For more add-on packs and building instructions, please visit:

learn.makeblock.com/mbot-add-on-packs/

We appreciate your opinions about our products, please contact us with your suggestion at:

Makeblock Co., Ltd.
Technical support: tec-support@makeblock.com
Tel: 0755-2639 2228
Address：4th Floor, Building C3, Nanshan iPark, No.1001 Xueyuan Avenue, Nanshan District, Shenzhen, Guangdong Province, China

:@Makeblock : @Makeblock : +Makeblock

D1.1.3_7.40.3621

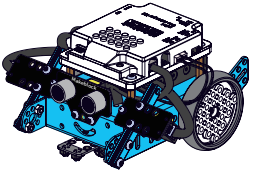
Makeblock
Construct Your Dreams

mBot Add-on Pack
Interactive Light & Sound

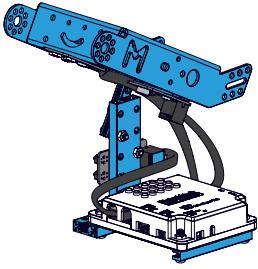
Contents

Introduction to product

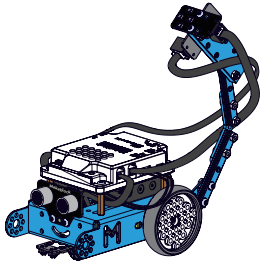
mBot interactive light & sound pack is a 3-in-1 add-on pack. With the parts in the pack, you can build out three robots based on mBot : “light chasing robot”, “intelligent desk light” and “scorpion robot”.



Light chasing robot:
It detects the light intensity around mBot via two light sensors on each side. When the light intensity on the left side is greater than that on the right side, the robot will turn left; when the light intensity on the right side is greater than that on the left side, the robot will turn right; otherwise, the robot will go straight.



Intelligent desk light:
By changing the building configuration, mBot can turn into an “intelligent desk light”. The light has two operating modes: touch mode in which the light brightness can be regulated by touching the line follower sensor with fingers, and voice control mode, in which the sound intensity in the surrounding area has to be sensed, and when the intensity is large, the light will come on, like the voice-activated light at the stairway in our daily life.



Scorpion robot:
Add mBot with a vivid “tail”, enabling it to look like a scorpion. In this case, by adding an arc tail at the rear part of mBot, the center of gravity of the robot is changed, thus making it easier for the mBot to raise its head.

Parts list

2× Me Light Sensor 

2× Beam0808-072 

1× Me RGB LED 

2× Beam0824-080 

1× Me Sound Sensor 

1× Plate 45° 

2× RJ25 cable-35cm 

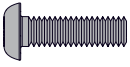
4× Spacer 4*7*3mm 

1× Wrench M5+M7 

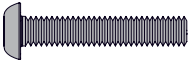
Screws and nuts (1:1 Scale)

