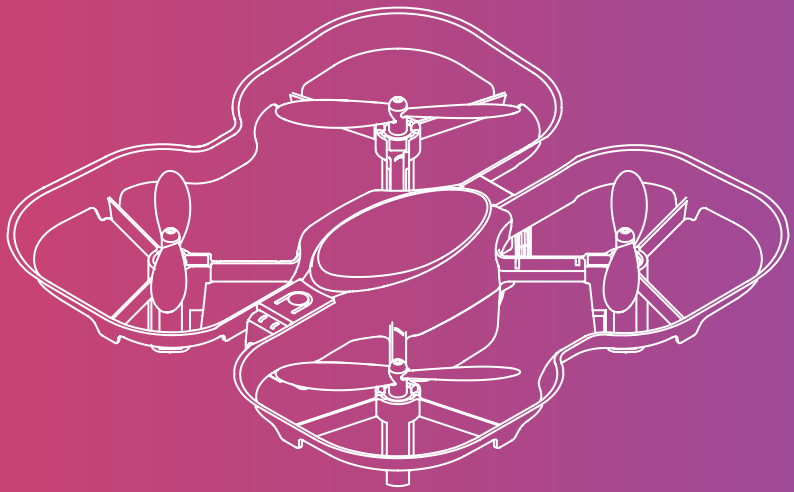
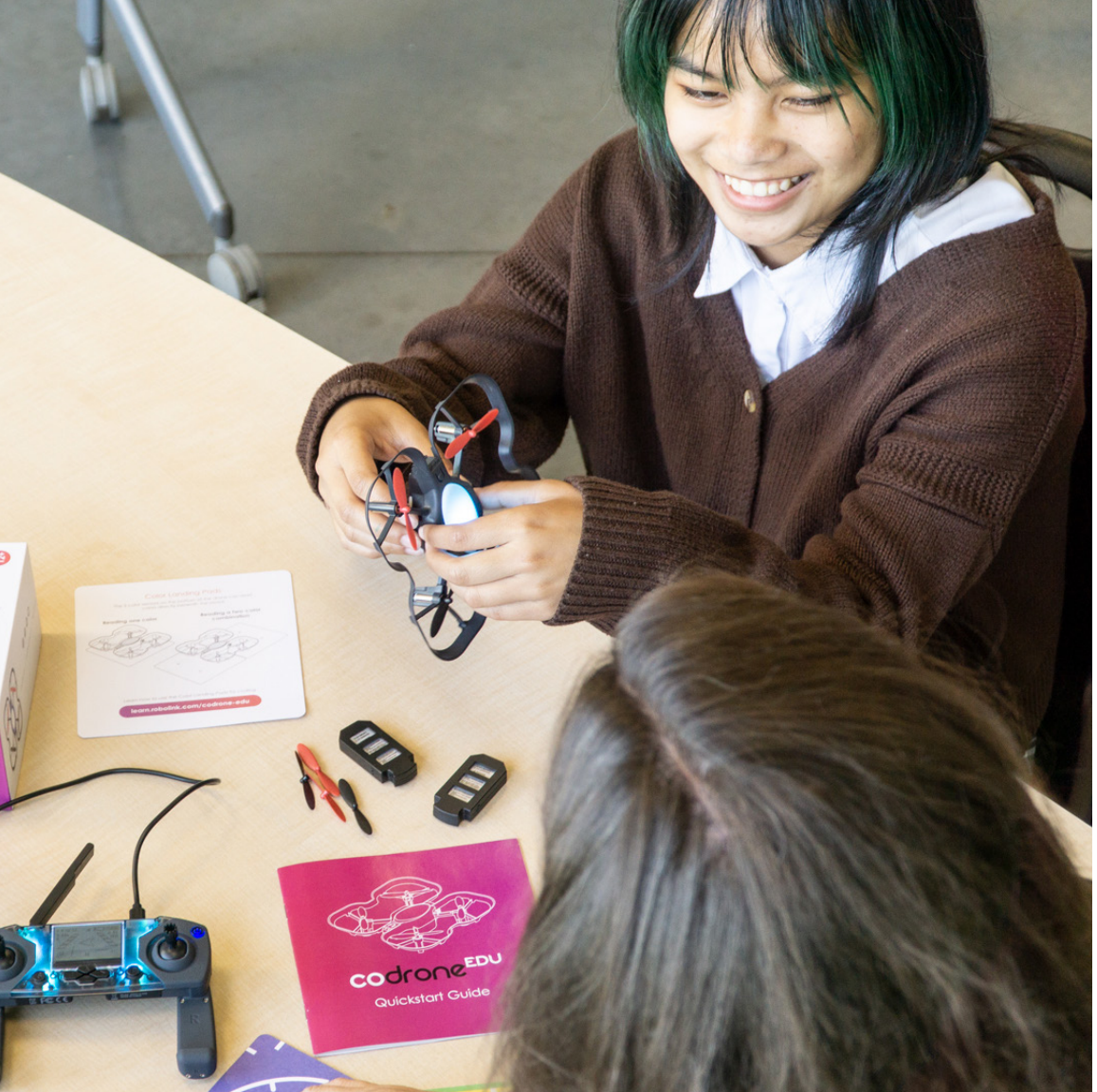


