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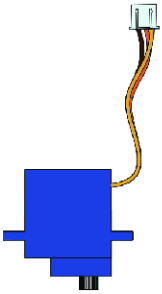
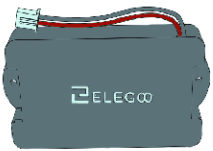
Material List



SG90 * 4PCS

speakers* 2PCS



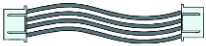
Cell Box
(Lithium Battery inside) *1PCS

Phillips Screwdriver*1PCS

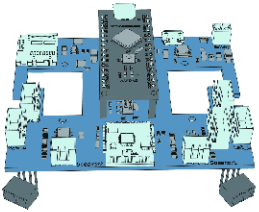
Foot Sticky Pads* 2PCS

USB Cable*1PCS

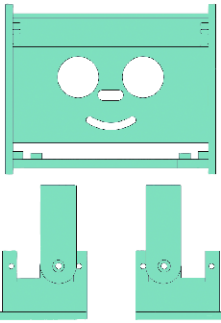
ultrasonic sensor * 1PCS



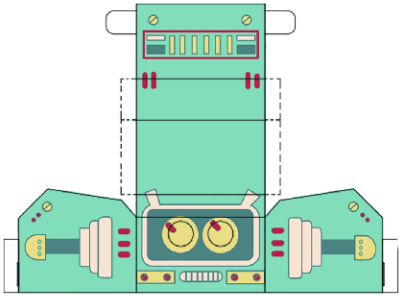
4P cables* 1PCS



Controller Board * 1PCS



shell* 1PCS



Head covers* 6PCS

Connectors * 3PCS (1 for spare)

M2*10 Phillips Screw*11PCS（1 for spare)

M2*20 Copper * 2PCS

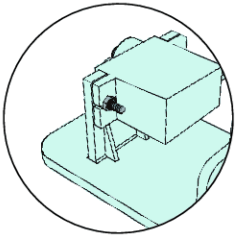
M2*5 self-tapping screw * 5PCS (1 for spare)

M2.6*8 self-tapping screw * 5PCS (1 for spare)

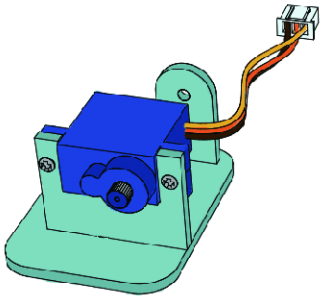
M2 Nuts * 10 PCS (2 for spare)

M2*6 Phillips Screw*3PCS（1 for spare)

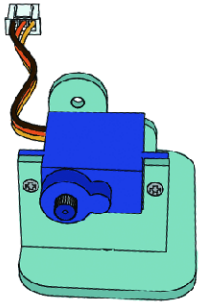
Assemble the legs



Pay attention to the direction of the SG90.



