Makeblock
Construct Your Dreams

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Makeblock

neuron

Inventor Kit

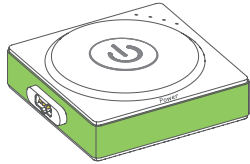Make Anything, Make Everything

Inventor kit

Parts List

Power

Bluetooth

Gyro Sensor
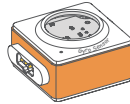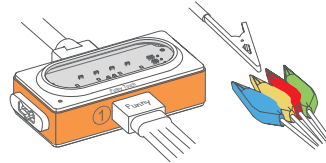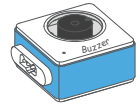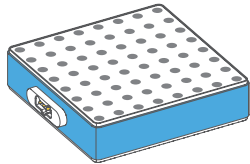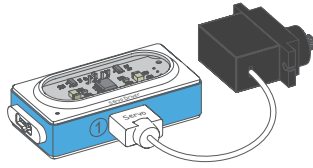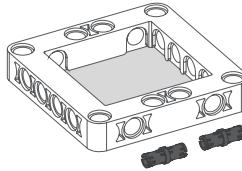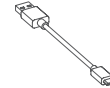
Funny Touch

Buzzer

LED Panel

Dual Servo Driver + Servo

9 × Neuron Board

USB Cable (20cm)

Rubber Bands

Meet Your Neuron

Colorful Blocks With Diverse Functions

The Neuron is classified into three categories according to color.
Energy & Communication blocks (Green): Provide power to other blocks. The communication block contains a Micro USB interface, you can connect the block to power bank or power adapter via USB cable to power the other blocks. The communication blocks also supply diverse wireless communication modes.
Input blocks (Orange): The input blocks collect information (such as sound and light) from the environment and send signals to change the output.
Output blocks (Blue): The output blocks receive signals from input blocks, and then do something, such as lighting up, moving or making a sound.

Graphical Programming

Makeblock Neuron App
Makeblock Neuron app is an easy-to-use graphical programming software. It uses flow-based programming and provides limitless creativity.

How to begin?
1. Download the Makeblock Neuron app from Apple App Store ⬛ App Store or Google play ⬛ Google play .
2. Ensure the bluetooth block is connected to your chain.
3. Launch the app and follow the instructions on the screen to connect your blocks to the tablet computer or smart phone.

mBlock

mBlock is a graphical programming tool based on Scratch. It allows users to read sensor values, control the output of hardware blocks and quickly get started programming Neuron.

Download mBlock and find more information from: http://www.mblock.cc

Easy Connection

- **Magnetically snap together, experience the magic of Neuron.**
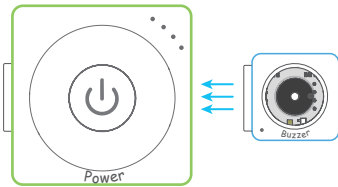
- **The input block (orange) must be connected on the left side of the output block (blue) when the Makeblock Neuron app or mBlock is not in use.**

Normal working!
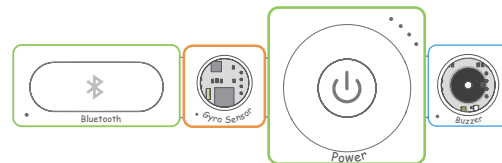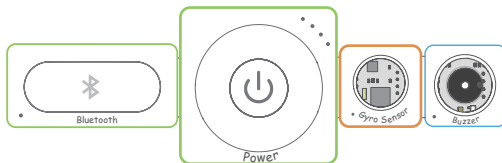
(!) Works normally only if you program the blocks using Makeblock Neuron app or mBlock.
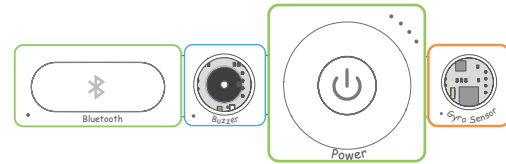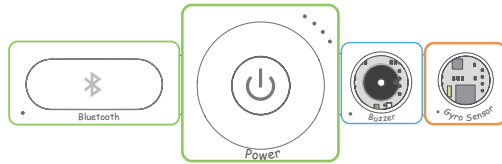
• **An input block can affect multiple output blocks, while an output block can only receive signals from its nearest input block when the Makeblock Neuron app or mBlock is not in use.**
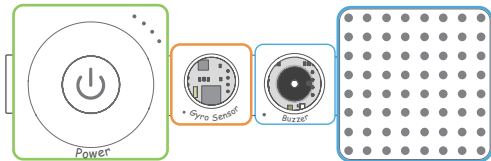
Both the buzzer and LED panel can receive signals from gyro sensor.
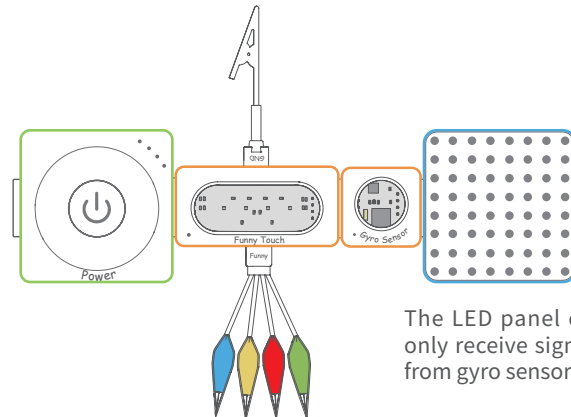
The LED panel can only receive signals from gyro sensor.

