ROBOLINK RL-CDEJ-100 Programmable Drone User Guide

Contents

ROBOLINK RL-CDEJ-100 Programmable Drone

Specifications

- CoDrone EDU (JROTC edition)
- Smart Controller (JROTC edition)
- Propeller removal tool
- Battery x 3
- Multi-charger
- USB-C cable
- PB 1.45.0mm / D=2.5 2x clockwise (F) counterclockwise (R)
- Spare propellers x 4
- PWB 1.4 * 4 * 4.5mm 2x
- Screw driver, spare screws and bolts
- Color landing pads x 8

Product Usage Instructions

Before You Fly
Make sure to read through the safety guidelines before using your CoDrone EDU (JROTC edition).

Check the Environment

- Designate an open area for flight without obstacles.
- Keep your drone below 10 ft to avoid damage.
- Maintain line of sight between yourself/the controller and the drone for signal strength.

Check Your Drone

- Ensure no major structural damage to motor arms or frame.
- Check propeller and motor positions as per page 18.
- Ensure bottom sensors are not obstructed.

Know the Rules of Operation

- Avoid flying over people or at walls/people.

- Keep hands, fingers, and objects away from propellers.
- Emergency Stop in case of a crash.

Label Your Drone
Use the provided stickers to label your paired drone and controller for easy identification.

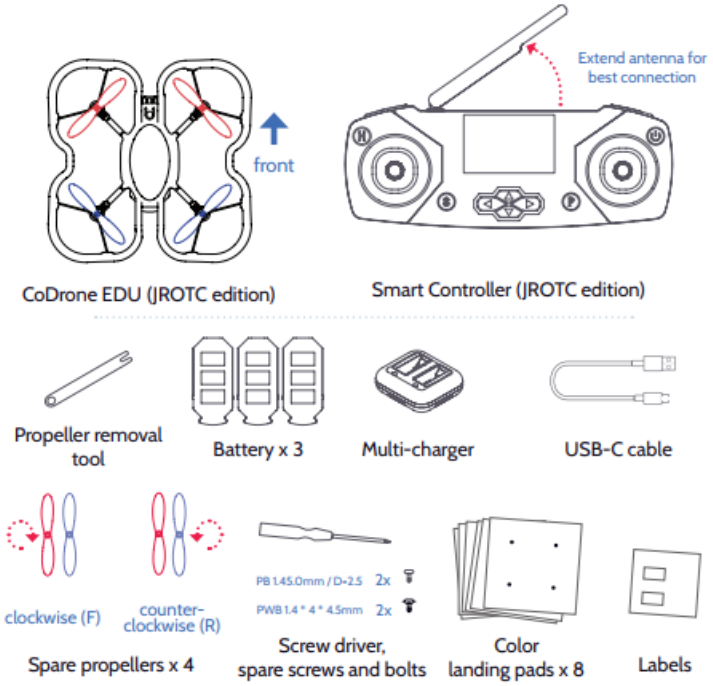
FAQ

- **Q: Can I fly the CoDrone EDU (JROTC edition) outdoors?**
  A: No, the drone is designed for indoor use only due to its limitations in outdoor environments.
- **Q: What should I do if my drone crashes?**
  A: Use the Emergency Stop feature to shut off motors and prevent damage.

Welcome to your CoDrone EDU (JROTC edition) journey!
We recommend everyone go through our “Getting Started” course online. It will give you an in-depth look into everything in this manual.

learn.robolink.com/codrone-edu

What’s Included



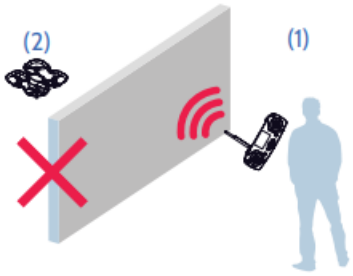
Before You Fly

Whether you're new to drones or a seasoned pilot, we recommend reading through the following safety guidelines before using your CoDrone EDU (JROTC edition).

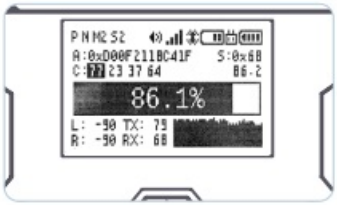
CAUTION
CoDrone EDU (JROTC edition) is designed for indoor use only. Rules for drone flight outdoors will vary depending on your location. The drone also cannot withstand wind. For those reasons, you should keep your drone indoors

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

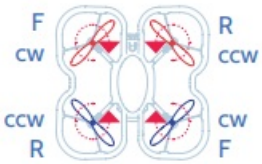


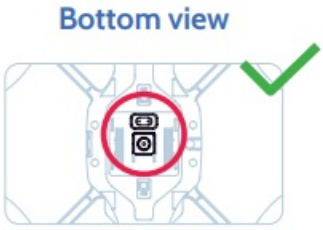
1. To maximize signal strength and safety, maintain line of sight between yourself/the controller (1) and the drone (2).
2. The signal has difficulty passing through people, glass, and walls.

