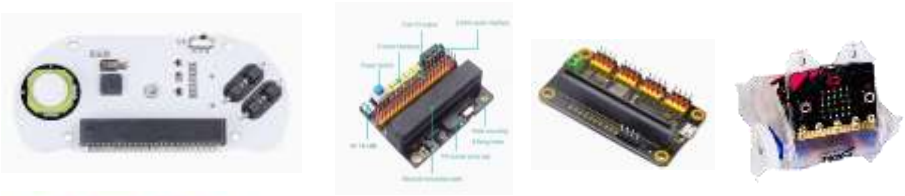


Imágenes ilustrativas

Micro:bit + Sensores para Micro:Bit

TURING M 01 Kit Advanced Sensors Kit

Manual

V 1.0

Index

1. Introduction

The manual refers to TURING M 01 Kit Advanced Sensors Ki compatible with the Advanced Sensor Kits for TURING M 01 Kit, with sensors and actuators to be used with the main board of the equipment.

2. Kit Component List

- Microbit V2.2 compatible motherboard
- GamePad
- Multifunction Expansion Board
- TURING M 01 IoT Extender Kit
- Battery holder with switch
- 16-channel servo driver
- Move Mini Buggy Kit
- Keystudio Sensor Shield
- Bit WIFI expansion board
- Camera Smart AI lens
- Breadboard
- Robotics Board
- TURING M 01 Sensor Shield V2 Kit
- RGB LED module
- Analog temperature sensor
- Photocell sensor
- Analog sound sensor
- Analog rotation sensor
- Digital tilt sensor
- Traffic light module
- Line tracking sensor
- Infrared Obstacle Detection Sensor 19.
- PIR Motion Sensor
- Collision Sensor
- Water Sensor
- Soil Moisture Sensor
- LM35 Linear Temperature Sensor
- GUVA-S12SD 3528 Ultraviolet Sensor
- I2C Display Module 1602
- HC-SR04 Ultrasonic Distance Module
- Joystick Module

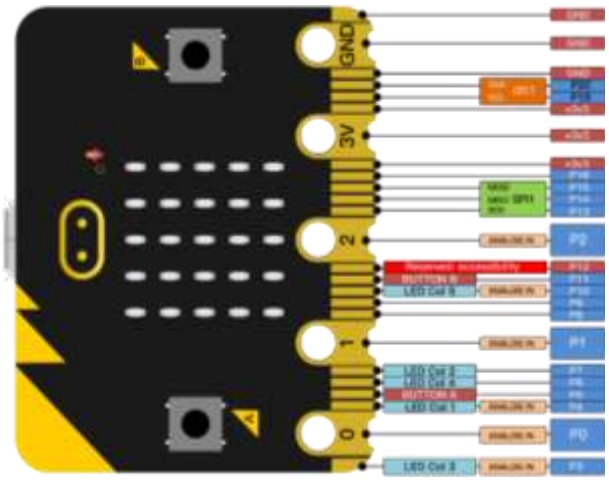
- Micro Servo
- Dupont H-H 40-pin Cables
- Battery
- Battery Charger

3. Introduction:

The TURING M 01 Kit was designed by the BBC to help children in Grade 7 (11-12 years old) and above learn programming better. The TURING M 01 Kit motherboard has features on the board, including a 5*5 LED dot matrix, 2 programmable buttons, compass, Micro USB port, Bluetooth module, etc. It's only half the size of a credit card (4cm x 5cm), but it's very powerful. It can be used to write video games, sound and light interaction, robot control, scientific experiments, portable device development, etc.

The TURING M 01 Kit V2 has a touch-sensitive logo and a microphone. A doorbell has also been added on the back so that various sounds can be played without external devices. In addition, the TURING M 01 Kit V2 card also supports sleep mode, which allows users to press the reset and power buttons on the back of the card to put it into sleep mode and reduce battery power consumption. The most important feature is that the CPU performance of the board is much better than the previous version.