9× Nut M4

4× Screw M4*8

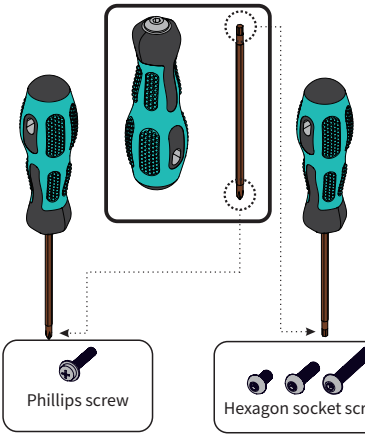


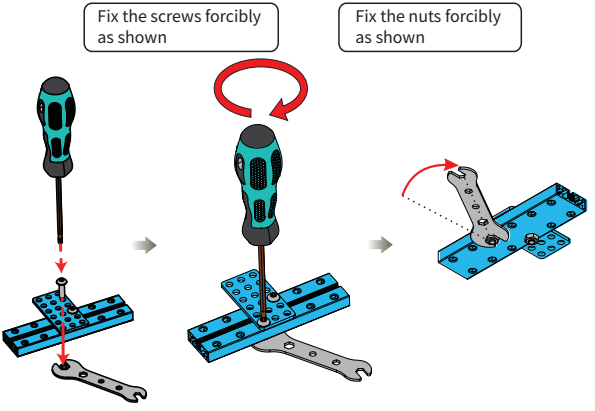
9× Screw M4*14



5× Screw M4*22

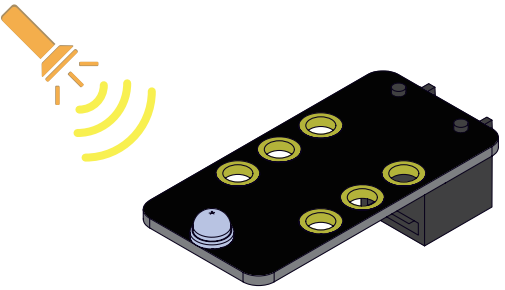
Tool tips


Phillips screw
Hexagon socket screws


Fix the screws forcibly as shown
Fix the nuts forcibly as shown

Me Light Sensor

The light sensor is developed based on the principle of semiconductor' s photoelectric effect. It can be used to detect the light intensity in the surrounding area and determine the light difference on different color surfaces. Moreover, it can also be used to make some items interacted with light, like intelligent dimming clearance light and intelligent light chaser robot. The module interface is in black, indicating it is an analog signal interface. The sensor module is connected to the black interface on the mainboard.



Technical specification:

Operating voltage: 5V DC

Operating temperature: -30°C～70°C

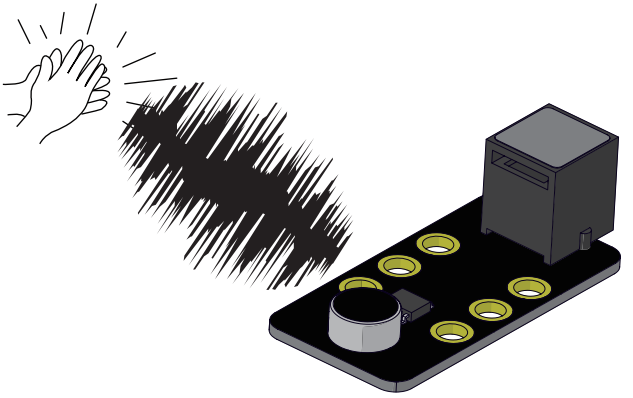
Module size: 52 x 24 x 18 mm (L x W x H)

Control method: single analog interface

Analog output : (> 500) when exposed to sunlight; (0 ~ 100) in the night; (100 ~ 500) under indoor lighting

Me Sound Sensor

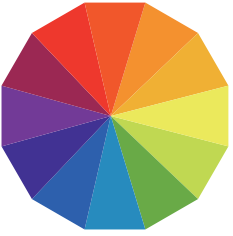
The sound sensor can be used to detect the sound intensity in the surrounding area, empowering the robot with “listening” capacity. Such sensor is developed based on microphone, and its core component is LM2904 low power amplifier. You can use this sensor to make some interactive items, like voice operated switch, intelligent voice-activated light and robot dancing with music rhythm.

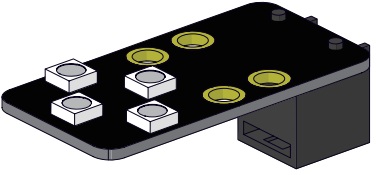


Technical specification:
Operating voltage: 5V DC
Microphone sensitivity (1 Khz): 50-54 dB
Module size: 52 x 24 x 18 mm (L x W x H)
Control method: single analog interface
Analog output: (> 250) in noisy environment; (100 ~ 250) under quiet condition

Me RGB LED

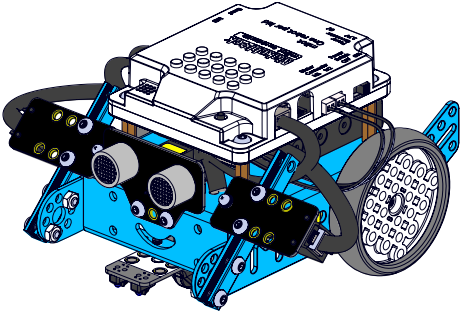
The colored Me RGB LED module includes four RGB LEDs with adjustable full color gamut. For each LED, its color is determined by the value of red (R), green (G) and blue (B), and the LED itself is characterized by highlight and adjustable brightness, realizing flowing water, flashing, rainbow light and other effects. The module interface is in yellow, indicating single digital interface control is adopted, and it must be connected to the yellow interface on the mainboard.





