

# **USER'S MANUAL for**

**MIRO, Marine Intelligence Robot**

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- To reduce the risk of injury or damage, keep these safety precautions in mind when setting up, using and maintaining your robot.
- Read all safety and operating instructions before operating your robot.
- Retain the safety and operating instructions for future reference.
- Follow all operating and use instructions.

# 1. Important Safety Information

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- This appliance is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety.
- Children should be supervised to ensure they do not play with the robot. Cleaning and maintenance shall not be performed by children.
- Do not drop your robot on the solid ground or do not place anything on top of your robot, which may cause a crack inside product to lead to water leakage inside of it.
- Stop operating robot and contact your seller in case it is exposed to hazardous materials or liquids, or smokes.
- Be careful not to put your fingers or other materials between joints of robot in operation. Do not try to physically stop robot's wagging or reverse the direction of joint in operation.
- Do not handle the (metal) plug socket of a charging stand with wet hands.
- Do not heat or place the robot near any heat source, which can cause explosion of the battery inside, and/or deformation or disorder of robot.
- Do not drill a hole or bore through the main body inside ornamental skins. It can seriously defect waterproof function of robot.
- Do not place robot near magnet or magnetic field.
- MIRO is designed to operate in normal fresh water environment. To operate MIRO in salt water will immediately void the warranty.
- Ornamental skins on the product are consumable. Under normal usage, they can be worn and torn, which does not mean a defect of robot. You can contact your seller to purchase new skins.

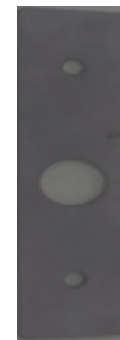
## 2. MIRO & Accessories



MIRO (1ea)



Charging stand for MIRO (1ea)



Weight (1~2 ea)



Router and charger (1ea)

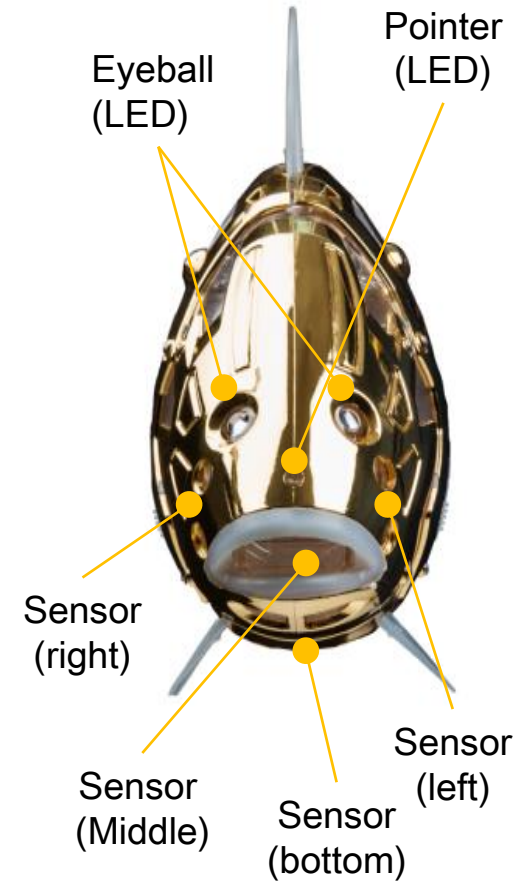
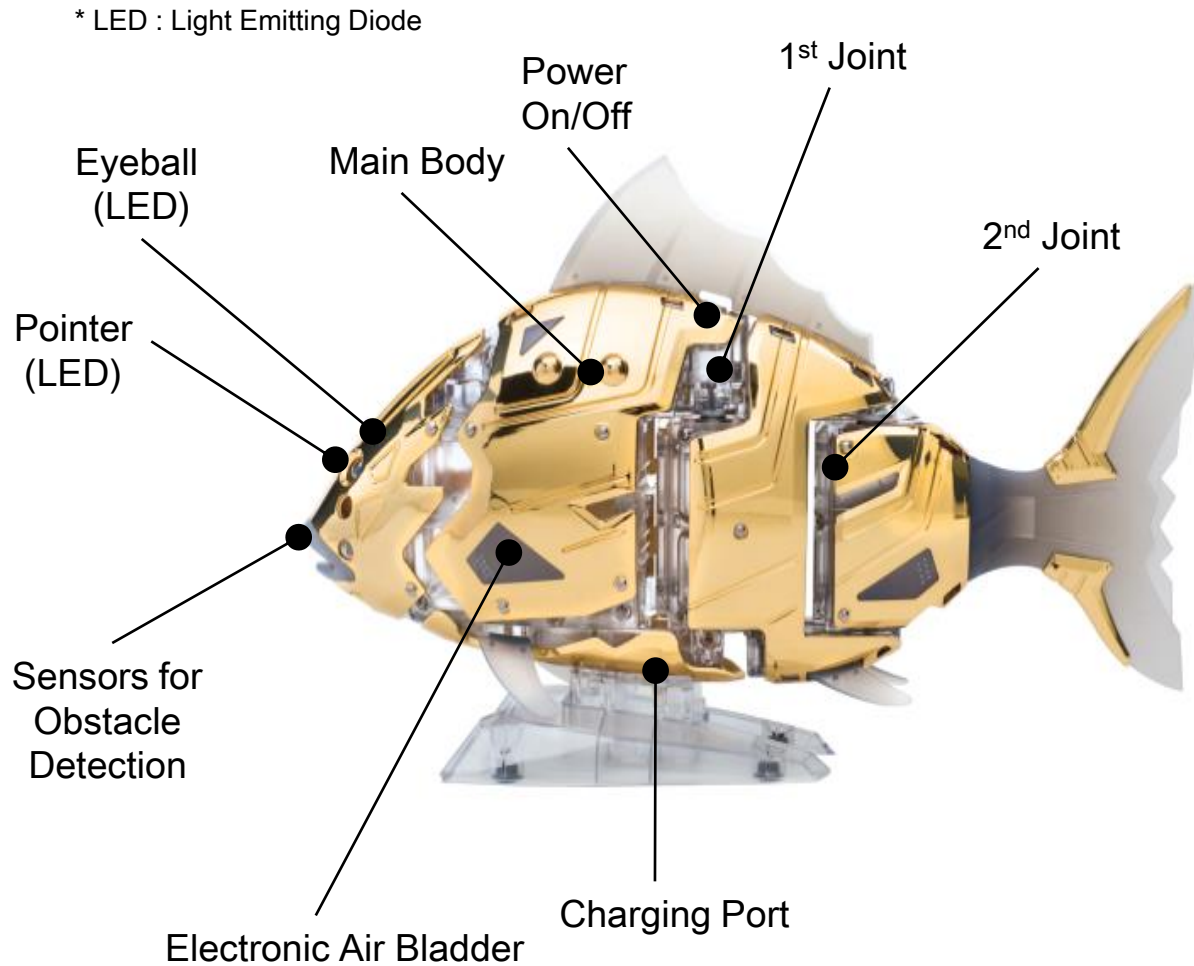