# codrone EDU

## User Manual

ROBOLINK




# Welcome to your CoDrone EDU journey!

For the best experience, **all users** should go through this manual before flying the drone to understand **proper use** and **safe operation**, even experienced users. Our warranty assumes proper use of the drone.

Once you've read through this manual, head over to our "Getting Started" course to learn about piloting, coding, and more.

**learn.robolink.com/codrone-edu**

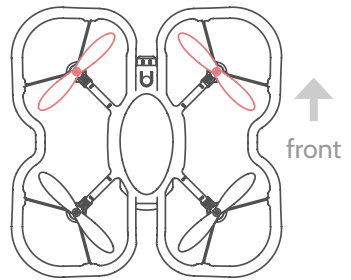
This QR code and link also appear at the end of this manual on page 22.

# Table of Contents

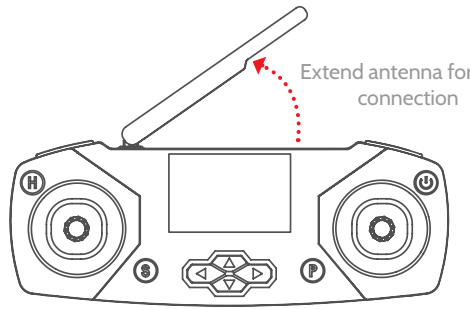




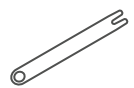
# What's Included



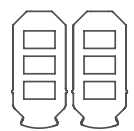

CoDrone EDU




Smart Controller

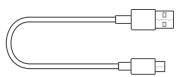


Propeller removal tool

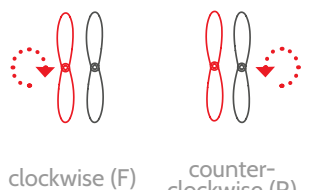


Battery x 2

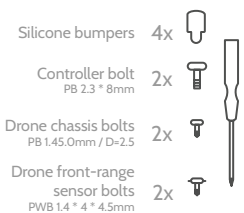
Dual-charger



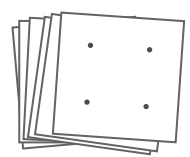
Micro USB cable




Spare propellers x 4




Screw driver, spare bumpers, screws,



Color landing pads x 8

Labels

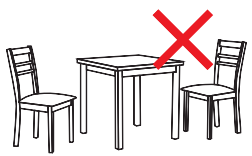
# Before You Fly

Whether you're new to drones or a seasoned pilot, we recommend reading through the following safety guidelines before using your CoDrone EDU. Our warranty assumes proper use of the drone.

**CAUTION**

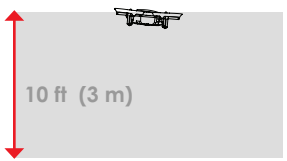
CoDrone EDU is designed for **indoor use** only. Rules for drone flight outdoors will vary depending on your location. The CoDrone EDU also cannot withstand wind. For those reasons, you should keep CoDrone EDU indoors.

## 1 Check the environment

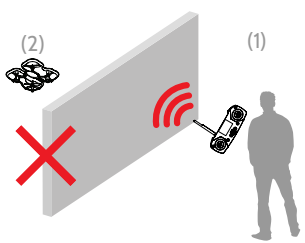


Designate an open area for flight without obstacles.

Put away fragile items and open liquids.