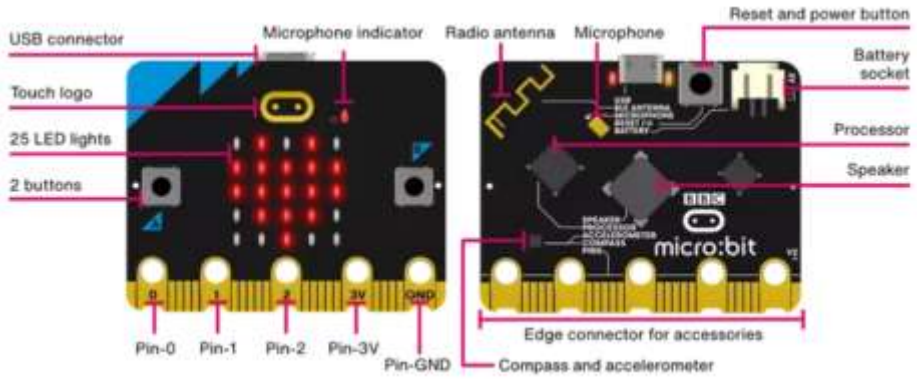
To make it easier for you to learn the TURING M 01 Kit microcontroller and some basic knowledge of electronics, we've set up this kit. The kit contains the TURING M 01 Kit control board, some sensors and modules.



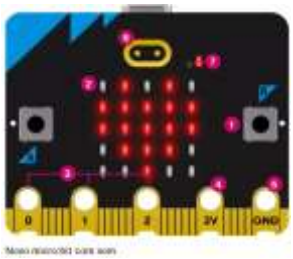
The functions of the TURING M 01 Kit pins are classified in the following table:

GPIO	P0,P1,P2,P3,P4,P5,P6,P7,P8,P9,P10,P11,P12,P13,P14,P15,P16,P19,P20
ADC/DAC	P0,P1,P2,P3,P4,P10
IIC	P19(SCL),P20(SDA)
SPI	P13(SCK),P14(MISO),P15(MOSI)
PWM (Frequently Used)	P0,P1,P2,P3,P4,P10
PWM (infrequently)	P5,P6,P7,P8,P9,P11,P12,P13,P14,P15,P16,P19,P20
Busy	P3(Col3 LED),P4(Col1 LED),P5(Button A),P6(Col4 LED),P7(Col2 LED),P10(Col5 LED),P11(Button B)

For more information, see the official website:
https://tech.microbit.org/hardware/edgeconnector/
https://microbit.org/guide/hardware/pins/



Front features



Your BBC TURING M 01 Kit has a wide range of features for you to explore. Find out more about each of the features listed below.

Buttons

On the front of the TURING M 01 Kit are two buttons that can be used together or separately to make things happen.

LED Display & Light Sensor

The screen consists of a 5x5 matrix with 25 LEDs; It shows images, words and numbers. LEDs can also be used as sensors, measuring the amount of light that's falling on your TURING M 01 Kit.

Pins - GPIO

GPIO pins allow you to connect headphones, touch sensor or add other electronics to expand the possibilities of your TURING M 01 Kit. The new TURING M 01 Kit has recesses to securely attach the crocodile clamps.

Pin - 3 volts power

You can power external LEDs or other electronics using the 3-volt power pin.

Pin - Ground

The GND pin is the Earth pin - used to complete electrical circuits by connecting headphones, LEDs or external switches to your TURING M 01 Kit.

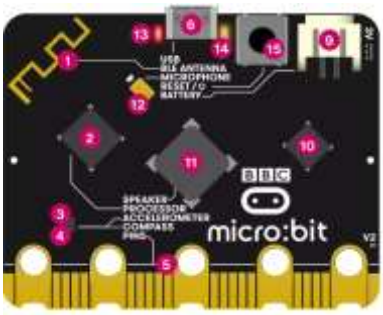
Touch logo

The TURING M 01 Kit has an extra input. The gold logo also doubles as a touch sensor. In addition to the A and B buttons, you can use this as an extra button in your programs.

