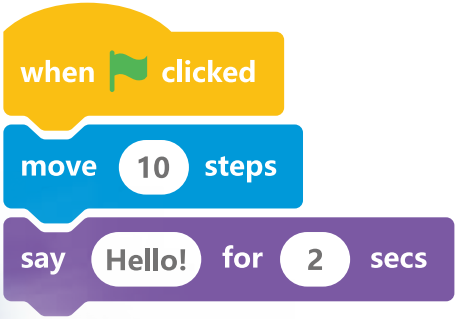
WEEEMAKE

WeeeBot

STEM Education Robot Kit

Ages 8+



Coding

Maker

Robot

To my classmates

There is endless whimsy in your mind every day.

Make a fan, a car, or even a robot…

Nothing can limit our imagination!

From now on, roll up your sleeve and create anything you want in your dream.

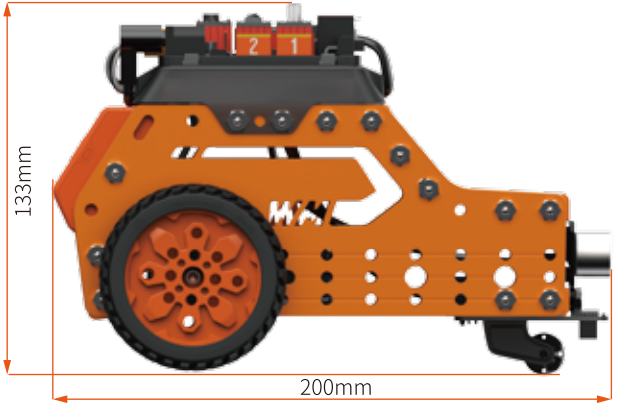
We put the right material in your hand and then you turn your idea into reality!

Introduction

I' m WeeeBot.

Hi, everyone, I' m WeeeBot, an entry-level STEM education robot kit! I am very clever, because I have a smart brain – mainboard ELF. Under the command of ELF, I can do anything with my powerful motor and solid body; I have a very sensitive ultrasonic sensor and a line-following sensor, so I' m a regular in line-following competition and obstacle-avoiding contest. In addition, I have rich expression (LED panel), colorful lights, elegant voice. Do you like me?
If you like me, be my friend and start to learn our WeeeCode graphical programming language immediately!

Product Size



The pictures are for reference only. Please refer to the object.

WeeeBot Part List


1X Left Side Panel


1X Right Side Panel


4X Beam 1030-100-B


2X 56T-plastic Gear


2X 56T-plastic Gear with Lug Boss


2X Tire 64*16


2X TT Motor


1X ELF Base Board


1X LED Panel Protective Shield


1X Plastic Caster


1X 18650 Battery Holder


1X ELF Mainboard


1X 328P Chip Module


1X LED Panel Module


1X RGB Ultrasonic Sensor


1X Line-following Sensor


1X Light Sensor


1X Infrared Receiver Sensor


1X Sound Sensor


3X 4P4C RJ11 Cable-20cm


1X 5.5-2.1 DC Power Cord-15cm


1X USB Cable B


1X Infrared Remote Control


4X Nut M3


4X Nut M4


30X Screw M4*6


2X Screw M2*4


2X Screw M2*6


4X Screw M3*25


1X PH0 Screwdriver


1X H2.5 Screwdriver

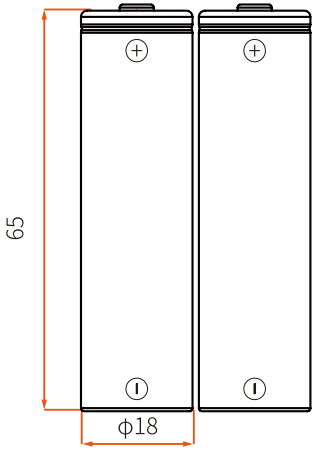

1X M1.6-M4 Multifunction Wrench


1X WeeeBot Line-following Map

Battery Instruction

Battery information:

1. Do not crush, or throw batteries.
2. Do not use batteries near to a heat source.
3. Always insert the batteries correctly with regard to polarity (-/+); do not short-circuit lithium battery.
4. Always keep batteries dry.
5. Do not puncture battery with sharp object.
6. Use only the correct type and size of battery indicated.
7. Place the battery in a cool, dry spot if not required.
8. Remove and safely dispose of exhausted batteries immediately.
9. If robot sit idle, remove battery out of battery holder when.
10. Replace all batteries in battery-operated products at the same time with the batteries of the same type and manufacture.

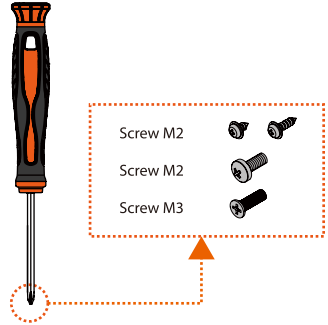


18650 Battery diagram
(Not included in package)

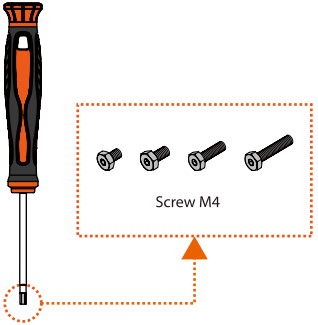
Low battery notification:

Your robot would run slowly, or restart frequently on low battery status. Please turn off power in this situation, and then change or charge your battery in time.