Technical specification:

Operating voltage: 5V DC
Number of light: 4 x RGB LED
Maximum current: 60mA for each, totally 240mA
Light model: WS2812-4
Brightness range: 0~255
Control method: single digital interface
Operating temperature: -25～+80°C
Angle of visibility: >140°
Module size: 52 x 24 x 18 mm (L x W x H)

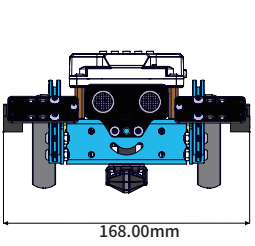


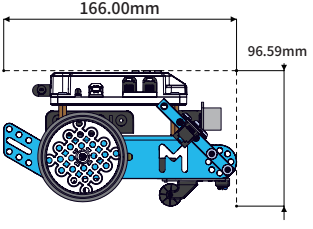
mBot Interactive Light & Sound Add-on Pack – Light Chasing Robot

Function description:

It detects the light intensity around mBot via two light sensors on each side. When the light intensity on the left side is greater than that on the right side, the robot will turn left; when the light intensity on the right side is greater than that on the left side, the robot will turn right; otherwise, the robot will go straight.

Product size

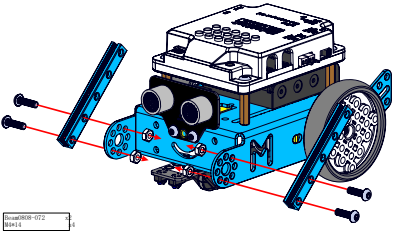




Building steps

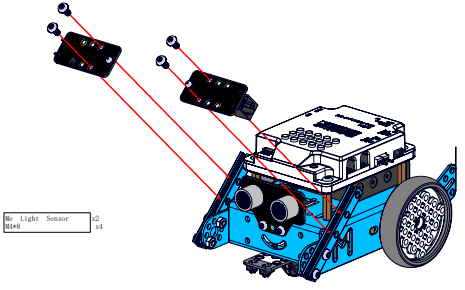
1

Beam0808-072 ×2
Screw M4*14 ×4
Nut M4 ×4

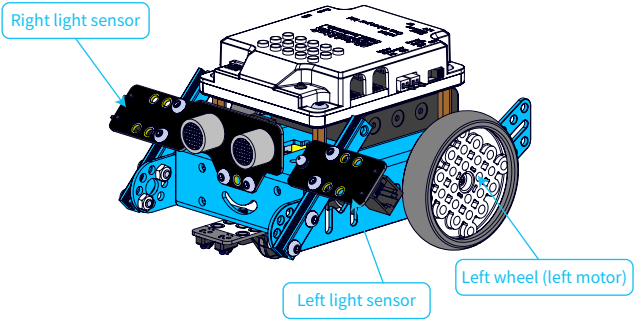


2

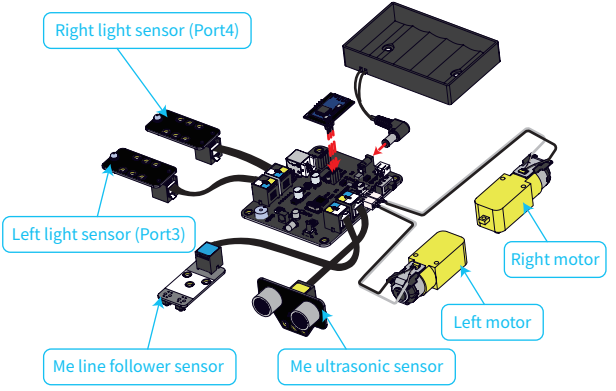
Me Light sensor ×2
Screw M4*8 ×4



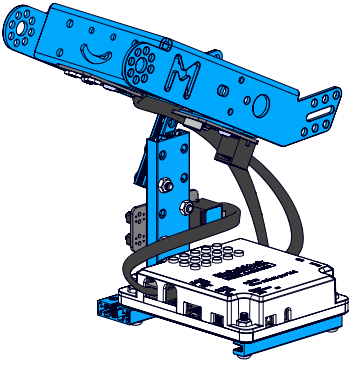
3 Assembled diagram



4 Wiring diagram



Please follow page 20 for programming

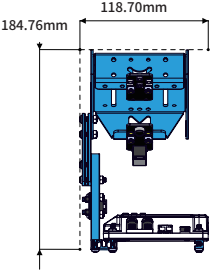