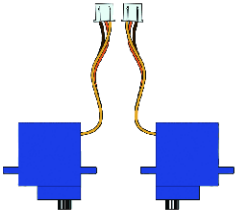
Left



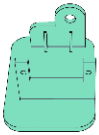
right

① M2 Nuts * 4 PCS

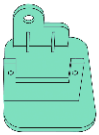
② M2*10 Round head cross screw *4PCS



③ SG90 * 2PCS



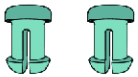
④ Left foot pad*1PCS



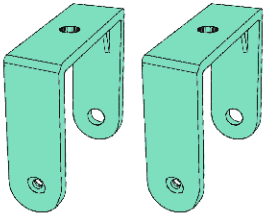
⑤ Right foot pad*1PCS

Take out ① ②from bag No. 1

Assemble the legs

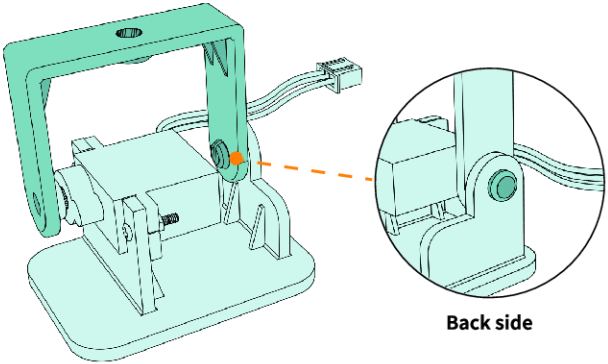


① Connectors * 2PCS



② leg stand * 2PCS

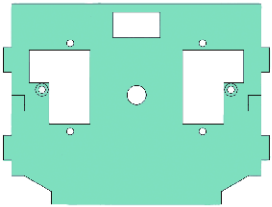
Take out ① from bag No. 2



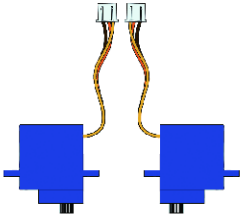
Back side

After finishing assembling the legs please do not rotate the servo to its limits in case of damages.

Assemble the controller board



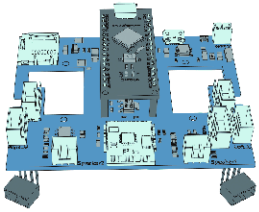
④ baseplate*1PCS



③ SG90 * 2PCS

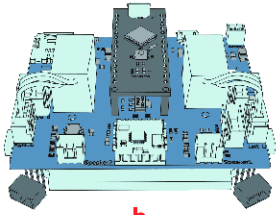
① M2 Nuts * 4 PCS

② M2*10 Round head cross screw *4PCS



⑤ Cotroller board*1PCS

a

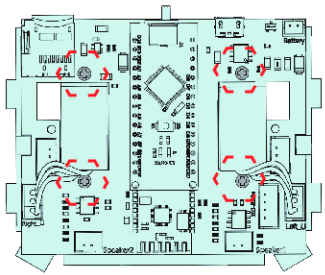


b

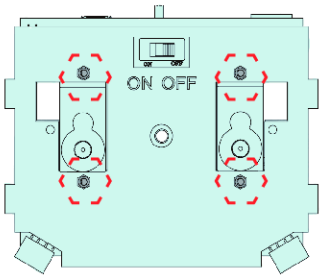
Pay attention to the side of the baseplate (ON and OFF are the back).

Take out ① ② from bag No. 1

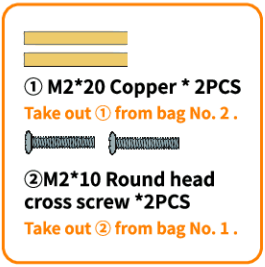
c



d



Back side

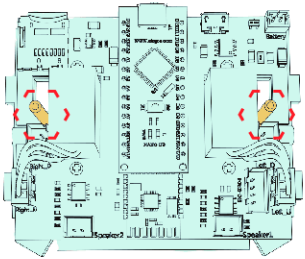


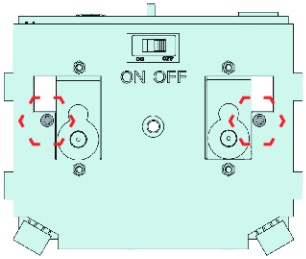
① M2*20 Copper * 2PCS

Take out ① from bag No. 2 .

②M2*10 Round head cross screw *2PCS

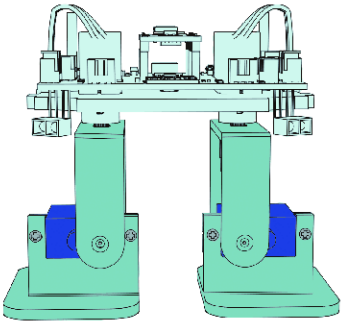
Take out ② from bag No. 1 .



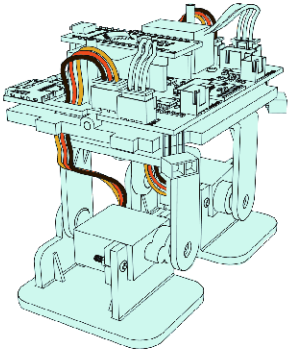


Back side

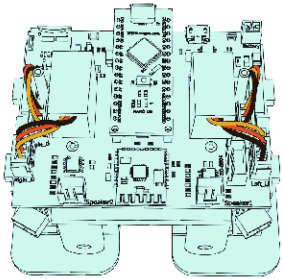
Wiring of 4 servos are as shown in the picture.