- 

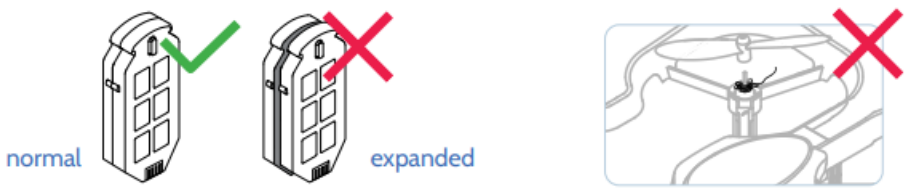
  Your connection status screen will display your signal strength. Use and to change display mode screens in the remote control state.
- For best performance, avoid flying over dark carpets or highly reflective surfaces. Surfaces that are bright, flat, well-lit, and patterned will work best.

Check your drone

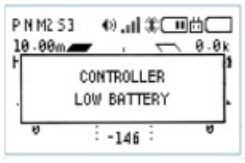


- No major structural damage to motor arms or frame.
- Propellers and motors are in the correct position (see page 18).
- Bottom sensors are not obstructed.



- Drone battery has not expanded and has no signs of structural damage.
- There is no debris beneath the propellers, and the propellers can spin freely.

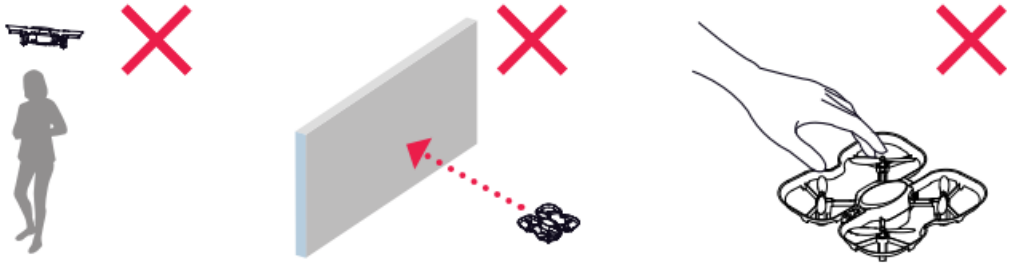
flashing red
beeping sound



low battery message
controller vibration

- Avoid flying when the drone or controller are on low battery.
- Flight and signal stability will be less reliable when the battery is low.

Know the rules of operation



- Do not fly over people.
- Do not fly at walls or at people.
- Keep hands, fingers, and other objects away from propellers.
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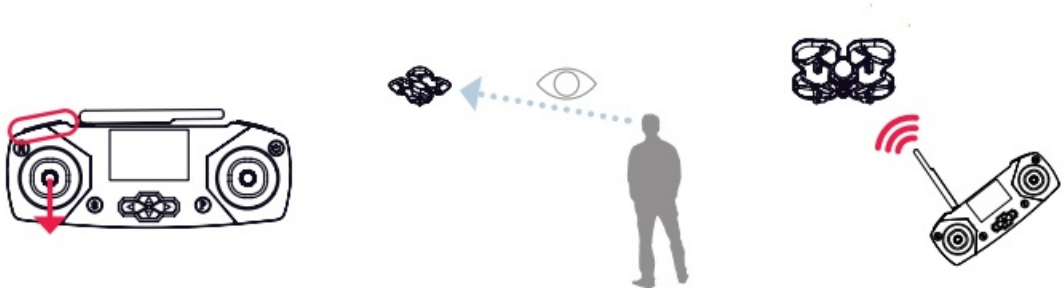
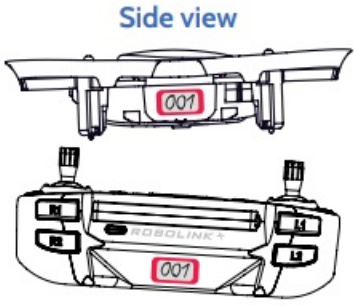


If the drone crashes, Emergency Stop to shut off motors and avoid motor damage.

- 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.

Label your drone



- 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.

