

# SIMULATOR

# Drone Simulator

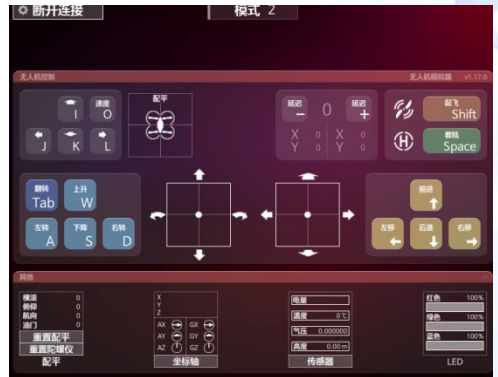
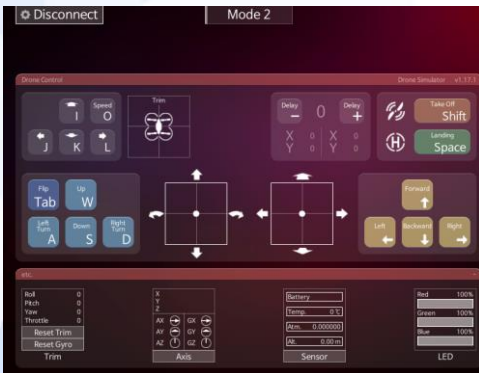
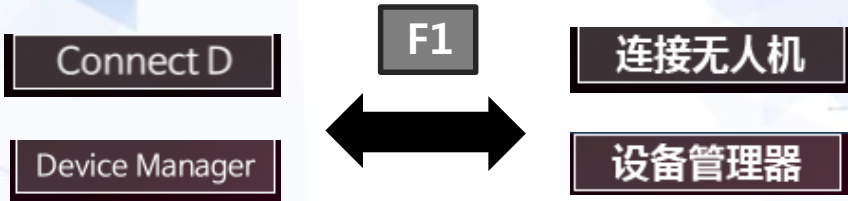


# Drone Simulator

## Default Description

# 0. Language support (Chinese)

The 'drone simulator' supports Chinese language by pressing 'F1' on any screen.



## 1. Connection

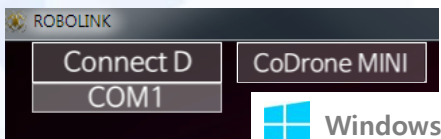


(1) Connecting PC to Controller, and Run "Drone Simulator"

(2) Select Drone mode (Check the "Codrone Mini")



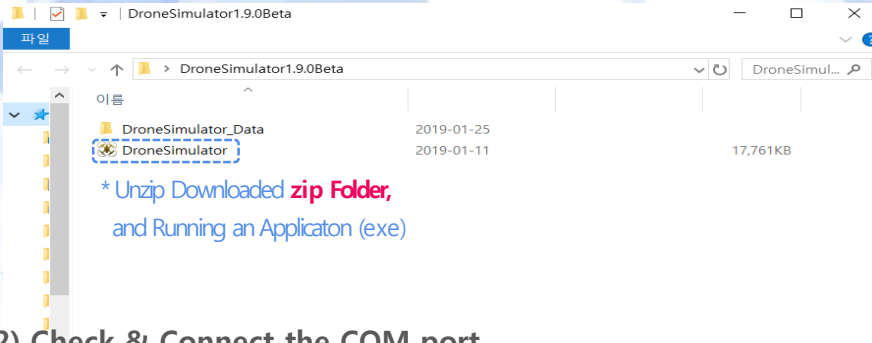
(3) Connect the communication port.



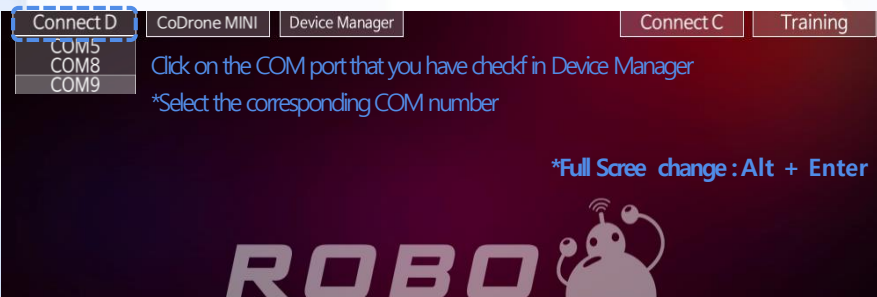
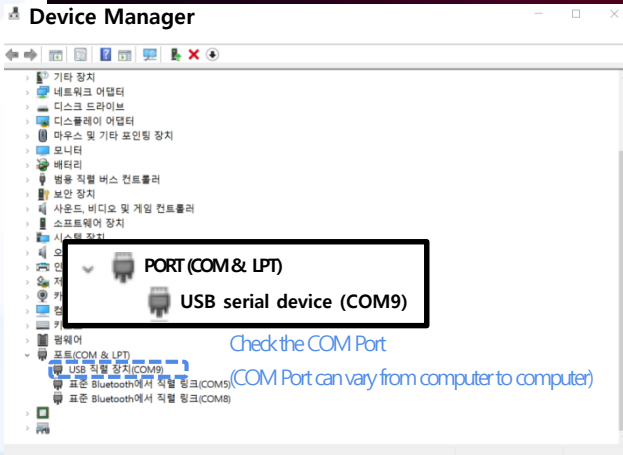
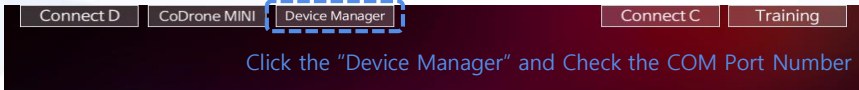
※ The number of ports varies from computer to computer.

