Makeblock
Construct Your Dreams

Starter Robot Kit IR Version

Robot Tank
Three-Wheeled Robot Car

Makeblock
Construct Your Dreams

MAKER WORKS TECHNOLOGY INC
Technical support: support@makeblock.cc
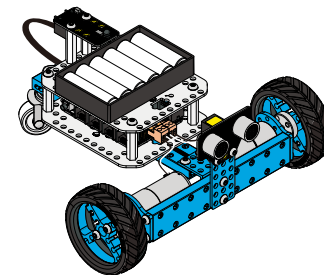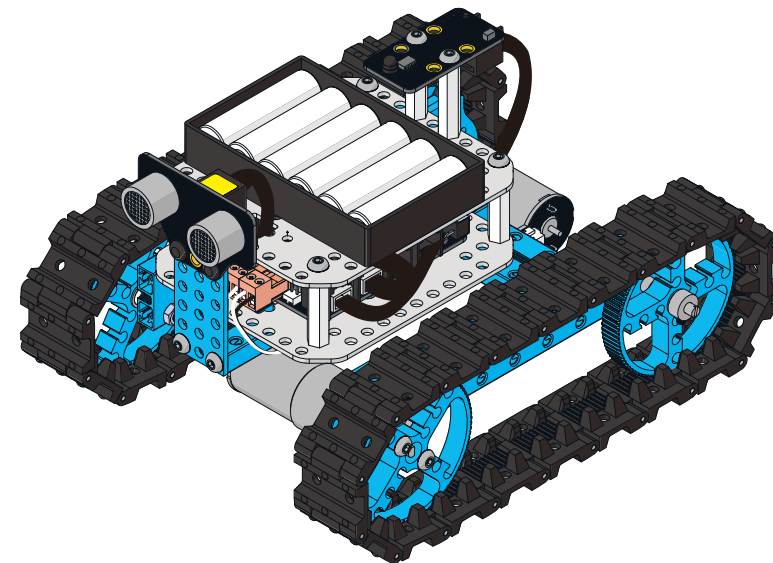www.makeblock.cc

:@Makeblock   : @Makeblock   : +Makeblock

Quick Guide

Makeblock Starter Robot Kit contains mechanical parts and electronic modules for you to start exploring the robot world which can be used to build a robot tank or a three-wheel robot car. It is also a great tool to learn mBlock and Scratch programming.
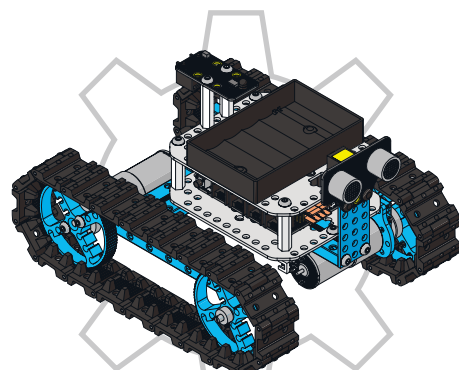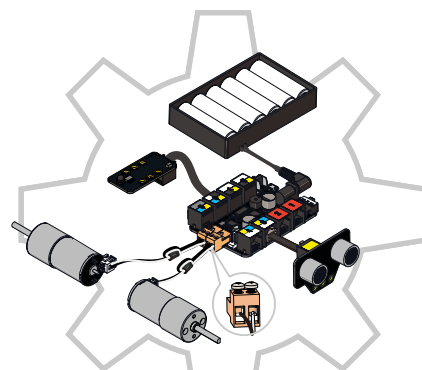
Parts List — 1

Check all components in parts list, please contact Makeblock or the distributor if any component lacked.
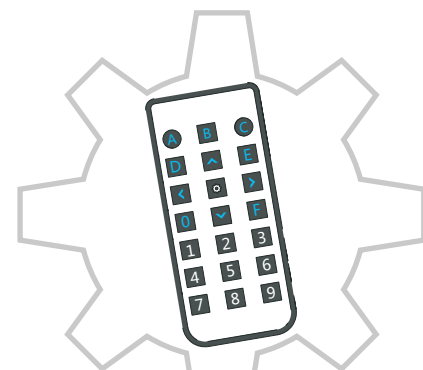
Build the Robot Tank — 3
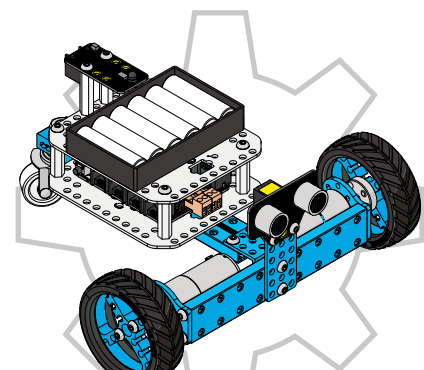
Follow our manual to build the Robot Tank.

Wiring — 11

Do wiring. Install batteries for your robot and remote control.

Remote control — 12

Turn on the power of your robot, control your robot with remote controll. Now it's time to play your robot!

Build three-wheeled Robot Car — 13

Try another style: Follow our manual to build the Three-wheeled Robot Car.

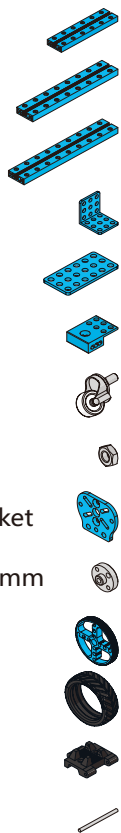## Programming Guide — Further exploration — 22

Advanced player can re-program to the robot by mBlock or Arduino to explore the wonderful robotic world.

Parts List   Pictures for reference only

1× Beam 0824-96	2× Threaded Shaft 4×39mm	2× BaseBracket
1× Beam 0824-128	2× Shaft Collar 4mm	1× Battery Holder for (6) AA
2× Beam 0824-144	4× Flange Bearing 4×8×3mm	2× DC Motor-25
1× Bracket 3×3	1× Hex Screwdriver	2× Terminal Block
1× Plate 3×6	1× Cross Screwdriver	2× Motor Cable
1× Bracket P3	1× Hex Allen Key 2.5mm	2× Ferrite Ring
1× Caster Wheel	2× Hex Allen Key 1.5mm	1× Makeblock Orion
1× Nut M8	1× Wrench	1× Me Ultrasonic Sensor
2× DC Motor-25 Bracket	20× Screw M4×8	1× Me Infrared Receiver Sensor
2× Shaft Connector 4mm	12× Screw M4×14	1× Me IR Remote Controller
4× Timing Pulley 90T	4× Screw M4×22	1× Micro USB cable
2× Tire 68.5×22mm	12× Nut M4	1× 6P6C RJ25 Cable-20cm
36× Track	4× Headless Set Screw M3×5	1× 6P6C RJ25 Cable-35cm
36× Track Axle	4× Screw M3×8	
	6× Plastic Ring 4×7×2mm	
	6× Nylon Stud M4×30	