Microphone LED

With the TURING M 01 Kit new internal microphone, you can create programs that react to loud or quiet sounds and measure noise levels. The microphone LED shows when the microphone is active measuring sound levels. Just to the left of the LED you can see a small hole where the sound enters.

Back features



Antena Bluetooth & rádio

Your TURING M 01 Kit can communicate with other TURING M 01 Kit via radio and with other devices via Bluetooth.

Processor & temperature sensor

The processor is the brain of the mainboard, always searching, decoding and carrying out your instructions. It also contains a temperature sensor that allows you to measure the heat or cold that is in the place where you are.

Compass

Find magnetic North or measure the strength of magnetic fields using the TURING M 01 Kit compass. It can measure magnetic fields in three dimensions and can be used for scientific experiments or to make simple door or window alarms.

Accelerometer

The TURING M 01 Kit accelerometer measures forces in 3 dimensions, including gravity, so your designs can tell which way your mainboard is facing. You can use it for science experiments, to make games with inputs that react to shakes, or to make simple alarms that warn you if someone is messing with your stuff

Pins

Connect your TURING M 01 Kit to headphones, simple switches, touch sensors and more. Pins can power simple accessories like lights, motors, and robots.

Micro USB connection

Use the USB interface to download programs to your TURING M 01 Kit and connect it to electricity.

Single yellow LED

The individual LED, located on the back of your TURING M 01 Kit, flashes when you're downloading a program, and turns on to show that you're powering the TURING M 01 Kit from the USB connection.

Reset Button

Restart your TURING M 01 Kit programs with the reset button.

Battery holder

Instead of powering the TURING M 01 Kit via USB, you can disconnect it from your computer and use a battery holder. This is very useful if you want to take it outside, use it hanging on clothes or as a game console. It can last for a long time using only two AAA batteries.

Chip de interface USB

The interface chip handles the USB connection and is used to download the new code to the TURING M 01 Kit, sending and receiving serial data to your computer.

Speaker

The new TURING M 01 Kit has a built-in speaker that makes it even easier for you to add music and new sounds to your projects.

Microphone

The new microphone and TURING M 01 Kit LED are on the back of the device. The LED lights up when you're monitoring sound levels and is visible with a microphone icon on the front of the device. On the front there is also a small hole that allows sound to enter the microphone.

Red LED

The red LED on the back of the new TURING M 01 Kit indicates that your TURING M 01 Kit has power, either via batteries or the USB cable.

USB Yellow LED

The TURING M 01 Kit has a yellow LED light that flashes when your computer is communicating with the TURING M 01 Kit via USB; when you install a file from a program, for example.

Power & Reset Button

Pressing this button on your TURING M 01 Kit will reset it and run your program from the beginning. If you continue to press it, the red LED indicates the electrical connection will turn off. When the power LED turns off, release the button and your TURING M 01 Kit enters power saving mode. He does this to save batteries. Press the button again to string your TURING M 01 Kit.

