

# PLEN.D

## Instructions

First Edition

If you have purchased  
PLEN.D, please read this manual.

Robot Yuenchi

2-12-15 Nakamachi, Atsugi City, Kanagawa Prefecture 243-0018

Amu Atsugi 3F

## About **PLEN.D**

PLEN.D is a bipedal walking robot that can be easily operated using a smartphone. Radio control is possible using a dedicated app.

### Software operating environment

Use "PLEN Connect" to operate PLEN.D. The operating environment is as follows,

- Supported versions  
iPhone ios8 or later, Android 4.4 or later \*Communicate via Bluetooth

### accessories

PLEN.D comes with the following accessories to enable maneuverability.

- PLEN.D body •Charger •Roller skating shoes •Ball •Box (paper craft)

### Aircraft configuration

PLEN.D has the following structure.

- CPU...Arduino compatible •Number of joints...18 axes •Communication port...USB •Wireless device...Bluetooth •Size Height...250[mm], Width...130[mm], Depth...70[mm] •Weight...700[g]

## Instructions

### How to download the software

Please download "PLEN Connect" to your smartphone. The download method differs depending on your smartphone.

Please download from "AppStore" for "iPhone" and "Google Play" for "Android".

### Starting method

See pages 6 onwards.

### How to operate

See pages 8 onwards.

## Notes

- When using a battery, please be careful about the usage time. The battery may be damaged if used for a long time. (Standard battery life is approximately 15 minutes.) For information on how to charge the battery, see pages 3 onwards.
- Although the servo motors that make up the robot have a range of motion, they do not have stoppers, so they will rotate 360 degrees when there is no load, but please be careful as rotating them will break the connecting cable. Also, if the power is turned on beyond the operating range, the motor will rotate in an unexpected direction, causing a malfunction.
- Please operate on a horizontal surface. Also, please be careful not to fall or fall as this may cause malfunction.

## Regarding support

- The warranty is one year from the date of purchase (however, if parts need to be replaced, only the cost of the parts will be charged). In addition, the return shipping fee will be borne by the customer.
- If you have any questions, please contact Robot Yuenchi.

Amu Atsugi 3F 2-12-15 Nakamachi, Atsugi City, Kanagawa Prefecture 243-0018

Email address: [info@robotyuenchi.com](mailto:info@robotyuenchi.com) TEL:

046-225-5210 FAX:

046-225-5211

## How to charge the battery

### Steps: 1

Connect the charger to a power outlet. Once connected, the lamp will turn green.

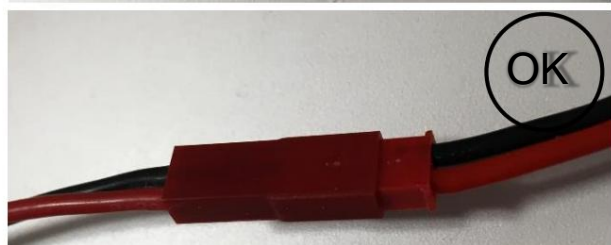


### Step: 2

Connect the charger and battery. Once connected, the lamp lights red and charging begins. At this time, carefully check the shape of the connector and the color of the wire, and be careful not to insert it in the wrong direction.



\*Pay attention to the direction



### Step: 3

When charging is complete, the LED will turn green. Disconnect the connector and unplug the power plug from the outlet. \* Immediately remove the battery from the charger after charging is complete.

### Precautions Please

be careful not to leave the battery connected to the charger as much as possible, regardless of whether it is being charged or not. \*If the battery becomes too hot to touch, immediately stop charging, unplug the charger, and move it outdoors to a safe place away from flammable materials. please.

## How to install/remove the battery

### How to install the battery

### Precautions before installation Be sure to

check the battery and its cables before use. If the battery coating is torn, etc., immediately stop using it and contact us.

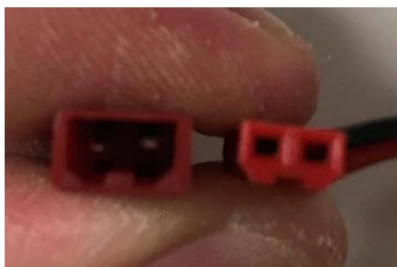
### Steps: 1.

Make sure the power switch is OFF, then while pressing the bottom of the main unit (pay attention to the protrusion in the circle in the figure), pull the entire chest cover towards you, then lift it diagonally upwards. Lift it in the direction and remove it.