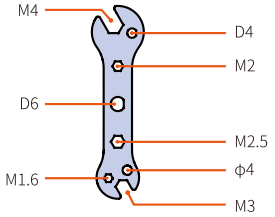
Tool Instruction



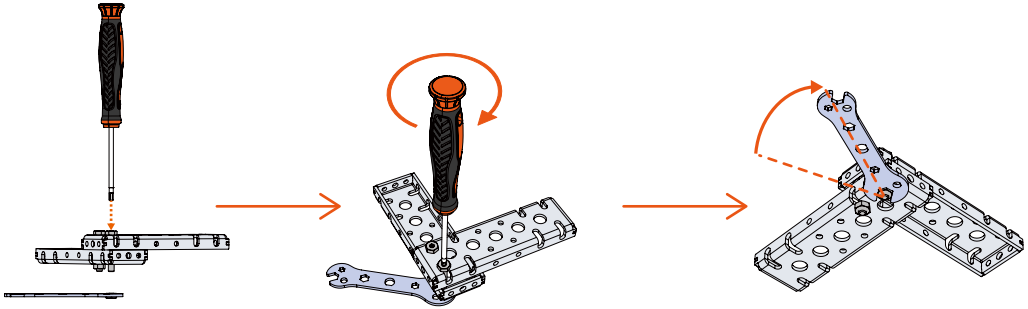
PH0 Screwdriver

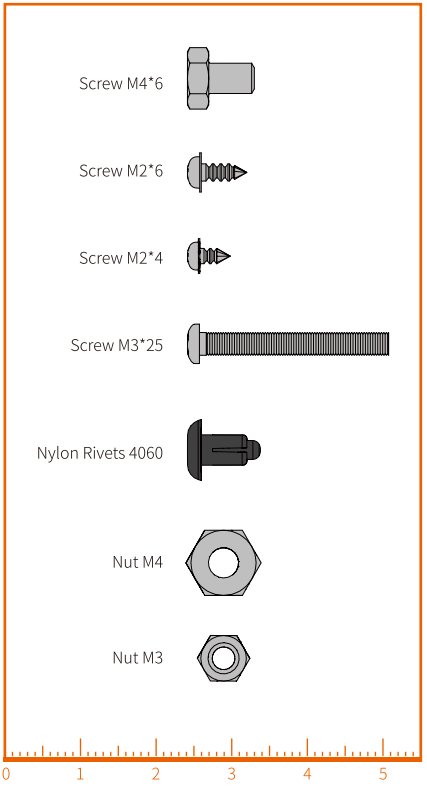


H2.5 Screwdriver



M1.6-M4 Multifunction Wrench





Assembly Tips

Assembly Steps

Assembly Path

Considerations

Number of Parts

Parts Required

Explain

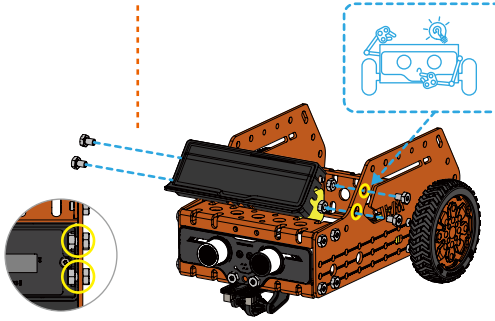
05 **Install LED Panel Module**

4X Nut M4

4X Screw M4*6

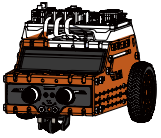
1X LED Panel Module

Steps:
1. Install 4 x Screw M4*6 and 4 x Nut M4. Do not lock them.
2. Match the 4 screws with the gap on LED Panel Module.
3. Lock 4 x Screw M4*6 with nut.



Left side panel installation diagram
(Right side panel is the same)

Tip：Please follow the installation guide in the left side.



Parts Name and Type

The colored part is the installed part

Assemble WeeeBot

01 Assemble WeeeBot Body Structure

– Install the front beam and side panel

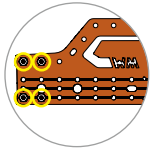

2X Beam 1030-100-B

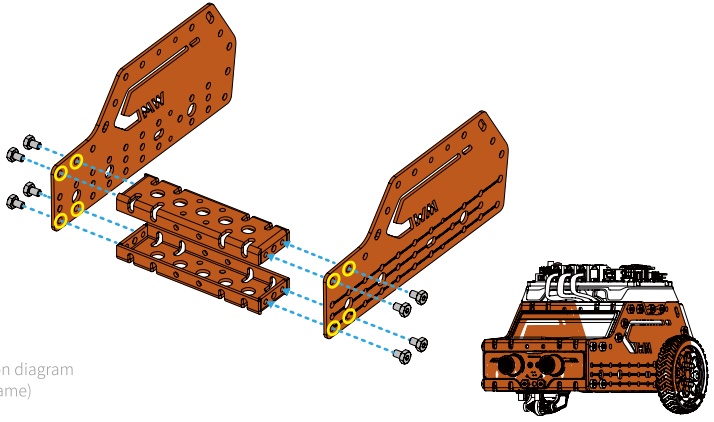

8X Screw M4*6


1X Left Side Panel


1X Right Side Panel

Steps:
1. Install left side panel (The strip surface faces toward the outside), and two beam 1030-100-B (The convex surface faces toward the outside).
2. Install right side panel (The strip surface faces toward the outside).





Left side panel installation diagram
(Right side panel is the same)

Assemble WeeeBot Body Structure

– Install motor and backside beam


2X TT Motor

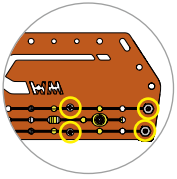

4X Screw M3*25

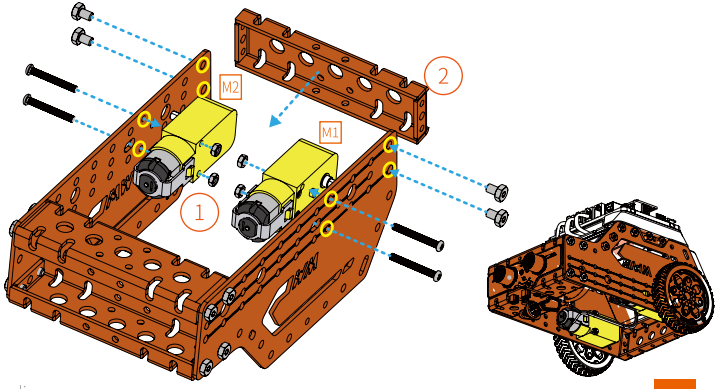

4X Nut M3


1X Beam 1030-100-B


4X Screw M4*6

Steps:
1. Install 2 x TT Motors.
2. Install the backside beam (The convex surface faces toward the outside).