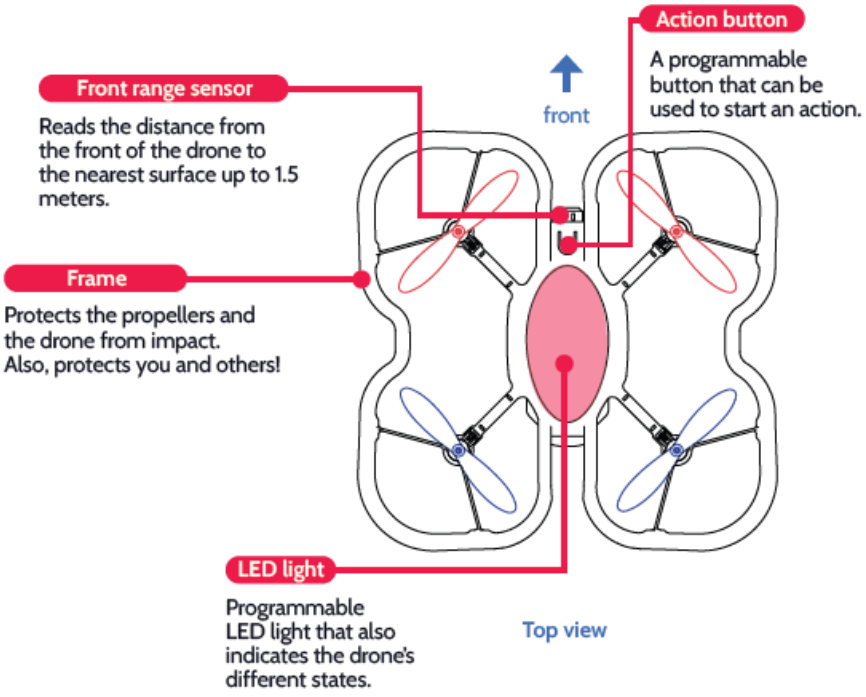
Check your firmware
The drone and controller occasionally have firmware updates. We recommend updating to the latest version.

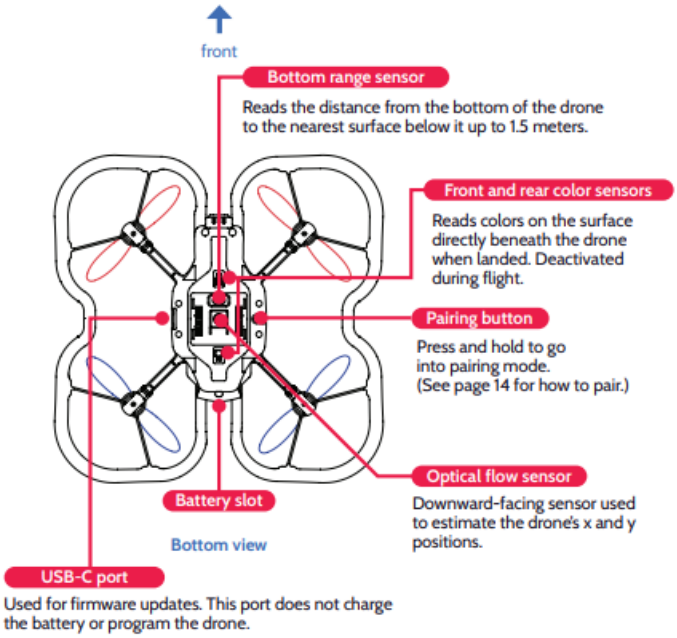
robolink.com/codrone-edu-j-firmware

Complete safety guide
These steps only cover the basics for safe use of the CoDrone EDU (JROTC edition). If it's your first time flying, please read our complete safety guide.

robolink.com/codrone-edu-safety

Getting to Know Your CoDrone EDU (JROTC edition)