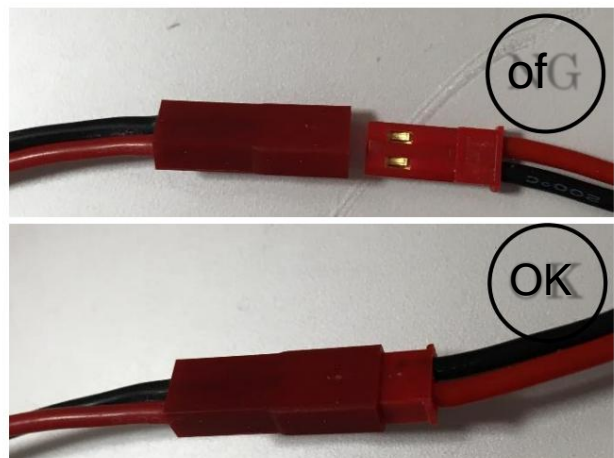


### Step: 2

Connect the body side connector (red) and battery side connector (red) by inserting them until the gap is no longer visible. At this time, carefully check the shape of the connector and the color of the wire, and be careful not to insert it in the wrong direction.

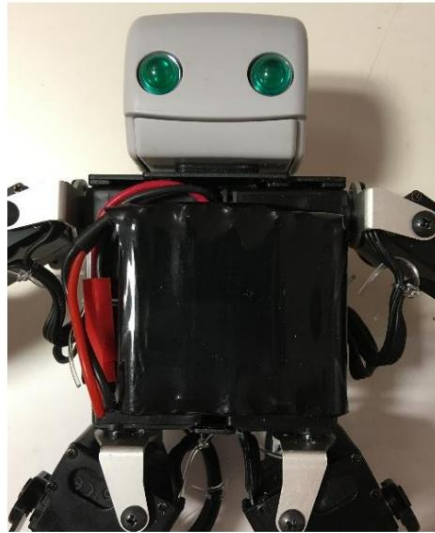


\*Pay attention to the direction



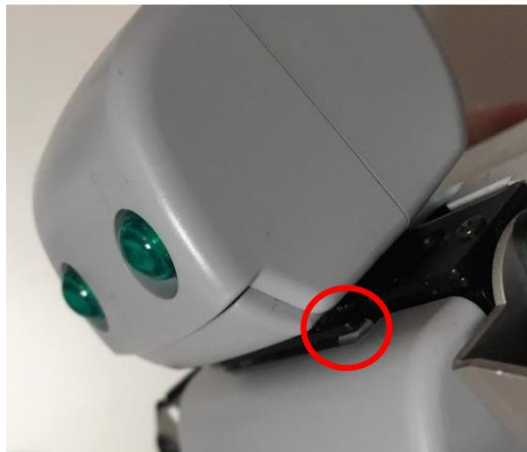
### Step: 3

Store the battery as shown in the illustration. At this time, be careful not to pinch the cable, etc.



### Step: 4

Hook the chest cover into the notch at the neck of the main unit and place it over the body until the protrusion of the chest cover clicks into the black hole at the bottom of the chest cover. Push it in until it clicks into place.



\* Be careful not to get the cable caught in the gap between the chest cover and the body. If the chest cover is difficult to close, follow step 3.  
Arrange the cables and connectors according to the illustration.

## •How to remove the battery

### Steps:

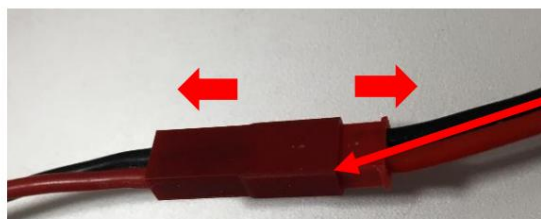
1 Make sure the power switch is OFF and remove the chest cover in the same way as installation step 1.

### Step: 2

Remove the battery stored inside the fuselage.

### Step: 3

Remove the connector of the removed battery. At this time, do not pull the cable; instead, grasp the connector and remove it.  
Charge the removed battery when it has cooled down.



Grasp the connector and remove it.

## When using

### •Turn on the robot.

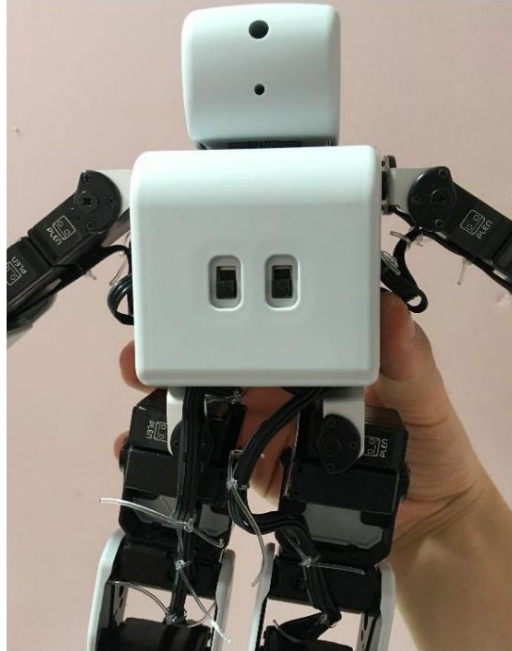
#### Steps: 1.