Block Introductions

Energy & Communication Blocks

Power

Provide power to other blocks.

Appearance

Power Button
Press to turn on. Press and hold for about 3 seconds until all LEDs go out to turn off.

Power

Power Indicator
Press the Power button to display the current battery level.

Micro USB interface
Charge for power block.
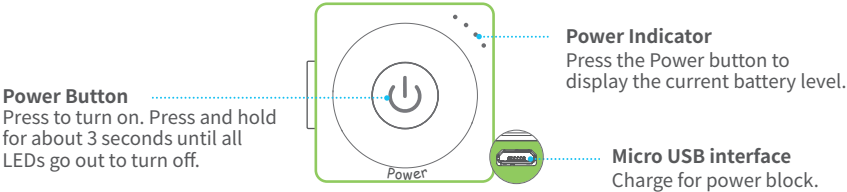
Charge your power block

We recommend you to charge your power block when the last indicator is blinking.

Via power adapter
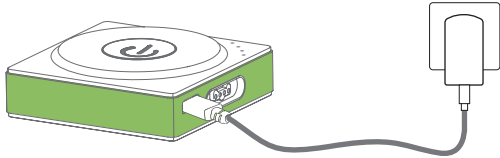
Via computer

or
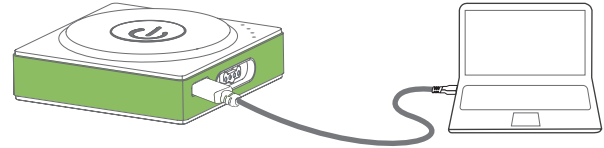
Specifications

Battery Capacity	950mAh
Output Voltage	DC 5.1 V
Input Voltage	DC 5V

Input Current	<1A
Operating Temperature	0° C ~ 45° C
Storage Temperature	-10° C ~ 55° C

Tips: 1. Please charge the block once every three months when not in use.
2. The power block cannot power the other blocks while it is charging.

Bluetooth

The bluetooth block has two functions:
• Establish a wireless connection between the blocks and your tablet or smart phone within 10 meters, then you can program the blocks via Makeblock Neuron app.
• Provide power to other blocks. It contains a Micro USB interface, you can connect the block to power bank or power adapter via USB cable to power the other blocks.

Micro USB interface

Power Adapter (5V / 2A)

Power Bank

USB Cable

Bluetooth

Gyro Sensor

Buzzer

Tablet   Smart Phone
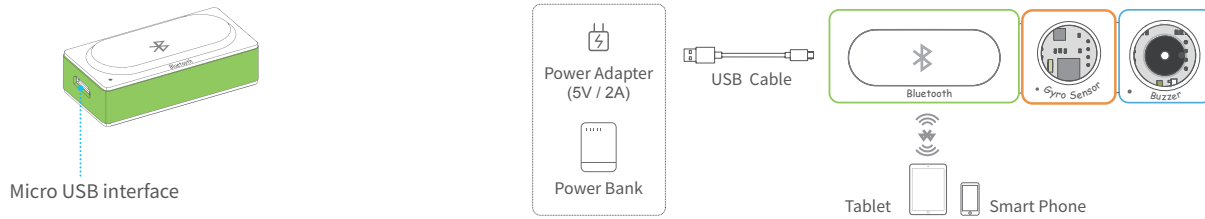
Specifications

Bluetooth Specification	BT 4.0
Frequency Band	2402 - 2480MHz
Output Power Class	Max. 4dBm