Tool Tips

Hex Screwdriver

Hex Allen Key 2.5mm

Screw M4×8

Screw M4×14

Screw M4×22

Cross Screwdriver

Screw M3×8

Terminal Block

Hex Allen Key 1.5mm

Headless Set Screw M3×5

Wrench

Nut M4

Build the Robot Tank

4× 2× 2× 2× 4× 2× 4× 2×

1

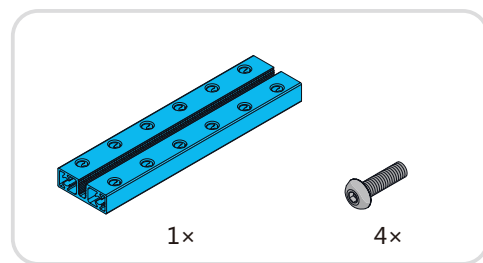2× Screw M4×14

2
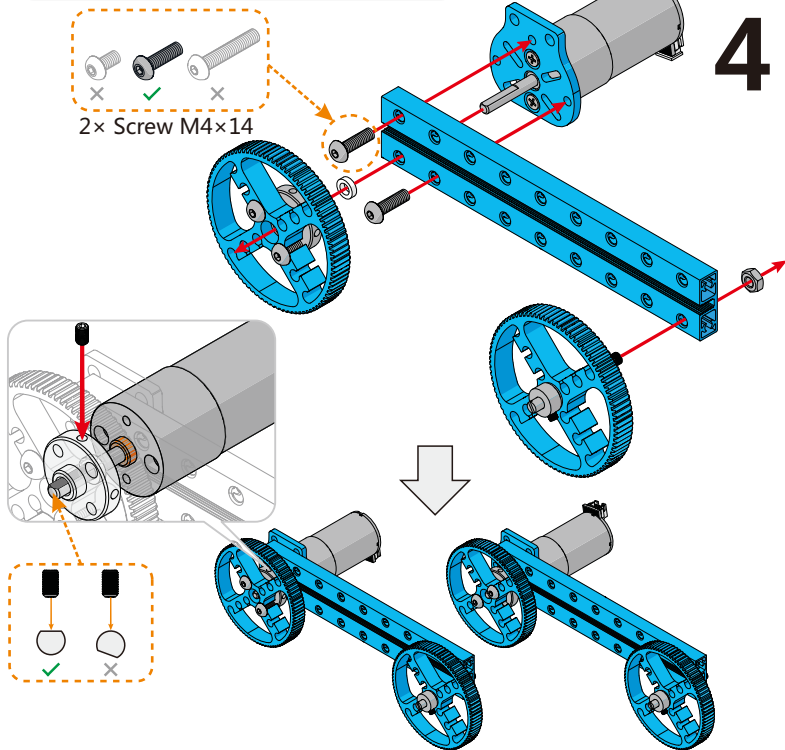
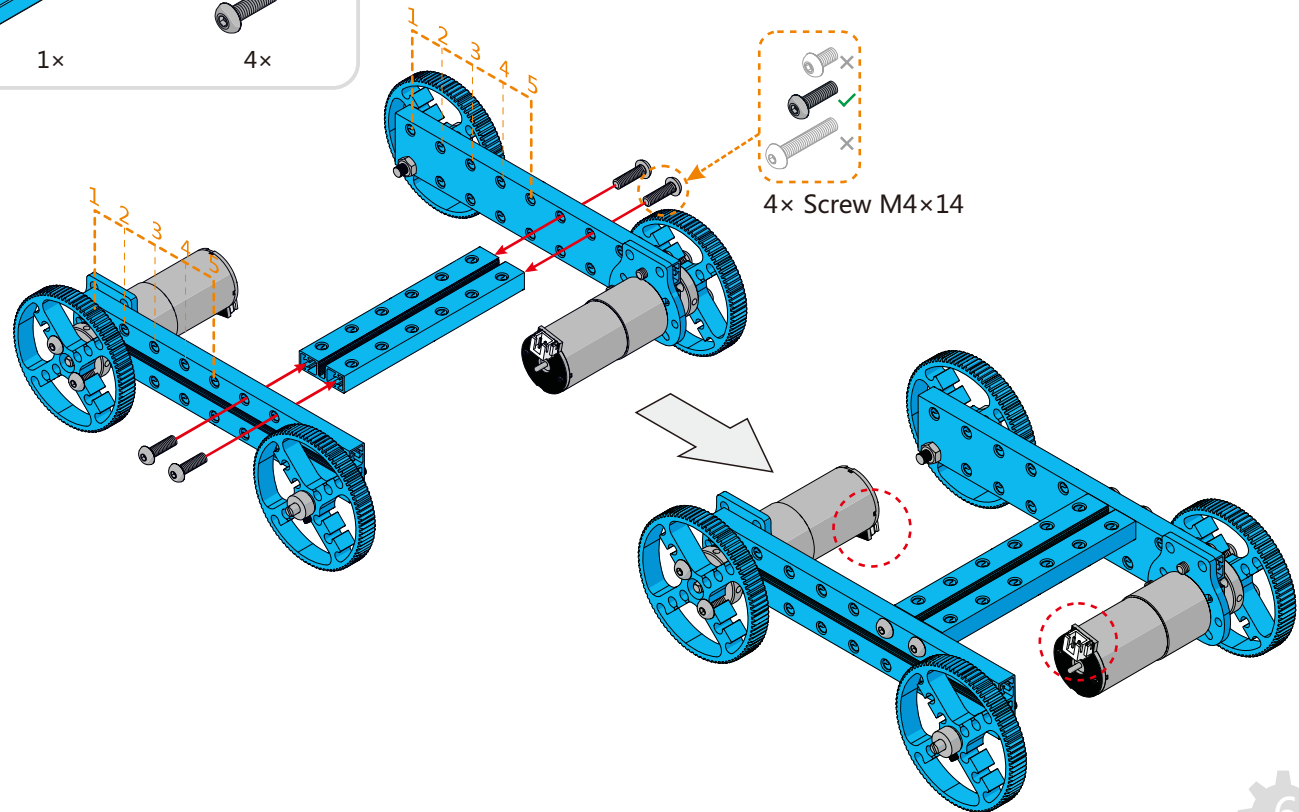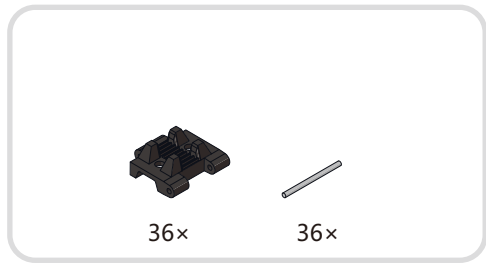**3**

2x   2x   4x

4

2×   2×   2×   2×   4×
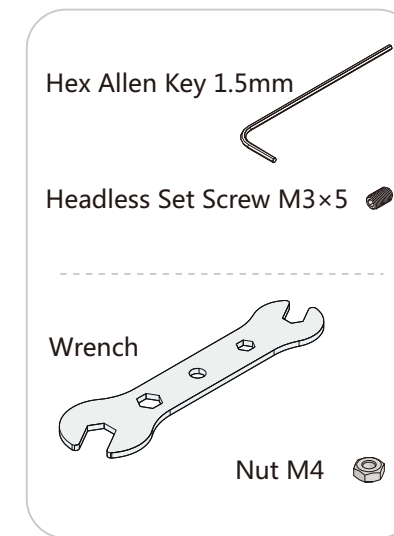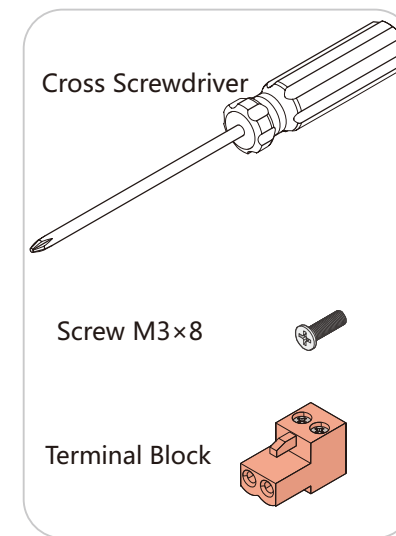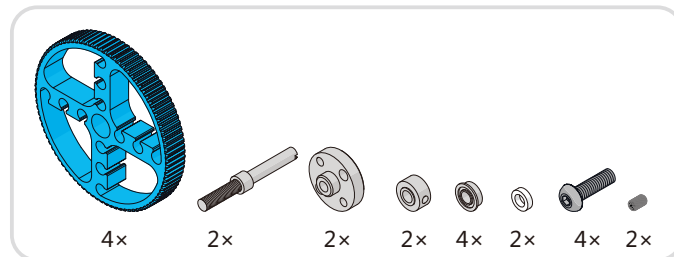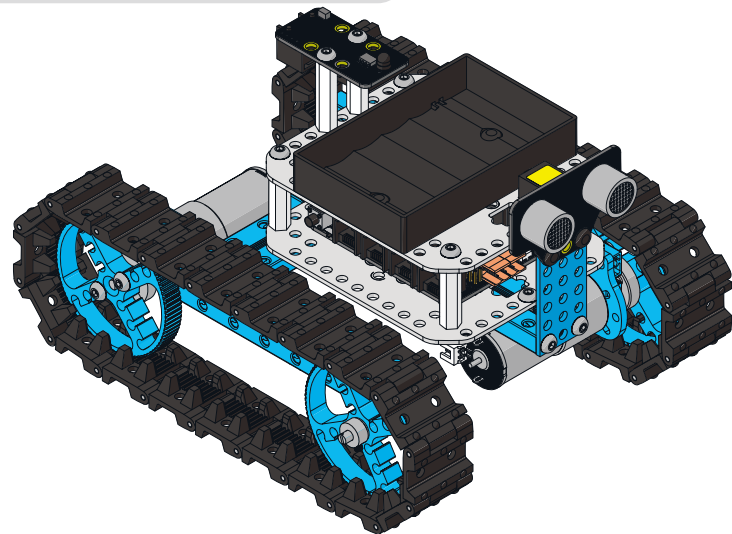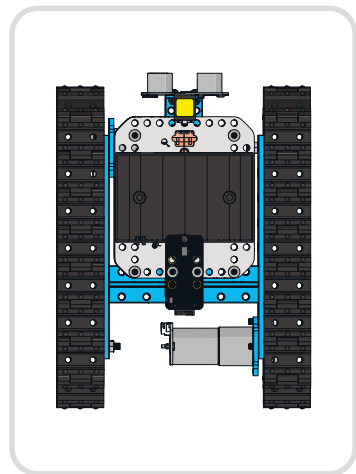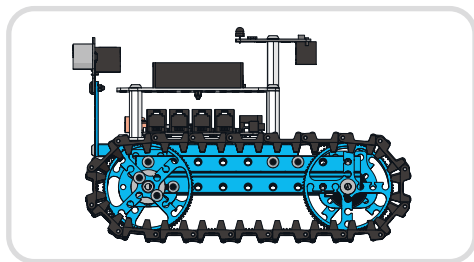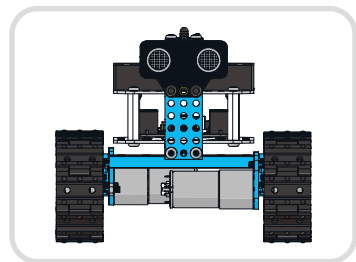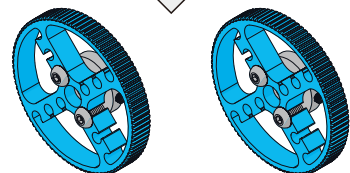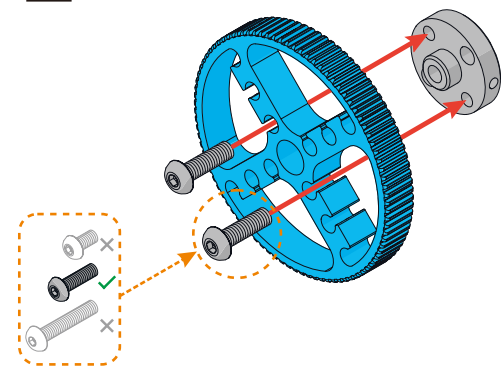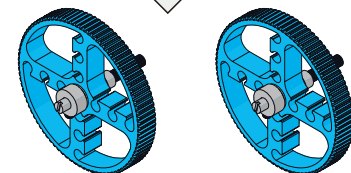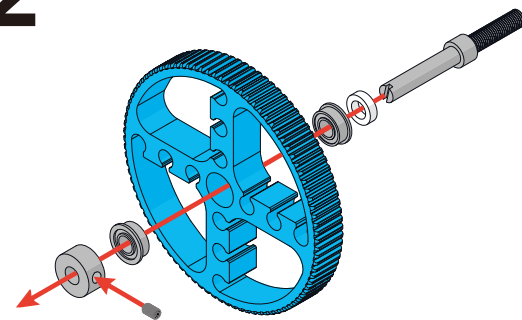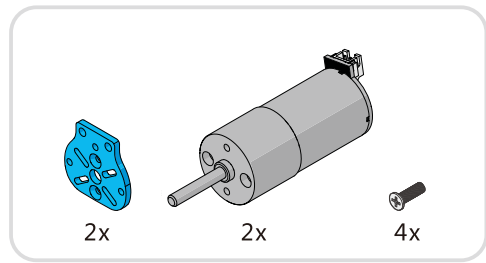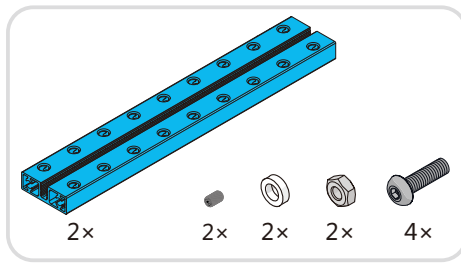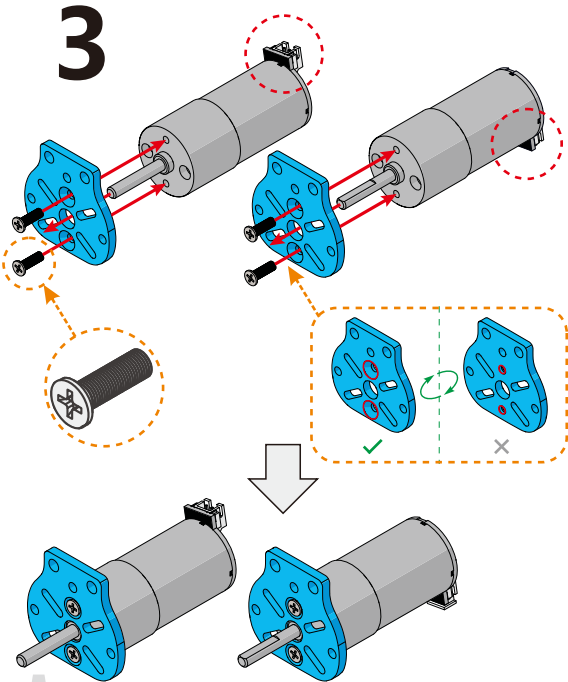
Tips:Identify the right mechanical parts from similar ones with different hole quantity included.