## 2. Drone Simulator connected

### (1) Running a drone simulator



### (2) Check & Connect the COM port



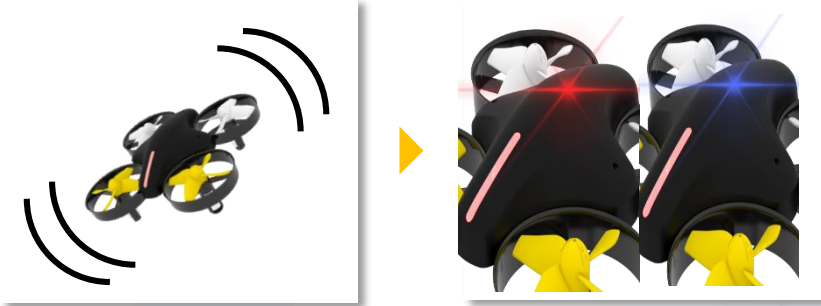
### 3. Pairing

Pairing means connecting the drone and the controller with the same communication settings. Pairing allows only two devices to communicate without interference from other devices.

There will be.

Pairing may be disabled during use, or a drone or controller must be purchased and used with the existing device.

To pair, shake the drone five to six times as shown in the picture below.



When the drone is ready for pairing, the LED on the top of the drone is red and blue.

It flashes as it repeats. Press the pairing button on the controller as shown below.



If the LED does not flash, the pairing is complete.



- You only need to perform the first pairing once. (Pairing will be maintained)
- If it doesn't work, try again from the beginning.
- Depending on the environment, it may not be paired in a single attempt.
- The drones and controls must be up-to-date

## 4. Running the Drone Simulator

First press **'take-off' Button (shift)** to take off the drone. And use W (rising), S (falling) A (left Turning), and D (right turn) among the keys **W, S, A, D**, You can also fly in desired direction with the rudder (↑ ↓ ← →)

\* Mode B 기준

<p>Altitude · Rotation</p>	<p>Front · rear · left · right Move</p>
<p>Landing <b>Space</b> &lt;Space bar&gt; 1회 : Landing / 2회 : Emergency Landing</p> <p>• Be sure to familiarize yourself with the 'Emergency Landing' Method' and fly.</p>	

Control method  
(Mode 1,2,3,4)  
Default : Mode 2

- Control Record Save & Recall
- Control Record Record & Replay
- Operating Cell ADD/Delete

Connect/Disconnect

The screenshot shows the Drone Simulator interface with several key elements:

- Top Bar:** Disconnect button, Mode 2 selection, Take-Off Button (Shift), Landing Button (Space), and Record/Save/Play/Delete controls.
- Control Panels:**
  - Trim (fine adjustment) button/value:** Includes Speed (O) and Trim controls.
  - Set Response Speed:** Delay controls for X, Y, Z axes.
  - Yaw & Throttle:** Tab, Up (W), Left Turn (A), Down (S), Right Turn (D).
  - Roll & Pitch:** Forward (↑), Backward (↓), Left (←), Right (→).
- Monitoring Windows (Numbered 1-4):**
  - 1) Trim(trim) Value Monitor:** Shows Roll, Pitch, Yaw, Throttle values and Reset Trim/Gyro buttons.
  - 2) Acceleration-gyro sensor(IMU):** Shows X, Y, Z acceleration and AX, AY, AZ, GX, GY, GZ rotation values.
  - 3) Battery Residue / Drone Temperature:** Shows Battery level, Temp (28 E), Atm (0.994532), and Alt (155.23 m).
  - 4) Drone LED color Setting:** Shows Red, Green, and Blue LED intensity settings.
- Operating Cell List (Timetable):** A table with columns for Open, Save, Record, Play, Add, Delete, and Delete All, with rows for Up, Down, Left, and Right movements.
- Cell Action Button:** A set of directional movement buttons.

(1) Trim(trim) Value Monitor

(2) Acceleration-gyro sensor(IMU)

(3) Battery Residue / Drone Temperature

X, Y, Z : Acceleration sensor value

/ Barometric Pressure Value

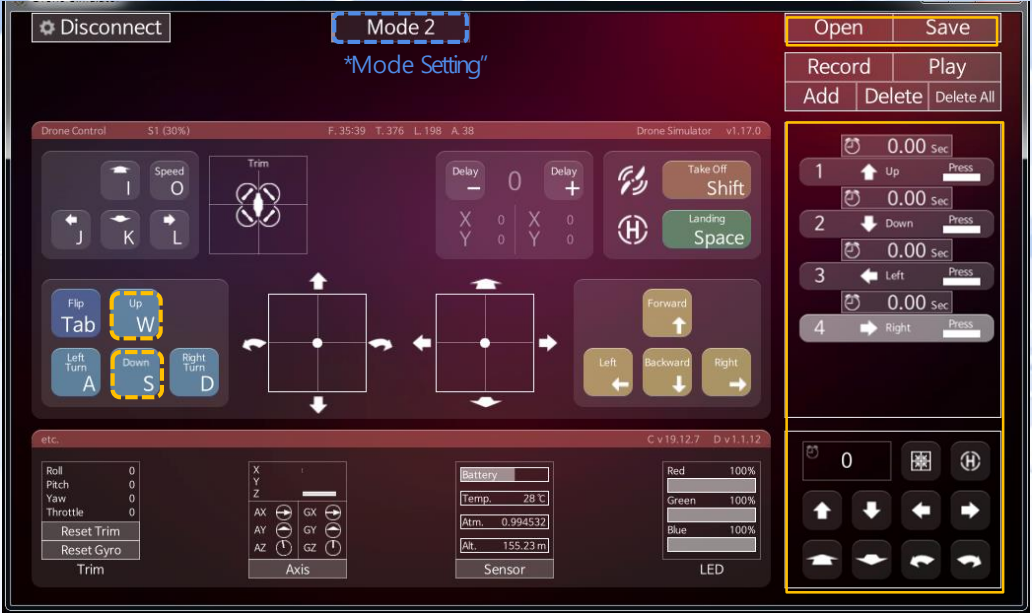
AX, AY, AZ : Angle of Drone (Rotation)

/ elevation value

GX, GY, GZ : gyro sensor value(Gyroscope)

(4) Drone LED color Setting

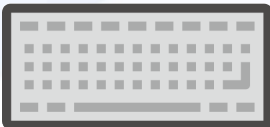
# 5. Drone Simulator Operation Cell Recording



- (1) When you press the "Rec" button in the upper right corner of the screen, the control value is remembered.
  - (2) When the "Stop" Button is Pressed and the "Replay" Button is pressed, the entered control value is automatically executed
- ※ The trajectory may change depending on the environment of the drone

When you control a drone on a PC, you can control it with a keyboard  
 The control standard is MODE2. (Check mode2 at the top of the screen)

## Keyboard Shortcuts Guide



- Rise : W Key
- Fall : S key
- Left Turn : A key
- Right Turn : D key
- forward : ↑ key
- Reverse : ↓ key
- Left-hand Movement : ← key
- Right-hand Movement : → key
- TAKE-OFF : Shift key
- Landing : Space bar key
- Emergency Landing**  
: Space bar (Two consecutive hits)

※ Alt + Direction Key ( ) : Flip



## 6. Additional Information



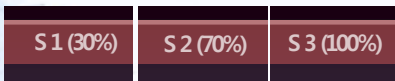
### (1) Communications Status Monitor

Once connected to the drone, the cogwheel rotates.