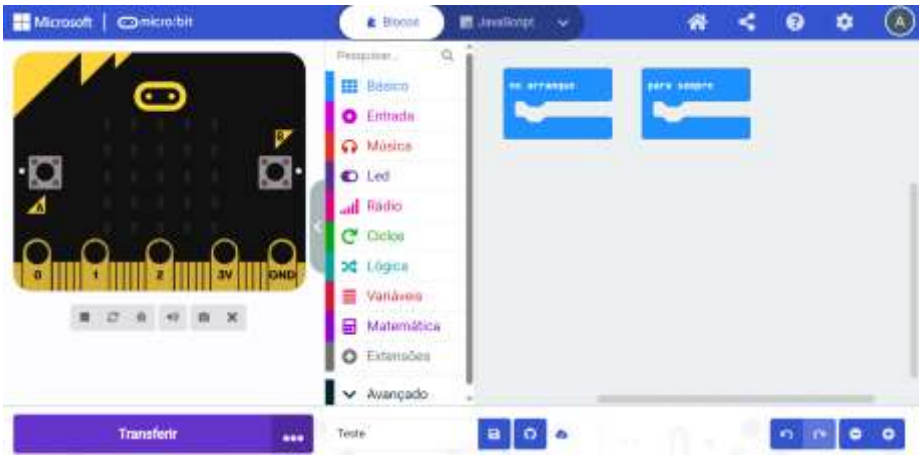
Inputs and outputs

Inputs and outputs are an important part of any computer system. Being a small computer, the BBC TURING M 01 Kit has plenty of inputs and outputs to know and use.