Spread out the robot's limbs and make sure that the limbs are not tangled. If hands and feet are tangled when turning on the power, the motor or damage to the cord may occur.

#### Steps: 2

Put your hand into the side of the robot to make it hang in the air, and turn on the power switch on the backpack on its back.

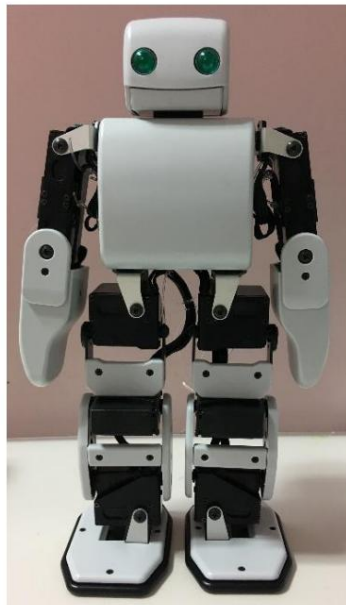
Turn on in the order of "right y left". (Place the switch at the bottom to turn it off, and move it to the top to turn it on.)



#### Step: 3

Turn on the power switch and the robot will take a careful posture. The upright posture is called the "basic posture."

Once the robot is in its basic position, gently stand the robot on the road.



### •Attention•

\*If the robot suddenly loses its strength (weakness) or its limbs move violently while turning on the power, the battery may not be charged enough, or something may be wrong. There may be some abnormality occurring. Turn off the power and check if there are any abnormalities with the robot.

- Try moving the robot using the app.

### •Precautions before moving the robot•

- \* If you are moving the robot for the first time, or if you are moving it after several months, the connectors of various parts may come off and the robot may not start up in the correct position. There are cases where the robot cannot stand upright due to severe warping, so avoid placing the robot on a table or desk where it may fall, and try to move it in a "spacious area" where there is nothing nearby that could break if the robot hits it. .
- \*Basically, the robot's walking is adjusted based on a flat board, or at least a flooring. on a soft carpet  
It does not like uneven floors or slanted places.
- \* The amount of time you can run the device on a single charge varies depending on the playback operation, but as a guideline, it will last about 15 minutes. If the battery is completely used up, the battery itself may become over-discharged (unable to be recharged), so please recharge it after about 15 minutes of operation. Also, **if the robot has been running for 15 minutes, please let it rest for about 45 minutes (cannot be used continuously).**
- \* Battery lead wires may be damaged due to forceful loading or pinching during storage. Charging or installing the battery in a robot in this state is extremely dangerous as it may cause a short circuit or fire. **Never use a battery with damaged lead wires.** Also, the use of deformed (expanded) batteries poses the same danger. Never use it.