※ The cogwheel rotates 5 degrees each time the 'drone & manipulator' communicates. If the rotation is slow or does not rotate, there is a problem with the communication status, and it checks.

### (2) Drone Motor Speed

Speed can be changed by pressing the left back (the back left) button of the controller with the drone connected.



### (3) Flight Information Display

If the drone is connected, You can confirm by pressing F9.

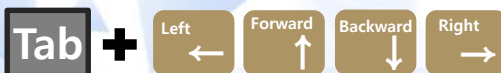
F. 35:39 T. 376 L. 198 A.38

F9

FLIGHT TIME 00 : 35 : 39	
TAKEOFF	376
LANDING	198
ACCIDENT	38

### (4) Flip

Press Tab button while the drone is taking off.  
Press the directional key button to flip in that direction.



## A Game Using Sensor Values

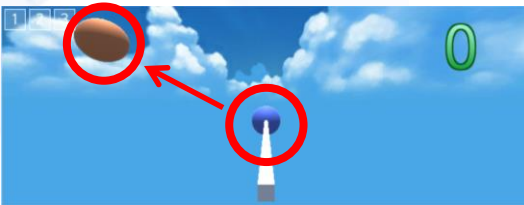
Click on the Axis box at the bottom and you will see the screen below.



Operate the following simulator using the drone's gyro sensor.

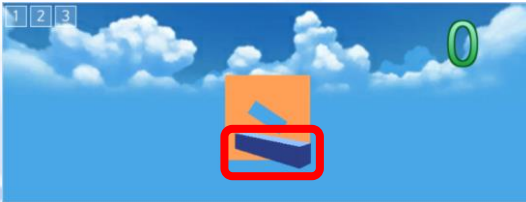
This simulator can learn about 'sensors'.

You can select a simulator by clicking 1,2,3 in the upper left corner.



1

Move the drone and hit the ball to score.



2

Move the drone, pass the oncoming box, and you score.



3

Move the drone, steer the car, eat the ball, and score.

※ Before you start the game, make sure the drone and the pilot are in the same direction, and then re-engaged the battery.

(It matches the AZ value of the drone with the pilot.)



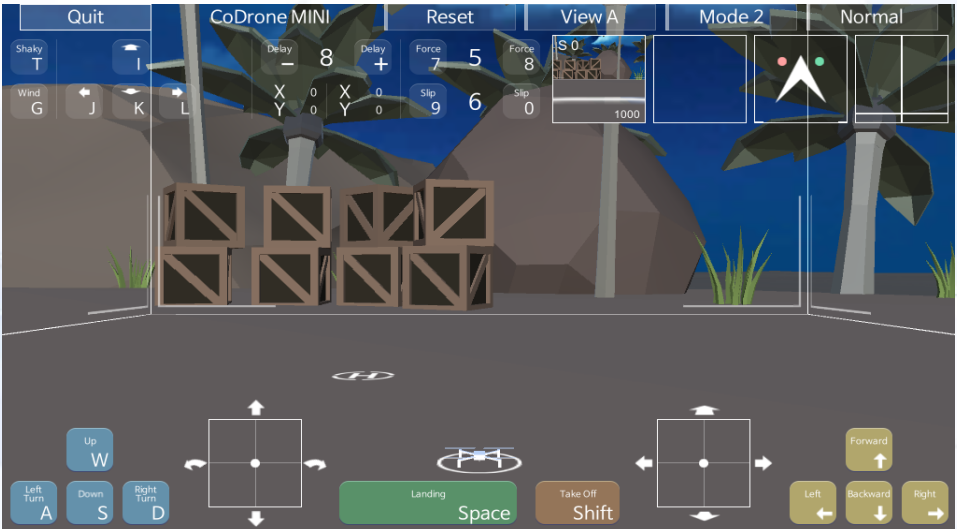
# Drone Simulator

“Virtual Flight Exercise”

# 1. Starting



Press the " **Training** " button in the upper right corner of the screen, You can enter virtual flight practice mode where you can learn how to control a drone before you manipulate the actual drone.

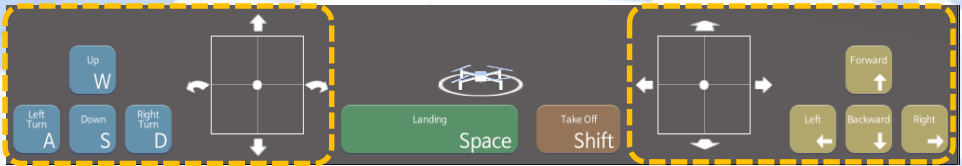



Like actual drones, virtual drones can operate after takeoff  
 Let's push the take-off button for a second and fly the virtual drone into the air

## 2. Operation Key Description

**Mode 2** Left : Rising/Fall Move /Rotation

**Right** : Front/Reverse/Left/Right/Move



The simulator controls the w,a,s,d keys with the left hand and the up,down,left, and right rudder keys with the right hand. To stop (land) a drone in flight, Press the landing key  for 1 second to use.

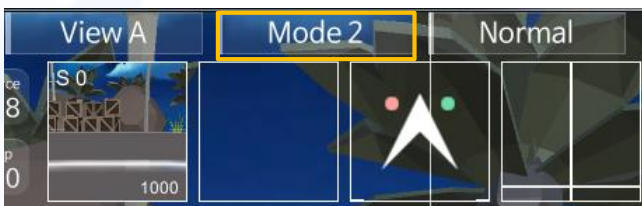
The mode used in this guidebook is usually a popular "MODE2" method.