L Wrench(2mm, 1 ea)



User Manual

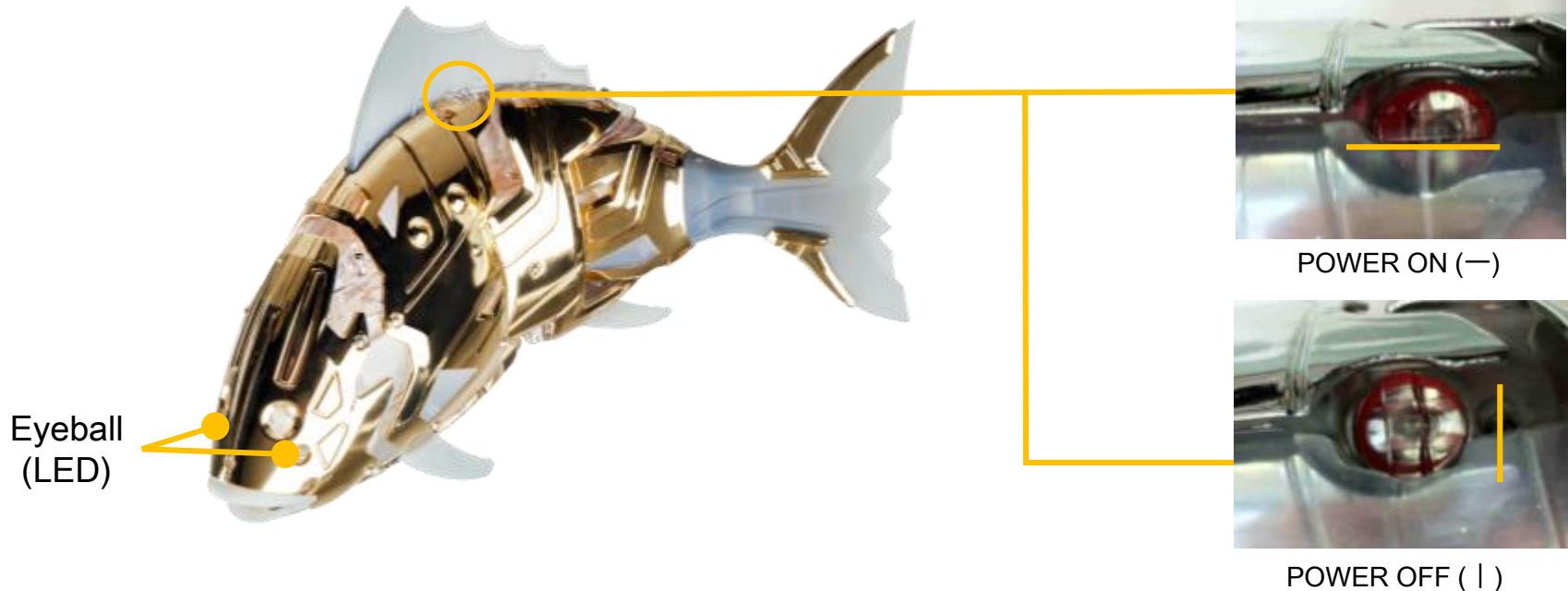
### 3. MIRO Anatomy



Four Sensors for Obstacle Detection

## 4. Basic Operating Instructions

### Power On/Off



1. Before turning power on, be sure to grip robot tightly, otherwise it might fall down onto ground.
2. Turn on power switch clockwise 90°. When power is on, the robot will start operating in 3 seconds.
3. If the eyeball LEDs are on and off(flickering), then the robot is ready to use.

## 4. Basic Operating Instructions

### Operating in the water

- When you operate MIRO in the water, make sure that the robot can have enough buoyancy for swimming.
- Recommended is that before robot's swimming, you shake robot in the water for a while to get possibly all the bubbles out of it. If you just dump the robot in the water, it might swim only around the water surface.
- When the battery is dead, the robot itself automatically comes up to the surface.
- When you need to get the robot in operation out of water, you can use your hands or a scoop net.

Water tank

water surface

bubbles



## 4. Basic Operating Instructions



- When robot not in use, you can place it either on the charging stand or in the packaging box.
- Before charging or placing robot, check whether robot is dry enough.

LED	Robot	Battery	Note
Blue LEDs on (Four Blues LEDs)	In Operation	Battery Remaining depending on the numbers of blue LEDs on	One : less than 20% Two : less than 50% Three: less than 70% Four : More than 95%
Blue LEDs flickering	Under Charging		
Red LED flickering	In Operation	Battery Remaining less than 20%	Robot on the water surface, stopping its operation
All off	In Operation	Battery Dead	
	Under Charging	Battery Fully Charged	Robot on the Charging Stand.



## 5. MIRO App



### MIRO App Installation Process

1. Download MIRO App on either smart-phone or Tablet PC (Android OS only)
2. Install MIRO app on device.
3. Turn on the power of MIRO.
4. Install Router provided together with MIRO.
5. Pair device(Tablet PC or smart-phone) and MIRO over blue-tooth.
6. Choose mode either automatic or manual.

### Device Recommendation in using MIRO App

#### TABLET PC

- Android 4.2 or above
- Bluetooth 2.1 or above
- Screen Size 10.5 inch
- Aspect Ratio 16:10
- Resolution WQXGA (2560 x 1600)

#### SMART-PHONE

- Android 4.2 or above
- Bluetooth 2.1 or above
- Screen Size 5.5 inch
- Aspect Ratio 16:9
- Resolution 1920 x 1080, 960 x 540

✓ If either Resolution or Aspect Ratio of your device matches the above-mentioned specification, you can use "Manual" mode.

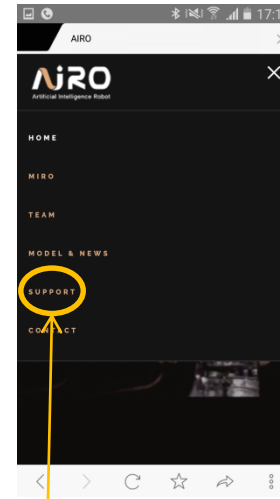
## 5. MIRO App

### Downloading & Installing MIRO App

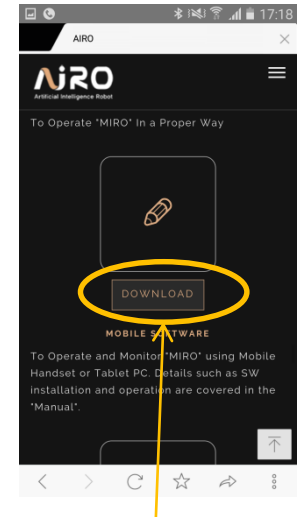
- You can download MIRO App from AIRO Web site, [www.airo.kr](http://www.airo.kr),
- Or contact your seller to get one.