Input Blocks

Gyro Sensor
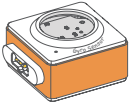
The gyro sensor is an ideal block for motion and posture detection of your creation. It can be used to measure the angular rate and the acceleration information of your creation. When it detects a vibration, the sensor will send out an on signal.

Reference coordinates:

Z-axis

Y-axis   X-axis

Detect a vibration:

Thump

Send out an on signal
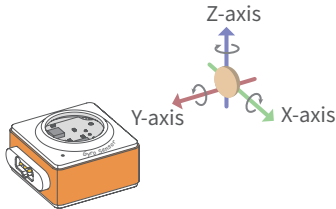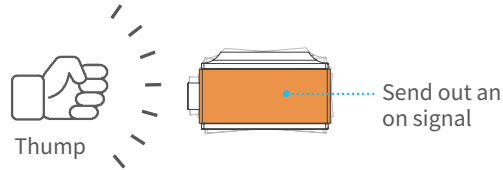
Try it now!
1. Press the power button to turn on the chain.
2. Put the block on the desk and thump the desk. The buzzer will activate when the gyro sensor detects any vibration.
3. Pick up the blocks and rotate it, see what happens.

Gyro Sensor

Power

Buzzer
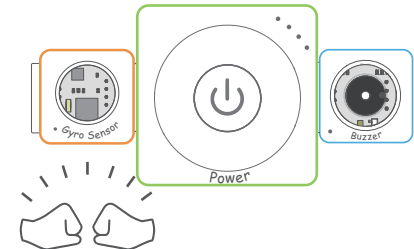
Funny Touch

Funny touch is able to turn any conductive object (such as bananas and water) into a touch switch. It contains one GND wire and four funny switches.

GND wire ·············

Indicators

Four funny switches
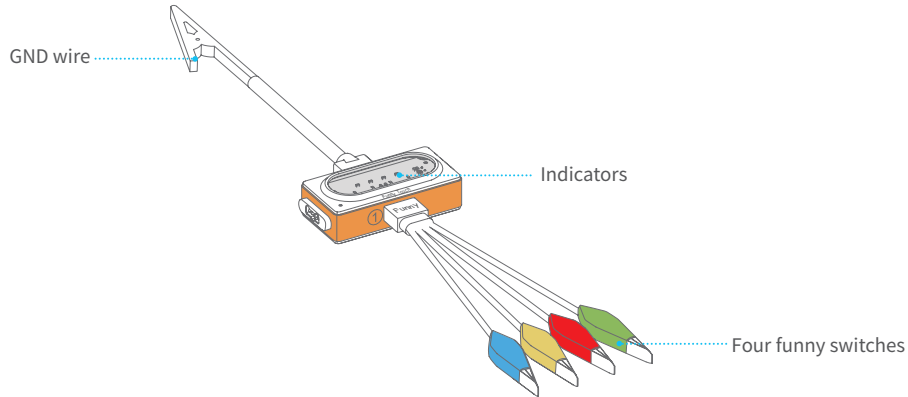
How to use?

1. Plug the funny switch to slot 1 and the GND wire to slot 2.
2. Clip a funny switch to a conductive object.
3. Hold the metal clip of the GND wire and touch the conductive object with the other hand, the relevant indicator will light up and the block will send out an on signal.

Tips: Alligator clip is sharp, please do not clip yourself with the funny switch or the clip of GND wire, it may hurt you.

Try it now!