**Mode 2**

**Left** : Rising/Fall Move /Rotation

**Right** : Front/Reverse/Left/Right/Move

\* If you click the icon on the controller without typing it on the keyboard, it will work.



Click the mode button in the upper right corner to change the mode in order 1 → 2 → 3 → 4. While "Mode 2" is common, it can be operated by switching to an environment that is convenient for individuals to use.

Mode 1

Mode 2

Mode 3

Mode 4

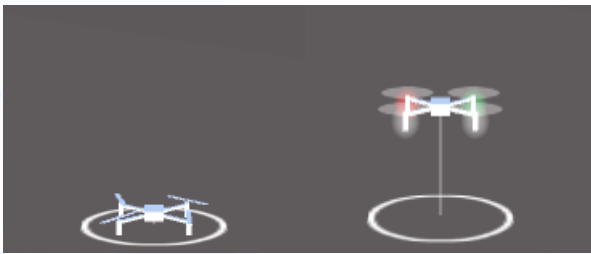
### 3. Setting the control mode

**Mode 1**      **Left** : Front / Reverse Move /Rotation      **Right** : Rising/Fall/Left/Right

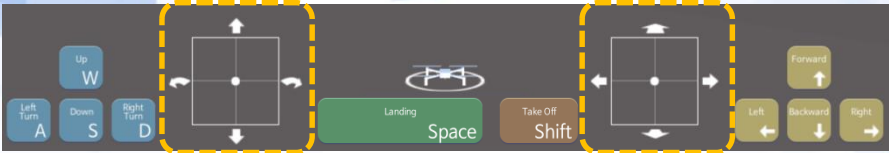
**Mode 3**      **Left** : Front / Reverse Move /Left /Right      **Right** : Rising/Fall/Rotation

**Mode 4**      **Left** : Rising / Fall / Left /Right Move      **Right** : Front/Reverse/Rotation

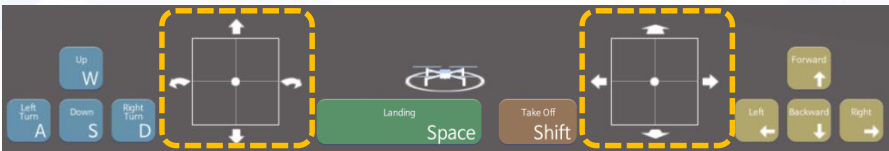
The landing drone cannot enter any action other than take-off.  
 Set the mode and press the take-off button.



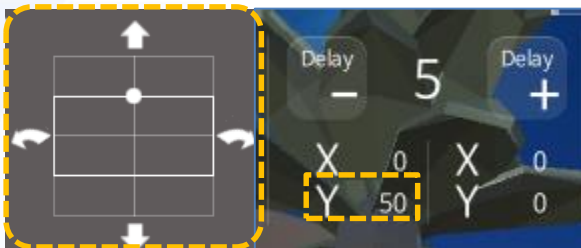
## 4. Setting up the steering environment – Set input Limit Values



You can control the individual force applied to the drone. If the area representing maximum and minimum of UI is arbitrarily adjusted, it will not be subjected to more than a limited size.



Clicking and dragging an area with the mouse or, After pressing the Ctrl key on the keyboard, you can change the W, A, S, and D keys or orientation keys.



You can see that the UI at the top does not apply force over a limited size. It can be used, for example, when fine tuning is needed.

## 5. Manipulating – Trim Adjustment

Shaky



First Makes the drone "unstable.". It works with the 'T key' on the keyboard and can also be operated by clicking the button (UI) on the screen.

A single press of the button produces a "check" mark on the side of the button.

A one more press of the button removes the "check mark" and the drone flies in a steady flight.



The buttons above are four 'trimming' buttons.

You can fine-tune it with the I jk l key on your keyboard, and you can fine-tune it by clicking the UI icon on the screen.

Press the opposite direction that tilts to proceed with stabilization. Repeat this function to learn 'stabilize the drones'.

Wind



It creates a wind that pushes the drone away. Operate with the G key on the keyboard and click the button (UI) on the screen to operate.

A single press of the button produces a "check" mark on the side of the button.

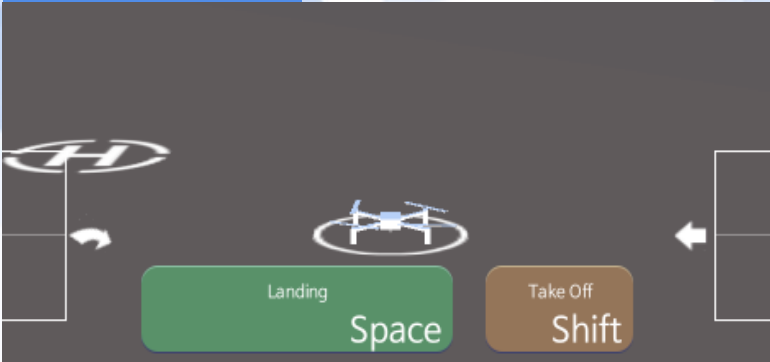
The direction of the wind changes randomly when it is checked.

Using this function, we have a slightly more experienced control.



## 6. Manipulating – Landing Exercise

### (1) Landing Exercise



Move the drone to the landing position shown on the screen, and through this process you can practice landing. This exercise will learn the basic maneuverability of the drone, and when the drone is correctly lowered to the landing position, the next landing position will be displayed.



If the drone flew too far and disappeared from the screen, Press the **Reset** button to move the drone to its first position. This function works by clicking the button (UI) on the screen.