2× Screw M4×14

5

1×   4×

4× Screw M4×14
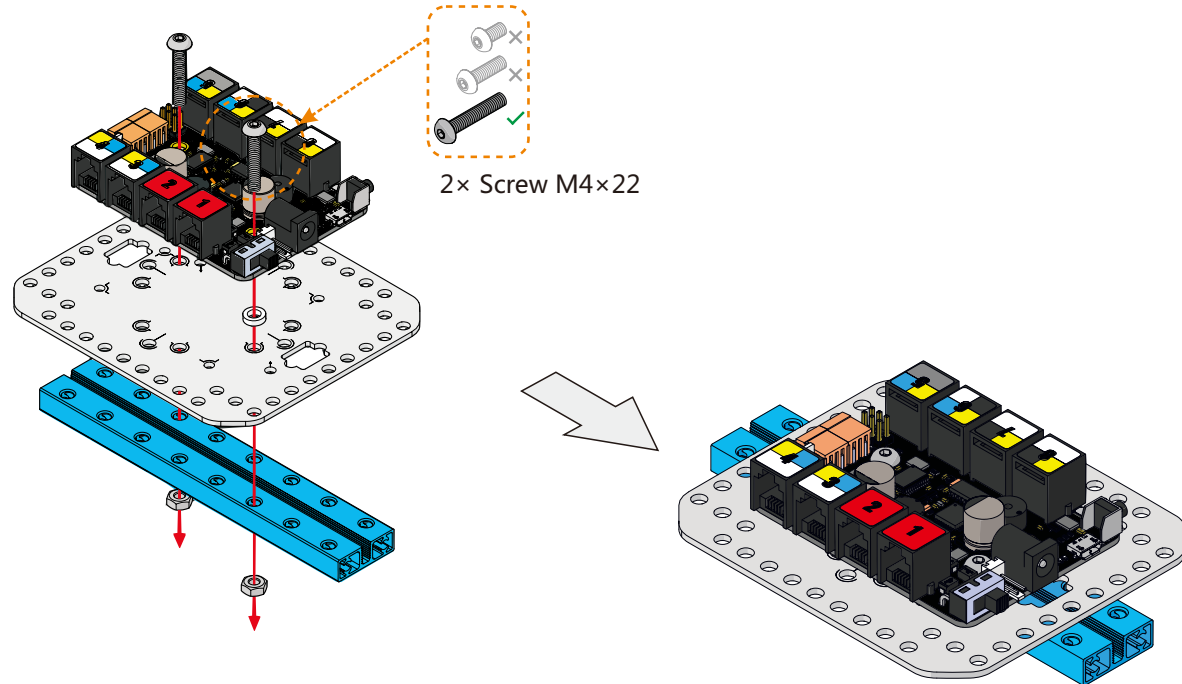
6

36×   36×

7

8

1×   1×   1×   2×   2×   2×

2× Screw M4×22

9

1×	1×	1×	6×	2×	14×

4× Screw M4×8

10

8× Screw M4×8

11

1×	1×	4×	4×	2×

2× Screw M4×22

4× Screw M4×8

DC Motor-25(M1)

DC Motor-25(M2)

Wiring

To reduce the electromagnetic interference, please add ferrite ring for the wires which connected to motors.