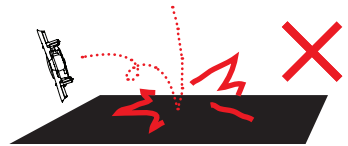

Try to keep your drone below 10 ft to avoid damage.



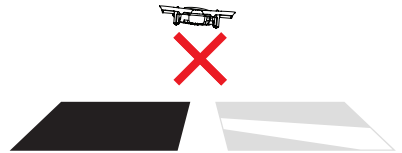

To maximize signal strength and safety, maintain line of sight between yourself/the controller (1) and the drone (2).

The signal has difficulty passing through people, glass, and walls.



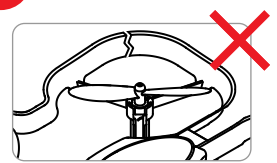


To minimize damage during unexpected crashes, avoid flying over hard surfaces like concrete and cement.

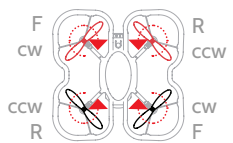


For best performance, avoid flying over dark carpets, reflective surfaces, and patterns with solid parallel lines. Flat, well-lit, and patterned surfaces will work best.

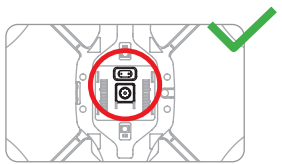
## 2 Check your drone



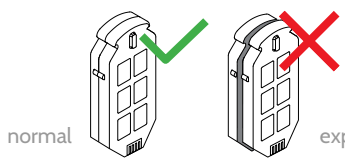
No major structural damage to motor arms or frame.



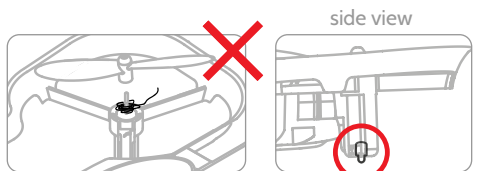

Propellers and motors are in the correct position (see page 18).



Bottom sensors are not obstructed.

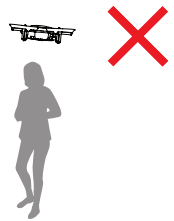



Drone battery has not expanded and has no signs of structural damage.

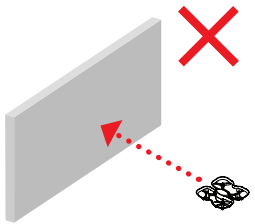



No debris under the propellers. Propellers can spin freely. Check motors (see page 21), and that bumpers are under the motors.

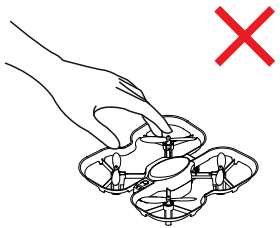
## 3 Know the rules of operation



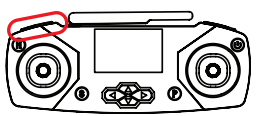
Do not fly over people.



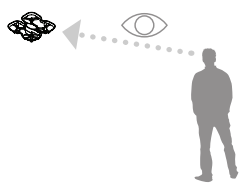
Do not intentionally crash into walls or at people.



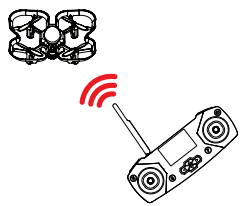
Keep hands, fingers, and other objects away from propellers.



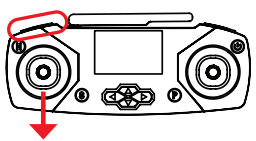
Using land is the safest way to stop your drone.



The pilot or a spotter should always maintain a visual on the drone.



Extend and point the antenna at the drone for best signal strength.



Only use Emergency Stop for emergencies when you need to stop the motors.

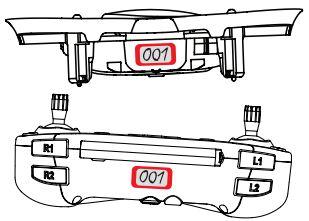
**CAUTION**

Using Emergency Stop from above 10 ft or at high speeds could damage your drone, so **use it sparingly**. It's best to catch your drone when possible.



## 4 Label your drone

Side view




We've included a set of stickers for you to label your paired drone and controller. For example, you can label them with "001." That way, you'll know which drone and controller go together without powering them on.