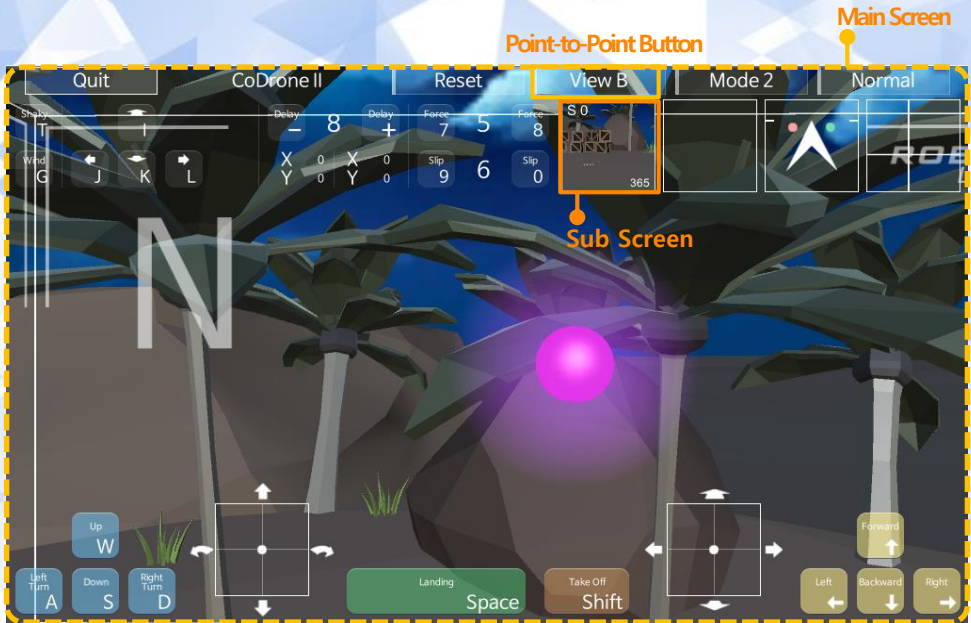
### (2) Practice reaching a fixed/free target



You can practice moving drones to the target (violet ball). At the top of the screen, the point of view of the drone is shown, and the numbers shown below indicate the distance to the target.

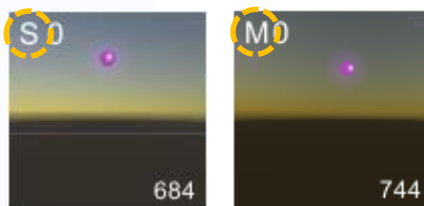
The distance to the numerically marked target, the location of the drone, and the target using the front view of the drone, must be reached to

When the drone reaches the target, the top number is counted by one, and the next target is displayed.



Press the point-in-time conversion button to switch to View A ↔ View B.

View A	<b>Main Screen:</b> Pilot Point <b>Sub-screen:</b> drone Point	View B	<b>Main Screen:</b> Drone Point <b>Sub-screen:</b> Pilot Point
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Click on the sub-screen to change the purple target from S (Stay, Fixed) to M (Movement). When motion (M) occurs, the fixed (S) purple target moves freely within the space. Each time you click on the sub-screen, it changes to S ↔ M repeatedly.

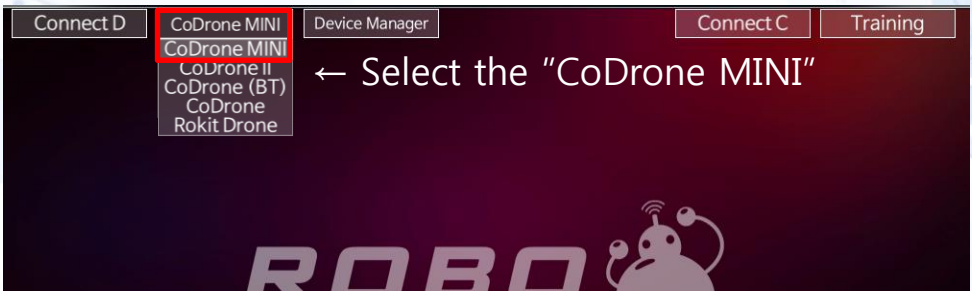
The number of times a target has been reached is counted next to the alphabet, and this function is aimed at learning more skilled manipulations.

## 7. To Simulate flying with a controller

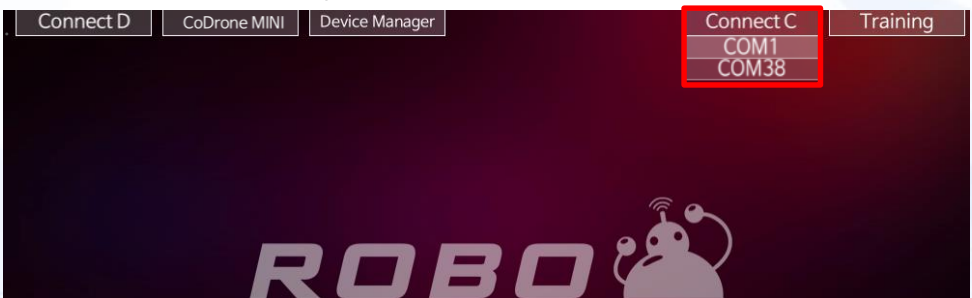


- (1) Connect the PC and the controller, the drone. Run the simulator.

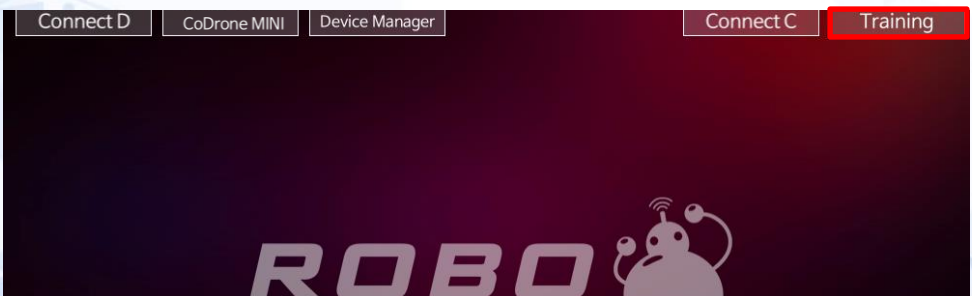
- (2) Select the Drone MODE



- (3) Select and click on the port to which the control is connected.



- (4) Click the Training button to switch to the simulated flight screen





(5) Hold the L1 button for more than 1 second to take off/land and control the drone with the controller.