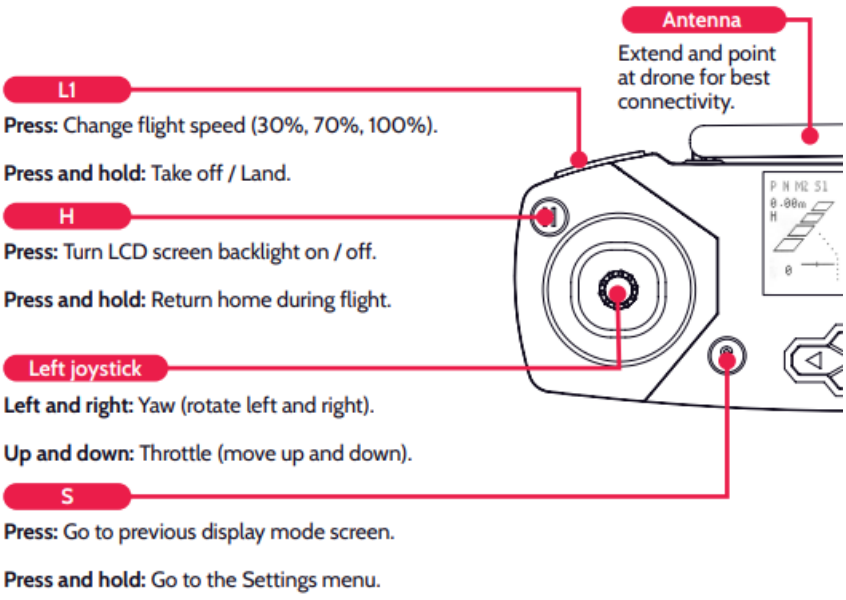


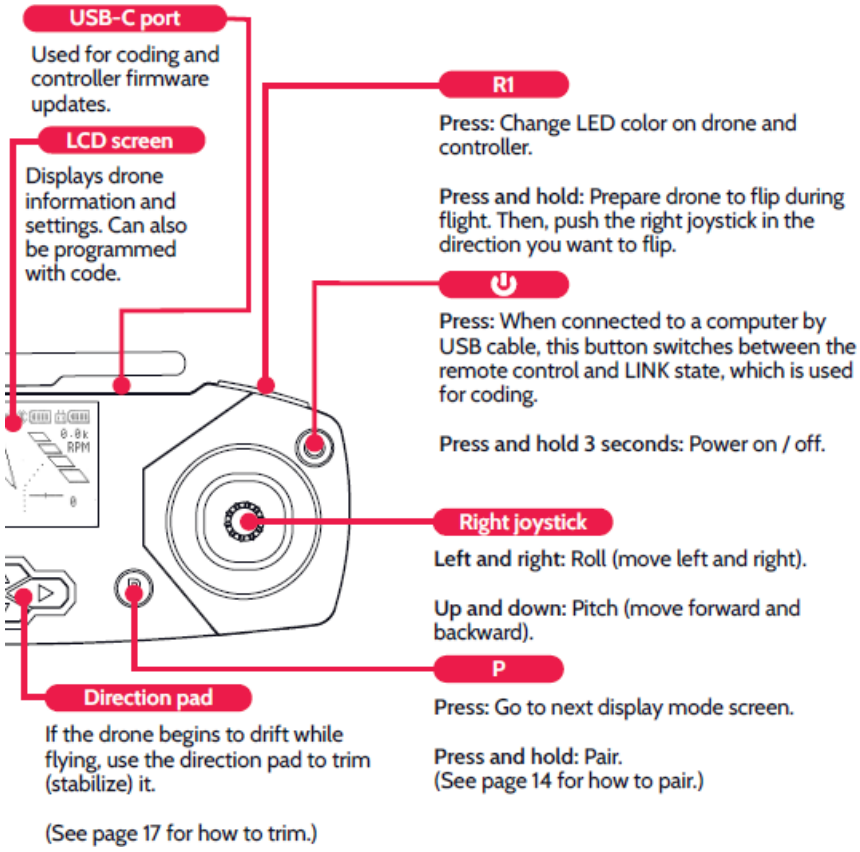


Getting to Know Your Controller

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-guide

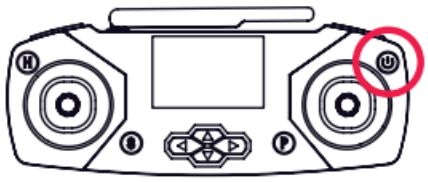




Powering On

Powering on the controller

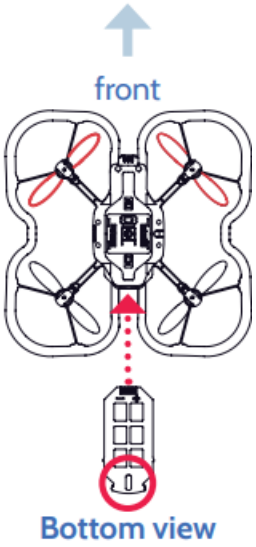
- The controller uses the same battery as the drone.
- Press and hold the button for 3 seconds to power on.



You can also use a USB-C 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 for 3 seconds or unplug the USB-C 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.

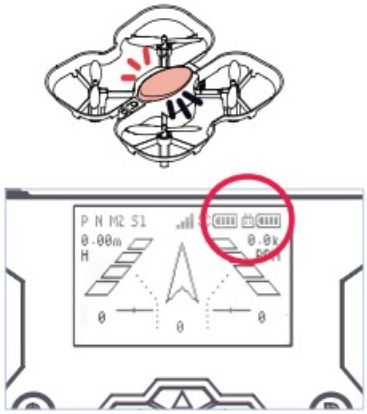


CAUTION
Practice safe battery use. Don’t leave charging batteries unattended. Store batteries away from extreme heat or cold. This will help extend its lifetime. Do not charge or use a damaged or expanded battery. Discard lithium polymer batteries safely according to local e-waste guidelines.