1. Press the power button to turn on the chain.
2. Clip a funny switch to a banana. You can try other objects at your home to see if they are conductive.
3. Touch both the metal part of the GND wire and the banana with your hands, watch the LED panel light up. Try touching another funny switch or touching two funny switches simultaneously, see what happens.
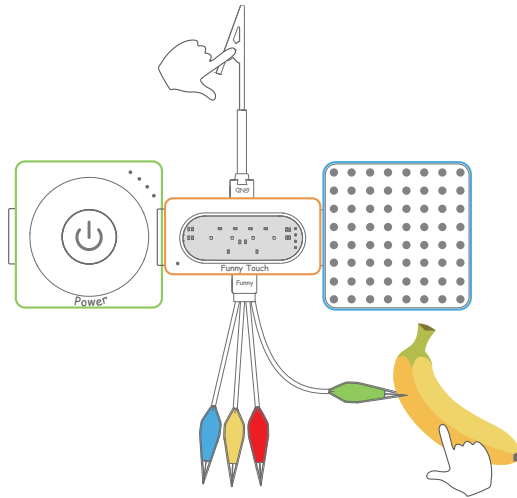
Output Blocks

Dual Servo Driver + Servo

The servo can rotate from 0 to 180 degrees.
Get the servo pack and install servo hub as shown in the figure below. Then plug the servo into the slot.

Try the other servo hubs

Try it now!
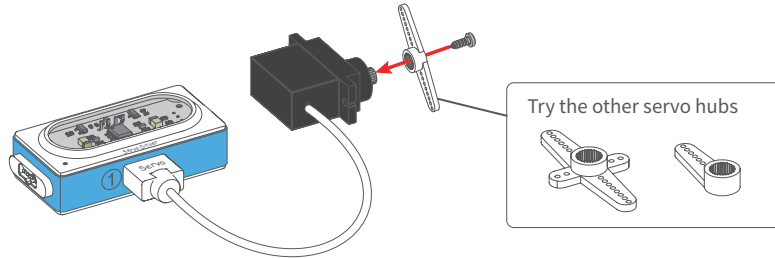1. Press the power button to turn on the chain.
2. Place the blocks on the desk and thump the desk, see what happens.
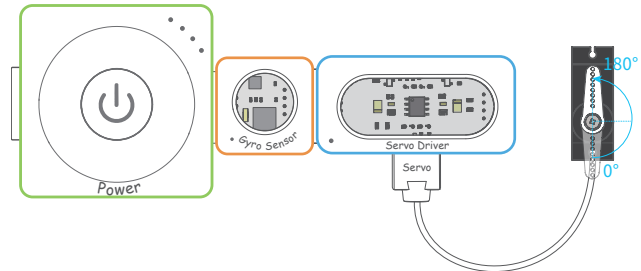
Servo Specifications

Storage Temperature	-20℃～ 60℃		Idle Current (at stopped)	6±1mA
Operating Temperature	-10℃～ 50℃		Stall Torque (at locked)	1.5-1.8 kg · cm
Operating Voltage	DC 4.5V ～ 6.0V		Limit Angle	180° ± 10°
Relative Humidity	65 ± 10%		Weight	13.5± 0.5g

LED Panel
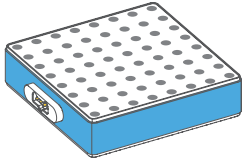
The LED panel contains 64 RGB LEDs. Change the color and do more interesting things via Makeblock Neuron app or mBlock.

Try it now!
1. Press the power button to turn on the chain.
2. Rotate your chain, see what happens.
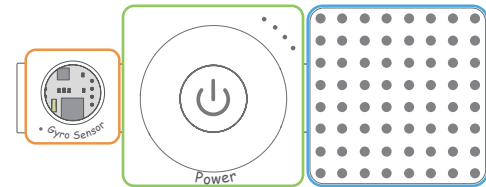
Buzzer
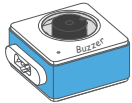
The buzzer makes a buzzing sound when it receives an on signal. You can program the buzzer to get a different sound by using Makeblock Neuron app or mBlock.

Try it now!
1. Press the power button to turn on the chain.
2. Touch the metal parts of both GND wire and a funny switch with your hands, the buzzer will make a buzzing sound. Try touching another funny switch or touching two funny switches simultaneously, see what happens.