This is **especially important in classroom settings**, or anywhere there are multiple drones and controllers.

## 5 Check your firmware

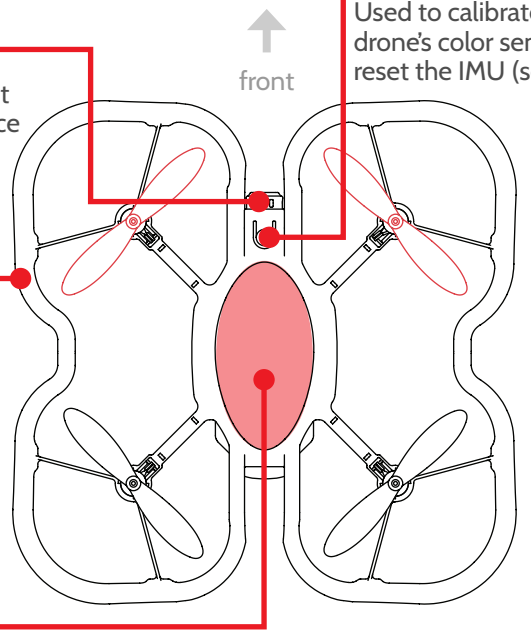
The drone and controller occasionally have firmware updates. Be sure to update to the latest firmware before flight.

**robolink.com/codrone-edu-firmware**

These steps only cover the basics for safe use of the CoDrone EDU. If it's your first time flying, please reference our complete safety guide.

**robolink.com/codrone-edu-safety**

# Getting to Know Your CoDrone EDU




**Front range sensor**

Reads the distance from the front of the drone to the nearest surface up to 1.5 meters.

**Action button**

Used to calibrate the drone's color sensor and reset the IMU (sensor).

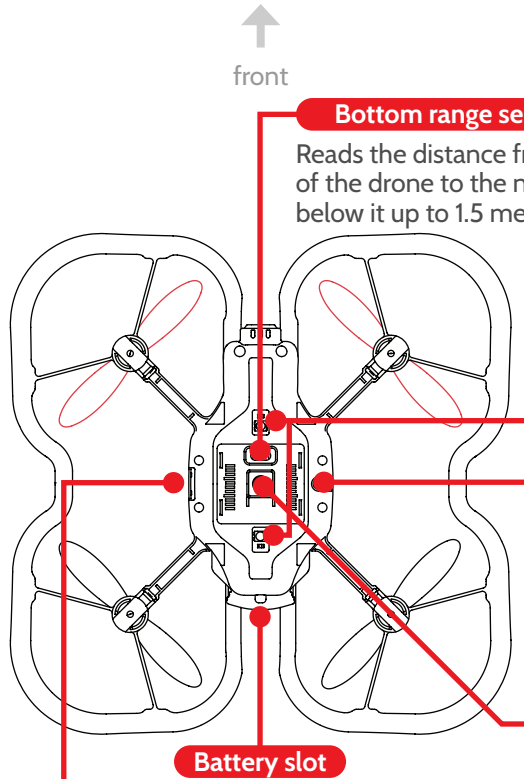
**Frame**

Protects the propellers and the drone from impact. Also, protects you and others!

**LED light**

Programmable LED that also indicates the drone's different states.

Top view




**Bottom range sensor**

Reads the distance from the bottom of the drone to the nearest flat surface below it up to 1.5 meters.

**Front and back color sensors**

Reads colors on the surface directly beneath the drone when landed. Deactivated during flight.

**Pairing button**

Used for pairing and firmware updates.

(See page 14 for how to pair.)

**Optical flow sensor**

Downward-facing sensor used to estimate the drone's x and y positions.

**Battery slot**

Bottom view

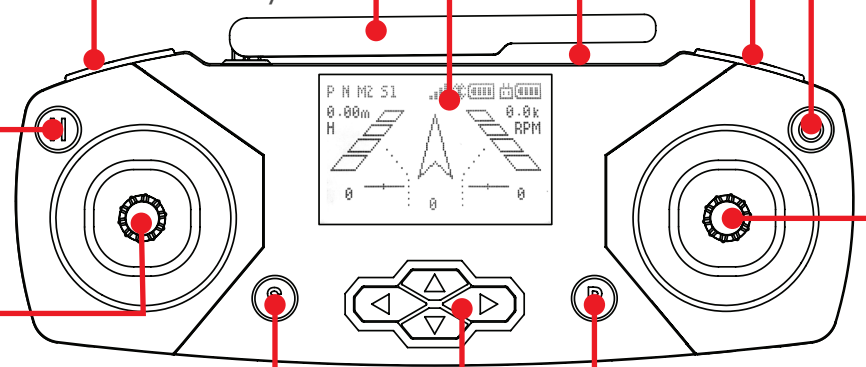
**Micro USB port**

Used for firmware updates. This port does not charge the battery or program the drone.