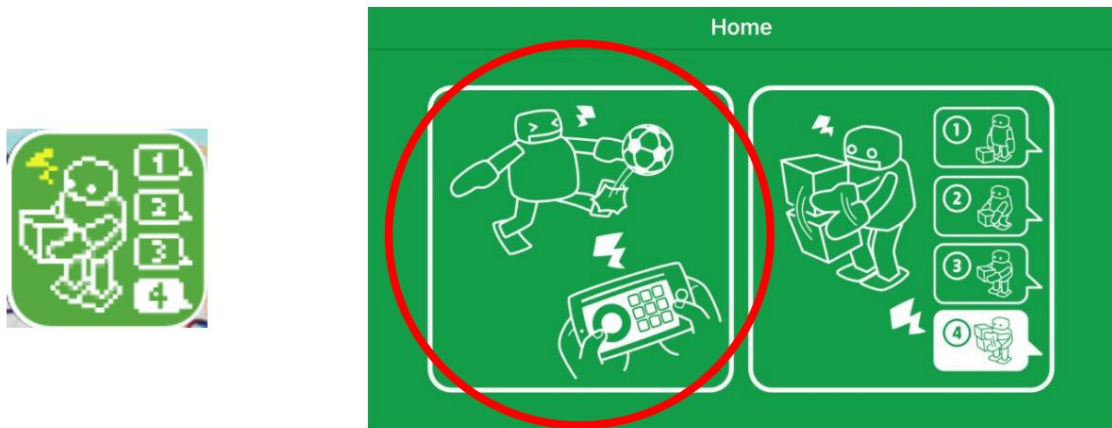


**Batteries with damaged leads can cause a fire and are extremely dangerous.**

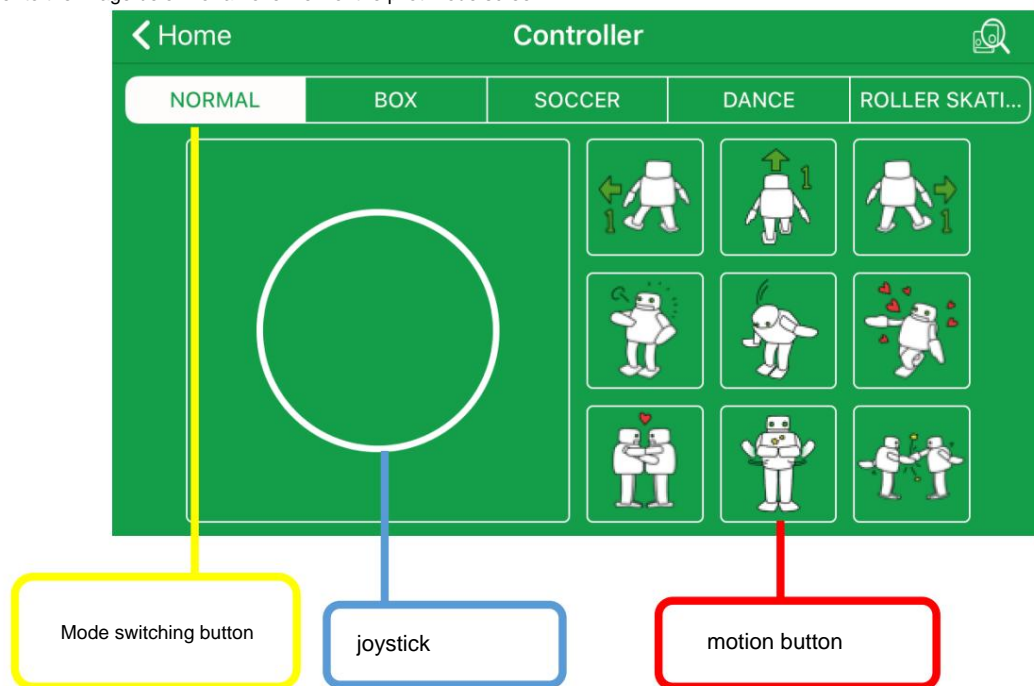


- How to play PLEN Connect "Maneuvering Mode".

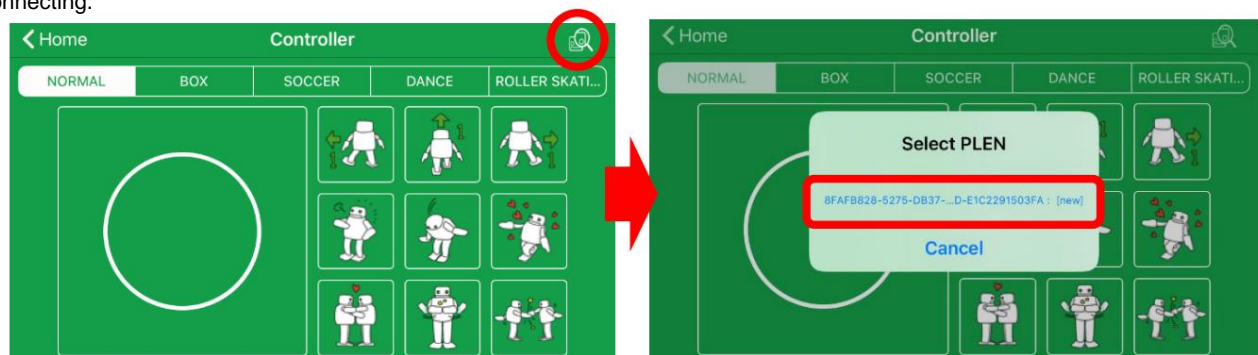
Turn on the power to the robot and launch "PLEN Connect", which you have downloaded to your smartphone in advance. (Icon shown on the left) When you launch it, the screen on the right will be displayed, so tap the icon on the left.



Please refer to the image below for an overview of the pilot mode screen.