Please touch the metal part of funny switch.
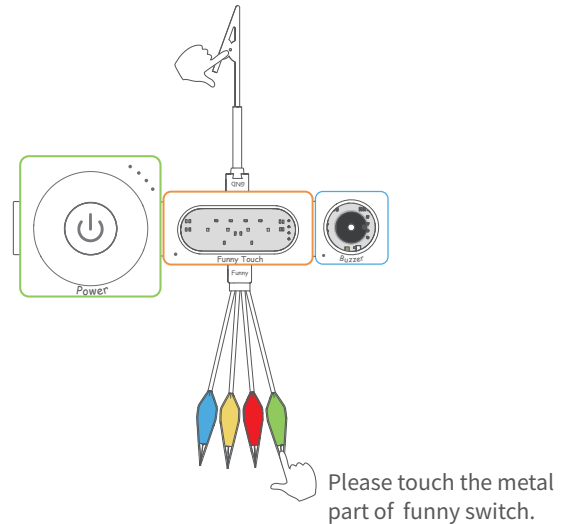
Accessories

USB Cable
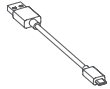
1. Connect some specified blocks, such as camera, Mic & Speaker, Bluetooth and Wi-Fi.
2. Provide power and transmit the data.

Neuron Board
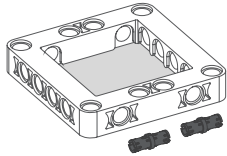
1. Snap Neuron blocks to the mechanical parts of Makeblock.
2. Snap Neuron blocks to LEGO$^{®}$ blocks.

How to use?

Connect two Neuron boards:

Snap the blocks to the Neuron boards:

Rubber Bands

Used to fasten the servo to the Neuron boards.
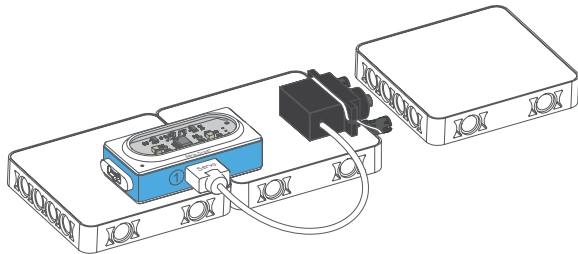
FAQ

Why the program stops running after exiting the Makeblock Neuron app?

A: The Bluetooth block can not store programs, thus it needs the app to run the program.

What should I do if the blocks have no response?

Reasons that may cause the problem:

A1: When not using the Makeblock Neuron app or mBlock, the input block must be connected on the left of the ouput block. Please refer to the **Easy Connection** section to check if the connection is correct.
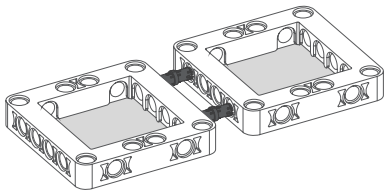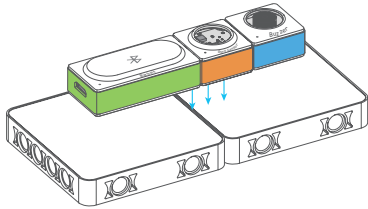
A2: The Neuron firmware upgrade process is interrupted (due to poor connection). Please try to upgrade firmware again.

A3: The silicone case of the block was installed improperly, which may cause poor connectivity. Please adjust the silicone case positions accordingly.

Why does the battery life decrease?

A: The Power block uses a lithium-ion battery, multiple charges and discharges may decrease the battery life gradually.

Why does the funny touch block goes wrong?

A1: The power supply is unstable. Please use a power adapter or power bank of high quality.

A2: Mistakenly plug the funny switch to slot 2 and the GND wire to slot 1, please replug them to the correct slots.

Find more FAQs, please visit http://neuron.makeblock.com/faq

FCC STATEMENT:

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.

Warning: Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

NOTE: 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.

RF warning statement:

The device has been evaluated to meet general RF exposure requirement. The device can be used in portable exposure condition without restriction.

IC STATEMENT:

This device complies with Industry Canada licence-exempt RSS standard(s). Operation is subject to the following two conditions:

(1) this device may not cause interference, and

(2) this device must accept any interference, including interference that may cause undesired operation of the device."

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes :
(1) l'appareil nedoit pas produire de brouillage, et
(2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement."

CE

DECLARATION OF CONFORMITY
Declaration of conformity Hereby, Makeblock Co., Ltd., declares that this product is in compliance with the essential requirements and other relevant provisions of Directive RED 2014/53/EU and the RoHS directive 2011/65/EU

0-3

Age 6+

⚠️ **WARNING:**

CHOKING HAZARD
 - Small parts. Not for children under 3 years.
Children to use only under adult's supervision.