# Getting to Know Your Controller

Using your controller, you can pilot your drone or connect your controller to your computer for coding. These are the controls for the controller while in the remote control state. For a complete video guide to the controller, visit:

robolink.com/codrone-edu-controller




**L1**

**Press:** Change flight speed (30%, 70%, 100%).

**Press and hold:** Take off / Land.

**H**

**Press:** Turn LCD screen backlight on / off.

**Press and hold:** Return to take off location, and used for firmware updates.

**Left joystick**

**Left and right:** Yaw (rotate left and right).

**Up and down:** Throttle (move up and down).

**S**

**Press:** Go to previous display mode screen.

**Press and hold:** Go to the Settings menu.

**Micro USB port**

Used for coding and controller firmware updates.

**LCD screen**

Displays drone information and settings. Can also be programmed with code.

**Antenna**

Extend and point at drone for best connectivity.

**Direction pad**

If the drone begins to drift while flying, use the direction pad to trim (stabilize) it.

(See page 17 for how to trim.)

**R1**

**Press:** Change LED color on drone and controller.

**Press and hold:** Prepare drone to flip during flight. Then, push the right joystick in the direction you want to flip.

**⏻**

**Press:** When connected to a computer by USB cable, this button switches between the remote control and LINK state, which is used for coding.

**Press and hold:** Power on / off when using AA batteries.

**Right joystick**

**Left and right:** Roll (move left and right).

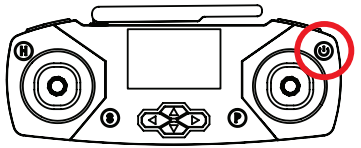
**Up and down:** Pitch (move forward and backward).

**P**

**Press:** Go to next display mode screen.

**Press and hold:** Pairing mode.
(See page 14 for how to pair.)

# Powering On



## Powering on the controller

The controller takes two AA batteries (not included). Press and hold the ⏻ button until you hear a chime to power on.

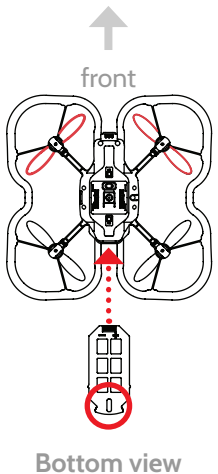
You can also use a Micro USB cable to power the controller with a computer or external power source. If you want to pilot the drone, make sure the controller is not in the LINK state by pressing the ⏻ button.

To power off, press and hold the ⏻ button or unplug the Micro USB cable.

## Powering on the drone

Power on the drone by inserting the battery into the battery slot. Note the **small tab** on one side of the battery. Insert the battery so that the side with the small tab is facing downward.

To power off the drone, grab the battery firmly and pull the battery out fully.




Bottom view

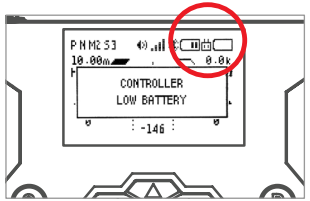
**CAUTION**

Practice safe battery use. Don't leave charging batteries unattended. Store batteries away from extreme heat or cold. This will help extend its lifetime. Do not charge or use a damaged or expanded battery. Discard lithium polymer batteries safely according to local e-waste guidelines.



# Charging

## Low battery

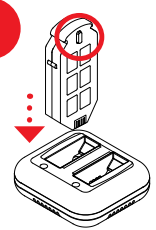



You can check your drone and controller's battery levels on the LCD screen. When the drone battery is low, the **drone will beep**, **the LED will flash red**, and the controller will vibrate.

The controller is not rechargeable. AA batteries can be replaced when the battery is low, or you can switch to an external power source.