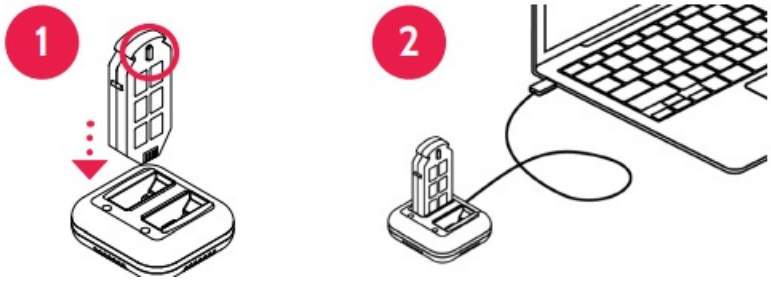
Charging

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 rechargeable. You can plug the controller into an external power source to charge the battery.



Charging the drone battery



1. Insert the battery into the charger, with the tab facing towards the middle of the charger.
2. Plug the USB-C 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.

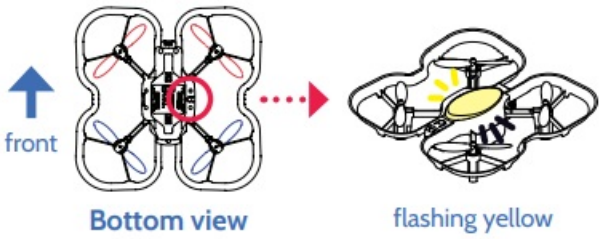
Pairing

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

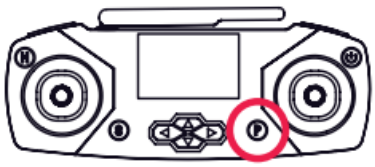
1. Put drone in pairing mode

   Insert a battery into the drone. Press and hold the pairing button on the bottom of the drone for 3 seconds until the drone LED is flashing yellow.



2. Press and hold P

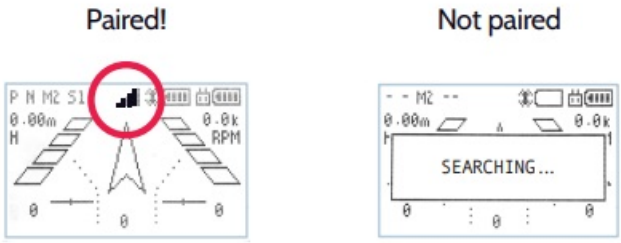
   Power on the controller. Make sure you aren't in the LINK state (see page 12), if your controller is connected to a computer. Press and hold the P button for 3 seconds.



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.

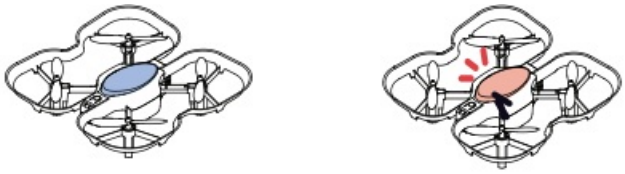
Verify that you are paired by pressing R1 a few times. The colors of the drone and controller should change together. If the LED on your drone is flashing red and the controller screen says "Searching…", your drone and controller are not paired.



Using the Controller

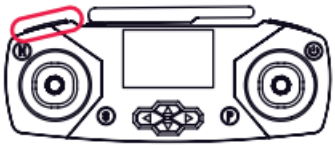
Here are a set of common commands you can use with the controller to pilot the drone.

Taking off, landing, stopping, and changing speed



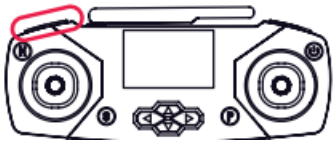
Take off

- Press and hold L1 for 3 seconds.
- The drone will take off and hover at about 1 meter above ground.



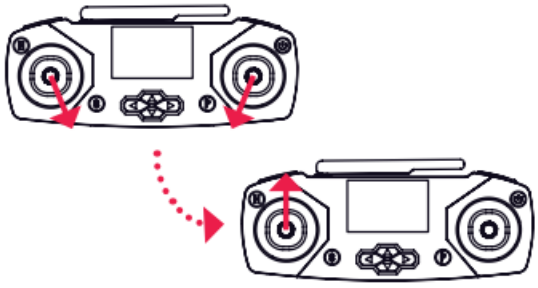
Land

- 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).