2×   2×   2×   2×
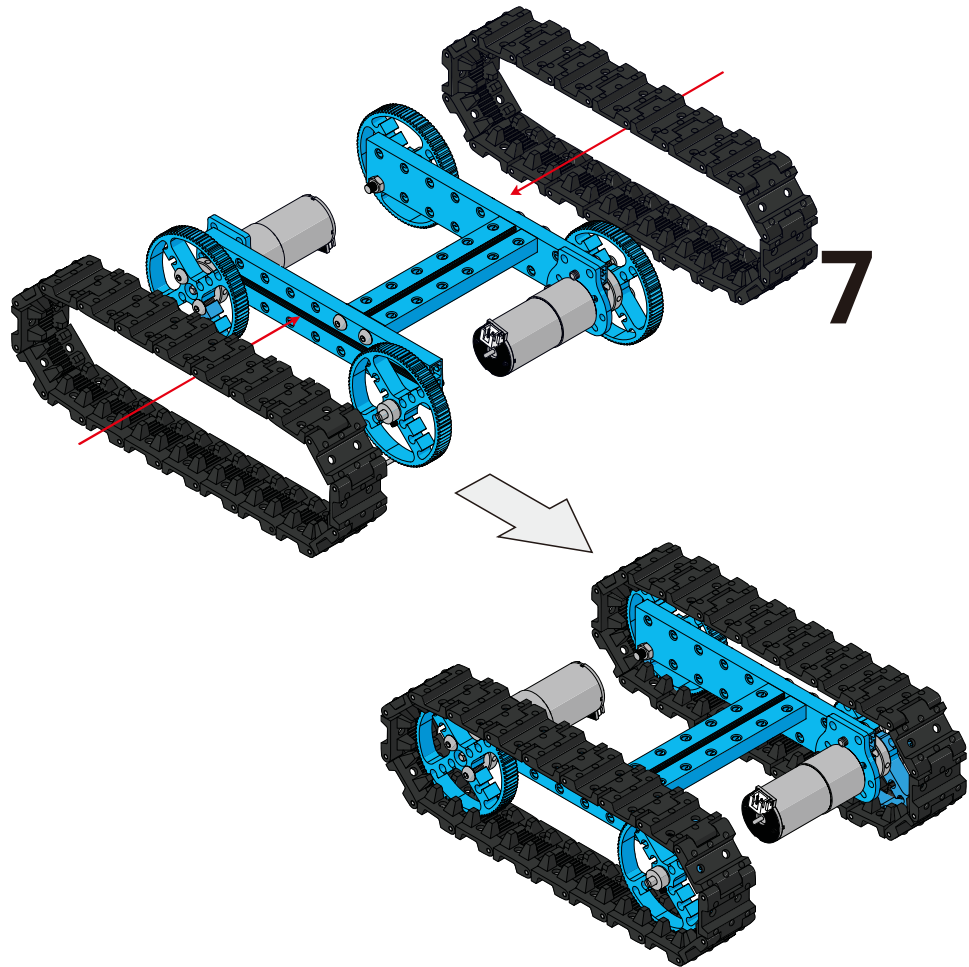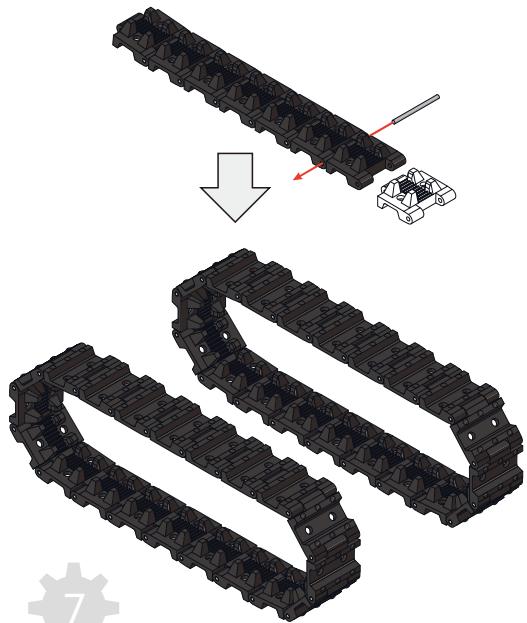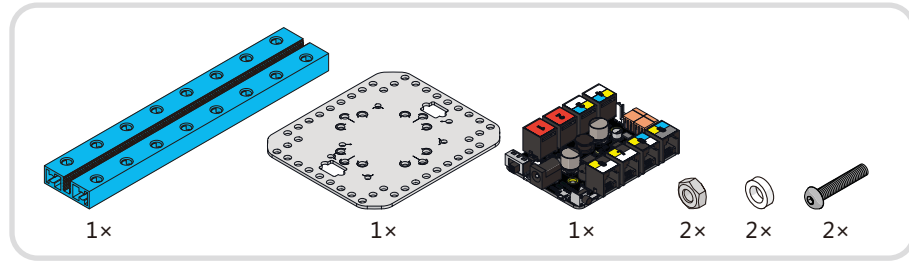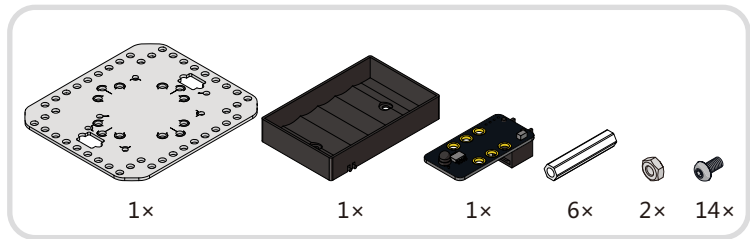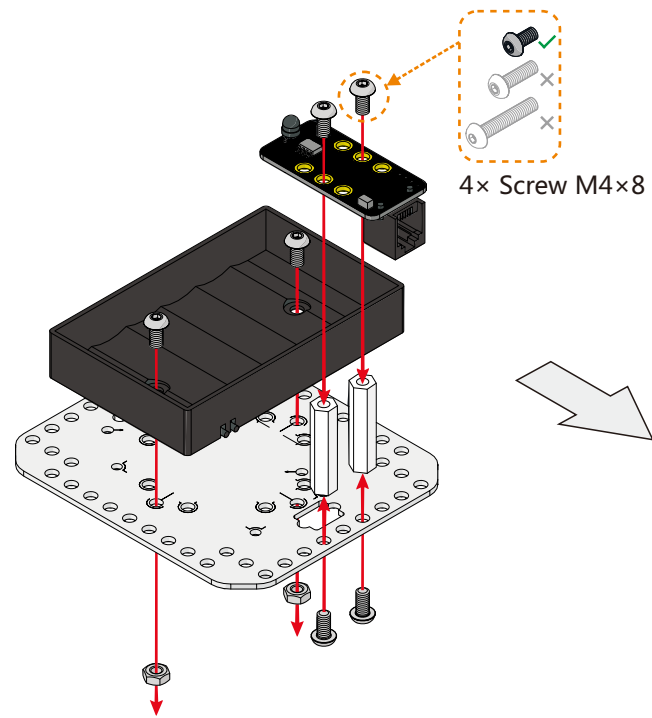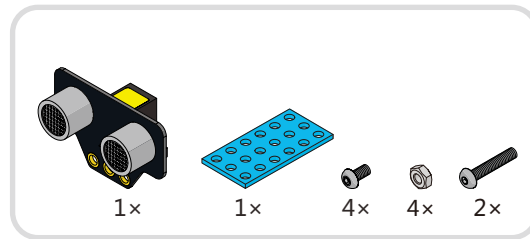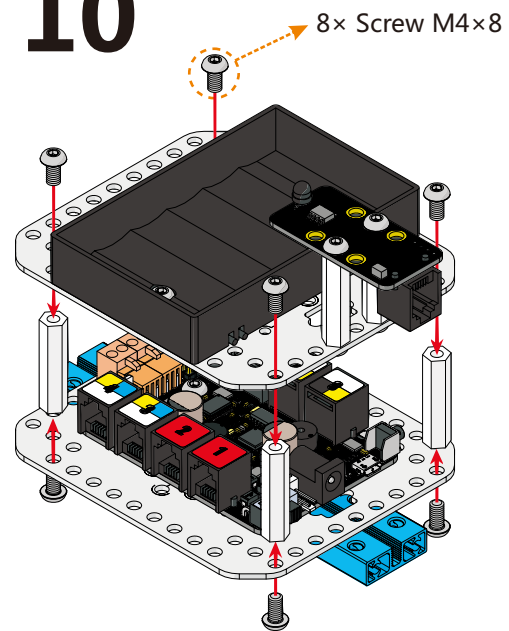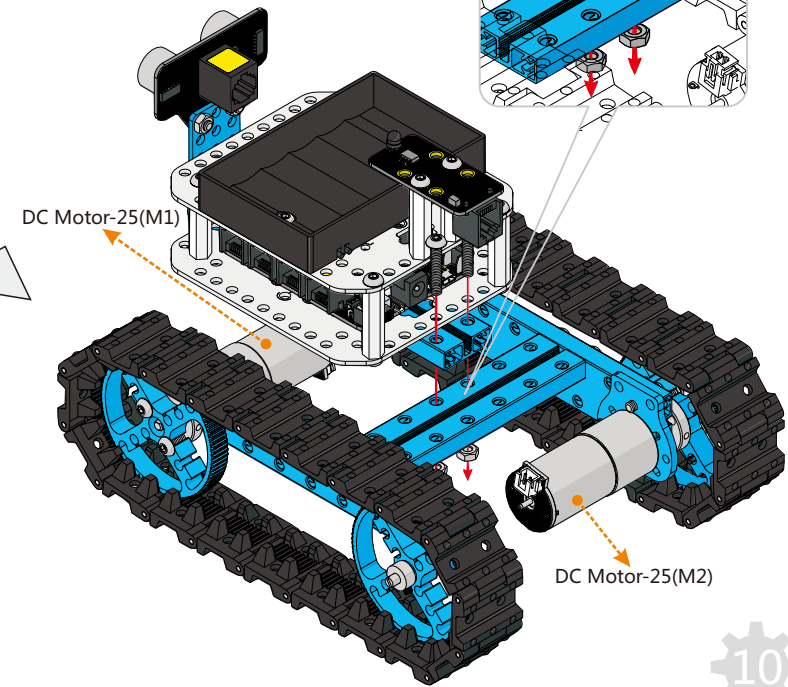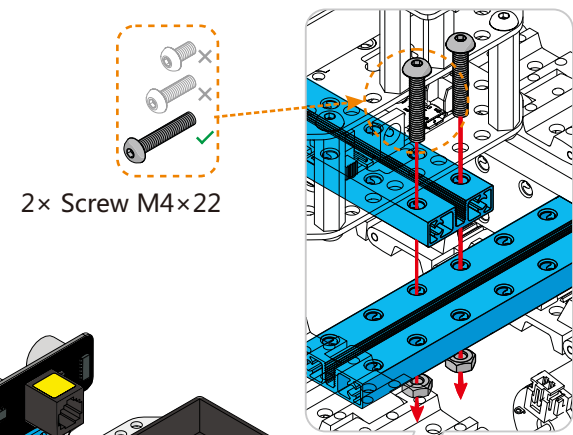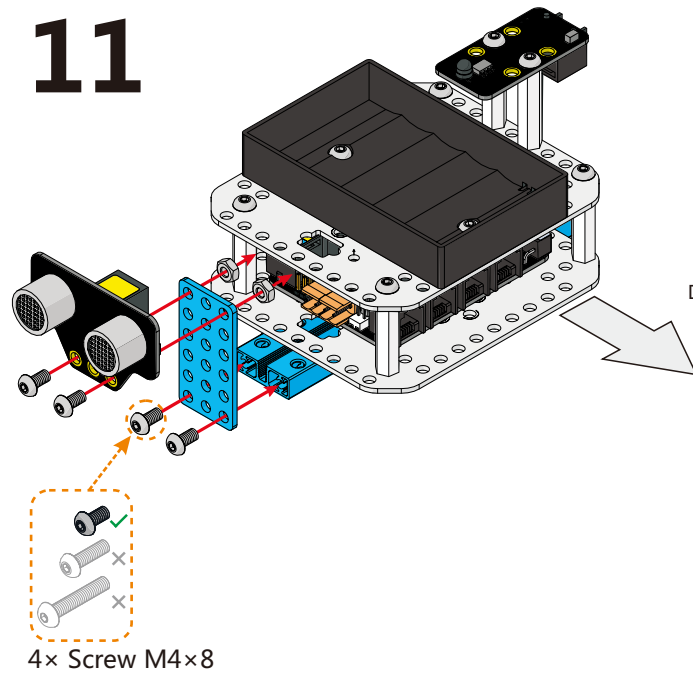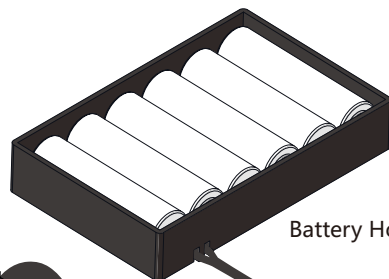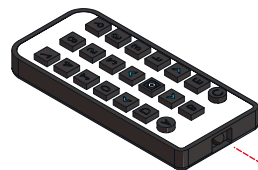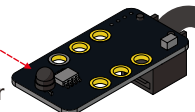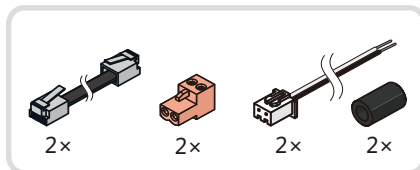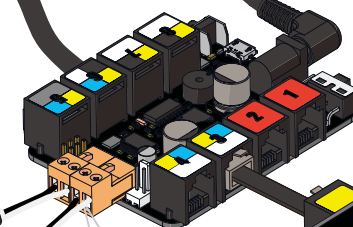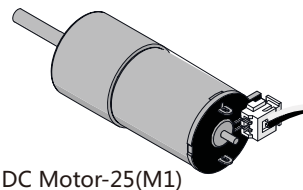
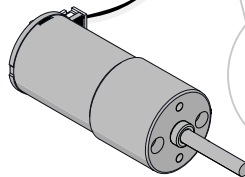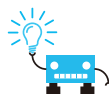Me IR Remote Control(CR2025 battery,not included)