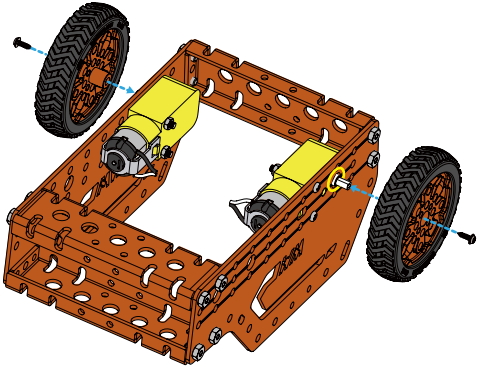
Left side panel installation diagram
(Right side panel is the same)

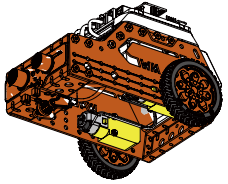
For firmer installation, Nut M3 can be replaced by Nylon Locknut M3.

02 Install Wheels

2X Wheel

2X Screw M2*6



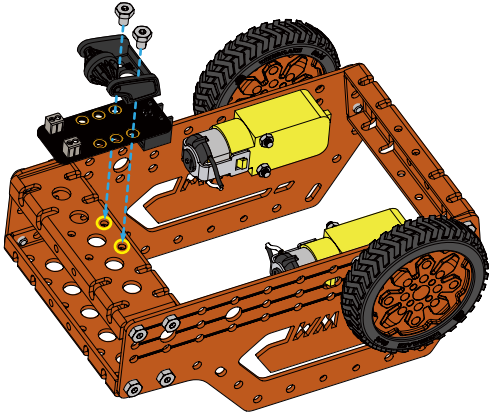


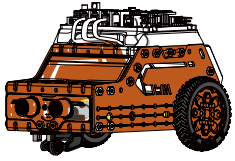
03 Install Caster

1X Plastic Caster

1X Line-following Sensor

2X Screw M4*6



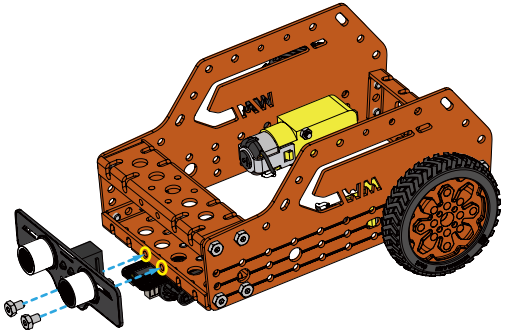


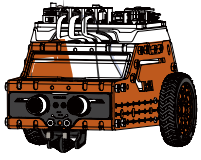
Assemble WeeeBot

04 Install RGB Ultrasonic Sensor

1X RGB Ultrasonic Sensor

2X Screw M4*6





05 Install LED Panel Module

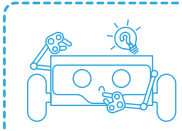
4X Nut M4

4X Screw M4*6

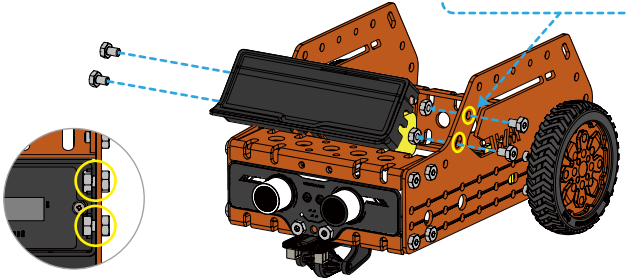
1X LED Panel Module

Steps:

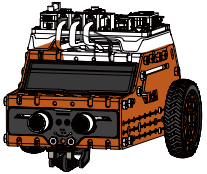
1. Install 4 x Screw M4*6 and 4 x Nut M4. Do not lock them.
2. Match the 4 screws with the gap on LED Panel Module.
3. Lock 4 x Screw M4*6 with nut.



Tip：Please follow the installation guide in the left side.

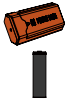


Left side panel installation diagram
(Right side panel is the same)