1. Go to AIRO web and Press menu button.



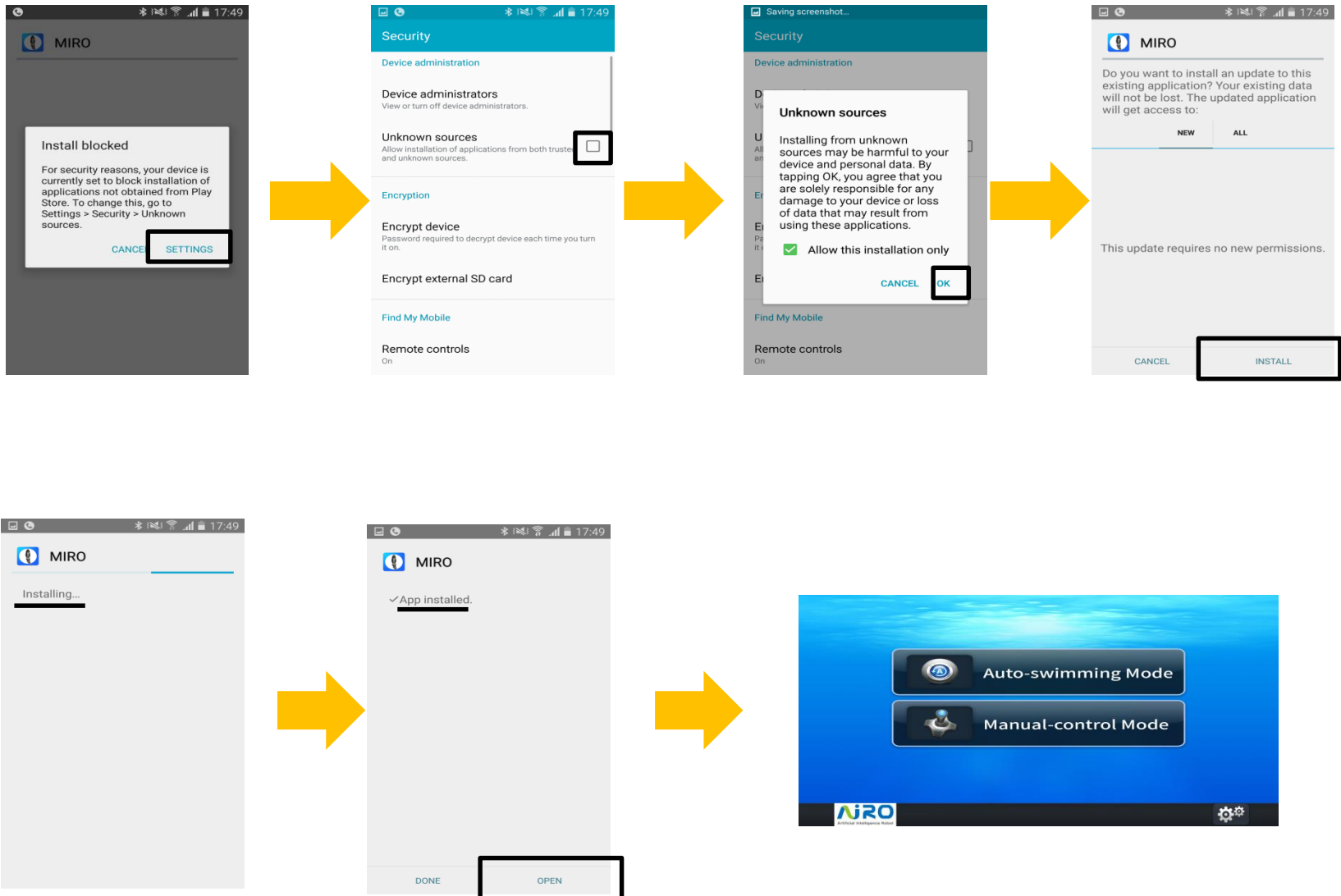
2. Press "Support".