Battery Holder(6 x AA batteries , not included)
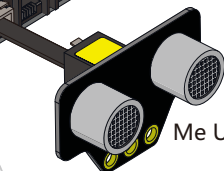
Me Infrared Receiver Sensor

Makeblock Orion

DC Motor-25(M1)

Me Ultrasonic Sensor

DC Motor-25(M2)
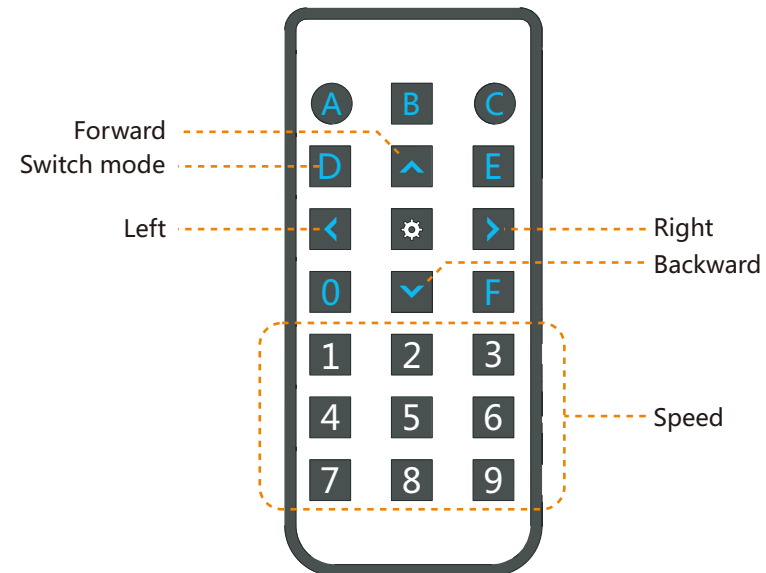
?

You may need to switch the order of two wires to correct the rotation direction.

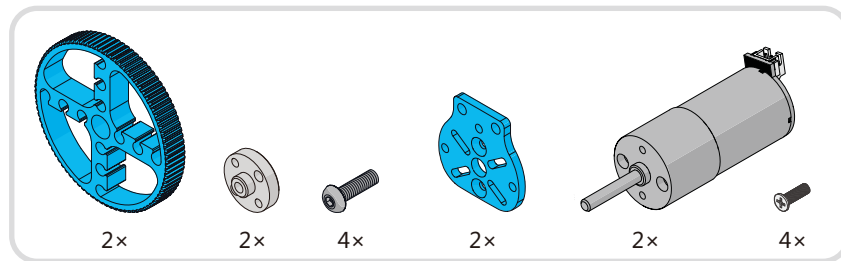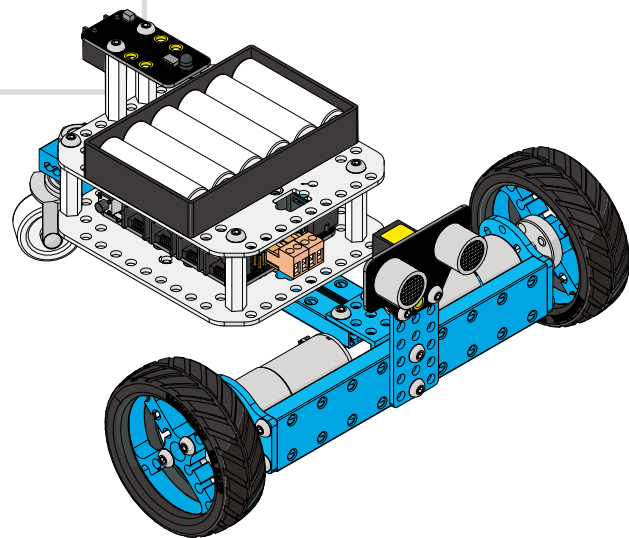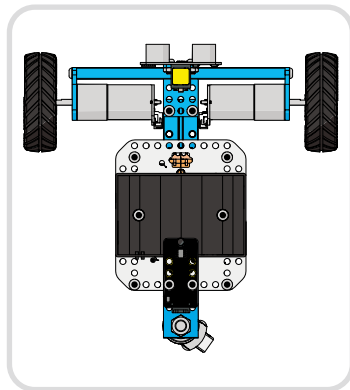## Working with remote control
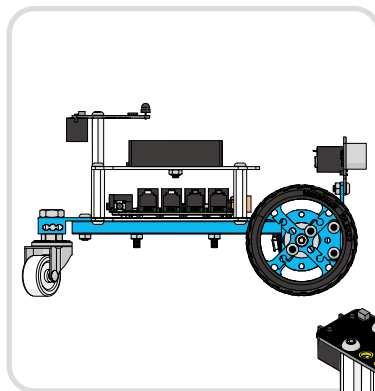—Construct It Once, Control It Everywhere

Forward
Switch mode

Left

Right
Backward

Speed

A B C
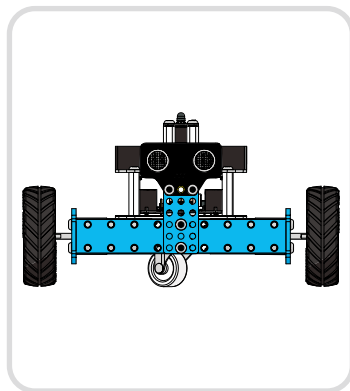D ∧ E
‹ ☼ ›
0 ∨ F
1 2 3
4 5 6
7 8 9

Remote control :
Press key D to switch modes

Manual mode :
Press direction keys for car direction and number keys for speed.
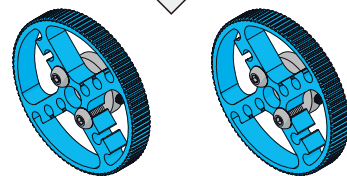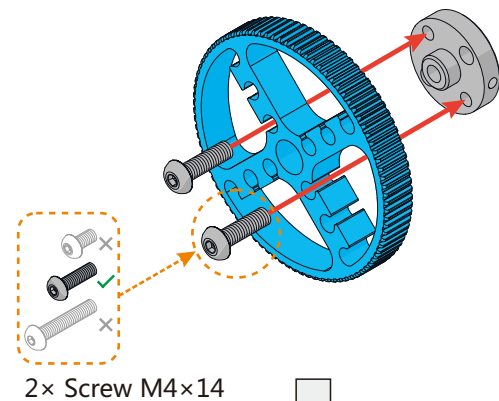**Ultrasonic obstacle avoidance mode:**
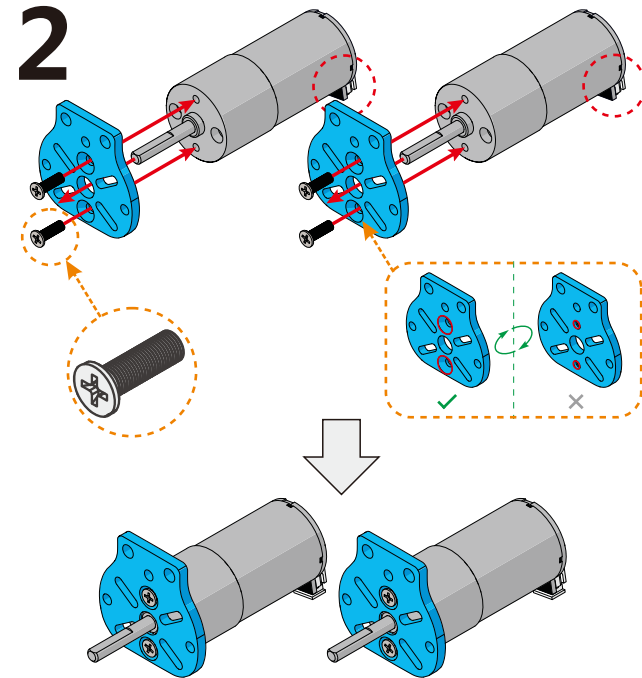The car will run and avoid obstacle automatically. No response when press any keys until you switch mode.