06 Install Battery

18650 Lithium Battery

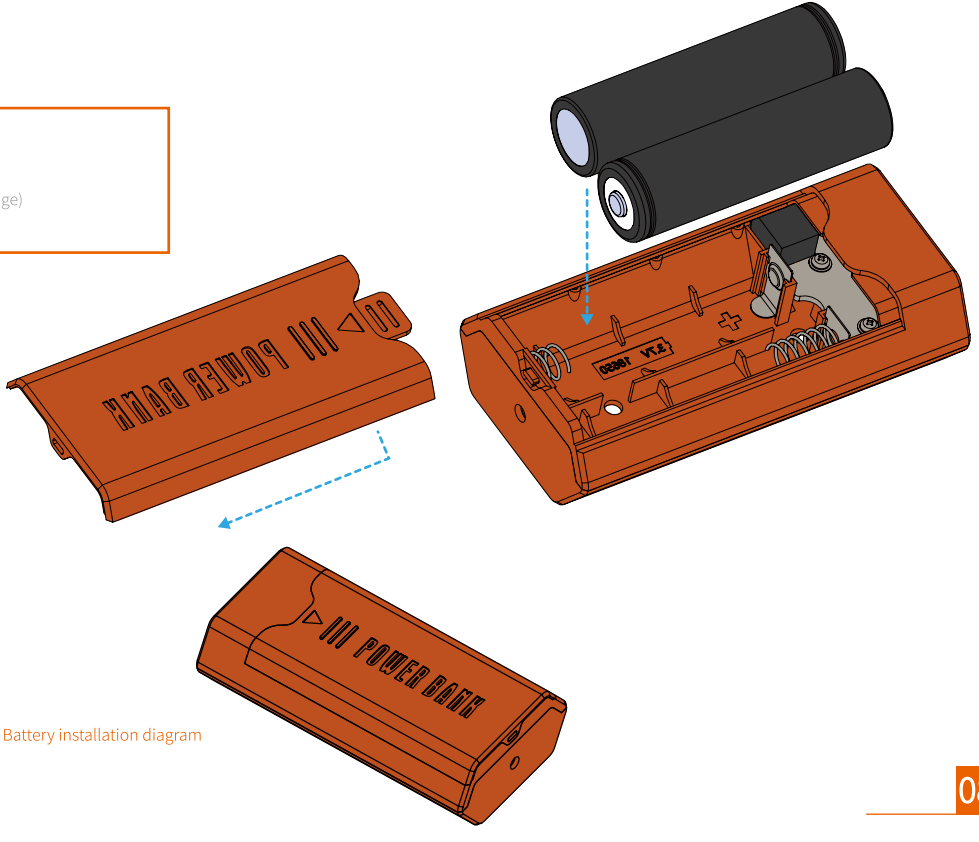


1X 18650 Battery Holder

2X 18650 Lithium Battery (Not included in package)

Steps:

1. Slide open the cover of 18650 Battery Holder.
2. Insert 18650 Lithium Battery correctly with regard to polarity (-/+) on battery holder.
3. Slide close the cover of 18650 Battery Holder.



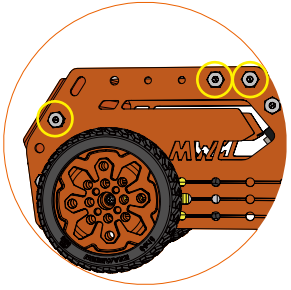
Battery installation diagram

07 Install Battery Holder

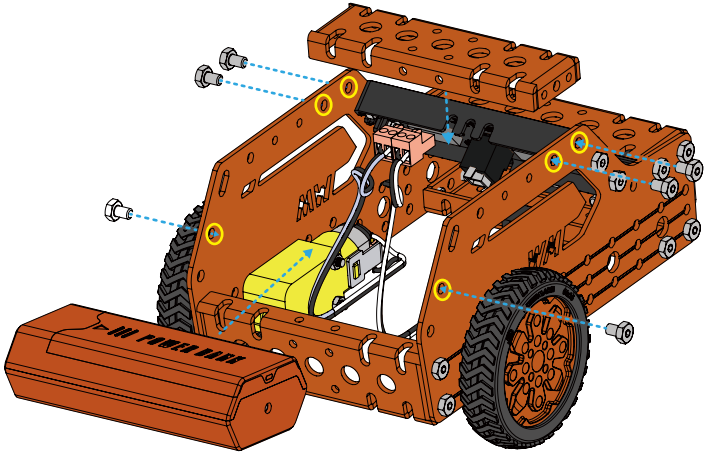
18650 Lithium Battery

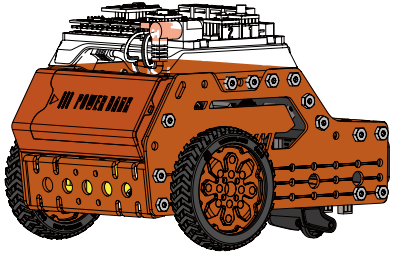
6X	Screw M4*6	1X	5.5-2.1 DC Power Cord-15cm
1X	18650 Battery Holder	1X	Beam 1030-100-B

Steps:
1. Install 18650 Lithium battery holder as installation diagram
2. Install Beam 1030-100-B(The convex surface faces toward the outside).



Left side panel installation diagram
(Right side panel is the same)





08 Wiring

3X 4P4C RJ11 Cable-20cm

Steps:

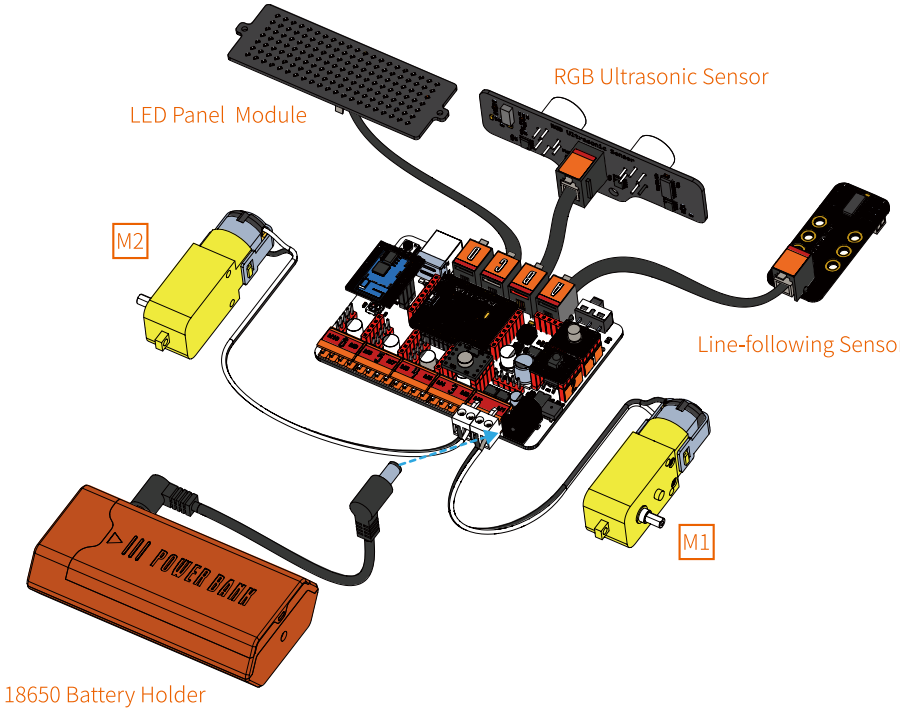
1. Wiring RJ11 cable on all sensors and electronic modules, take the other open end of RJ11 cable out of WeeeBot body structure.
2. After Step 9, connect the open end of RJ11 cable with ELF mainboard.