3. Press "Download" on Mobile Software.

- Once you download the file, please open it. Next page will show you how to install MIRO app on your device.
- Note AIRO used smart-phone (Android Version 4.2 or above) to create a procedure on next page.

# 5. MIRO App




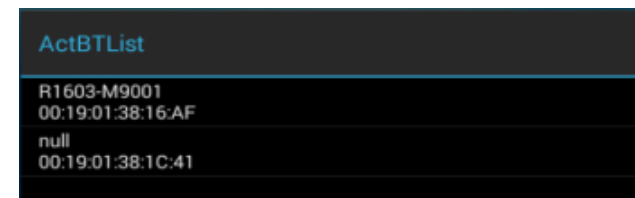
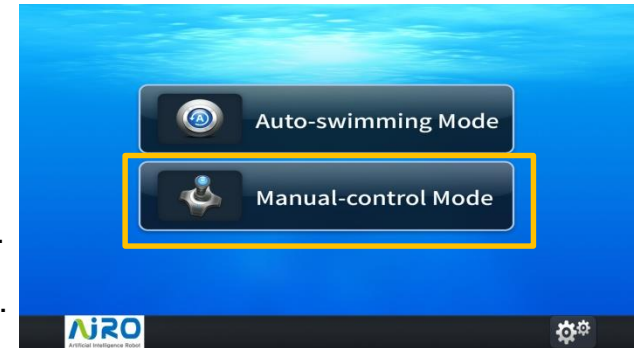
# 5. MIRO App

## Setting up Router

1. Connect power cable and router. Then, turn on the power of router.
2. Check whether your device's bluetooth is on. If off, then turn on.
3. Recommended is that router should be placed where it can communicate with robot with as minimum an interruption as possible.

## Bluetooth(B/T) Pairing

1. Click  on your device.
2. When main page is on, press "Manual-control Mode".
3. Press "CONFIRM" for pairing.
4. Select "R\*\*\*\*-M9\*\*\*\*" and type '0000' as a PIN number.
5. When B/T ID is 'null', press 'null'. Then there will be input field for PIN number as well as B/T ID.



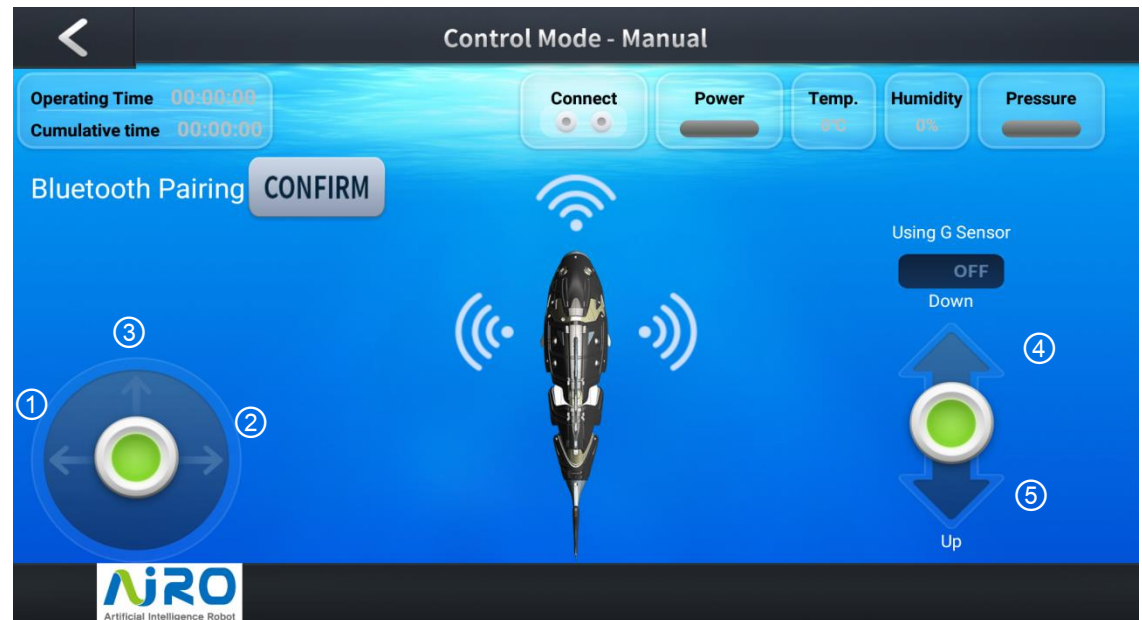
## 5. MIRO App

### Automatic Mode

1. Three seconds after the power of MIRO is on, it will automatically operate itself as "Automatic Mode".
2. Auto Mode will not need any device to operate MIRO, which, of itself, will detect obstacles and swim around using four sensors.