Now it's time to play your robot!

Build three-wheeled Robot Car

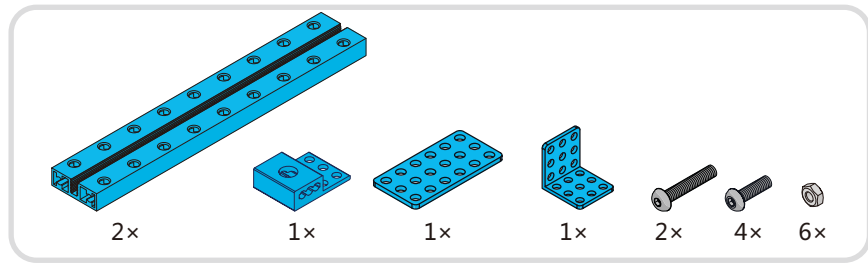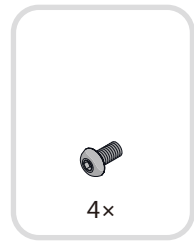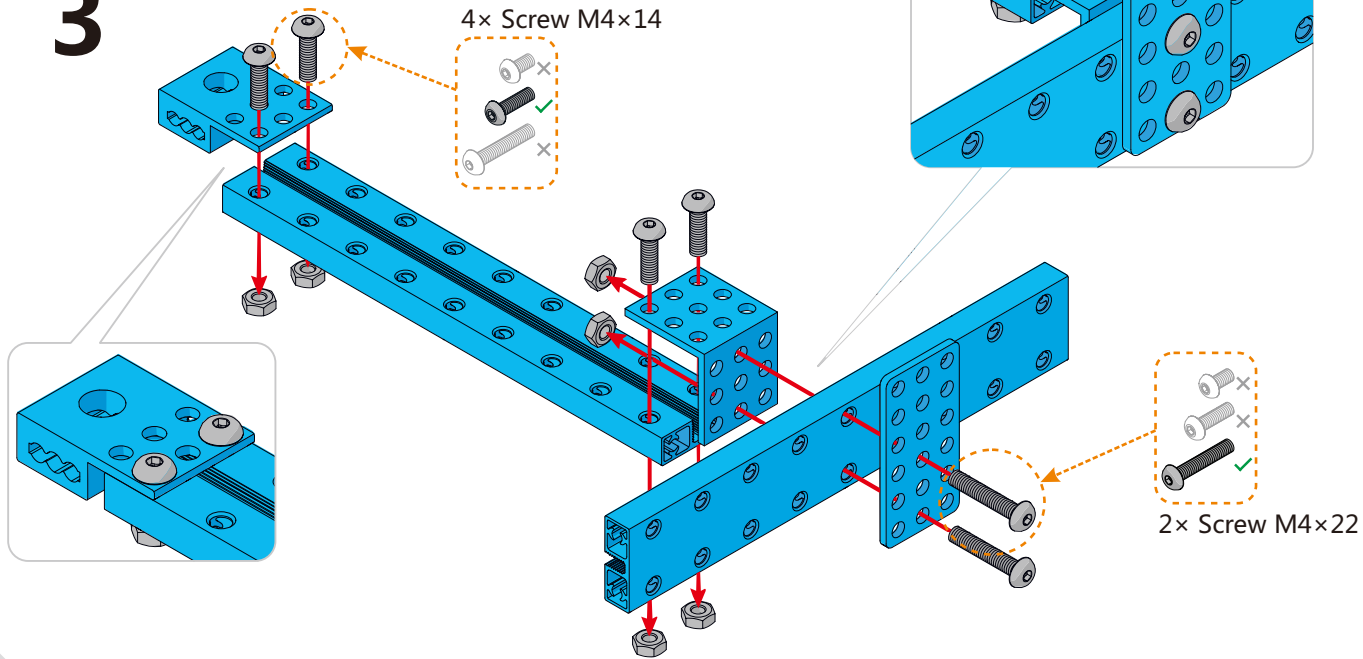2× Screw M4×14