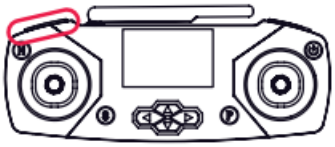


Emergency Stop

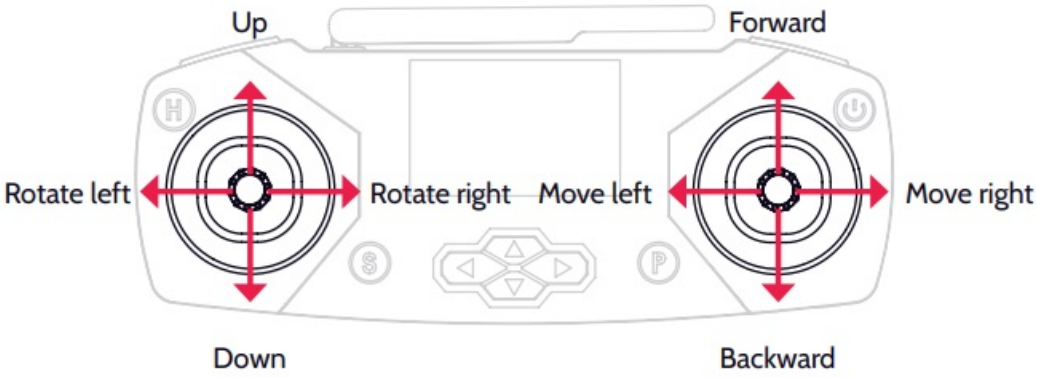
Press and hold L1 and pull down on the left joystick. Use this to shut the motors off immediately.

CAUTION
Whenever possible, press and hold L1 to land safely. However, if you've lost control of the drone, 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 best to catch your drone whenever possible.

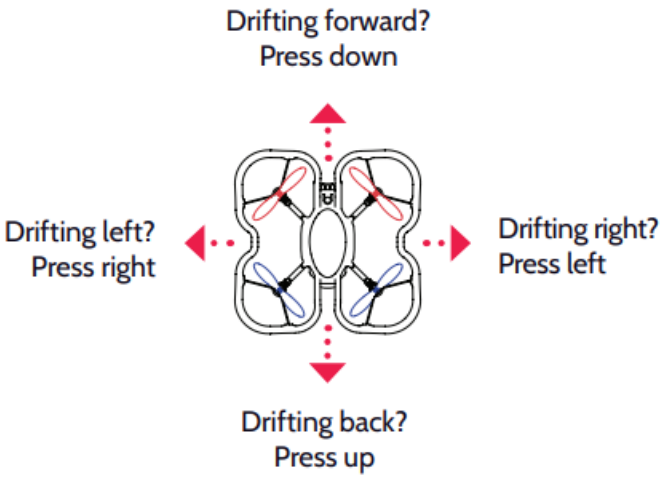
Change speed
Press L1 to change the speed between 30%, 70%, and 100%. The current speed is indicated in the screen's top left corner with S1, S2, and S3.



Movement during flight
While flying, these are the controls for the drone, using the joysticks. The following is using Mode 2 controls, which is the default.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
Drifting forward?Press down



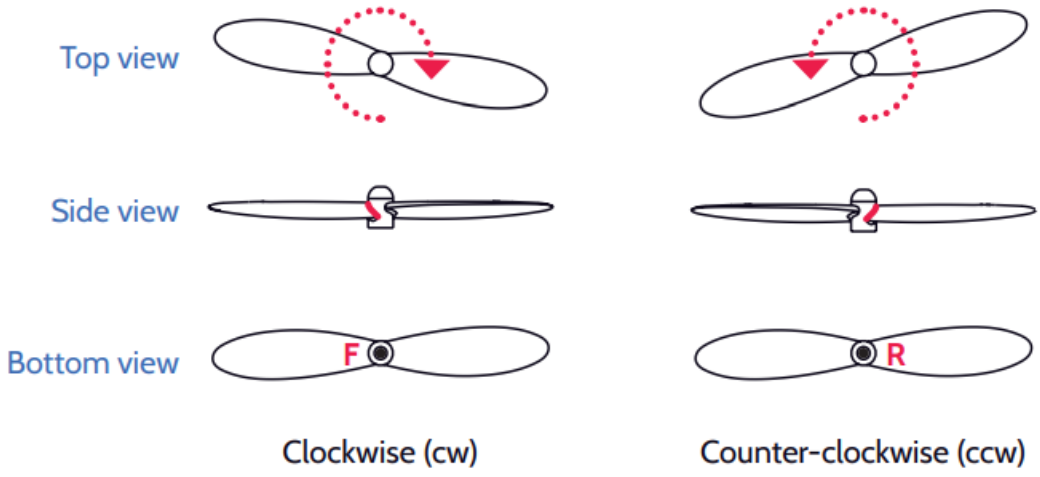
Trimming to prevent drift Use the direction pad buttons to trim the drone if it drifts when hovering. Trim in the opposite direction that the drone is drifting.

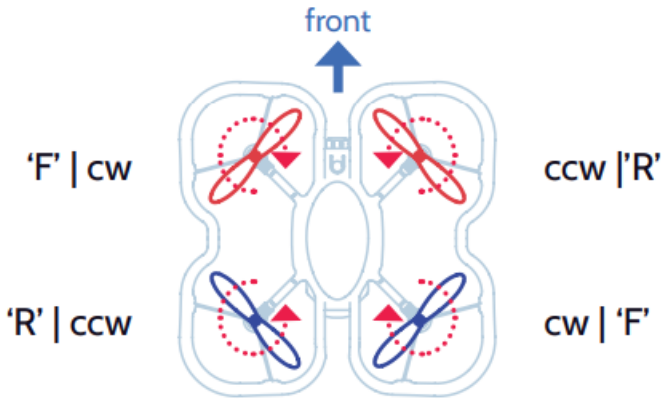
Complete controller guide
Take a look at our complete video guide about the controller:

robolink.com/codrone-edu-controller-guide

Propeller Placement

Your CoDrone EDU (JROTC edition) 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.