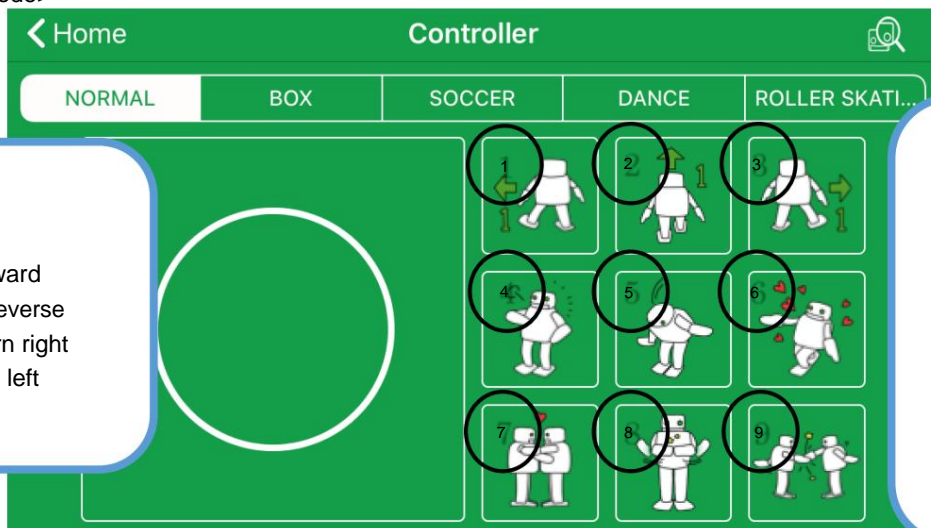
Next, tap the magnifying glass mark in the upper right corner to connect PLEN. Be sure to turn on the Bluetooth setting when connecting.





There are various control modes. By pressing the mode switching button, the corresponding motion control screen will appear. Please refer to each image for each control screen.

#### <Normal mode>



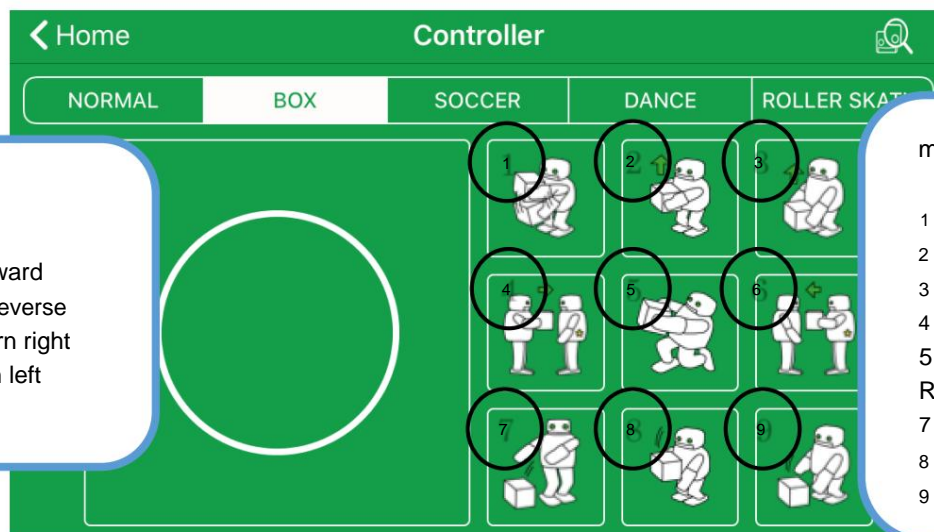
##### joystick

Ÿ Swipe up: Forward  
 Ÿ Swipe down: Reverse  
 Ÿ Swipe right: Turn right  
 Ÿ Swipe left: Turn left  
 let go: stop

##### motion button

- 1 step left
- 2 steps forward
- 3 Step to the right
- 4 Echen pose
- 5 bow
- 6 Confess
- 7 Hug
- 8 clap
- 9 High five

#### <Box mode>



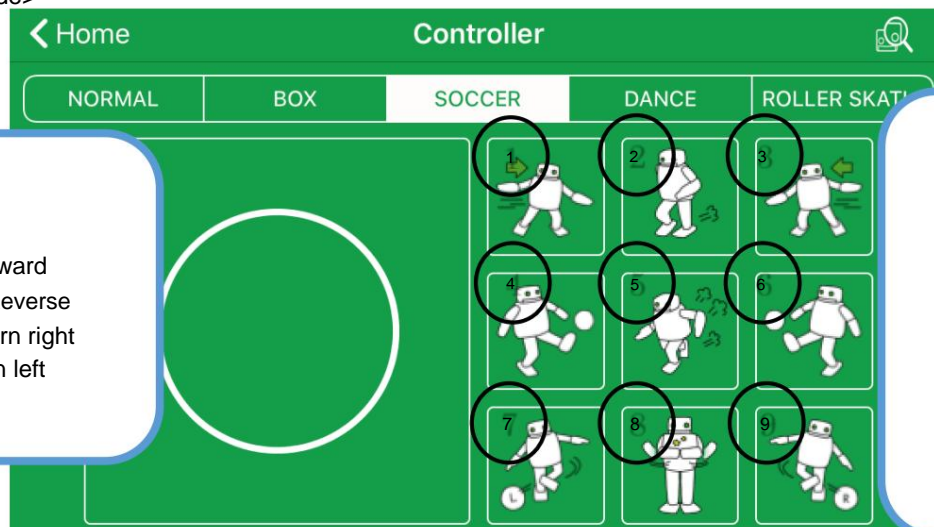
##### joystick

Ÿ Swipe up: Forward  
 Ÿ Swipe down: Reverse  
 Ÿ Swipe right: Turn right  
 Ÿ Swipe left: Turn left  
 let go: stop