1

2

3

2×   1×   1×   1×   2×   4×   6×

4× Screw M4×14

✓
✗

2× Screw M4×22

4

4×

4× Screw M4×8

5

2×

6

1× 1× 2×

7

1×   2×   2×

2× Screw M4×8

8

1×   1×   2×   2×   2×

2× Screw M4×22
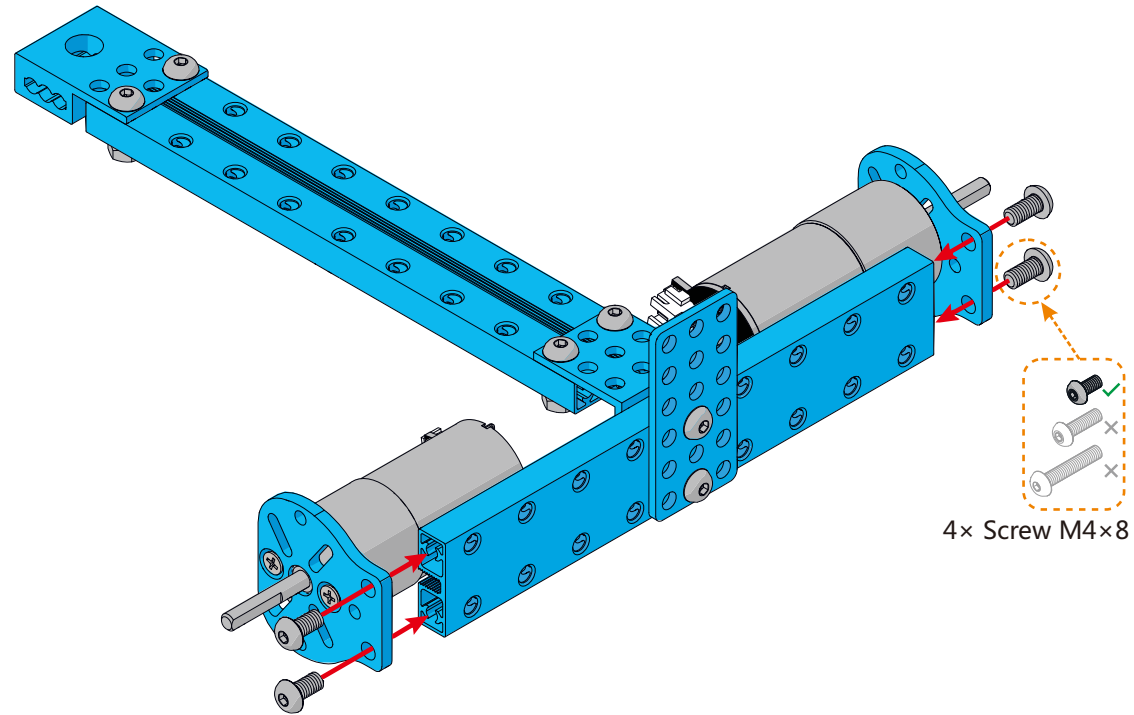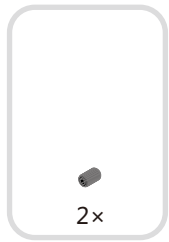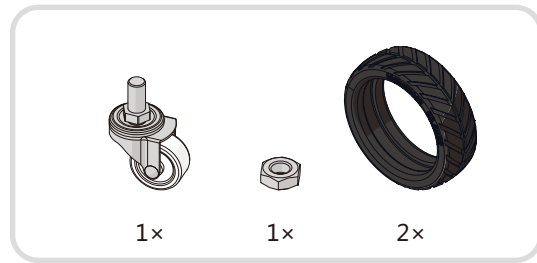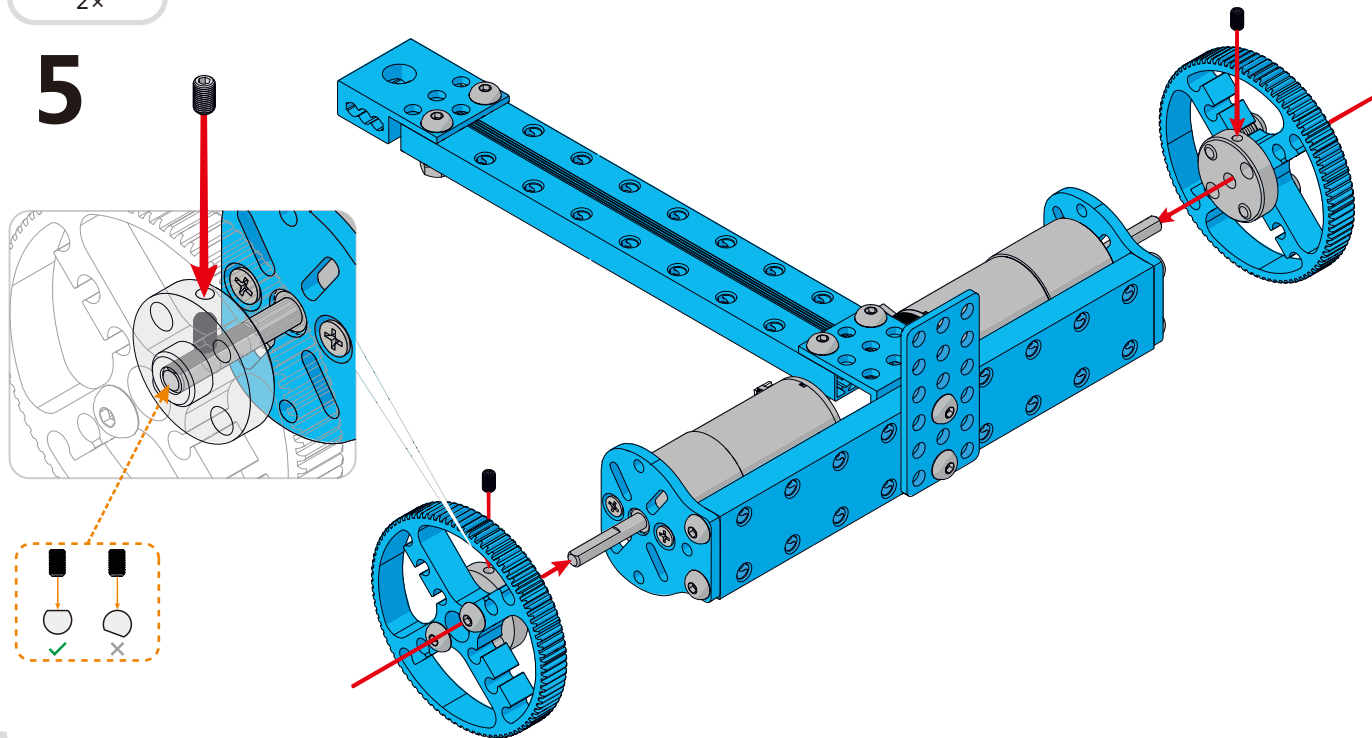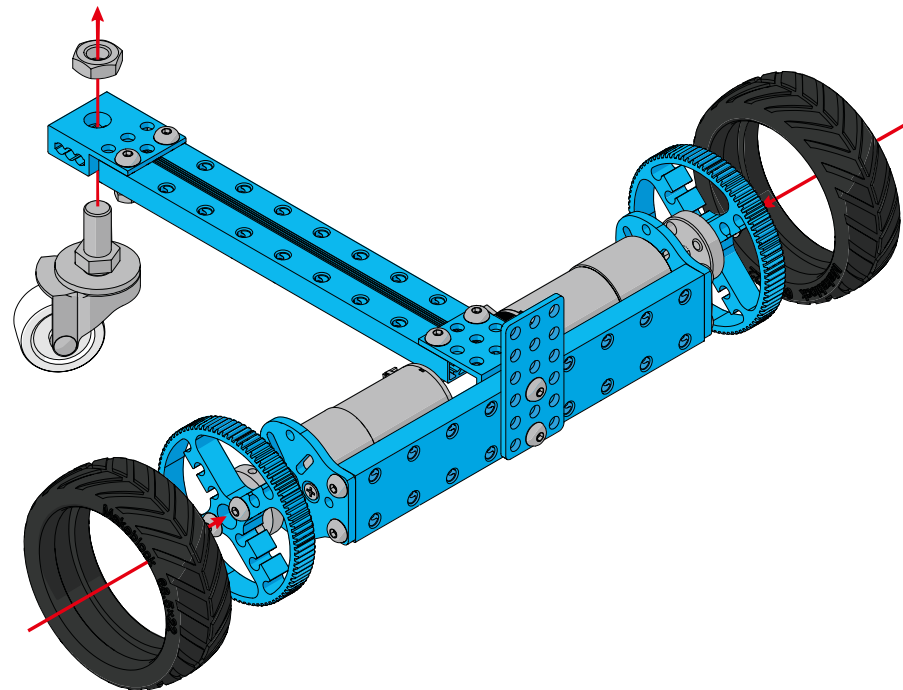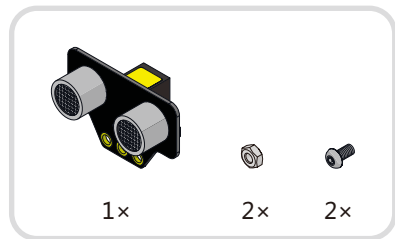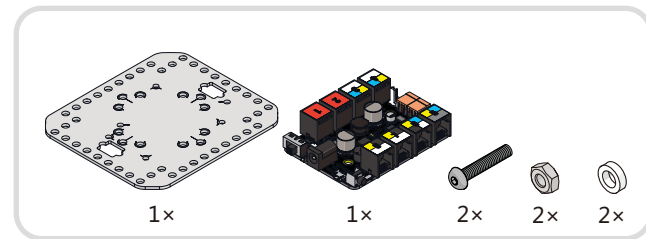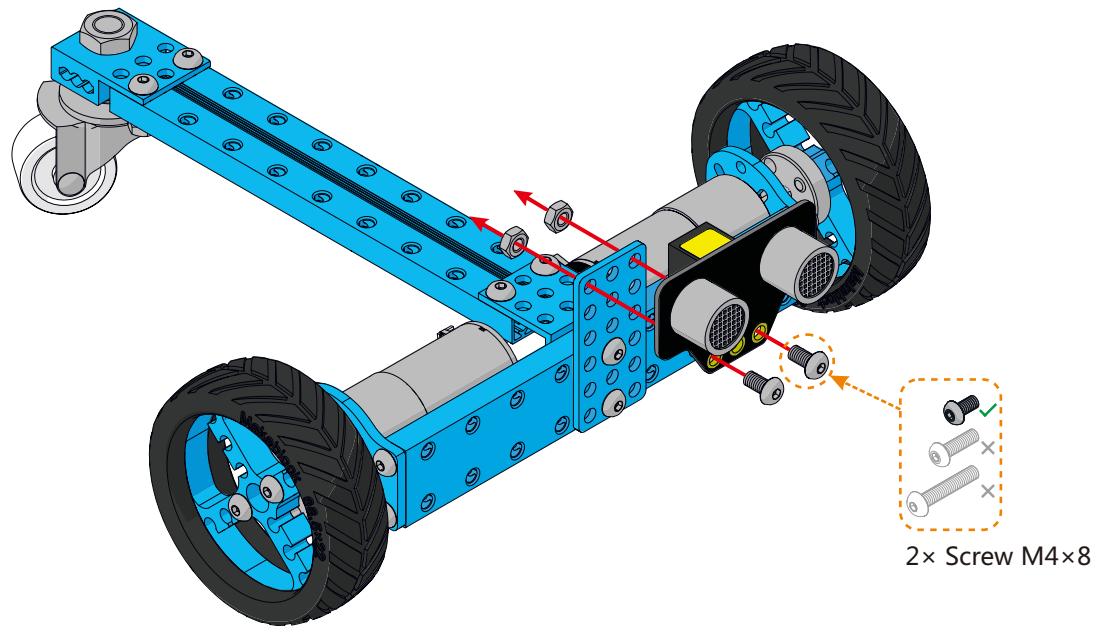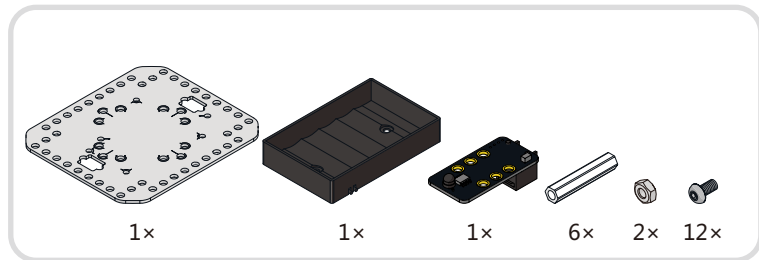
Please follow page 11 for wiring and remote control.