Connect the assembled legs with the servos on the head as shown in the picture.



Put the servo wire through the holes of the baseplate and the controller board.



Assemble the speakers

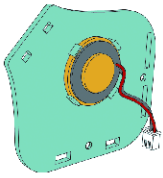
① M2.6*8 self-tapping screw * 2PCS

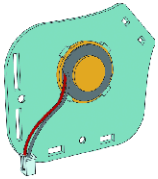
② speakers * 2PCS

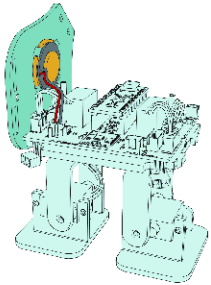
③ Right side panel * 1PCS

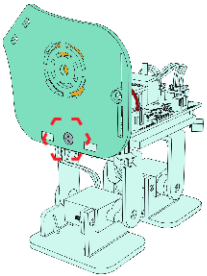
④ Left side board * 1PCS

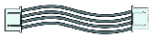
Take out ① from bag No.2



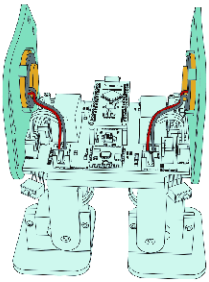


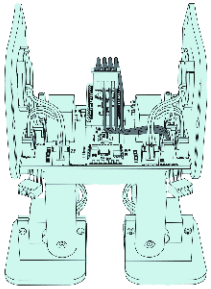






4P cables * 1PCS





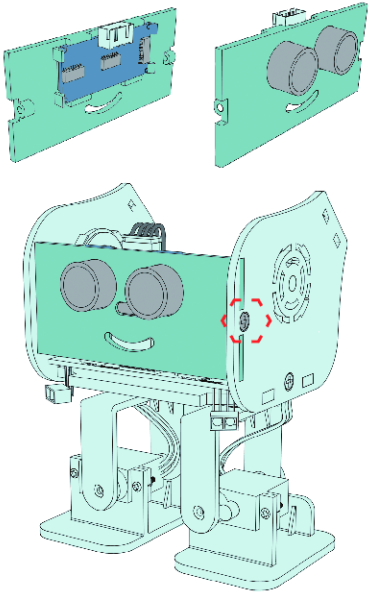
Assemble the Ultrasonic sensor

① M2.6*8 self-tapping screw *2PCS

② ultrasonic sensor * 1PCS

③ fastener for ultrasonic sensor*1PCS

Take out ①from bag No. 2



Connect the 4P wires with the ultrasonic sensor.

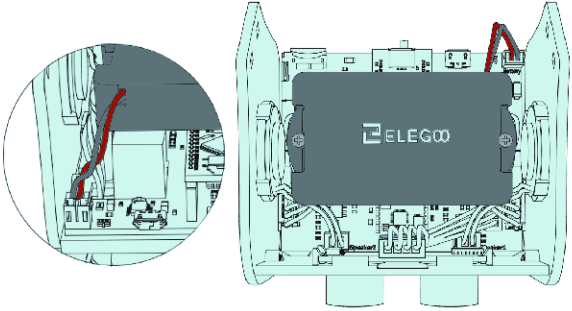
Assemble the Cell Box

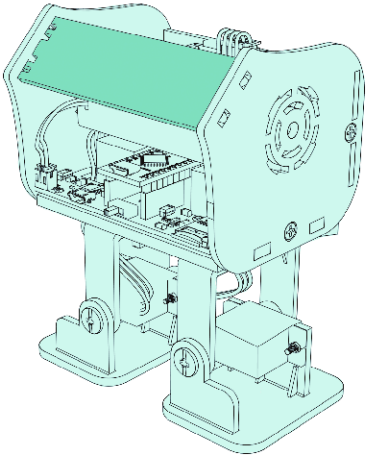
① M2*6 Round head cross screw *2PCS

②Cell box
(Lithium battery inside)