##### motion button

- 1 Shake the box
- 2 Hold the box in a high position
- 3 Hold the box in a low position
- 4 Give the box
- 5 Offer a box
- Receive 6 boxes
- 7 Throw the box
- 8 Place the box in a high place
- 9 Place the box in a low place

#### <Soccer mode>



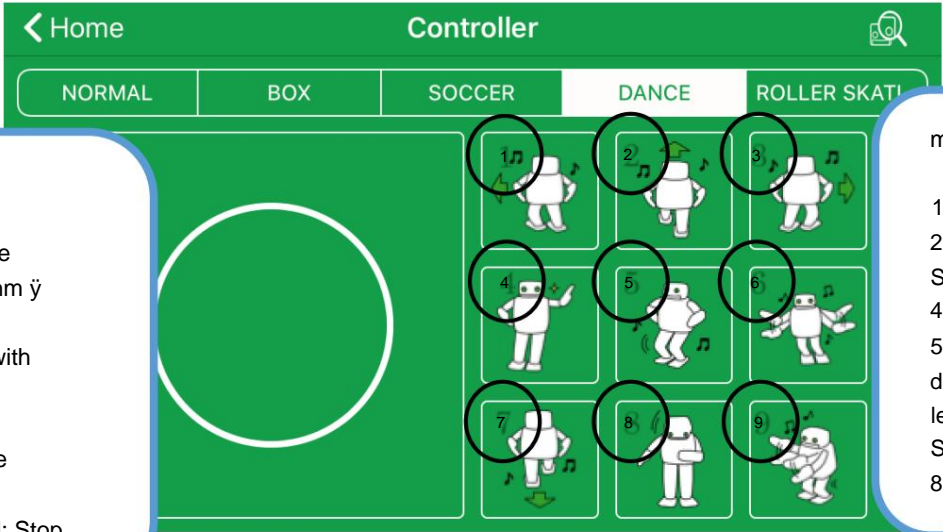
##### joystick

Ÿ Swipe up: Forward  
 Ÿ Swipe down: Reverse  
 Ÿ Swipe right: Turn right  
 Ÿ Swipe left: Turn left  
 let go: stop

##### motion button

- 1 step left
- 2 Go forward
- 3 step right
- 4 left foot kick
- 5 dash
- 6 Right foot kick
- 7 Left foot pass
- 8 applause
- 9 Right foot pass

#### <Dance mode>



**joystick**

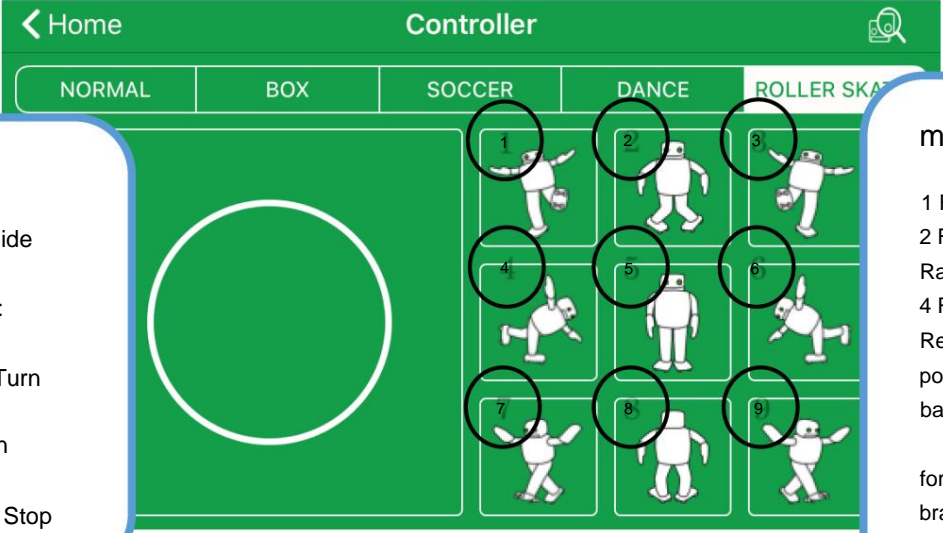
- Swipe up: Move forward with rhythm
- Swipe down: Move backward with rhythm
- Swipe right: Turn right
- Swipe left: Turn left
- Release hand: Stop

**motion button**

- 1 Step to the left
- 2 Step forward
- 3 Step to the right
- 4 Striking pose
- 5 Rhythm up and down
- 6 Rhythm left and right
- 7 Step back
- 8 Bow
- 9 Twist

<Roller skating mode>

\*When using roller skating mode, please wear roller skates on the soles of your feet.



