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The diagram illustrates the assembly of the Ultrasonic sensor module. The components shown are:

- NANO * 1PCS
- TB6612FNG Module * 1PCS
- Ultrasonic sensor * 1PCS
- Expansion board * 1PCS
- Top plate * 1PCS
- Fastener for battery box * 1PCS
- Aluminum Alloy Board * 1PCS
- Foothold * 1PCS
- Battery box

① 1x Aluminum alloy board

② 2x Motor Bracket

③ 6x M4*6 Round head Phillips screws

④ 2x Coupling

Take out ① from No.1 label bag

Back side

Take out ④ from No.3 label bag

Attention:
Make sure that the screw on coupling should align with the cross-section of motor shaft.

1x Footfold

4x M3E Pin head machine screws

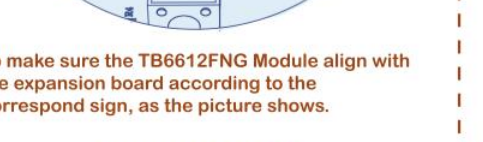
2MM3E11 Double-pass copper columns

Note: The vertical copper columns are M3.2 thread type.

Type: Please make sure you remove the protective film on the Acrylic plate.

Assembly the circuit board

To make sure the TB6612FNG Module align with the correct board according to the correspond sign, as the picture shows.



Two views of the assembled ultrasonic sensor robot are shown. The left view is a top-down perspective, showing the robot's rectangular body, four large black wheels, and the internal electronic components, including the sensor module and various connectors. The right view is a front-facing perspective, highlighting the two large blue cylindrical sensors mounted on the front of the robot's chassis.

① 4XAA K-type gear nut

② 4X AA battery

③ 4X AA battery

Pay attention to the direction of the battery box and make sure it is in the correct position of the acrylic board after assembly.

Pay attention to the direction of the battery box and make sure it is in the correct position of the acrylic board after assembly.

③ 2X18650 Batteries ④ 1x Battery box



⑤ 1x Fastener for battery box

Take out ① from No.5 label bag

Back side

Assembly the top board

Take out ① from No.4 label bag
Take out ② from No.1 label bag

The diagram shows a rack-mounted device with a callout showing a cable connection. The callout shows a cable with a connector being plugged into a port on the device. The connector is labeled with a circled '1' and the port is labeled with a circled '2'.

The wiring of the motor is shown in the image.

Functional blocks of a robot:

- Battery Box
- Power Supply
- TB6612FNG Module
- Motor Drive
- GY-521 Module
- Motion Detection
- Ultrasonic Sensor
- Detect the distance from the obstacle ahead
- Expansion Board
- Provide Module Interface
- Mode switch button
- Switch each function mode
- Left Infrared Sensor
- Detect the distance from the obstacle on the left side
- Right Infrared Sensor
- Detect the distance from the obstacle on the right side
- NAND
- Main Controller
- USB interface
- Upload program
- Motor
- Move Mechanism
- Hall Sensor
- Measure Speed

The diagram illustrates the Tumbler robot in its 6 modes. The robot is shown in a circular inset, tilted forward, with a label "Mode switch button" pointing to a switch on its side. The modes are listed in yellow boxes above the robot:

- Standby Mode
- Obstacle-avoidance Mode
- Glowing Mode
- Auto-follow Mode
- Bounce Mode
- Mobile Control

Auto-follow Mode (Backward)

- Press the mode switch button for 3 times, Tumbler will be in the follow mode "backward", then Tumbler will lights up in green.
- If there is an obstacle within 10-35cm in front, the 2 LEDs in back flash in green, and Tumbler will move backward with the obstacle.
- If there is an obstacle within 0-20cm on the left or right side, Tumbler will turn left or right with obstacle.
- If there are obstacles on both right and left side within 0-20cm, Tumbler will move backward with the obstacles.

Glowing Mode

Press the mode switch button for 4 times, Tumbler will be in the glowing mode and light up a random lighting effect

Standby Mode

Press the mode switch button for 5 times, Tumbler will be in standby mode and stop all motions. Likewise to repeat.

Click the Bluetooth icon in the right upper corner to enter the Bluetooth search page, then click the search list of Bluetooth names in the upper left corner, and select the Bluetooth name (ELEGOO BT16) to connect.

If you can't find the Bluetooth name (ELEGOO BT16), please turn off Tumblebot, then turn it back on and reconnect Bluetooth.



When the Bluetooth icon turns to blue in the upper right corner, that means Bluetooth is connected.

Click the Rocker Control on the left to enter the designed control page.