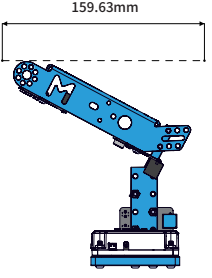
mBot Interactive Light & Sound Add-on Pack – Intelligent Desk Light

Function description

By changing the building configuration, mBot can turn into an “intelligent desk light”. The light has two operating modes: touch mode in which the light brightness can be regulated by touching the line follower sensor with fingers, and voice control mode, in which the sound intensity in the surrounding area has to be sensed, and when the intensity is large, the light will come on, like the voice-activated light at the stairway.

Product size

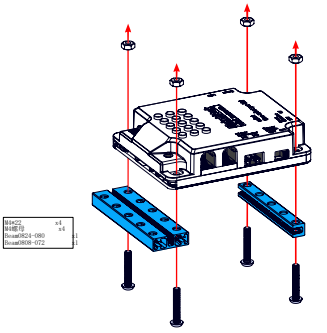




Building steps

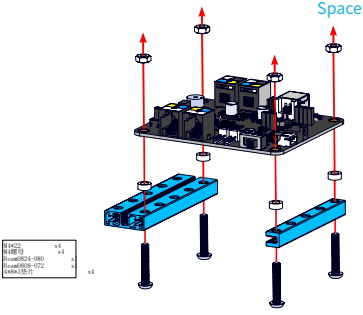
1

Beam0808-072 ×1
Beam0824-080 ×1
Nut M4 ×4
Screw M4*22 ×4



Note:
Some parts in this building example come from mBot, so you need to disassemble mBot first.

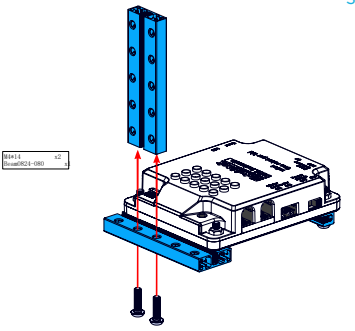
Beam0808-072 ×1
Beam0824-080 ×1
Nut M4 ×4
Screw M4*22 ×4
Spacer4*7*3 ×4



Note:
If your mBot is in version v1.0 (without plastic protective case), please refer to this diagram for installation.

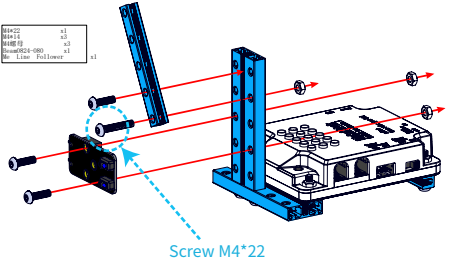
2

Beam0824-080 ×1
Screw M4*14 ×2



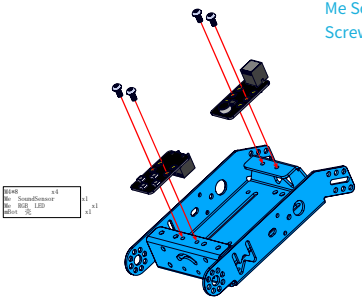
3

Me Line follower sensor ×1
Beam0808-072 ×1
Nut M4 ×3
Screw M4*14 ×3
Screw M4*22 ×1



