

# Specification

Revolution Robotics Challenge kit contains more than 500 parts. Most of the parts are plastic building blocks. See parts poster:

**DISTANCE SENSOR**  
CAPTEUR DE DISTANCE  
1x 0102

**BUTTON**  
BOUTON  
1x 0101

**BRAIN**  
CERVEAU  
1x 0100

**ROUND BEAMS**  
POUTRES RONDES  
4x 0201  
4x 0202  
4x 0203  
12x 0204  
6x 0205

**WEDGE**  
COIN  
4x 0301

**BATTERY HOLDER**  
SUPPORT DE BATTERIE  
1x 0302

**STRAIGHT BEAMS**  
POUTRES DROITES  
8x 0402  
8x 0403  
8x 0404  
8x 0405  
4x 0406  
4x 0407

**CABLES**  
CABLES  
2x 0501  
4x 0502  
6x 0503

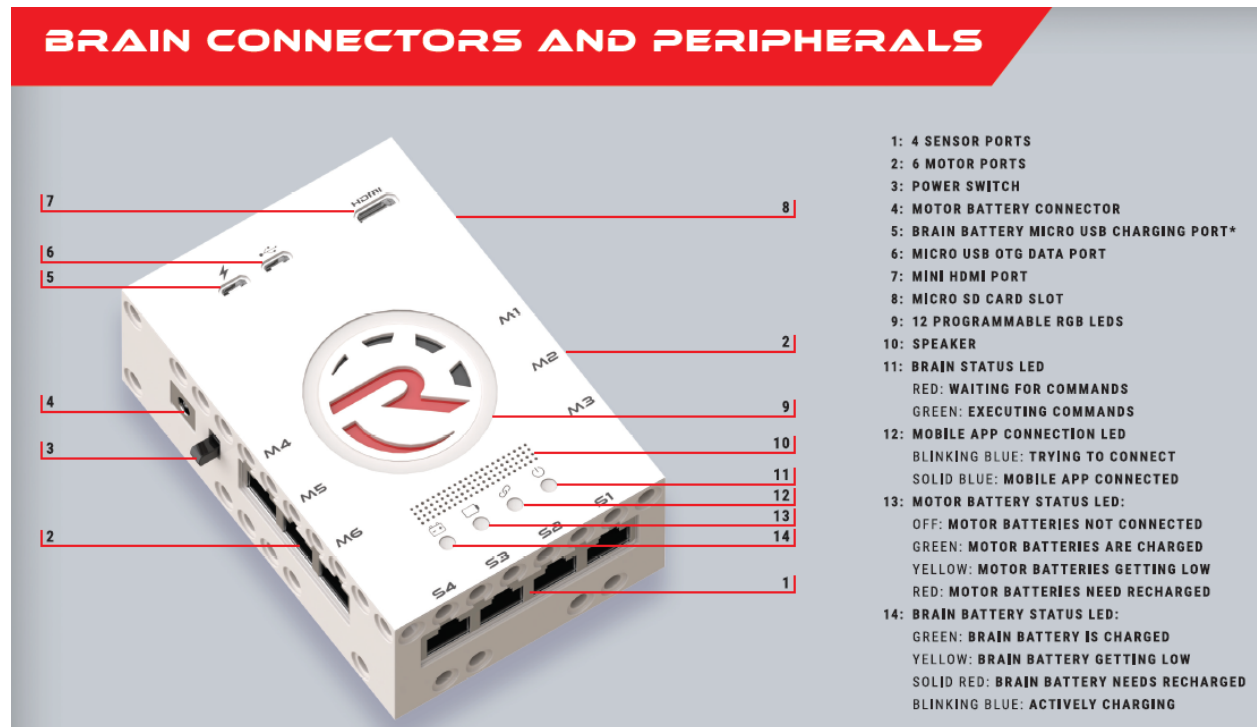
**MOVING PARTS**  
PIECES MOBILES  
4x 0601  
2x 0602  
5x 0603  
6x 0604  
8x 0605  
8x 0606  
1x 0607  
8x 0608  
1x 0609  
6x 0610  
6x 0611

**AXLES**  
ESSEUX  
2x 0701  
2x 0702  
8x 0703  
4x 0704  
4x 0705  
6x 0706  
8x 0707

**CONNECTORS**  
CONNECTEURS  
120x 0801  
40x 0802  
20x 0803  
8x 0804  
12x 0805  
24x 0806

**SPECIAL BEAMS**  
POUTRES SPECIALES  
6x 0901  
6x 0902  
8x 0903  
8x 0904  
16x 0905  
8x 0906

The main component of the Challenge Kit is the Robot Brain:



The Robot Brain uses the Raspberry Pi Zero W as the main device, the Challenge Kit uses the Raspberry Pi's radio and antenna for wireless communication.

The Robot Brain is powered by a built-in Lithium battery.

The motor and sensor peripherals can be connected to the RJ-45 ports on the sides (motor ports) and on the front (sensor ports).

The built in 8 Ohm speaker is connected to an audio amplifier, and the audio source signal comes from the Raspberry Pi Zero W.

The Robot Brain is a wireless data transmission system operating at 2400-2483.5MHz band. The Robot Brain is powered by 3.7Vdc from rechargeable battery and the transmitting frequency is crystal controlled. The operation is achieved by different combinations of form pulse modulating signal on the 2.4GHz carrier frequency. When the Robot Brain is positioned in the RF field, the high speed RF communication interface allows the transmission of the data and enable the Bluetooth pairing.

### Bluetooth Specification

#### For BLE

Operation frequency: 2402MHz ~ 2480MHz  
 Modulation:GFSK  
 Channel number:40  
 Channel separation: 2MHz

#### For BT BR+EDR

Operation frequency: 2402MHz ~ 2480MHz  
 Modulation:GFSK,  $\pi/4$ DQPSK, 8DPSK  
 Channel number:79  
 Channel separation: 1MHz

#### FCC Warning Statement

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment. This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- - Reorient or relocate the receiving antenna.
- - Increase the separation between the equipment and receiver.
- - Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- - Consult the dealer or an experienced radio/TV technician for help.

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

#### RF Exposure Statement

To maintain compliance with FCC's RF Exposure guidelines, This equipment should be installed and operated with minimum distance of 20cm the radiator your body. This device and its antenna(s) must not be co-located or operation in conjunction with any other antenna or transmitter