The diagram illustrates the transition from a 2D grid of icons to a 3D representation of a CD-ROM. On the left, there are two panels: 'Router Control' and 'DPI Control', each containing a grid of icons. An arrow points from these panels to a large CD-ROM on the right, which has the same grid of icons on its surface. A label 'which are' is positioned to the right of the CD-ROM.

• You can control the Tumbler to move in 8 directions by holding the controller. Tumbler will move towards the direction which the rocker points. By rocking the rocker then Tumbler will enter in standby status.

Auto-Follow Mode (Forward):

- Click the Auto-Follow Mode (forward) icon as picture, to make Tumbler enter in Auto-Follow mode and flashes in green light.
- If there is an obstacle within 10-30cm in front, the 2 LEDs in front flash in green, and Tumbler will move forward with the obstacle.
- If there is an obstacle within 0-20cm on the left or right side, Tumbler will turn left or right with obstacle.
- If there are obstacles on both right and left side within 0-20cm, Tumbler will move forward with the obstacles.

Auto-Follow Mode (Backward):

- Click the Auto-Follow Mode (Backward) icon as picture, to make Tumbler enter in Auto-Follow mode and flashes in green light.
- If there is an obstacle within 10-30cm in front, the 2 LEDs in back flash in green, and Tumbler will move backward with the obstacle.
- If there is an obstacle within 0-20cm on the left or right side, Tumbler will turn left or right with obstacle.

backward with the obstacles.

If you want to customize the buttons, you can click "DIY control" to enter in the customization page, then click "ok".



The Turntable

Press and hold any button to pop up the "Button editor". Then you can choose color and edit name of the button as you like. But please notice that, the "message" is corresponding to below definition, (refer next page) you can enter the "message" field according to your own needs.

The following are the issues to be aware of when using Tumbler:

- 1- Make sure the battery is fully charged before using. When the battery is in charging state the charger lights in red. When the battery is fully charged, the charger lights in blue.
- 2- The LED will flash red when the battery is running out of power.
- 3- When you pick up the Tumbler vertically, the wheel will still rotate. After lifting the Tumbler 2.7", the rotation will stop.
- 4- In the use of all types of media models, Tumbler will automatically enter the standby mode

- 5. Tumbler can't be used in places where the sunshine or light is very strong, because the strong brightness will affect the sensor.
- 6. It is impossible to charge the battery with USB. When plugged in USB, Tumbler will flash red because the voltage supplied by USB is too low.
- 7. The screw on the coupling is easy to get loose, please do lock tight.
- 8. The USB interface is only used for burning program. When burning program, please turn off the battery compartment switch to prevent interference.

Material List

- Charger Adapter * 1PCS
- USB Cable * 1PCS
- Battery Box * 1PCS
- Motor * 2PCS
- 18650 Batteries * 2PCS
- Phillips Screwdriver * 1PCS
- 8P Cables * 2PCS

Some material images shown in the instruction manual are illustration purposes only. Actual product may vary.

Material List

- M3*6 Pin head machine screws *2PCS
Actually only need 20 pieces for assembly, 1 more additional as spare
- Coupling *2PCS
- M4*6 Round head Phillips screws *6PCS
- M3*5 Counterscrew Screws *11PCS
Actually only need 10 pieces for assembly, 1 more additional as spare
- M3 K-type gear nut *4PCS
- M3*11 Double-pass copper column *7PCS
- Motor Bracket *2PCS
- Tires *2PCS

Take out [] from No.2 label bag
(Pay attention to the installation)

① 2x Motor

② BxM3x5 Countersunk Screws

Pay attention that only lock 4 screws on Motor Bracket, as the picture shows.

Assembly the tires

2xTires

[illegible]

Assembly

④ 1X Expansion Board

Take out ④ from No.4 label bag

Take out ④ from No.2 label bag

Assembly the ultrasonic sensor

① 1 x Ultrasonic Sensor

② 4X M3*11 Double-pass copper column
The double-pass copper columns is 1/8" x 1/8" x 1/8" long

③ 8X M3*6 Pan head machine screws

Back side

Assemble the ultrasonic sensor

Take out ① from No.4 label bag
Take out ② from No.1 label bag

Take out ③ from No.4 label bag
Take out ④ from No.1 label bag

① 4 x M3*45 Single-pass copper pillar
② 4 x M3*6 Pan head machine screws

Back side

18650 3.7V 2000mAh

18650 3.7V 2000mAh

Attention: Please fully charge batteries before using.

1: 2 x 6P Cables

The wiring of the motor is shown in the image.