(See Quick Guide for self-controlled methods)

✳ **Emergency landing: L1 + under the throttles ( ↓ )**

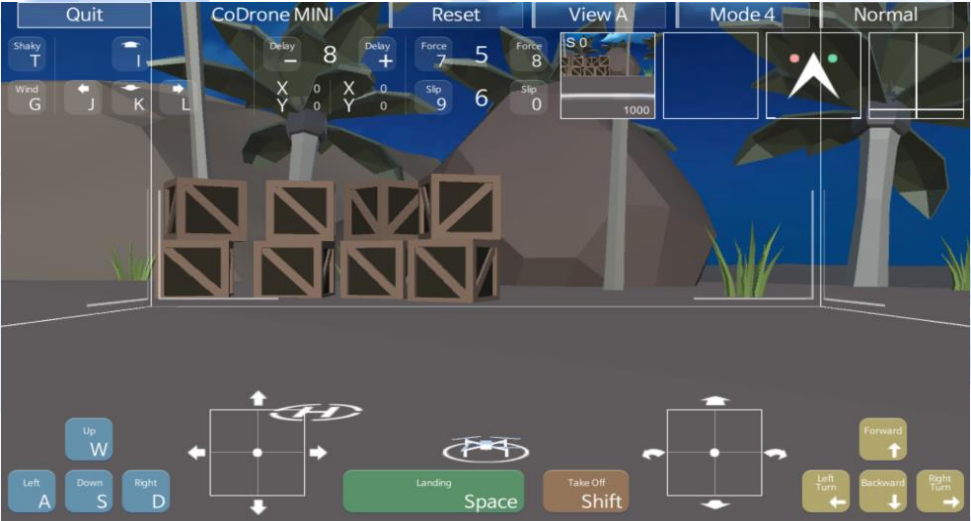


(6) Other options for simulated flight are the same as for simulated flight with a keyboard.

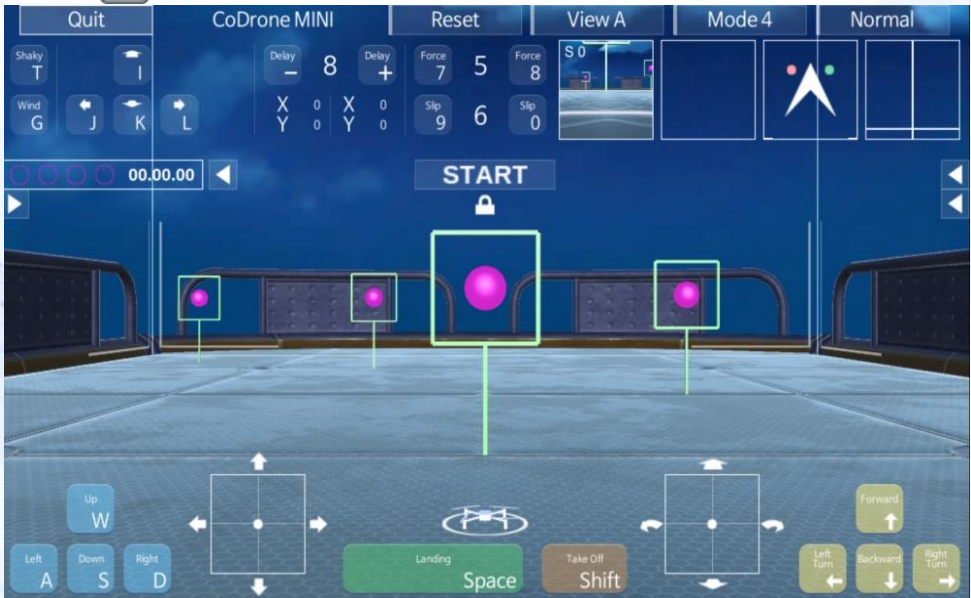
# Drone Simulator

“Mini Game”

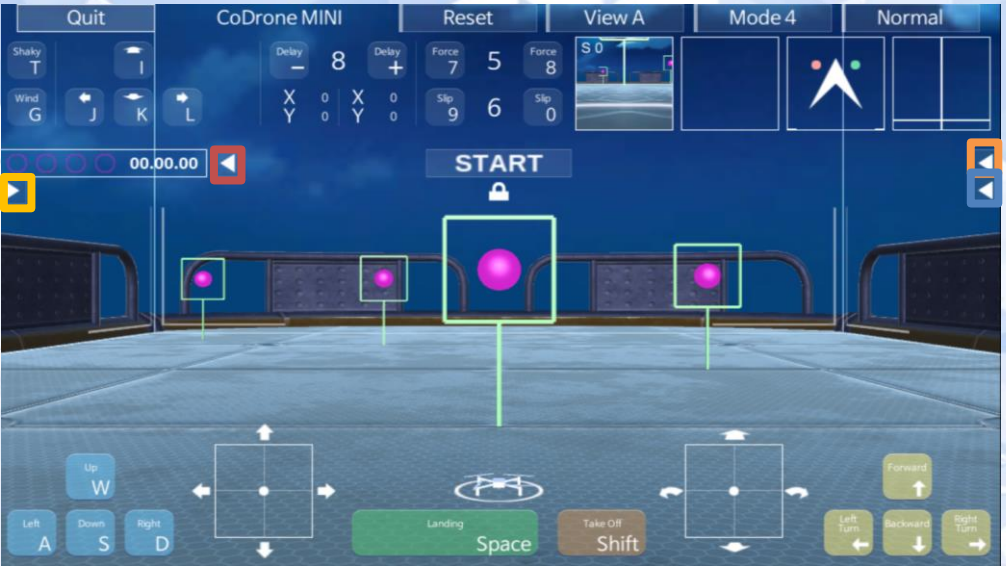
# Mini game



Press ' **F2** ' on the Training Mode screen as shown above.



The screen changes as shown above.



In the above mode, press the arrow  at the end of the screen to turn the game on.

Press the  button to start the game.

✘ **On this screen, you must press START to operate the drone.**

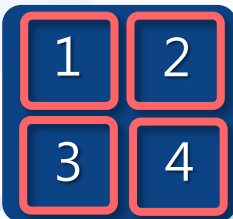
## Game 1



## Game 3



## Game 2



## Game 4



## Mini - Games : Description

### Game 1

View A

View B



The first game is who collects the purple balls in the obstacle faster within the time limit.