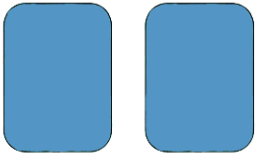
top plate * 1PCS

Take out ①from bag No.2

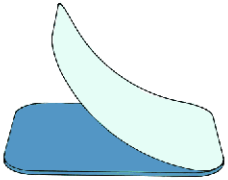




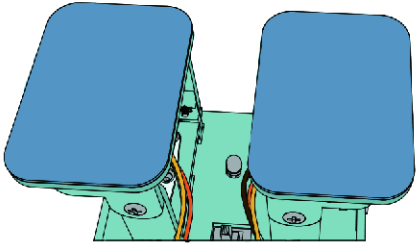
Stick foot pads



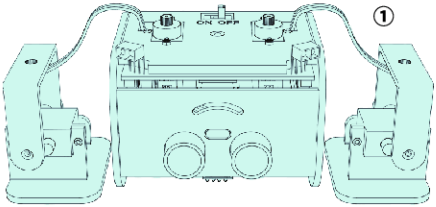
Foot Sticky Pads* 2PCS



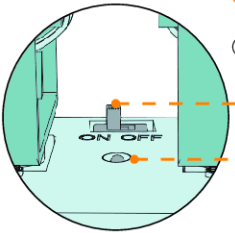
Take off the protective film on the foot pads,
and stick the pads to the bottom of the robot feet.



Calibrate the servo

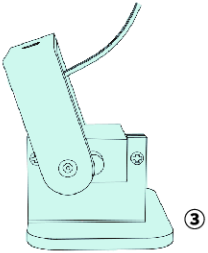


Put the Penguin bot upside down and put the 2 legs on each side.

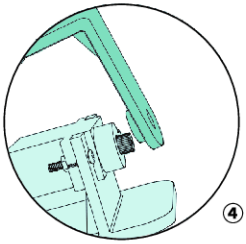


Turn on the power of the controller board.

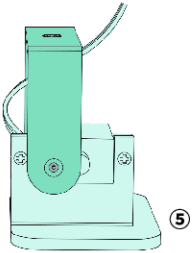
Status Indicator



The leg is not vertical to the foot pad and inclined after the music and starting moves,



Remove the leg stand slightly from the servo

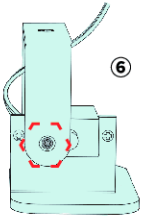


Install the leg stand as shown in the picture and make sure it is 90° vertical to the foot pad (allowable error 5°).

Do not rotate the servo while the power is on in case of damage.

M2*5 self-tapping screw * 4PCS

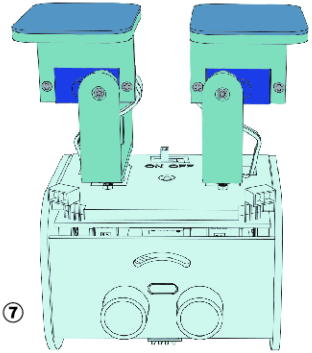
Take out the screws from the servo' s bag.



⑥

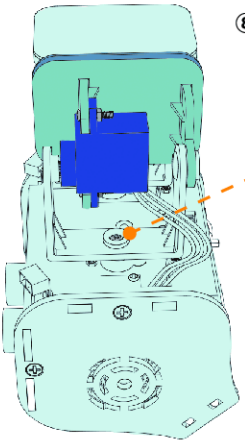
Correction of the right foot SG90 is completed and the screws are locked.

Use the same way above to calibrate the left feet.

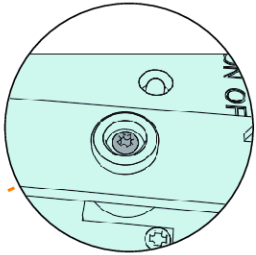


⑦

Install the 2 legs as shown in the picture and make sure they are vertical to the baseplate (allowable error 5°).



⑧

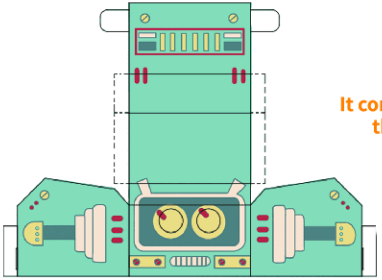


Only rotate the servo after the the power is off in case of damage.