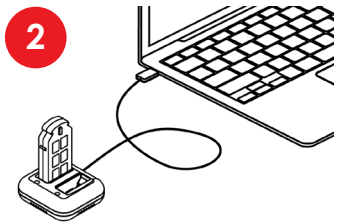
## Charging the drone battery

**1**



Insert the battery into the charger, with the **tab** facing towards the middle of the charger.

**2**

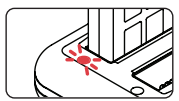


Plug the Micro USB cable into the charger. Plug the other end into a power source, like a computer or external power source.

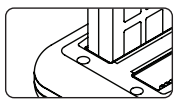
**TIP**

When charging two batteries, make sure the power source can deliver 5 Volts, 2 Amps.

If batteries appear not to be charging, try disconnecting and reconnecting the cable.



A solid red light means the battery is **charging**.



The light will turn off when the battery is **fully charged**.

# Pairing

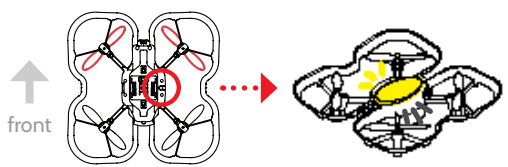
Your new drone and controller are **already paired out of the box**. If you want to pair the controller to another drone, you can pair by following these steps.

## How to pair

Please note, the drone and controller **only need to be paired once**. Once paired, they will **pair automatically** when powered on and within range.

### 1 Put drone in pairing mode

Insert a battery into the drone. Press and hold the pairing button on the bottom of the drone **until the drone LED is flashing yellow**.

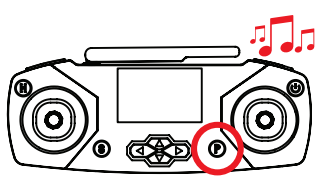



Bottom view

flashing yellow

### 2 Press and hold P

Power on the controller. Make sure you aren't in the LINK state (see page 12), if your controller is connected to a computer. Press and hold the P button **until you hear a chime**.



### 3 Verify that you're paired

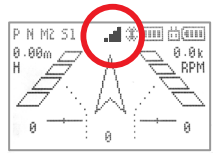
You should hear a chime, and the lights on the drone and controller should turn solid. You should see a symbol on the screen.

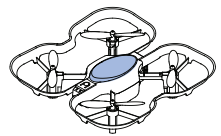


Verify that you are paired by **pressing R1 a few times**. The colors of the drone and controller should change together.

If the LED on your drone is **flashing red** and the controller screen says **"Searching..."**, your drone and controller are not paired.

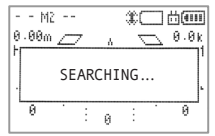
Paired!

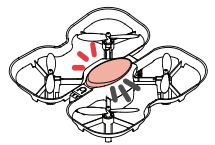


solid color

Not paired



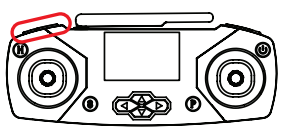



flashing red

# Basic Flight Commands

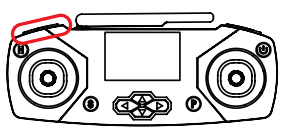
Here are a set of common commands you can use with the controller to pilot the drone.

## Taking off, landing, stopping, and changing speed



**Take off**
Press and hold L1 for 3 seconds.

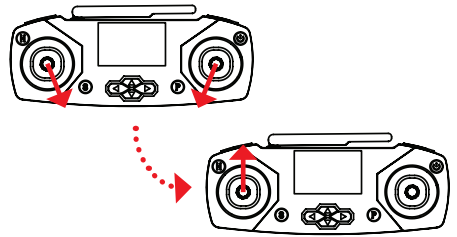
The drone will take off and hover at about **70-90 cm above ground**.

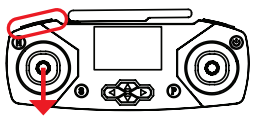


**Land**
During flight, press and hold L1 for 3 seconds.

**Quick take off**
To start the motors, push both joysticks downward, angling them toward the middle. Then, push up on the left joystick to take off.

This method will take off more quickly than the L1 method (see page 15).





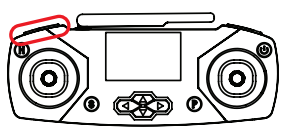
**Emergency Stop**
Press and hold L1 and pull down on the left joystick.