When you eat a ball in an obstacle in a designated space with a drone, the ball is filled like the image above.

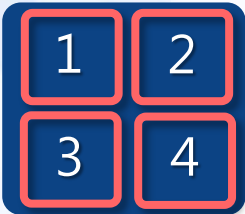
View A

and

View B

### Game 2

View B



Two Views Supports

The second game is to see who will fly in a shorter time (1→2 → 3 → 4) in order of the aerial obstacles (No. 1, 3) and the floor obstacles (No. 2, 4).

If you pass or land through the obstacle, the left digit plate will be marked with a check mark, and obstacle number 3 will need to be changed to View B.

### Game 3

View A

View B



The third game is shooting game. When you eat the bullet icon (🔫), you load 100 bullets.

The bullet is fired automatically.

You can score if you hit the 'ink drop' with a bullet.

When the drone hits a black ball, the screen darkens and the game is over.

### Game 4

View B



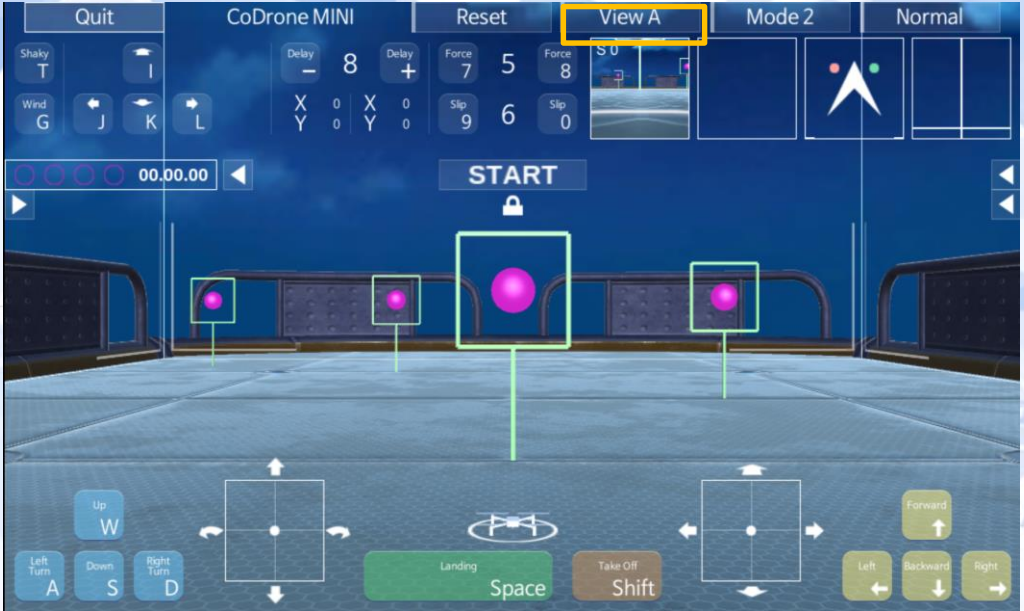
The fourth game is collecting yellow balls. If you control a drone and eat a yellow ball, you get a point.

In a short period of time, the ball will appear randomly and 'X Point' will be added '1 point' if you can't eat or eat late.

A total of 20 balls appear.



## Point-in-time Transformation



### Game 1

View A

View B



The first game is who collects the purple balls in the obstacle faster within the time limit.  
When you eat a ball in an obstacle in a designated space with a drone, the ball is filled like the image above.

View A

and

View B

Two Views Supports

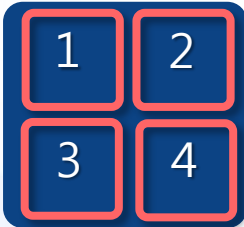
View A : Pilot Point of View

View B : Drone Point of View



## Game 2

View B



The second game is to see who will fly in a shorter time (1→2 → 3 → 4) in order of the aerial obstacles (No. 1, 3) and the floor obstacles (No. 2, 4).

If you pass or land through the obstacle, the left digit plate will be marked with a check mark, and obstacle number 3 will need to be changed to View B.




## Game 3

View A

View B



The third game is shooting game. When you eat the bullet icon , you load 100 bullets. The bullet is fired automatically.

You can score if you hit the 'ink drop' with a bullet. When the drone hits a black ball, the screen darkens and the game is over.

※ When the game is over, no ink drops appear.

You can no longer earn points.