9

1× 1× 1× 6× 2× 12×

8× Screw M4×8

4× Screw M4×8

DC Motor-25(M2)

DC Motor-25(M1)
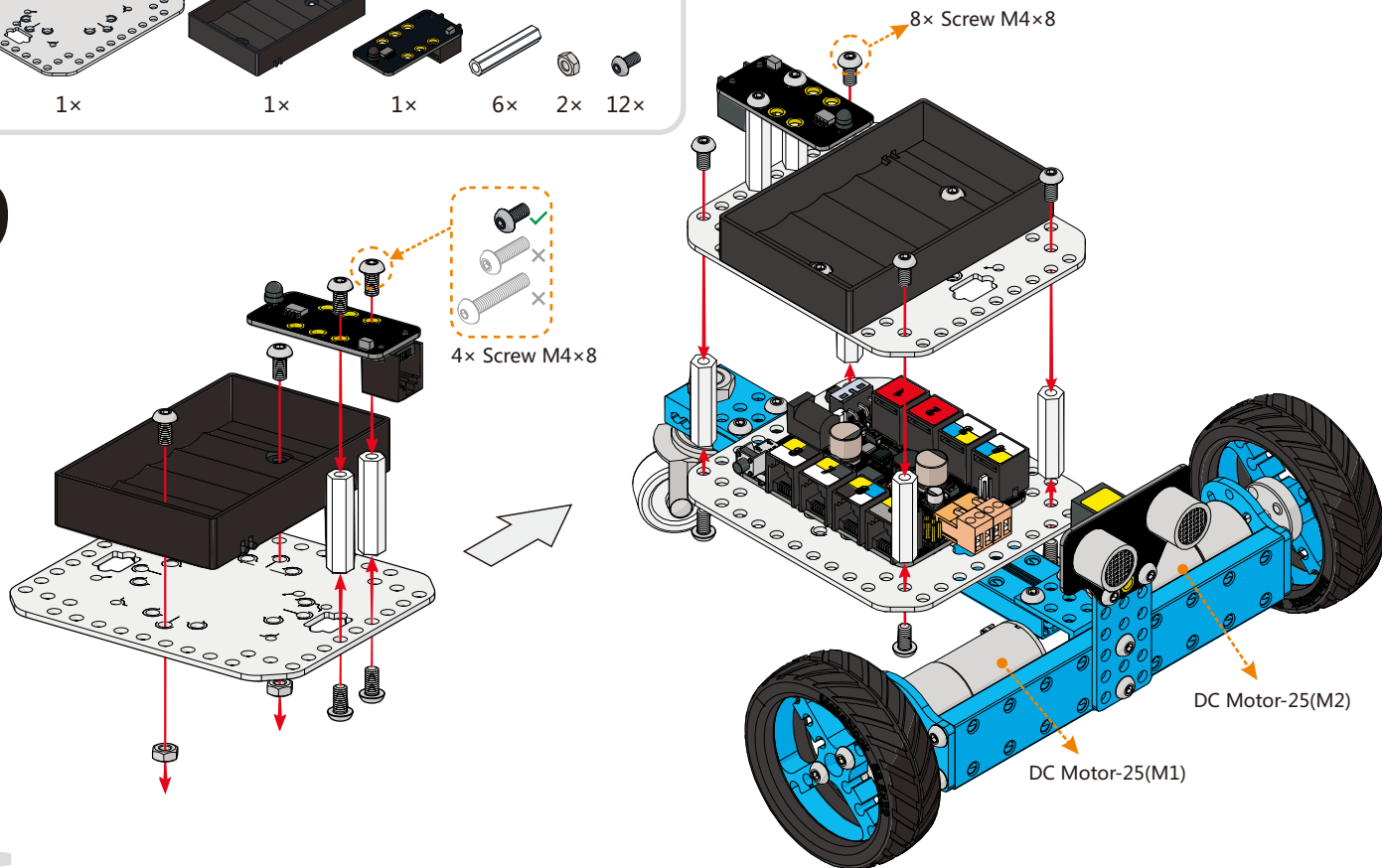
Programming--Further exploration

Working with mBlock--Hack the Physical World
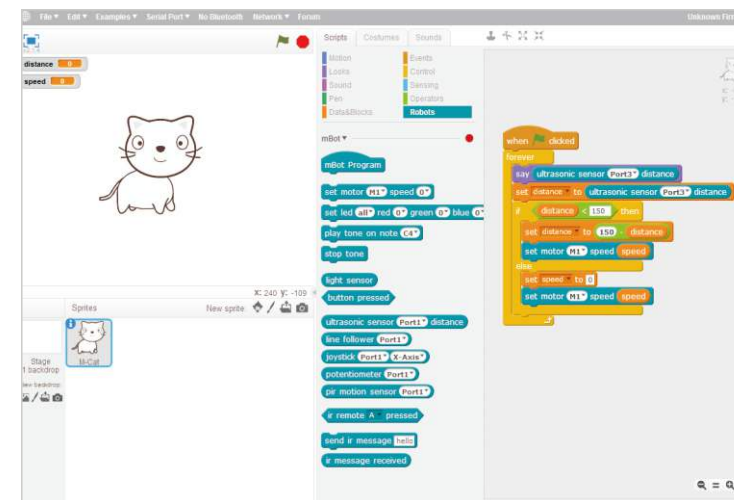
The Starter Robot Kit support mBlock perfectly which allow you re-programming your robot by simply drag and joint the blocks of mBlock. No more difficult coding.

mBlock is a free modified version of Scratch 2.0 developed by MIT Media Lab, mBlock add some hardware-related blocks in the original Scratch, with these blocks, users can read sensors, control motors and even a whole robot.

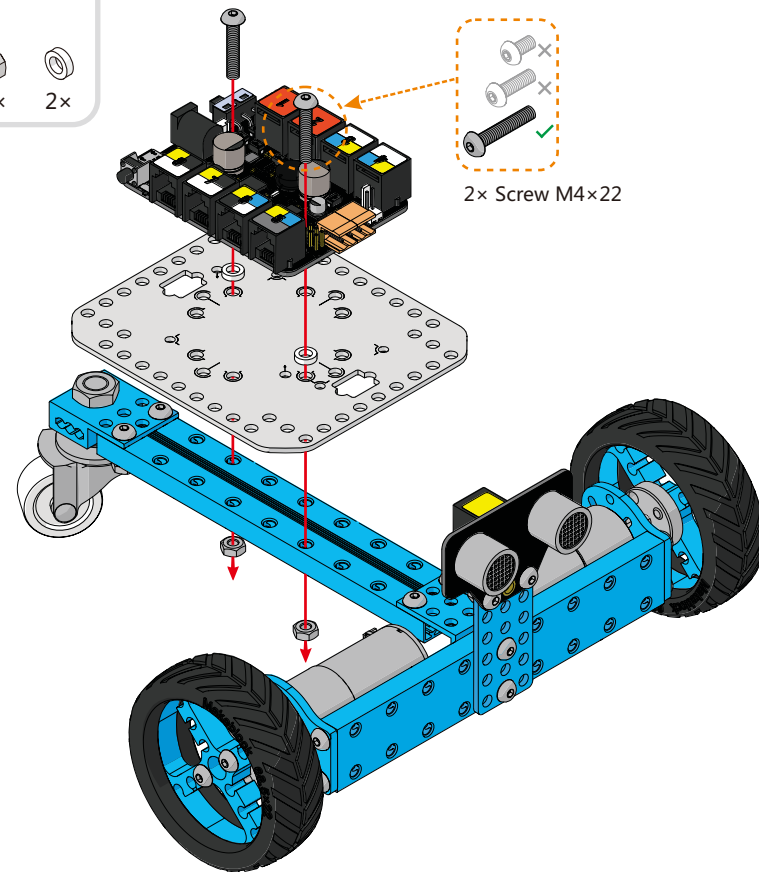Besides blocks for the basic microcontroller functionalities, analog and digital writes and reads, PWM outputs. There are also blocks for each specific electronic modules, such as ultrasonic sensor, temperature sensor, light sensor, DC motor driver, stepper driver, etc. With these blocks, it's simple to interact with many kinds of electronic modules.
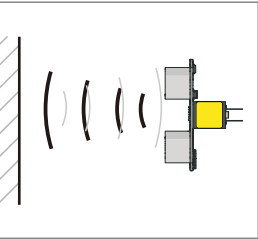
Visit the following URL for more details:
http://learn.makeblock.cc/learning-scratch
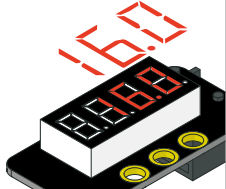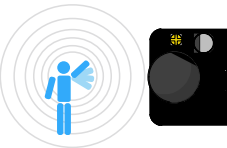
Working with Arduino IDE --Learn Programming the Fun Way

Arduino is an open-source electronics prototyping platform based on flexible , easy-to-use hardware and software.The Arduino software consists of a development environment (IDE) and the core libraries. The IDE is written in Java and based on the Processing development environment.

Visit the following URL for more details: http://learn.makeblock.cc/learning-Arduino
Download the library zip package: https://github.com/Makeblock-official/Makeblock-Library/archive/master.zip

Electronic modules on makeblock--Further exploration

	Ultrasonic module works for measuring distance from 3cm to 400cm.	
	Me 7-Segment Display is a display module with four digit tube which can show some data ,such as speed ,time ,score etc.	
	Me RGB LED module contains four programmable RGB LEDs. Color of each LED can be set by editing components of red, green, and blue.	
	Me Joystick is normally used to control the move direcion of object.	

	Me Sound Sensor can measure the volume.It can used in some sound interactive projects,such as an voice operated switch.	
	Me Temperature Sensor is a stainless steel tube sensor which is used for measuring temperature.	
	Me PIR Motion Sensor can detect infrared ray which derives from animals/humans in less than 6 meters.	

see more on makeblock platform

Kits on Makeblock--Further exploration

Add-on Pack for Starter Kit

XY Plotter

3D Printer