy" (placeholder) batteries examples:
AA placeholder on AliExpress
They cannot be charged - they are only the "link" to omit 3 unnecessary places in the battery holder.