### Manual Mode

1. On "Connect" button, red color means failure in pairing, while green means success.
2. "Power" button shows remaining battery power.
3. The function of "Temp. (temperature), Humidity and Pressure" are being developed.
4. To manually operate MIRO, use joysticks. ① left ② right ③ forward ④ down ⑤ up
5. Manual mode will change into automatic mode when there is no manual operation for 30 seconds.



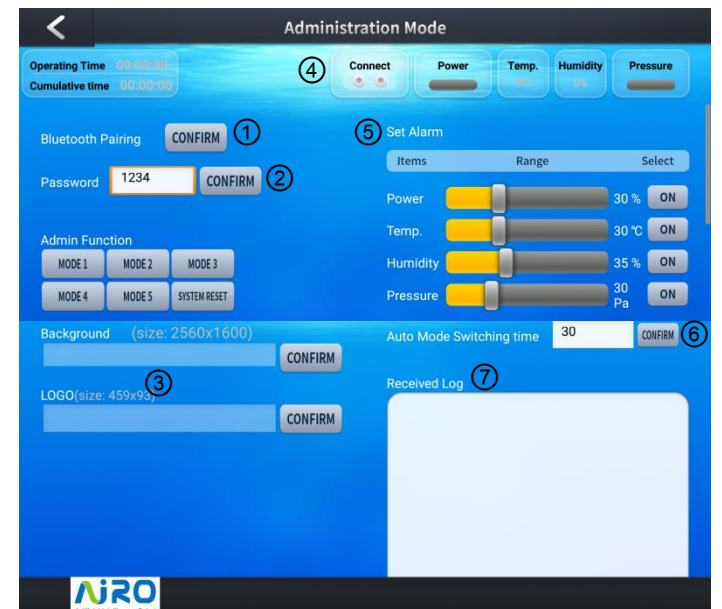
# 5. MIRO App

## Admin Mode

You can customize your MIRO App such as changing MIRO App wall paper, company logo, B/T pairing, sensor alarms and etc.

1. On main screen, press “① spot” **twice** on the right side of logo and right after then press “setting button” (②) **once**.
2. There will show “Enter Your Password”.
3. Input initial password “1234”, then you will enter Admin Mode.  
Password can be changed in admin mode.

- ① Bluetooth pairing
- ② Password Change in Admin Mode
- ③ Change of wall paper and company logo(i.e., customer’s logo)  
(wall paper size 2560 x 1600, company logo 459 x 93)
- ④ B/T Connection (green : success, red : failure)
- ⑤ Sensor Management(on/off, sensing range)
- ⑥ Setting time duration (i.e. 30 seconds), after which manual mode automatically changes into automatic one in case of no manual sign
- ⑦ Communication history with MIRO



## 6. Product Specification

Items		Specification
1. Body	Size	530(L)×250(H)×110(W)mm
	Weight	2.8Kg
2. Moving Features	Direction	Going up & down, forward, right and left
	Speed	30cm/s (Max. 60cm/s, when manually controlled)
3. Battery	Adapter	OUTPUT: 12V, 3A      INPUT: 100~240V, 50/60Hz, 1.5A
	Charging Time	5 hours
	Charging Method	Standing Charging
	Use Time	10 hours
4. Operation (Mobile App)	Manual Mode	Wireless control using MIRO App (Android OS only)
	Automatic Mode	Operating to avoid obstacles using four sensors
	Communication	Bluetooth 2.4GHz / RF 400Mz (ISM Band)
	Maximum Depth of Operation	30m(automatic), 5m(manual) * KOLAS certificate : durable under 500kPa, down to maximum 50M
5. Ornamental Skins		Changeable
6. Manufacturer / Country		AIRO Inc., / Republic of Korea

## 7. Customer Care

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We will do all we can to provide you with the most suitable response specific to your interests. Please feel free to contact us as below.

### **Headquarter / Laboratory**

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Operation hours : 09:00~18:00(UTC\*09:00. seoul)

Email : miro2100@naver.com / yinhua0707@airo.kr



**FCC Information to User**

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 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.

**Caution**

Modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

**FCC Compliance 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.

**IMPORTANT NOTE:****FCC RF Radiation Exposure Statement:**

This equipment complies with FCC RF radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with a minimum distance of 20 centimeters between the radiator and your body. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.