## Game 4

View B



✕ 0 ● 0

✕ 0 / 20 ● 0 / 20

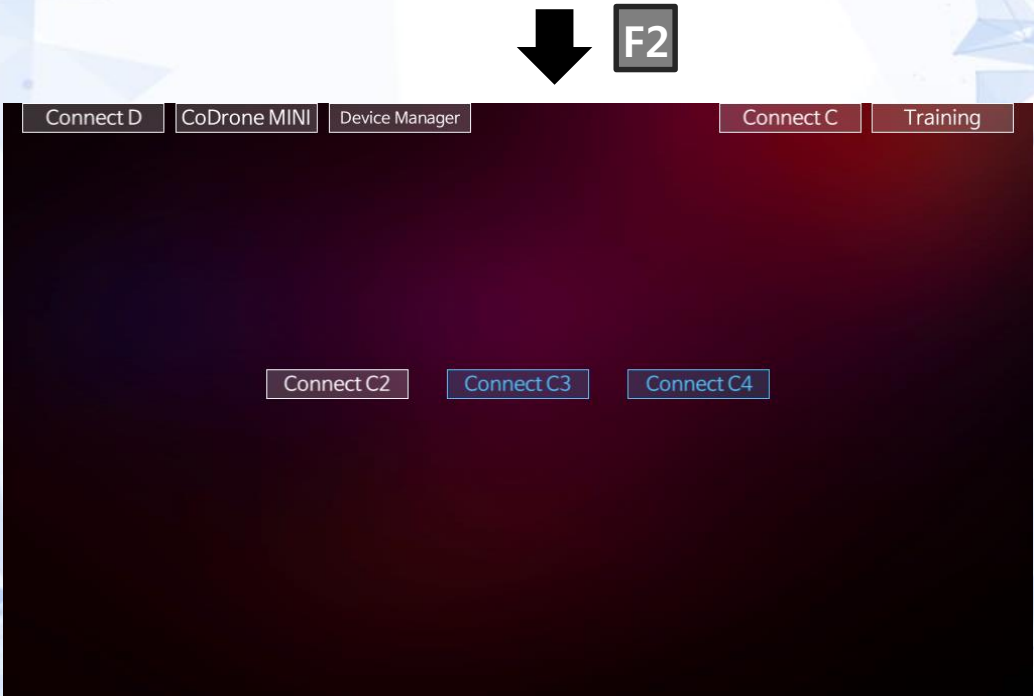
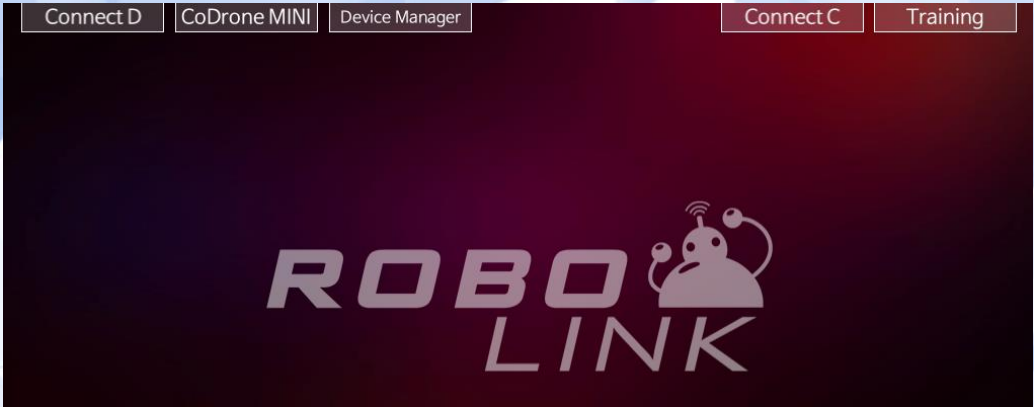
The fourth game is collecting yellow balls. If you control a drone and eat a yellow ball, you get a point. In a short period of time, the ball will appear randomly and 'X Point' will be added '1 point' if you can't eat or eat late. A total of 20 balls appear.

✕ : Number of Misses

● : Number of acquisitions

# Drone Simulator

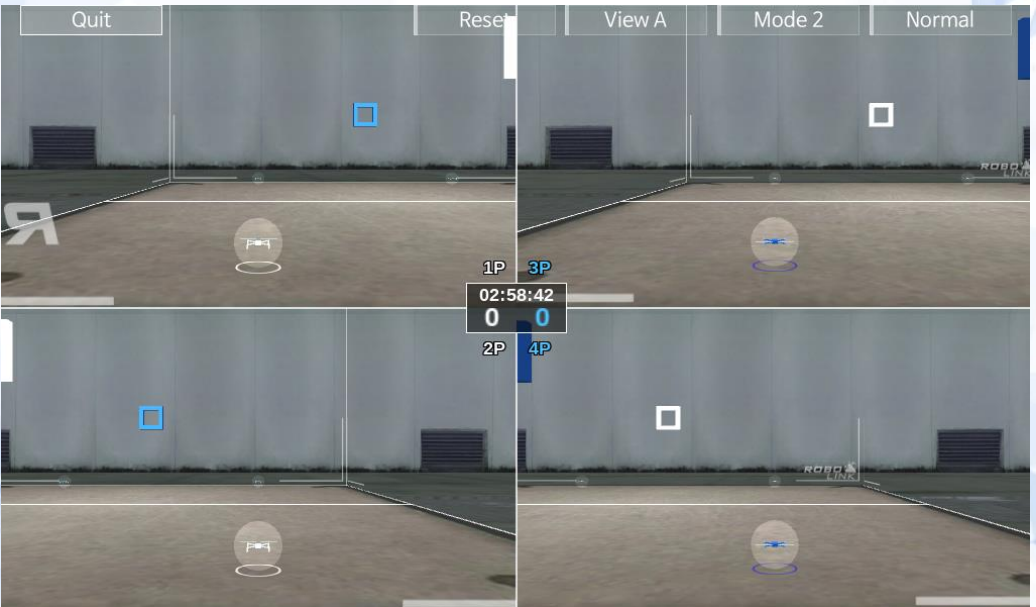
“Soccer Game”



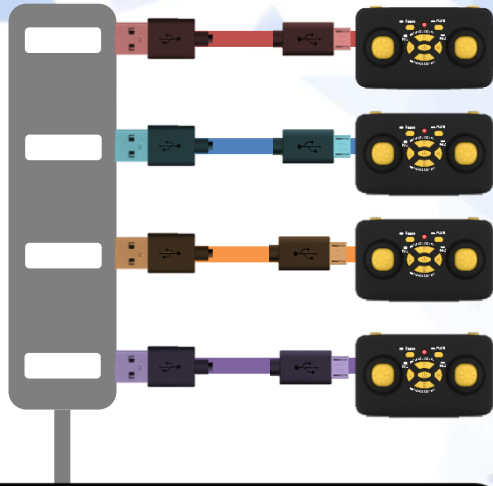
On the initial screen, press the 'F2' key to connect multiple controllers to a single PC using a multi-port.



F2



After connection, you can enter training mode by pressing Training in the upper right corner, and then press the 'F2' key to enter soccer game mode.



You can connect multiple controllers to enjoy soccer games on a single PC.





## ※ Game Rule

(1) **Switch View** : When you click and replace a **view**, all of the views in the window are replaced at the same time.

※ Even if you change the other control mode or headless mode, all drones will still be equipped with the same technology. It applies simultaneously.

(2) **Score/Time** : The time in the center shows the time remaining during the competition, and the white/blue numbers below mark each team's score.

(3) **Point score** : **White team** drives a drone into the opponent's **blue goalpost**, **Blue team** drives a drone into the opponent's **white goalpost**, and must pass in the right direction to score.



Even if you turn back and pass it in the right direction after scoring, you can't score, and you have to move to the center line point and go back inside the net to score.

※ Each score is 1 point and the total game time is 3 minutes.

DRONE SIMULATOR

# Drone Simulator

Robot Edutainment Company

**ROBOLINK**