Upload the Tumbler program

Notice:
We have uploaded some necessary programs in advance, thus you can skip uploading the programs. However, if you change the codes, you will need to reupload them.

First of all, please go to our website below to download the Tumbler tutorial: <http://www.elepios.com/download/>
And then select the tutorial files based on your computers' running systems.
For Windows system, please refer to "Upload Tumbler program for Windows.pdf"
For MacOS system, please refer to "Upload Tumbler program for MacOS.pdf"

The Tumbler has 6 modes which are:

Auto-follow Mode (Forward)

- Press the mode switch button once, Tumbler will be in the follow mode "forward", then Tumbler will light up in green.
- If there is an obstacle within 10-35cm in front, the 2 LEDs in front flash in green, and Tumbler will move forward with the obstacle.
- If there is an obstacle within 0-20cm on the left or right side, Tumbler will turn left or right with obstacle.
- If there are obstacles on both left and right side within 0-20cm, Tumbler will move forward with the obstacle.

Obstacle-Avoidance Mode

Then press the mode switch button twice, Tumbler will be in the obstacle-avoidance mode and light up in yellow. In this mode, Tumbler will avoid obstacles automatically if there is an obstacle in front 0-50cm in front.

Mobile Control

-For Android system, copy the APK file to the Android products and install it.

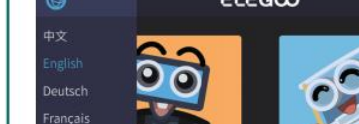
-The APK file is located in "ELEGOO Tumbler Self-Balancing Car Tutorial ELEGOO BLE Tool" or go to google play and search for "ELEGOO BLE Tool" to download and install our app.

-Below, take the Apple mobile phone or tablet for example:

-First of all, search "ELEGOO BLE Tool" in Apple App Store, install the APP and then run it on your phone.

ELEGOO BLE Tool

Click the icon in the top left corner, to enter the language list, then choose the language you prefer.

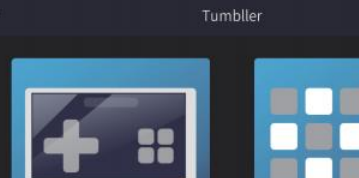


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If you find that the description of any product does not meet your needs, you can click on the product name to view the details and contact our official website: www.elegoo.com

Tumbler



Click OK, then click Tumbler to enter the control page

control page introduction

A close-up photograph of the Rocker Control panel. It features three buttons: a 'Bounce Mode' button on the left, a 'Light Effect switch' button in the middle, and a third button on the right. The panel is dark with white text and icons. A red dashed line is drawn vertically between the 'Bounce Mode' and 'Light Effect switch' buttons.

The Tumbler has 6 modes which are:

- Click the Obstacle-Avoidance Mode icon as picture, to make Tumbler enter Obstacle-Avoidance Mode and flashes in yellow light.
- In this mode, Tumbler will avoid obstacles automatically if there is an obstacle within 0-50cm in front.

Bounce Mode

- Click the stand icon as picture, 'Tumbler' will stand up instantly and keep balance.
- Click the lift forward icon as below, to make Tumbler enter Bounce Mode.

Standby Mode

- Click the stand icon as picture, will enter in standby mode, Tumbler will stop all actions.

Light Effect switch

to ensure one, there are over 6 light effects for switching.

Light decrease

The following is the message sent for each function

f	Forward
b	Backward
t	Turn Left

For example, I want to customize the button of obstacle avoidance mode

First, click DIY control and enter in customization page.

Then press and hold any button to pop up the "Button editor". I like orange and light green as the button color and name it as "avoidance". And according to the information list, the message for "Obstacle Avoidance Stop" is 2, and enter "2" in message field and click "OK". Then, it's done. Likewise, you can customize the buttons for any function of Tamiel.

The diagram illustrates the sequence of button presses to activate the 6 modes of the Tumbler robot. The modes are listed on the left, numbered 1 through 6, with corresponding button images on the right. The buttons are arranged in a grid, with the 'Transfer' button highlighted in blue.

- 1 Standby Mode
- 2 Auto-Follow Mode (Backward)
- 3 Auto-Follow Mode (Forward)
- 4 Obstacle Avoidance Mode
- 5 Light Effect Switch
- 6 Tilt Forward

The sequence of button presses is shown in the bottom right, with the 'Transfer' button highlighted in blue.

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If you feel it difficult to assemble the Turnbrier, please check the assembling tutorial video from [www.elsgo.com](#).

Please download the tutorial from our website [elsgo.com/download](#).

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to contact us at servicetig@elegoo.com.

Elegoo Team

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

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.

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

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