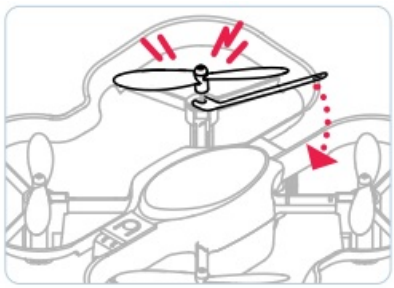
TIP

An easy way to remember the directions:

- F for fast forward, so clockwise.
- R for rewind, so counter-clockwise.

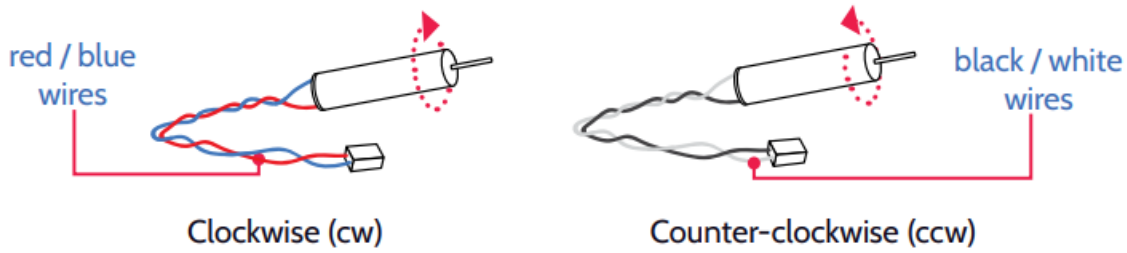
Please note, a propeller's color does not indicate its rotation. However, we recommend placing the red propellers at the front of the drone. This will help identify the front of the drone during flight.

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. Insert the fork-shaped end of the tool under the propeller hub, then push the handle down, like a lever. The new propeller can be pushed onto the shaft of the motor. Be sure it's fully inserted, so it doesn't detach during flight. Make sure that the replacement propeller's rotation is correct, and perform a quick flight check.

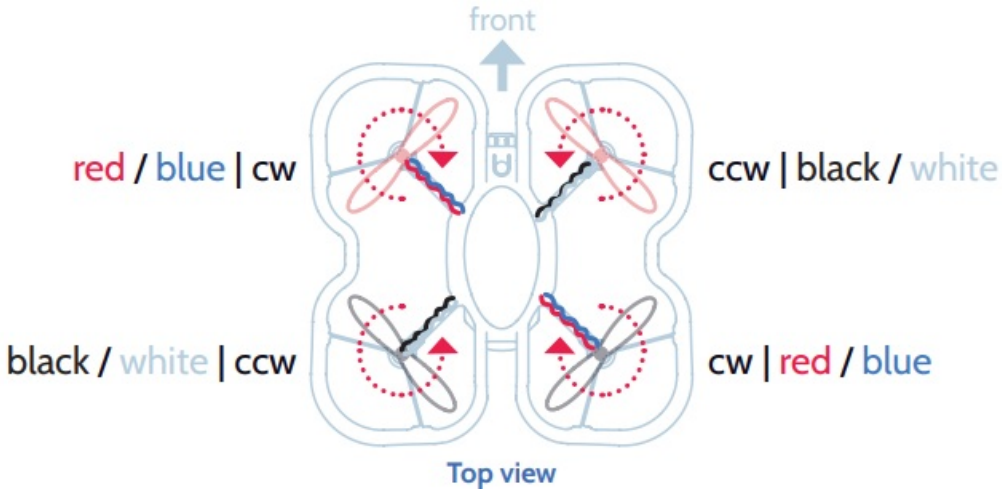


Motor Placement

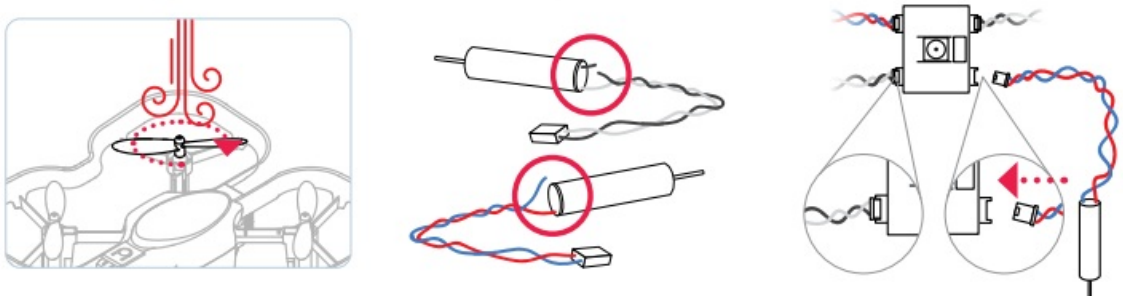
Motor placement is also important for the CoDrone EDU (JROTC edition). Like propellers, there are 2 types of motors, indicated by the color of the wires. Motor directions should match propeller directions.