Tips

1. Motor **M1** wire to port **M1**, motor **M2** wire to port **M2**. (Motor cable: black wire on the left, white wire on the right)
2. Sensor wiring port as follow:

Port A —— Line-following Sensor
Port B —— RGB Ultrasonic Sensor
Port C —— LED Panel Module

Note: You can plug RJ11 sensor or electronic module to any one of four RJ11 port, that plugged sensor or electronic module will be automatically identified by mainboard ELF.



Assemble WeeeBot

09 Install ELF Mainboard

4X Screw M4*6

1X ELF Mainboard

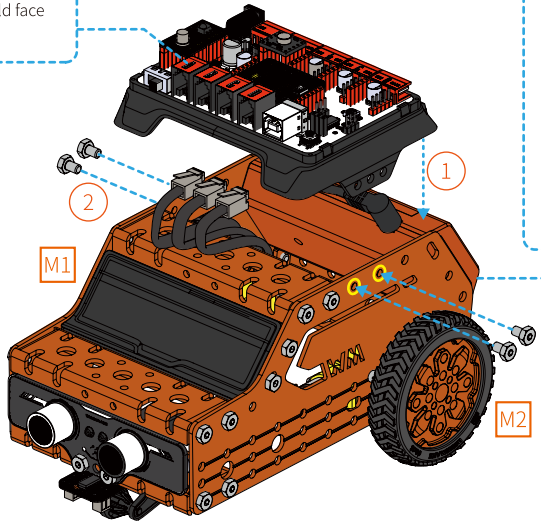
Steps:

1. Place ELF Mainboard in position (see diagram)
2. Lock 4 x Screw M4*6 in turn.
3. Follow Step 8, wiring. First step wire TT Motor, second step wire other sensors.
4. Check wires and make it tidy. Switch on your WeeeBot and test all functions.

Tips

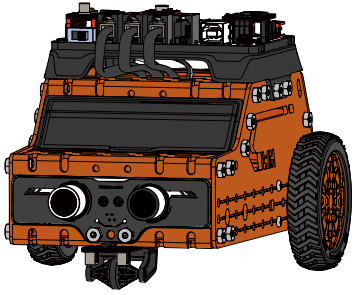
1. If your WeeeBot do not follow the direction on your program or remote control, please follow Step 8, check wiring on port M1 and M2.
2. If your WeeeBot do not follow the Line-following commend or avoid obstacle commend, please follow Step 8, check wiring of sensors.

Tip: Port ABCD should face toward car front.



Tip:
The left of the diagram is M1 motor, the right of the diagram is M2 motor.

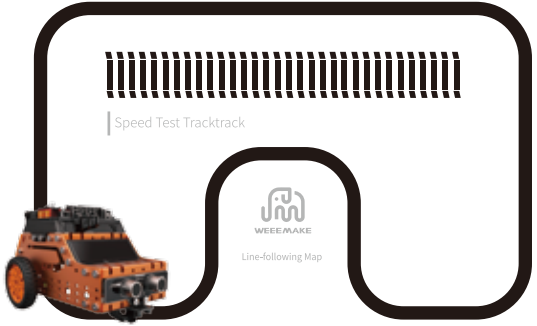
Left side panel installation diagram
(Right side panel is the same)

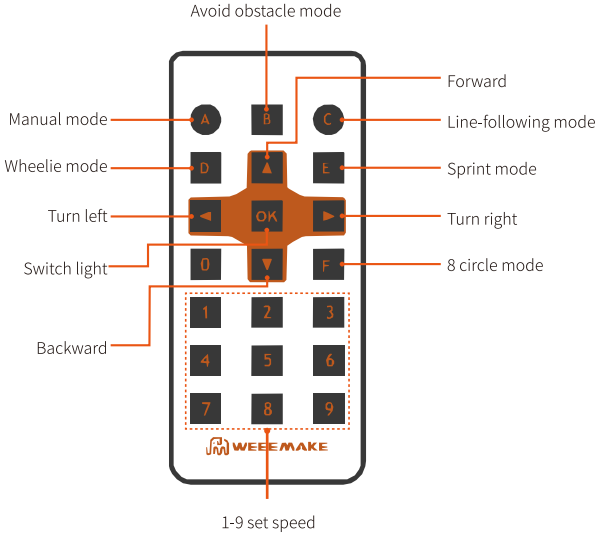


Congratulations, WeeeBot is fully assembled!

Quick Start

1. Take out IR Remote Control, insert CR2025 Button Cell (not included in package);
2. Switch on ELF mainboard, turn on the robot, use IR remote controller to control WeeeBot;
3. IR remote control guide:





Tip:
The battery of IR remote control is CR2025 button cell
CR2025 Button Cell (not included in package)

Software

WeeeCode Graphical Programming Software

WeeeCode is a graphical programming software that developed by WEEEMAKE on the basis of Scratch 3.0. It supports graphical programming as well as Arduino IDE code. In Weeecode, you only need to drag and drop the code modules to create lots of programs and showcases. WeeeCode supports WeeeBot perfectly.

Operation system: Windows/Mac
More information: www.weeemake.com

Arduino IDE

Arduino is an open-source electronics platform based on easy-to-use hardware (Arduino boards) and software (IDE). The Arduino Software (IDE) allows you to write programs and upload them to your board. Arduino senses the environment by receiving inputs from many sensors, and affects its surroundings by controlling lights, motors, and other actuators.
The ELF mainboard designed by WEEEMAKE is fully compatible with Arduino platform. With ELF and Arduino IDE, you can develop your own smart application project or education project.

For more information, please visit http://www.arduino.cc
Operation system: Windows/Mac
Tutorial: www.weeemake.com

Additional Assembly Guide

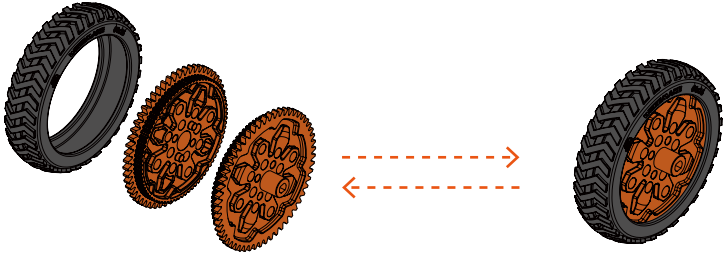
Assemble and Disassemble the Wheels

1X 56T-plastic Gear

1X 56T-plastic Gear with Lug Boss

1X Tire 64*16

Tip:
Wheels are assembled in package. You can disassemble wheels per necessity.