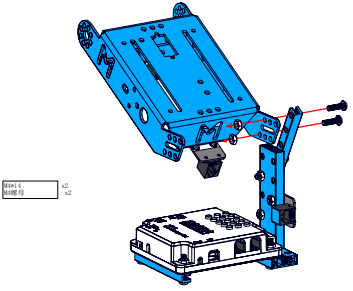
4

mBot chassis ×1
Me RGB LED ×1
Me Sound Sensor ×1
Screw M4*8 ×4

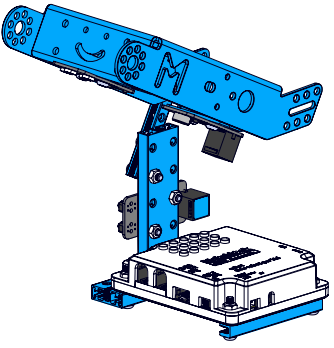


5

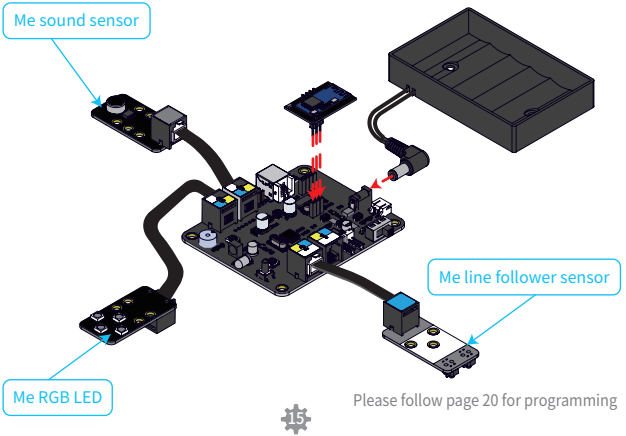
Nut M4 ×2
Screw M4*14 ×2



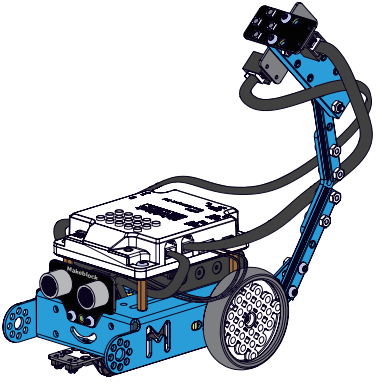
6 Assembled diagram



7 Wiring diagram



Please follow page 20 for programming

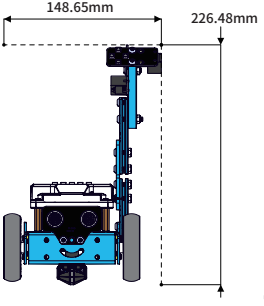


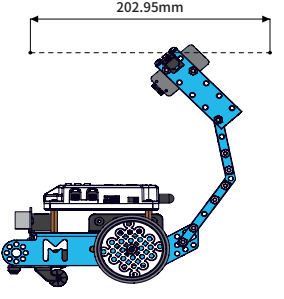
mBot Interactive Light & Sound Add-on Pack – Scorpion robot

Function description

Add mBot with a vivid “tail”, enabling it to look like a scorpion. In this case, by adding an arc tail at the rear part of mBot, the center of gravity of the robot is changed, thus making it easier for the mBot to raise its head.