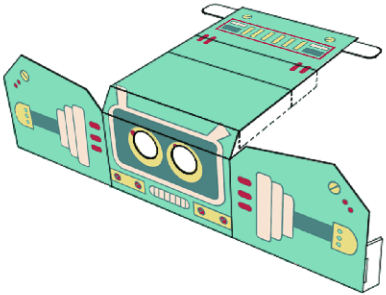
Turn off the power and rotate the servo to the inner side as shown in the picture and then fasten the screws. Use the same way to operate the other leg.

Making Head Covers

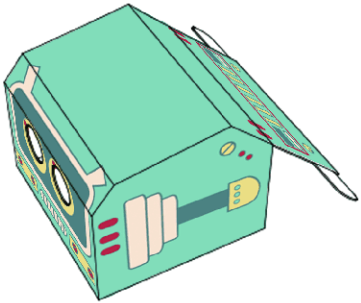
It comes with 6 different kinds of head covers and among them, there is a blank one and one with lines alone, which you can draw and paint based on your preferences of the colors or patterns and so on.



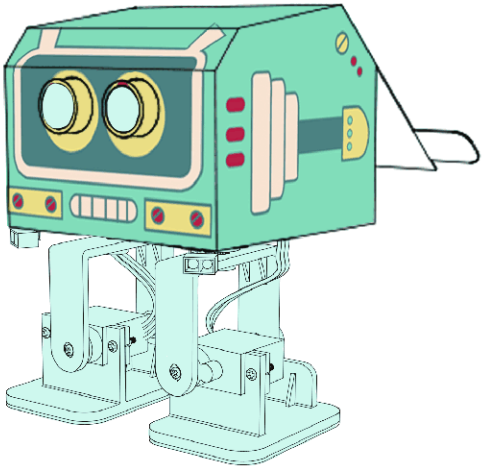
Paste double-side tape in the dashed line box;



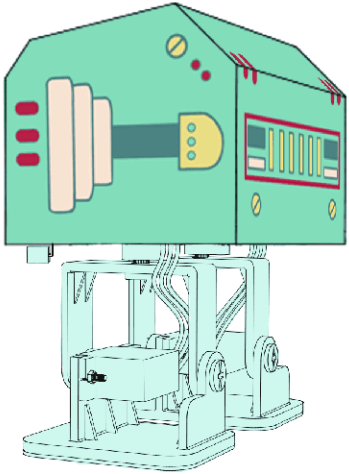
Fold it to the location as is shown in the picture;



Glue together the corresponding parts as displayed;

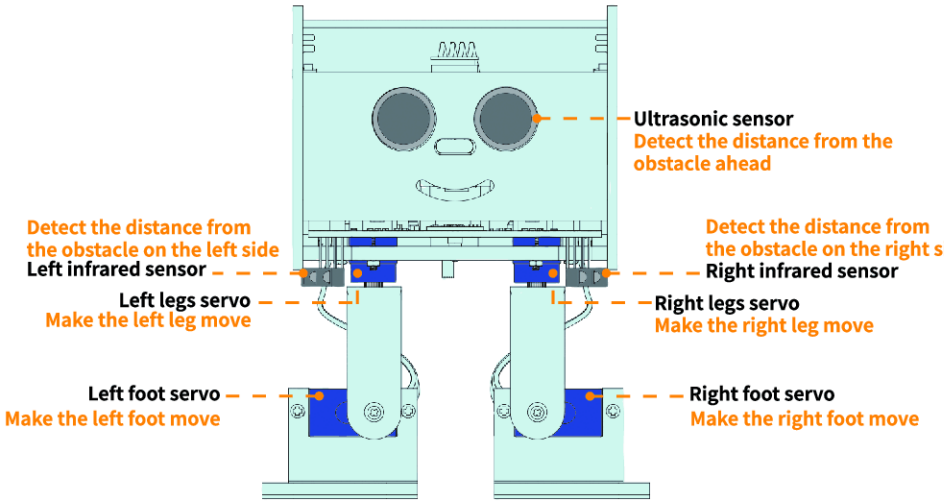


Put the cover on the robot head;