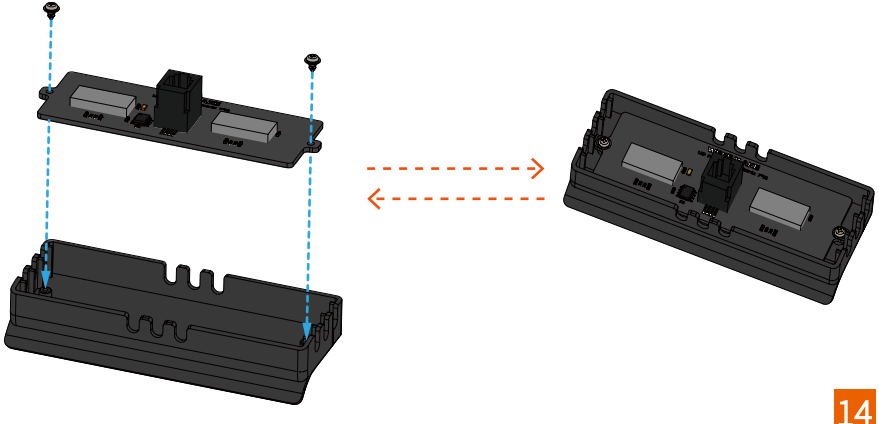
Assemble and Disassemble LED Panel Module

1X LED Panel Protective Shield

1X LED Panel Module

2X Screw M2*4

Tip:
LED Panel Module is assembled in package. You can disassemble it per necessity.



Additional Assembly Guide

Installation and Disassemble of ELF Mainboard Module


1X ELF Base Board


1X ELF Mainboard

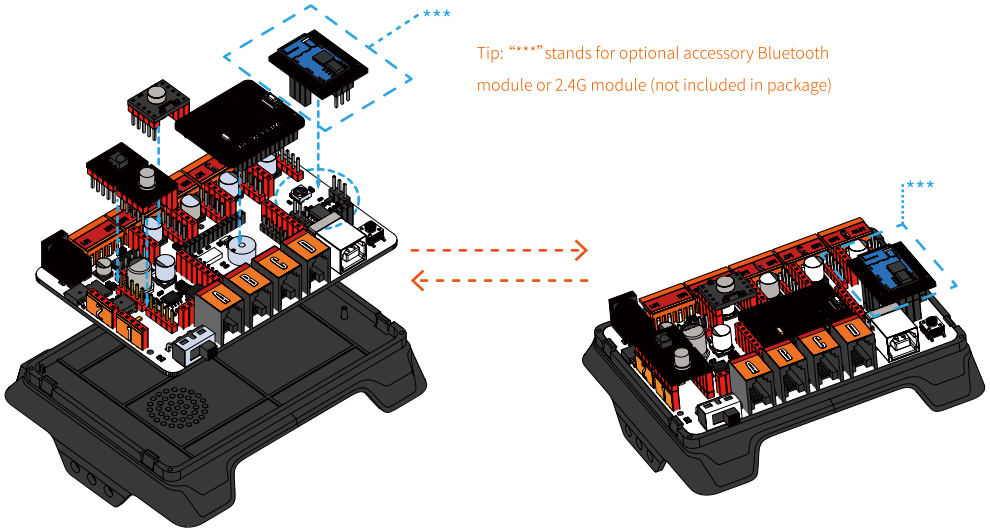

1X 328P Chip Module


1X Sound Sensor


1X Light Sensor


1X Infrared Receiver Sensor


1X ***Bluetooth 2.4G Module



Tip: "***" stands for optional accessory Bluetooth module or 2.4G module (not included in package)

Instruction:

1. Sensors and modules are fully installed in package as follows:

Port1 —— Light Sensor

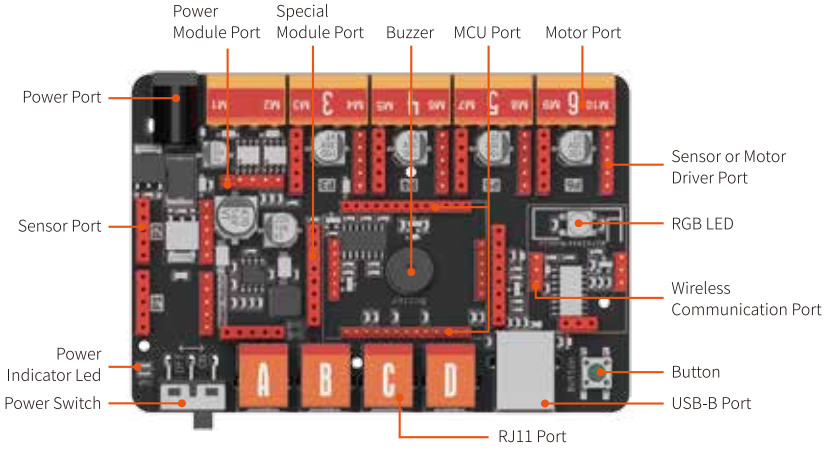
Port2 —— Infrared Receiver Sensor

Port3 —— Sound Sensor

MCU Port —— 328P Microchip

2. ***Port is for wireless communication modules such as Bluetooth, 2.4G wireless module.