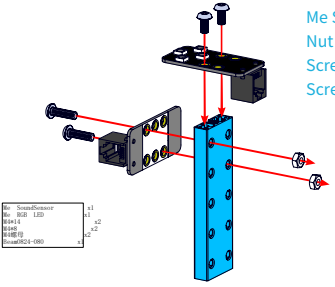
Product size





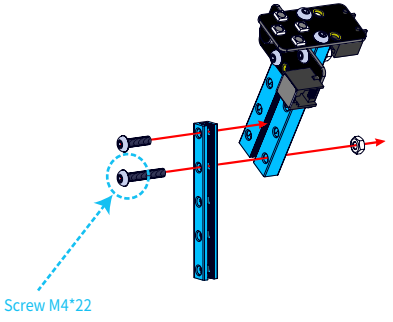
Building steps

1



Beam0824-080	×1
Me RGB LED	×1
Me Sound Sensor	×1
Nut M4	×2
Screw M4*8	×2
Screw M4*14	×2

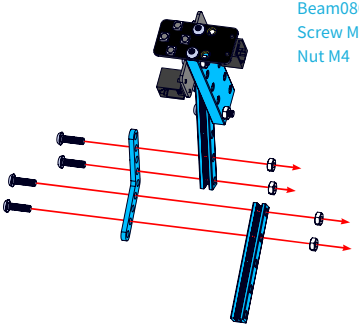
2



Beam0808-072	×1
Nut M4	×1
Screw M4*22	×1
Screw M4*14	×1

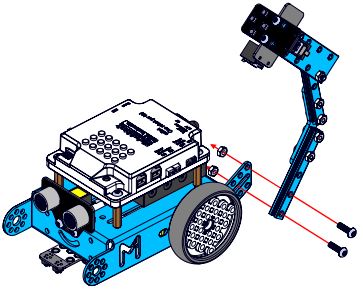
3

Plate 45° ×1
Beam0808-072 ×1
Screw M4*14 ×4
Nut M4 ×4

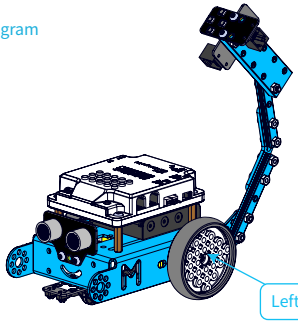


4

Nut M4 ×2
Screw M4*14 ×2



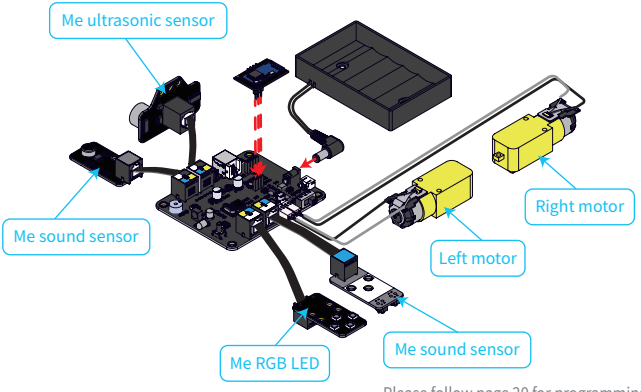
5 Assembled diagram



Note:

When you use a lithium battery to power mBot, you need to remove the lithium battery from the battery shell and fix it to the back of mBot with Velcro, so as to ensure the center of mBot' s gravity moves backwards.

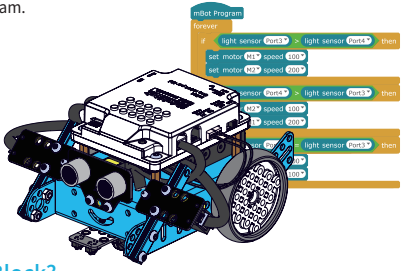
6 Wiring diagram



Please follow page 20 for programming

Suggestion about programming

Congratulations, you have completed the building of the robot. Now start to practice controlling your robot.
Please visit learn.makeblock.com/mbot-add-on-packs/ to download the latest mBlock graphical program.



What is mBlock?

mBlock is a graphic programming software based on Scratch2.0. This software is simple to operate and can allow you to program your Arduino project quickly. Therefore, it is an ideal tool for you to learn programming and to control the multi-function robot.

For more information, please visit: http://www.mblock.cc
System requirements: Windows/Mac