Additional information on https://microbit.org/pt-pt/

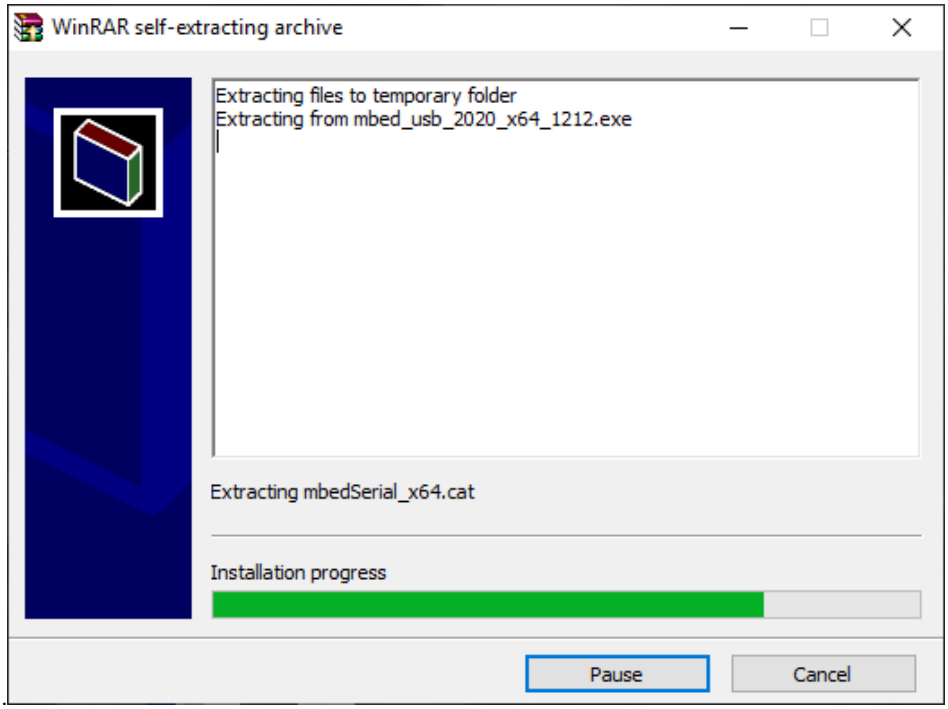
- **Programming Interface: MakeCode**

  Please check the link: https://makecode.microbit.org/

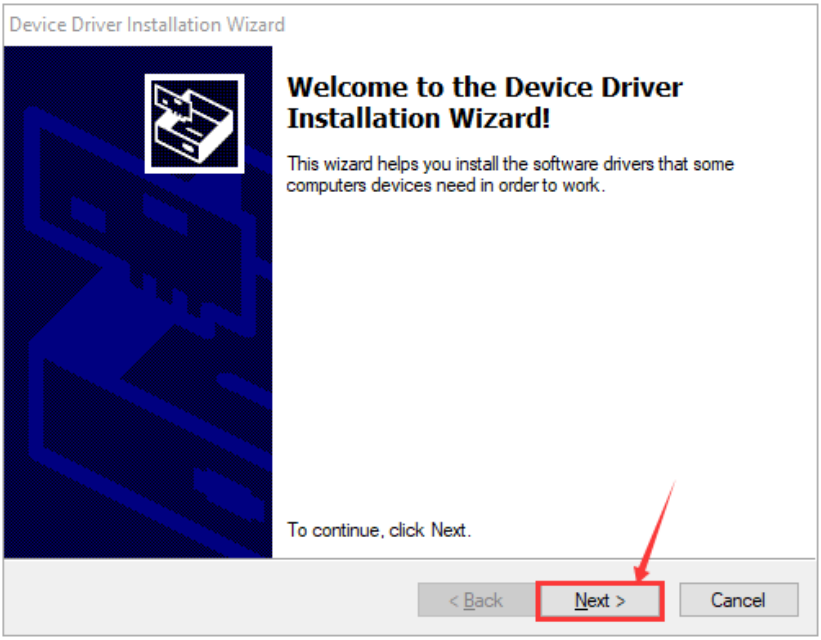


4. Mainboard controller installation instructions

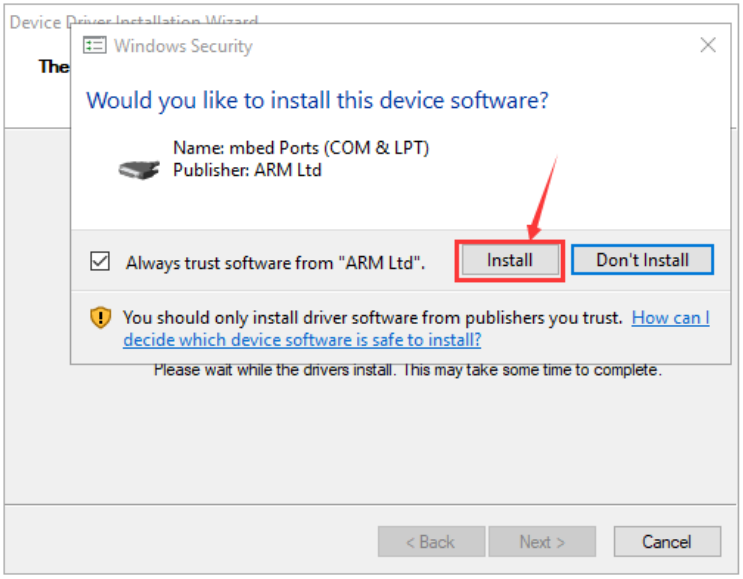
Install the driver for the TURING M 01 Kit development board below. First, connect the TURING M 01 Kit card to your computer with a micro USB cable, then double-click the driver file with the left mouse button and click Install

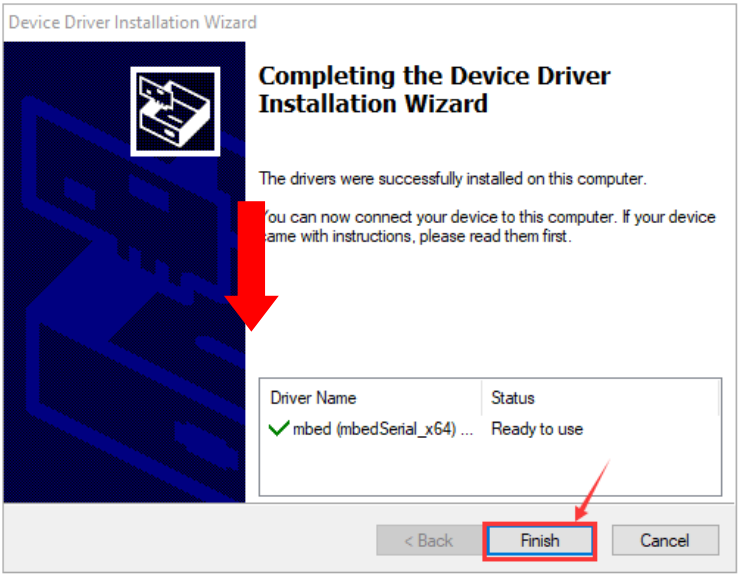


Continue to click Install to install the driver.