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. 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 a more involved process, so we recommend carefully following our motor replacement video. Replacement motors are sold separately.

robolink.com/codrone-edu-motors-guide

Troubleshooting

Here are some common issues you might encounter with the CoDrone EDU (JROTC edition), and how to address them.

My drone drifts when it flies.

1. Your drone may need trimming. Use the direction pad buttons to trim the drone. See page 17.
2. The flooring may be interfering with the optical flow sensor. Try changing the environment or flying over a different surface. See page 5.

My drone and controller are blinking red.
The drone and controller are probably un-paired. See page 14.

The controller is vibrating and my drone is beeping and flashing red
If the drone flashing and controller vibrating is accompanied by a beeping sound on the drone, your drone battery is probably low. Land and replace your battery.

The drone isn't flying after a crash.

1. Check propellers for debris or damage. Replace if necessary. See page 18.
2. Check for structural damage to motor wires and connectors. Replace if necessary. See page 20.
3. The drone may have sustained damage to one of the flight sensors. Contact Robolink Help to diagnose.

My controller is discharging too quickly.
Try turning off the LCD backlight to conserve your battery. Press H to toggle the backlight on and off.

The drone isn't responding to any of the controller buttons or joysticks.
If your controller is connected to a computer via USB, you're likely in the LINK state instead of the remote control state. Press the  button to switch to the remote control state. The LINK state is used for programming.

One or more propellers are spinning but my drone is not taking off.

1. Incorrect propeller or motor orientation may cause the drone to stay in place or behave erratically during take off. See page 18.
2. Check motor wires for damage or disconnection that may be preventing the motor from turning on. See page 21.
3. If the controller shows a "vibration" error, clean out the propeller hub and ensure the propeller is clean and spins freely without wobbling. Replace any motor or propeller as needed.

My battery isn't charging.
Try disconnecting the USB-C cable and the battery. Then plug the battery back in first, then the USB-C cable.

Robolink Help
For more complete troubleshooting help, head over to Robolink Help, where we have dozens of articles and videos for common issues. You can also use Robolink Help to reach out to us for technical support.

help.robolink.com

Tips for the Classroom

Follow these tips to keep your classroom environment safe and fun.

Divide your learning space into a "flight" area for drones and a "coding/piloting" area for people.

Tie up loose hair, put away plastic bags, and tuck away thin hanging items such as strings hanging from clothing or around the room. These can get caught in the propellers.

To avoid getting nicked by the propellers, never grab the drone body from above. Instead, only hold the drone by the guards or by the underside of its body.

To minimize wait time between flights, start class with at least 2 fully charged batteries per drone, and charge any depleted batteries immediately.

Keep depleted batteries and charged batteries in two separate bins, so batteries are organized and students can swap batteries quickly.

Learning to Code with CoDrone EDU (JROTC edition)

Now you know all the basics! 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 CoDrone EDU (JROTC edition).

For technical questions and help: **help.robolink.com**
For library functions and documentation: **docs.robolink.com**

How to update your drone and controller's firmware:

robolink.com/codrone-edu-j-firmware

Learn about the Aerial Drone Competition:

robolink.com/aerial-drone-competition

Access a digital version of this manual:

robolink.com/codrone-edu-manual

FCC STAMENT

Rule Part 15.19(a)(3): 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.

Rule Part 15.21: The users manual or instruction manual for an intentional or unintentional radiator shall caution the user that changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Note: This equipment has been tested and found to comply with the limits for a Class B digital

NOTE: 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 or more 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

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Documents / Resources

	ROBOLINK RL-CDEJ-100 Programmable Drone [pdf] User Guide RL-CDEJ-100 Programmable Drone, RL-CDEJ-100, Programmable Drone, Drone

References

- Robolink Documentation
- Robolink Help
- CoDrone EDU – Robolink Basecamp
- Getting Started with CoDrone EDU (JROTC ed.) – Robolink Basecamp
- How do I update the firmware on my CoDrone EDU (JROTC ed.) drone? - Robolink Help
- Getting Started with CoDrone EDU – Robolink Basecamp
- Getting Started with CoDrone EDU – Robolink Basecamp
- User Manual

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