**joystick**

- Swipe up: Slide forward
- Swipe down: Slide back
- Swipe right: Turn right
- Swipe left: Turn left
- Release hand: Stop

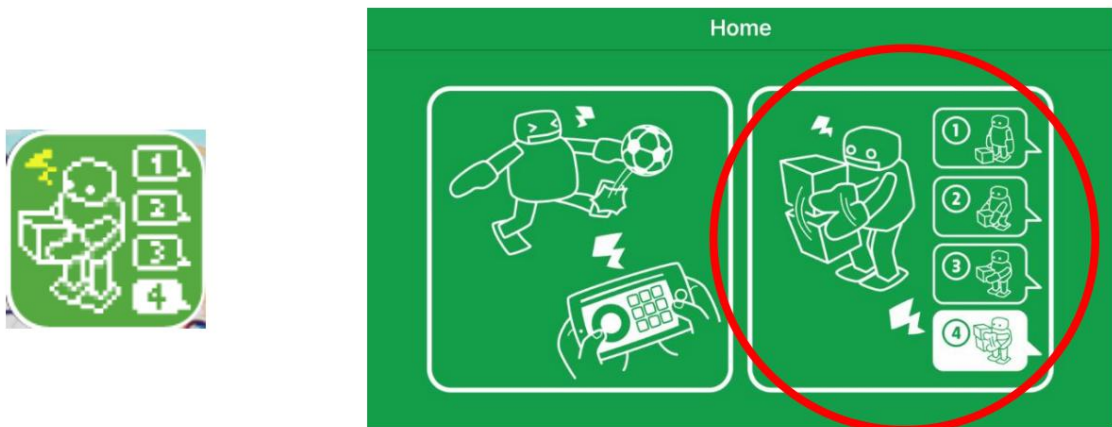
**motion button**

- 1 Raise left foot forward
- 2 Front brake
- 3 Raise right foot forward
- 4 Raise left foot back
- 5 Return to upright position
- 6 Raise right foot back
- 7 Raise toes and heel (left foot forward)
- 8 Rear brake
- 9 Raise toes and heel (right foot in front)

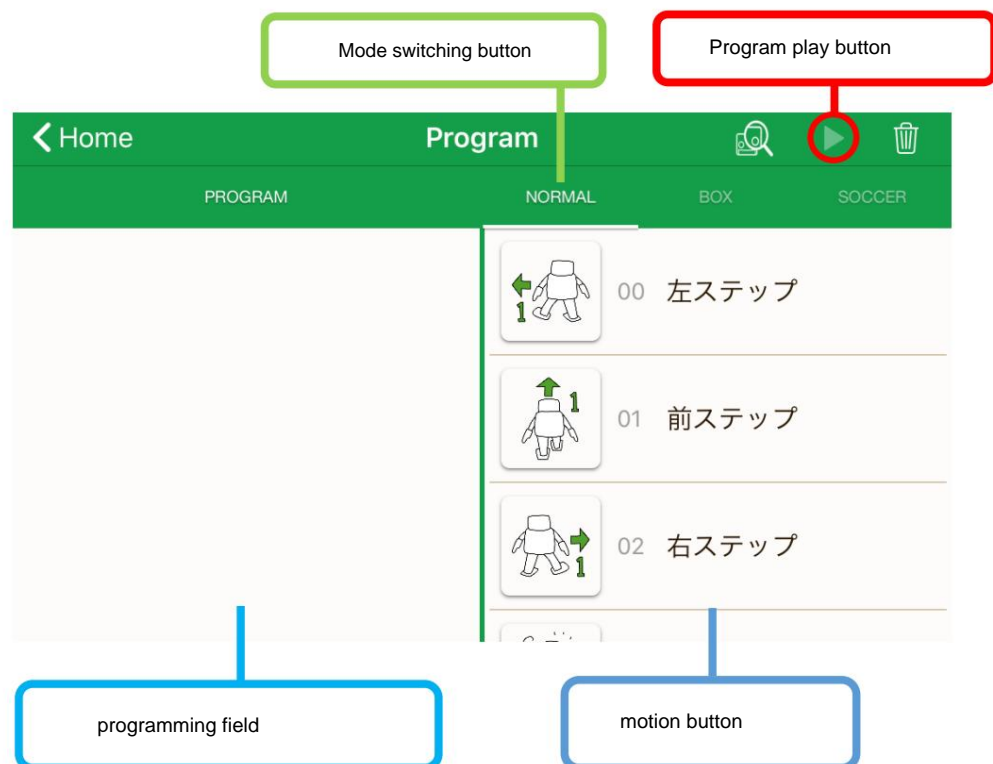
When finished, turn off the robot's power and exit "PLEN Connect".