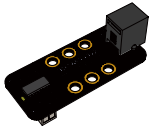
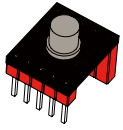
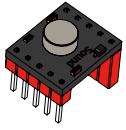
Additional Assembly Guide



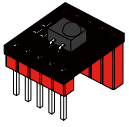
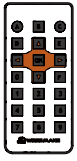
1. Replaceable microchip: Support ATMEGA-328P, ATMEGA2560 chip, etc.
2. Support 10 x DC motor, or 4 x Encoder motor, or 4 x Stepper motor working.
3. Support 4 x RJ11 port and 4 Pin port, support 10 sensors (input or output) working at the same time.
4. Support 5V power port to provide stronger power for more servos.
5. Support Bluetooth, 2.4G wireless communication.
6. Onboard button, buzzer, RGB LED.
7. Same port for motor driver and sensor pin port, easy to use.
8. Anti-reverse design port; mainboard has protection for overcurrent or reversed power.
9. Free 2x8P port, space for more accessory.
10. Support WeeeCode graphical programming and Arduino IDE coding.
11. Input voltage: DC6-12V.

WEEEMAKE ELF mainboard is designed on the basis of modular design style whose microchip is replaceable. This high-performance mainboard is designed for education.

Port Name	Port Label	Support Module
RJ11 Port	A, B, C, D	LED Panel Module; RGB Ultrasonic Sensor; Ultrasonic Sensor; Line-following Sensor
Sensor Port	1, 2	Onboard IR Receiver; Onboard Light Sensor; Onboard Sound Sensor; Onboard RGB LED; Onboard Temperature Sensor; Onboard Button
Sensor or Motor Driver Port	3, 4, 5, 6	Onboard IR Receiver; Onboard Light Sensor; Onboard Sound Sensor; Onboard RGB LED; Onboard Temperature Sensor; Onboard Button; DC /Encoder DC motor driver; Stepper Motor Driver; RGB LED Board
Motor Port	3, 4, 5, 6	DC Motor; Encoder Motor; Stepper Motor
MCU Port		ATmega 328P; ATmega 2560
Wireless Communication Port		Bluetooth Module; 2.4G Wireless Module; WiFi Module

Picture	Description	Features	Specification	Function
	Line-following Sensor is consist of two set of IR emitting LED and sensitive phototransistor. When the phototransistor detects the reflected infrared light from the IR emitting LED, it will output a digital signal, which changes from HIGH to LOW. Users can tell the different reflecting surface by this value.	Able to read value of one set IR emitting LED and sensitive phototransistor, high precision; High field adaptability and code-ability; Comes with two LED signal light to show feedback; RJ11 Port, easy to wire; Comes with MCU, smart identify;	Operating Voltage: 5V DC Detection Range：1~2cm Communication: 1-wire Peak Wavelength of Reflective Wave: 940nm Dimensions: 55 x 24 x 18.5 mm	Speed detection, black and white detection, line finder.
	Light sensor is developed on the basis of semiconductor photoconductivity effect, the resistance value changed by the strength of light. The stronger the light is, the higher the value will be.	Visible light detection; Anti-reverse design;	Operating Voltage: 5V DC Output Signal: analog voltage Spectral Bandwidth: 400nm-700nm Operational Lag: 15us Dimensions: 15 x 12.7x 16 mm	Light Detection; Light seeking robot
	RGB Ultrasonic Sensor is new ultrasonic distance detection module. Comes with independent RGB LED, you can change brightness and color. The RGB Ultrasonic Sensor uses split high-precision aluminum shell probe, calculate and amplify signal through onboard MCU, to output more stable and higher precision signal.	Distance defecting resolution is 1cm； Come with RGB LED, support 256 steps of brightness for red, green & blue and 16,777,216 color combinations;； RJ11 Port, easy to wire; Comes with MCU, built-in algorithm, intelligent identifying	Operating Voltage: 5V DC Detection Angle: ⩽30° Detection Range: 4-500cm Resolution: 1cm Ultrasonic Frequency: 42kHz Probe Angle: 60°±15° Communication: 1-wire Dimensions: 100 x 32 x 30 mm	Distance measurement; induction test
	Sound Sensor is to detect the loudness of the environment. By amplifying and filtering signals collected by microphone, sound sensor will generate analog signal. The louder the sound is, the higher the output value will be.	Sensitive sound detection; Anti-reverse design;	Operating Voltage: 5V DC Microphone Sensitivity (1 khz): 52-56dB Microphone Frequency: 16-20Khz Microphone S/N Radio: 50 db Output Value Range: 0~980 Output Signal: analog voltage Dimensions: 15 x 12.7x 13 mm	Sound-activated light/switch, alarm, etc.

Sensors and Electronic Modules Guide

Picture	Description	Features	Specification	Function
	ATmega328P microchip is designed for ELF mainboard. Compatible with Arduino. It is an entry-level module to start coding, with features such as anti-reverse design, high performance, low power, high reliability.	Anti-reverse design, easy to replace; High performance, low power, reliable Mega328P microchip; With reset button, easy to debug; With pin light, compatible with Arduino;	Microchip: Mega328P-AU Operating Voltage: 5 V Flash Memory：32KB EEPROM：1KB SRAM：2KB Number of I/Os:14 Analog Signal Input Port: 6 Clock Frequency: 16MHz Dimensions: 33 x 28 x 7 mm	Microchip
	Through the infrared receiver to receive infrared signal, IR is a widely used communication and remote-control way.	IR Receiver has high performance on anti-interference and rapid response; Anti-reverse design.	Operating Voltage: 5.0V DC Carrier Frequency:38KHz Peak Wavelength of Infrared: 940 nm Signal Receive Angle: 90° Communication Port：Singular Dimensions: 15 x 12.7x 19 mm	Communication
	IR Remote Control has 3x7 buttons (letter A-F button, number 0-9 button, direction button and center button); Power supply is one button cell.	Working distance beyond 5m； Small volume, low power； NEC IR communication protocol；	Operating Voltage: 2.25 V~3.9 V Operating Current: 6 mA~25 mA Working Distance：⩾ 5 m Wavelength of Infrared: 940±50 nm Carrier Wave Frequency: 37.9±0.2 KHZ Power Supply：3V button cell (CR2025) Button Service Lift: ⩾ 100K times Dimensions: 90 x 41 x 12 mm	Communication & Control
	LED Face Panel module integrates 7*21 = 147 Blue LED matrix. Through WeeeCode or Arduino IDE you can code and control each LED to create simple emoji, animation, rolling words, etc.	Support customized emoji; RJ11 port, easy to connect; Come with MCU, precisely control;	Operating Voltage: 5V DC LED Light: Blue LED Service Time: ⩾ 5000 Hours Communication: 1-wire Dimensions: 94 x 30.5 x 12 mm	Emoji; words;

FAQ

Q1:When I turn on the WeeeBot, my robot has no response, why?