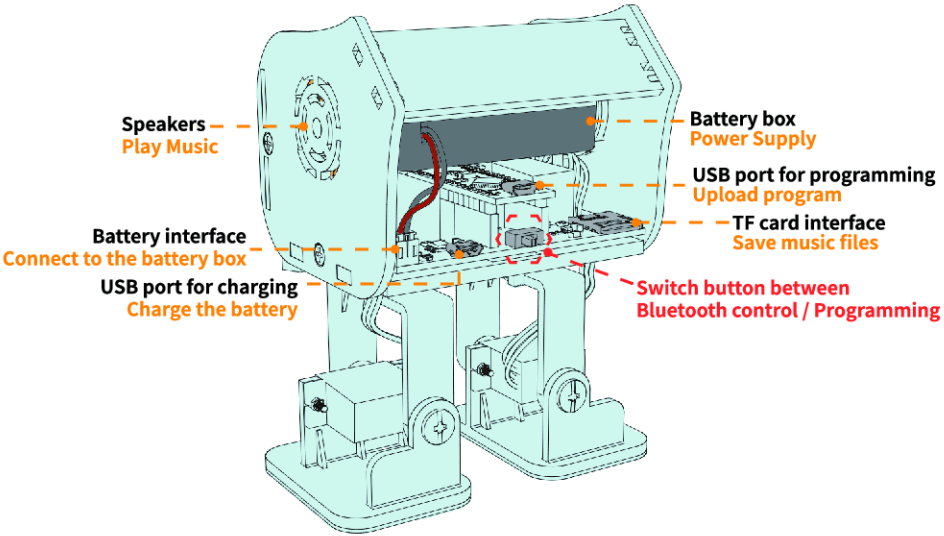


Press the clip at the back of the cover into the slot.

Function of each component part



Function of each component part



Upload Penguin Bot Program

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

First of all, please go to our website below to download the Penguin Bot tutorial: http://www.elegoo.com/download/.

And then select the tutorial files based on your computers' running systems.

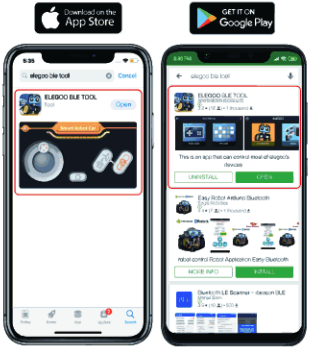
For window system, please refer to " Upload Penguin Bot program for Windows.pdf ".

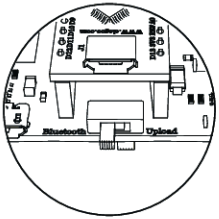
For OS system, please refer to " Upload Penguin Bot program for MacOS.pdf ".

Control the Penguin Bot with the Bluetooth APP

STEP1: Install the application

You can download the latest version of the "ELEGOO BLE TOOL" app on the App Store and Google Play.





STEP2: Application Settings

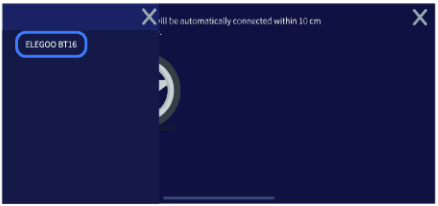
First of all, switch the mode of Penguin Bot the the Bluetooth mode.

Open the “Elegoo BLE Tool” App.

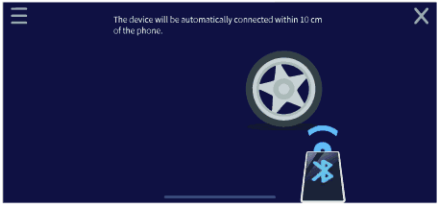
Select the “Penguin Bot”.

Tap the “ ” icon to enter the Bluetooth searching interface.

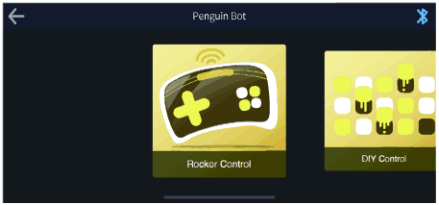
You can also open the Bluetooth device list by tapping the menu icon “ ” in the upper left corner and select “ELEGOO BT16” to connect the Penguin Bot manually.



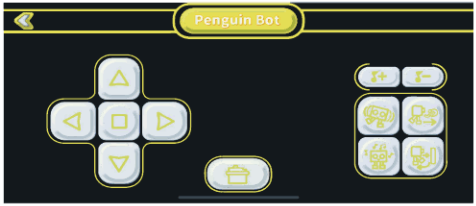
Put your phone close to the Penguin Bot (within 10cm), the app will connected to the Penguin Bot automatically.