## • How to play PLEN Connect "Programming Mode".

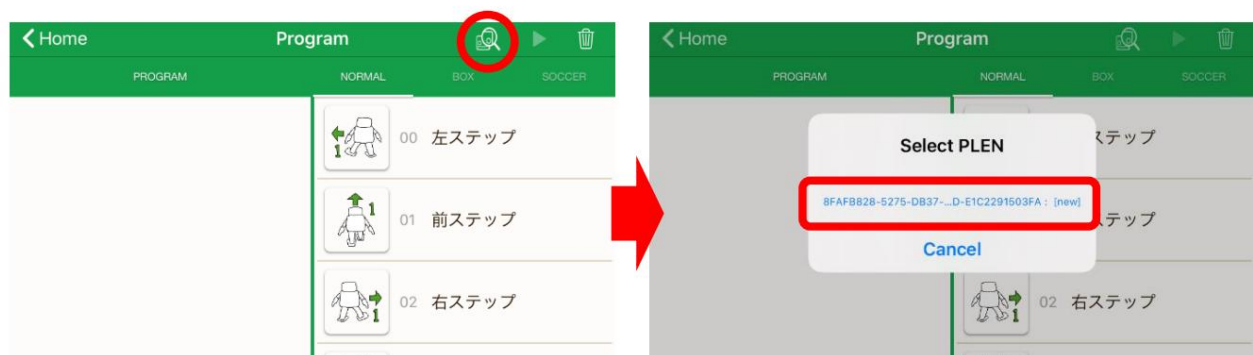
Turn on the power to the robot and launch "PLEN Connect", which you have downloaded to your smartphone in advance.  
(Icon shown on the left) When you launch it, the screen on the right will be displayed, so tap the icon on the right.



Please refer to the image below for an overview of the programming mode screen.



Next, tap the magnifying glass mark in the upper right corner to connect PLEN. Be sure to turn on the Bluetooth setting when connecting.



The basic operation of programming mode is to first move the mouse to the programming field on the left while pressing the right motion button.

Please.



Next, tap the number to the right of the button moved to the programming field to change the number and select the number of times to repeat.

can be set. Note that x1 is an "infinitely repeated action," x2 is a "one-time action," x3 is a "two-time action," and the following is a "setting to operate [x number - 1 time]." please note.

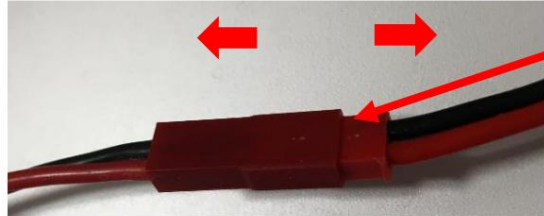


You can run the created program by clicking the play button on the top right. In addition, if you press the trash can button, all programming fields will be deleted. Can be deleted.

When finished, turn off the robot's power and exit "PLEN Connect".

## After use

- When replacing the battery, be sure to turn off the power.
- Periodically check the looseness of each part and request maintenance if the looseness is large.



Grasp the connector and remove it.

- Recharging the battery when it is not fully discharged will not affect its lifespan. However, the temperature may be high immediately after use.  
Please wait until the battery has cooled down before charging.
- Do not recharge a fully charged battery without using it. Not only is it dangerous to heat up, it can also damage the battery.  
It will also shorten the lifespan itself.
- When the robot is not being operated, be sure to remove the battery from the main body and store it away from flammable objects and places with high temperatures and humidity.  
stomach.
- In the event of a fall, connectors may come loose or cords may break, so please check regularly.
- The nickel-metal hydride battery included with this product can be used stably for a long time by discharging it regularly. We recommend that you use a discharger (sold separately).

## If the aircraft is not in good condition

- Please contact the contact information below immediately.

If the robot becomes weak or violently moves when the robot is powered on, the battery may not be sufficiently charged, or the battery itself may have reached the end of its lifespan. Also, some kind of abnormality may have occurred in the robot body.

- If you notice any unusual movements, sounds, or odors, immediately turn off the power and stop using the product.

## Warranty period

Warranty period: One year after purchase

Robot Yuenchi's complete robots (assembled robots) come with a one-year warranty. During the warranty period, you can receive free repairs at Robot Yuenchi as many times as you like. (However, the shipping fee will be borne by the customer. Also, please note that if parts are replaced due to failure etc., the cost of parts will be charged.) If you have any questions, please contact Robot Yuenchi.  
Please.

## Contact information

[Assembly/Adjustment/  
Sales] Robot Yuenchi Office MANOI Co., Ltd. Planning

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