A:It is possibly caused by:

1. Low voltage, please recharge all your batteries or replace with new batteries.
2. Batteries installed in wrong polarity (+/-);
3. Incorrect wring on battery holder or motor.

Q2:When I controlled the WeeeBot to move forward, it moved backwards. How can I fix this?

A:The wiring of the motor is connected reversed. Please reconnect.

Q3:I cannot connect WeeeBot to computer via USB cable nor wireless way, how can I fix it?

A:Your computer hasn't installed the driver of the main board. Please install driver, restart the WeeeBot, and connect to computer again. For more information please visit http://www.weeemake.com.

Q4:Why the WeeeBot cannot move with USB power supply?

A:USB power supply can only support chip and sensors in mainboard. To drive motors, please connect batteries and switch on the power button.

Q5:Why screws on WeeeBot will be loose after being used for a period?

A:WeeeBot use standard stainless-steel screws to fix all parts. The vibration generated during the operation of robot may cause the screw to loosen. Please tighten them with a screwdriver in time.

Q6:Why the software cannot read the value of sensor?

A:Please check your wiring, make sure sensors are connected to the right port in manual or in WeeeCode software.

Q7:Why the Line-following Sensor doesn't work?

A: Please:

1. Make sure the distance between Line-following sensor and line-following map is between 1-2cm, this is the best working range.
2. Do not use Line-following mode under strong light. Strong light will interfere the function of Line-following Sensor.
3. Make sure to use unreflecting material to make your own line-following map.

FAQ

Q8:When do you need to replace batteries or charge batteries?

A:If the speed is set to maximum value, and your robot run slowly, or keep restarting, you must replace all batteries, or charge your rechargeable batteries.

Q9:How to reset the default firmware or online firmware for ELF mainboard?

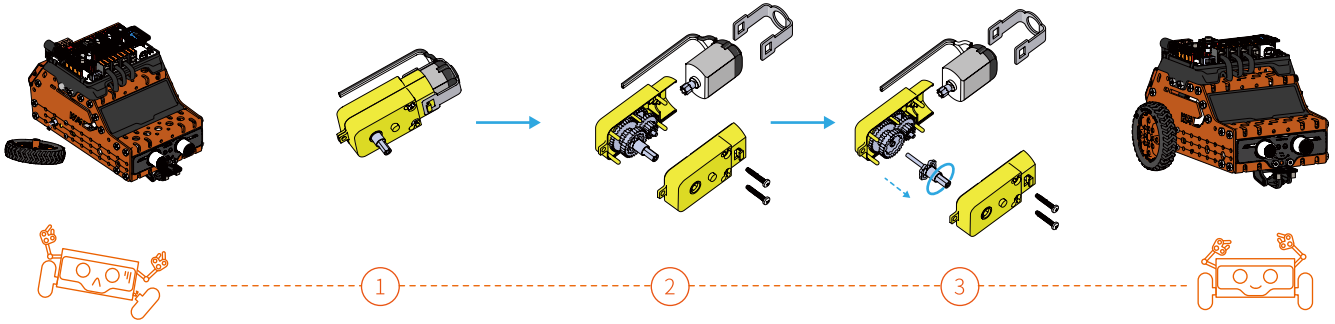
A:Connect ELF mainboard to computer with USB cable, open software WeeeCode.

1. Select menu “Arduino”, click “Restore Online Firmware”.
2. Select menu “Arduino”, click “Restore Factory Firmware”.

Q10:If motor shaft accidentally broken, how to fix it?

A:Please take the backup motor shaft in package, and replace the broken parts by follow instructions:

1. Disassemble the transparent rubber case and rubber connector(the connector is elastic for pulling out);
2. Unscrew to divide the gearbox and metal motor;
3. Replace the broken motor shaft.



FCC WeeeBot

FCC Information

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.

Any 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.

“ This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body. ”

WeeeBot Robot Kit—Warranty

Product	WeeeBot Robot Kit
SKU	160000, 161000, 160001, 161001

RoHS FC CE

Thank you for your interest in the products and services of WeeeMake. This Limited Warranty covers any defects in material or workmanship under normal use during one year since the date of purchase from authorized dealer. During the Warranty Period, WeeeMake will repair or replace, at no charge, products or parts of a product that proves defective because of improper material or workmanship, under normal use and maintenance; Once warranty expired or out of warranty range, repair or replacement will be charged.

This Limited Warranty does not cover any problem that caused by:

1. Product damage resulting from negligence, misuse, improper maintenance;
2. Damage or defect resulting from misuse, improper installation or modification, voltage or current overload, accident, force majeure events (flood, fire, terrorist attack, war, etc);
3. Damaged or destroyed by improper repair at unauthorized service point.
4. Natural wear and tear, or accidentally damage surface.

The following parts or items are not covered by this Limited Warranty:

1. Batteries, fuses, screws, wires and other supplies
2. Transportation, shipping or insurance costs;
3. The cost of product demolition, installation, assembly, adjustment or re-installation;

To obtain warranty service, please contact the authorized dealer (Warrantee) and show the receipt as proof of purchase date. The Warrantee will:

1. Repair the Product at no charge, using new or refurbished replacement parts;
2. Or replace with same or iterative Product;
3. Or refund at purchase price.

All replacement parts and products and refund products are deemed to be owned by the Warrantee. Warranty service may use a new or refurbished part or product.

For consumers, who are covered by consumer protection laws or regulations in their country of purchase or, if different, their country of residence, the benefits conferred by Weeemake limited warranty are in addition to all rights and remedies conveyed by such consumer protection laws and regulations, including but not limited to these additional rights.

www.weeemake.com

Technical Support:
support@weeemake.com