The Bluetooth status icon will turn blue when the Penguin Bot is connected.



The Rocker Control panel of the “Elegoo BLE Tool” App.



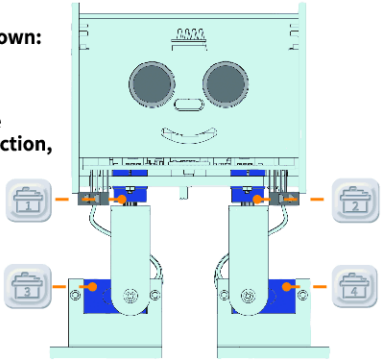
Direction control mode: When pressing the 4 direction button, the Penguin Bot will enter the Direction Control mode , and the bot will move accordingly to the direction you pressed, you can press the middle stop button to make it stop.

Servo adjustment function: You can use this function to adjust the correction angle of each servo separately.

After pressing the servo correction button, four servo icons will appear above the button. The corresponding icons of the four icons are as shown:

If the bot's feet and legs are not perpendicular to each other as shown in the right picture, and the offset angle is within ±15°, the steering gear can be fine-tuned by the APP's servo adjustment function, each time pressing “+” or “ - "the servo will rotated 1° to the left or right.

If the offset angle of the servo is greater than ±15°, it must be corrected in accordance with the previous “ Corrective the servo” method on page 12-13.



Volume Control Mode

You can press the “+” button or “-” button to increase or decrease the volume.

Dance mode

When you press the dance button, Penguin Bot will start dancing and you can press the button again to switch background music and dance moves. Three dance moves are provided by default.

Music mode

When the music mode button is pressed, Penguin Bot will start playing music, and you can switch music by pressing the button again. Three music is provided by default in the TF card.

Auto-follow Mode

Put your hand in front of the left Infrared sensor within 7cm, the Penguin Bot will turn left and if you put your hand in front of the right Infrared sensor within 7cm, the Penguin Bot will turn right.Keep your hand straight ahead of the Bot within 20cm and it will keep walking forward and if it doesn’ t detect any object within 20cm then it will stop moving.

Obstacle-avoidance Mode

When in obstacle-avoidance mode, Penguin Bot will walk forwards automatically until there is an obstacle within 20cm ahead then it will make a turn and choose a path where there is no obstacle in front.

The DIY control panel of the “Elegoo BLE Tool” App.

In the default settings, the DIY interface has only a few blank grids, we need to set their names, messages and colors to creat buttons.

Long press the button you want to set, a “Button editor” option box will pop up as shown above. You need to fill in the “Button Name”, “Message” and select the color of the button in this page (All preset Messages are of the character type, so you only need to check the "Character" option.).

function	Message
FORWARD	f
BACK	b
LEFT	l
RIGHT	i
Music mode	1
Dance mode	2
Obstacles mode	3
Follow mode	6
Volume	Volume+: 4 Volume-: 5
Servo 1	Angle+: 9 Angle-: d
Servo 2	Angle+: 0 Angle-: e
Servo 3	Angle+: 7 Angle-: a
Servo 4	Angle+: 8 Angle-: c

*Case sensitive

The comparison table of default Message and the Function is above.

Precautions

- The battery should be fully charged before using. The status indicator will flash blue when there is low power. Charge the battery through the USB cable.
- The Penguin Bot cannot work in places with strong light because infrared ray can affect the sensitivity of the sensor.
- It comes with a TF card for you to upload the music you like. But please be noted that company does not bear legal responsibility for the music you upload.
- When the power is on, please do not rotate the SG90 servo in case of damage.
- Servo calibration is very important and if the 2 legs are not vertical to the foot pads it will affect the robot's movement.
- The three default music files can be replaced. Please refer to the tutorial on our website for more details.
- When the power is low, the speaker of penguin bot will have some nosies or even no sound during dancing mode.
- If you feel it is difficult to assemble the Penguin Bot, please check the assembling tutorial video from www.elegoo.com.

  Please download the tutorial from our website elegoo.com/download.
- If you have any questions during assembling or testing please feel free to contact us at service@elegoo.com.

ELEGOO Team