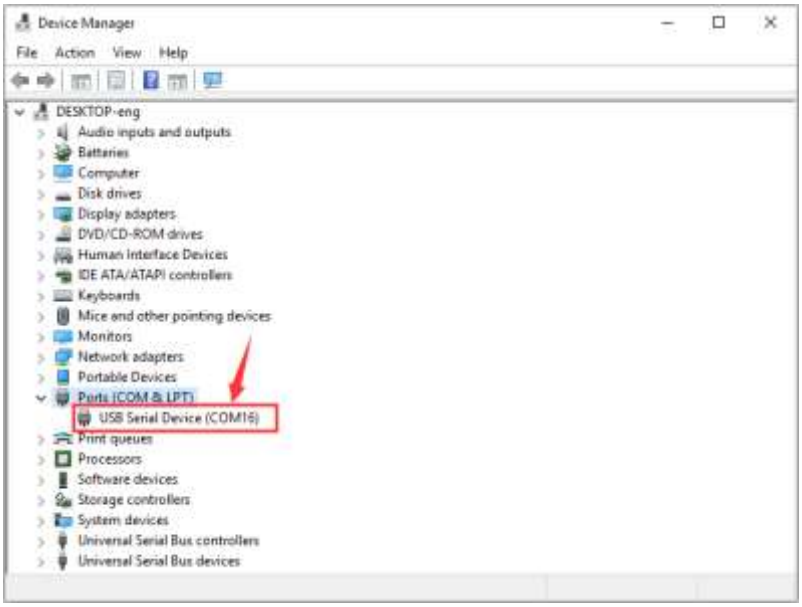


First click "Install" and then click "Finish", the installation is complete.



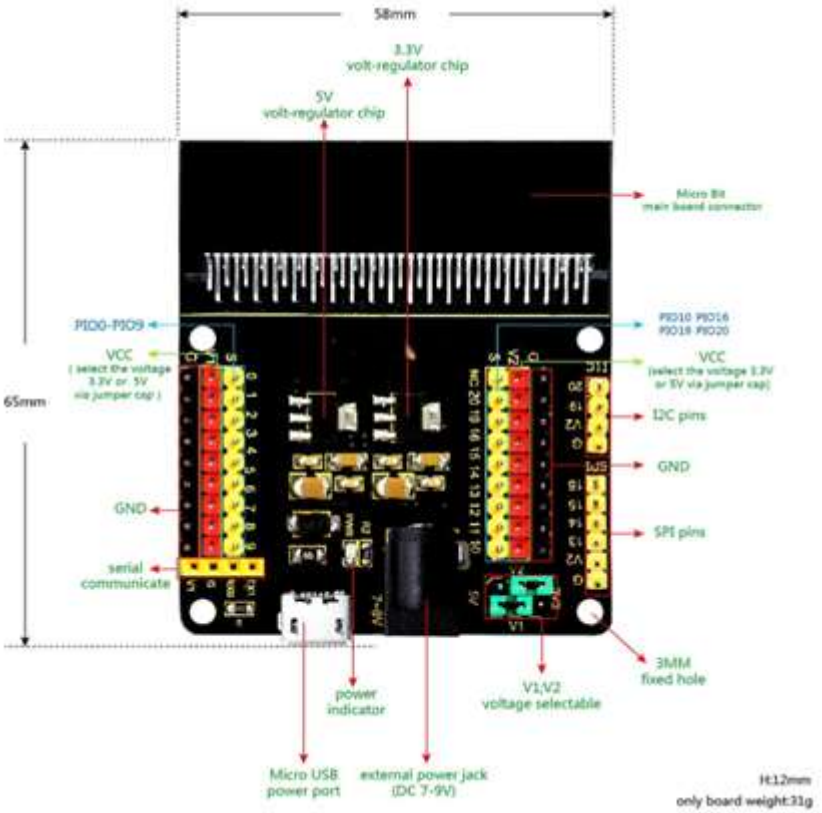


After installation, click on "Computer" -> "Properties" -> "Device Manager", we can see the following image.