**CAUTION**

Whenever possible, press and hold L1 to land safely. However, if the drone is going to crash or at risk of getting damaged, you can use Emergency Stop to shut off the motors. **Memorize Emergency Stop**, it will be useful if you lose control of the drone when testing code.

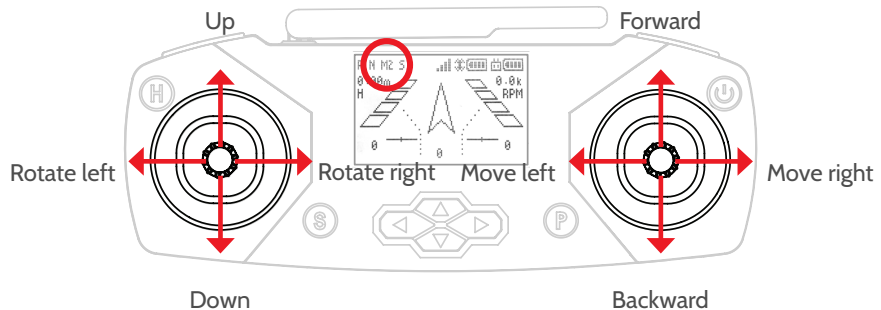
Using Emergency Stop from above 10 ft or at high speeds could damage your drone, so **use it sparingly**. It's always safest to catch your drone whenever possible.

**Change speed**
Press L1 to change the speed between 30%, 70%, and 100%. The current speed is indicated in the screen's top left corner with S1, S2, and S3.

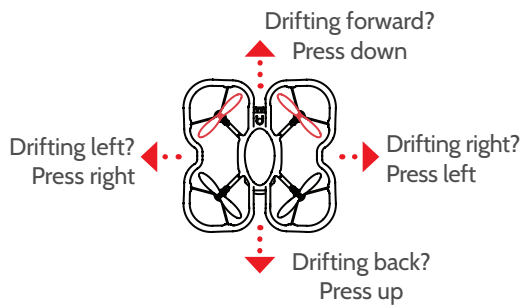


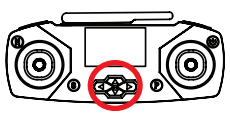


While flying, these are the controls for the drone, using the joysticks. The following is using Mode 2 controls, which is the default.




## Trimming your drone



**Trimming to prevent drift**
Use the direction pad buttons to trim the drone if it drifts when hovering.

Trim in the opposite direction that the drone is drifting.

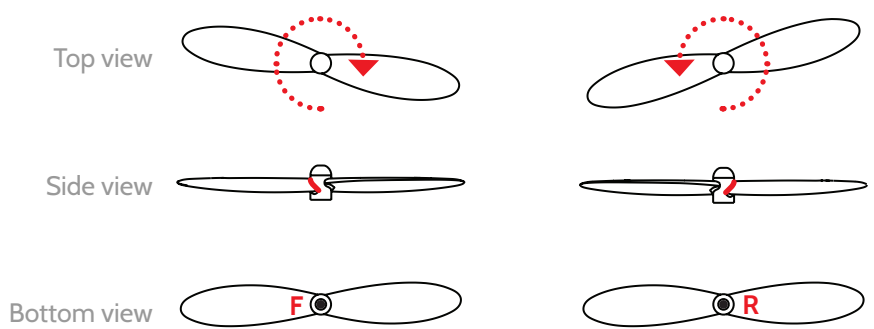
### Complete controller guide

Take a look at our complete video guide about the controller:

robolink.com/codrone-edu-controller

# Propellers

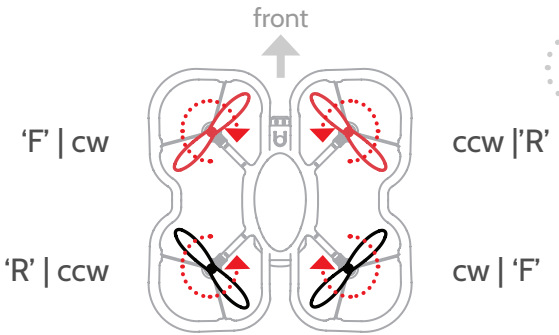
Your CoDrone EDU comes with 4 spare propellers. You can use the **propeller removal tool** to remove them. Propeller placement is important for the drone to fly correctly. There are **2 types of propellers**.