5. Technical specifications and characterization of the sensors

- Connection interface between the main board and the sensors



Sensor expansion board for TURING M 01 Kit.

PIO ports on the TURING M 01 Kit control board in 3PIN INTERFACE (GND, VCC, Signal), easy to connect with other sensor modules.

Allows communication between the TURING M 01 Kit control board and other communication devices.

You have two methods to power the TURING M 01 Kit board, via a DC socket (DC 7-9V) or a USB micro port (DC 5V).

- GamePad :

- Expansión Multifunción

- TURING M 01 Kit extensor IO

- Servo driver 16 canales

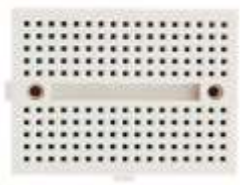
- Move Mini Buggy Kit

- Keystudio Shield para sensores

- Bit placa de expansión WIFI.

- Camera Smart AI lens.

- BreadBoard



- Robotics Board

- TURING M 01 Kit Sensor Shield V2

- RGB LED Module

- Analog Temperature Module

- Photocell Module

- Analog Sound Module

- Rotational analog module

- Digital tilt module

- Traffic Light Simulation Module

- HLine tracing module

- Obstacle Sensing IR Module

- Motion PIR module

- Collision Detection Module

- Water Detection Module

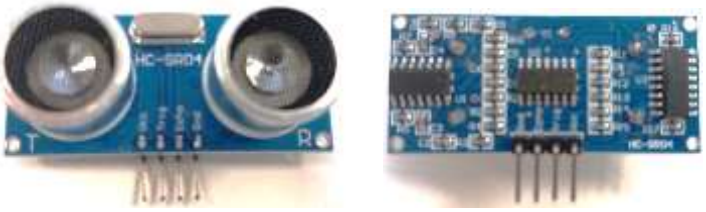
- Moisture detection module

- LM35 Linear Temperature Sensing Module

- GUVA-S12SD 3528 Ultraviolet Detection Module

- 1602 I2C Display Module

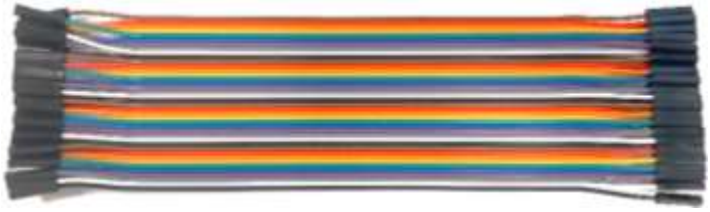
- Ultrassons Module HC-SR04



- Joystick Module

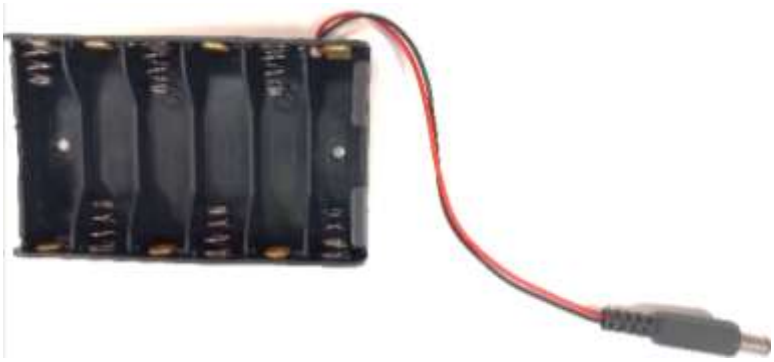
- Micro Servo Module

- F-F Dupont Jumper Wire 40 pinos



- Cabo microUSB / USB

- Battery Support Module (Premium Battery Case 6-cell AA)



- Battery Charge

- Rechargeable Battery