Clockwise (cw)

Counter-clockwise (ccw)






**TIP**

An easy way to remember the directions:

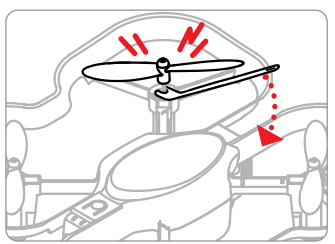
F for **fast forward**, so clockwise.

R for **rewind**, so counter-clockwise.

Please note, a **propeller's color does not indicate its rotation**. However, we recommend placing the red propellers at the front of the drone. This will help identify the front of the drone during flight.

### Removing propellers

Propellers can be removed to clear out debris from under the propeller hub. A propeller should be replaced if it's bent, chipped, or cracked, and it begins affecting the drone's flight. Use the included **propeller removal tool** to remove the propeller.



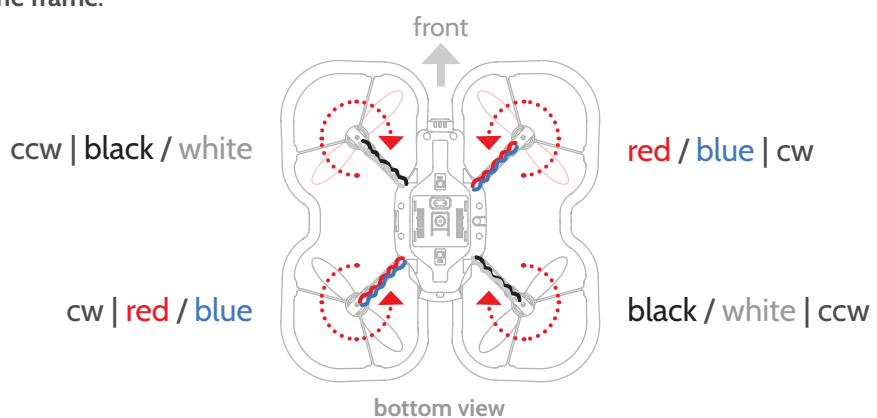
1. Insert fork-shaped end of tool under propeller hub.
2. Push handle down like a lever.
3. Push new propeller onto the shaft of the motor.
4. Check propeller rotation, and perform flight check.

# Motors

Motor placement is also important for the CoDrone EDU. Like propellers, there are **2 types of motors**, indicated by the color of the wires. Motor directions should match propeller directions.


Clockwise (cw) Counter-clockwise (ccw)

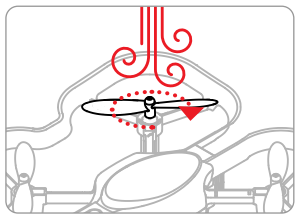
You can see the color of the motor wires by checking **underneath the arms of the drone frame**.



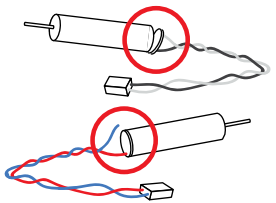



## Inspecting motors

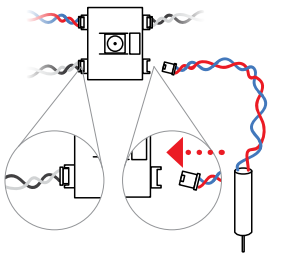
If your drone has issues flying, check propellers first. If the propellers don't seem to be the issue, check the motors. Motor issues usually result from hard crashes. Here are common signs that a motor should be replaced.



Blow on the attached propeller. Look for difficulty rotating or wobbling during rotation.



Check for breakages in the wiring or bottom casing. This can happen from hard crashes.



Remove the drone's bottom chassis. Then check if the motor is disconnected from the drone's board.

## Replacing motors

Replacing motors is an involved process, so we recommend carefully following our motor replacement video.

**Replacement motors are sold separately**.

**robolink.com/codrone-edu-motors**

# Learning to Code with CoDrone EDU

To start learning how to code, head to our lessons:

learn.robolink.com/codrone-edu

## Resources

Use these resources to help you on your journey learning to pilot and code with

For technical questions and support:

help.robolink.com

For library functions and documentation:

docs.robolink.com



### Update

How to update your drone and controller's firmware:

robolink.com/codrone-edu-firmware

### Compete

Learn about the Aerial Drone Competition:

robolink.com/aerial-drone-competition

### User Manual

Access a digital version of this manual:

robolink.com/codrone-edu-manual

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