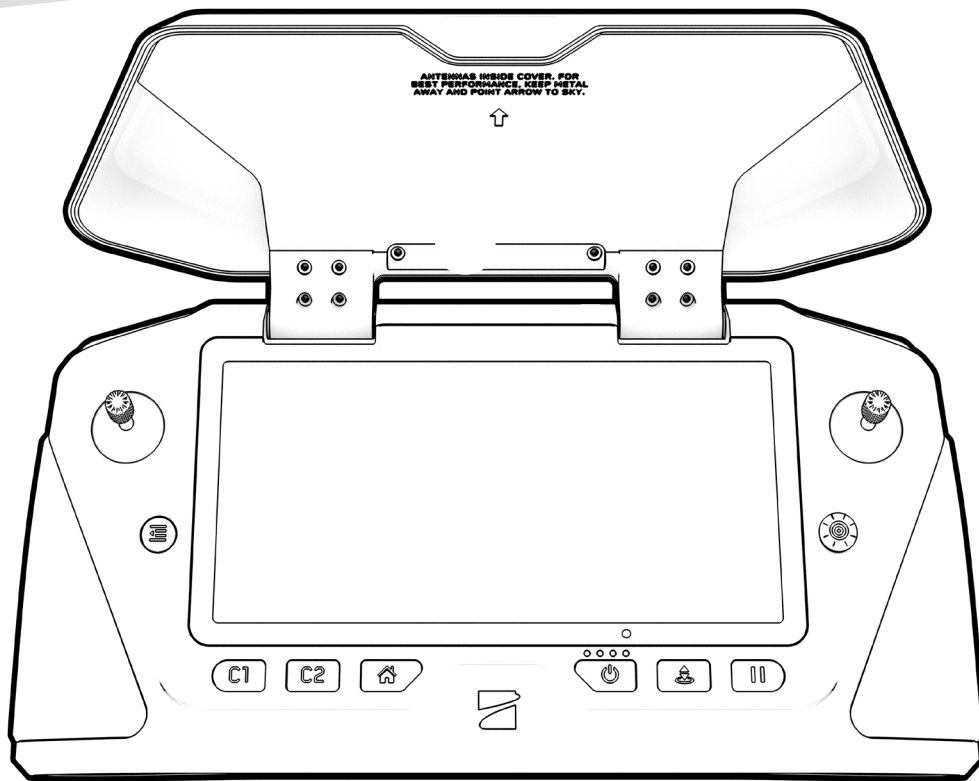




Operator Manual

Skydio Enterprise Controller



WARNING: Please read all documentation provided with your Skydio including but not limited to the Safety & Operating Guide found here: www.skydio.com/manuals.

Updated: August 31, 2022

Version: 21.0

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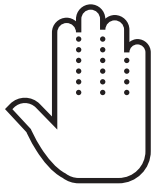
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Flying Safely

Safety Guidelines

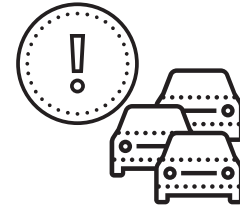
Read the full [Skydio Safety and Operating Guide](#) before your first flight.



Keep your fingers away from moving propellers at all times.



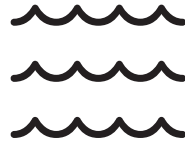
Use caution around reflective surfaces (still water, mirrors, etc.) and small obstacles (thin branches, utility lines, ropes, chain link fencing, etc.)



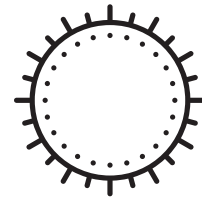
Skydio does not avoid moving objects or cars.



Skydio is not weatherproof – don't fly in rain, snow, fog, high winds, etc.



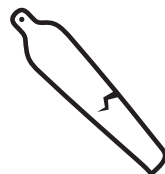
Before flying over water, ensure your drone has GPS lock. Launch and land your drone over a dry surface.



Skydio 2/2+: Don't fly in low-light conditions or in poor visibility.
Skydio X2: Fly with extreme caution in GPS Night Flight mode as Obstacle Avoidance is off.



Clean all of the cameras so Skydio can see clearly.



Check your propellers for damage before flying.



Follow all civil aviation authority regulations, as well as any applicable local and federal laws.



CAUTION: Skydio Enterprise Controller is not weatherproof. Do not operate in any precipitation, including rain, fog, snow, or similar environments. Do not rest the Controller in sand, dirt or on similar terrain where particles can get trapped in the fan. Do not use batteries if the magnets or connector pins are damaged.

Flying Safely

Pre-Flight

- Ensure that all of the camera lenses are dust and smudge-free prior to flight.
- Inspect the battery magnets and connections for damage and debris prior to flight.
- Inspect propeller blades for nicks, cracks, or other visible damage prior to flight.
- Inspect the chassis for damage and debris prior to flight.
- Remove the gimbal retaining clip from the front-facing camera.
- Ensure any Battery Saver or Low Power modes are disabled on your mobile device. These modes may interfere with Skydio's ability to communicate with the device and negatively impact your flight experience.

Environment

- Do not fly in precipitation, fog, or snow.
- Ensure flight environment has good visibility. Skydio 2/2+ can only fly in normal daytime conditions.
- Do not fly in extremely hot temperatures above 104°F (40°C).
- Do not fly in extremely cold temperatures below 23°F (-5°C).
- When flying in temperatures below 32°F (0°C) ensure your batteries are pre-warmed to 50°F (10°C) prior to takeoff.
- Avoid windy weather conditions, or gusts above 25 mph (40 km/h) for Skydio 2/2+ and 23 mph (37 km/h) for Skydio X2.
- Fly cautiously around reflective surfaces such as still water or mirrors.
- Before flying over water, ensure your drone has GPS lock. Launch and land your drone over a dry surface.
- Do not fly around objects less than .5 in (1.27 cm) in diameter such as thin branches, utility lines, ropes, netting.
- Do not fly around objects in motion such as cars, boats, balls, animals, or other drones.

Warnings

- Fly cautiously around people.
- Avoid transparent or reflective surfaces, windows, or mirrors greater than 23 in (58 cm) wide.
- Avoid moving obstacles, cars, and animals.
- The pilot in command (PIC) is responsible for managing altitude, range, and battery level and monitoring in-app messages and alerts.
- Avoid flight in low-light conditions.
- Avoid flight in low-light conditions.
- Alert messages will display if Skydio determines the environment is not safe for flight.
- When instructed to do so, immediately fly your Skydio to the safest area and land.
- Flying at high altitudes may significantly increase the time required to return and safely land.
- Propeller blades are sharp—handle with care.
- Skydio should not be used or handled by a person under the age of 18.

Regulations

- Follow all civil aviation, such as the FAA or your countries regulatory agency, rules and regulations.
- You are responsible for your Skydio at all times. When operating your Skydio drone check knowbeforeyoufly.org / B4UFLY / CASA-verified before flying.
- Do not fly in an environment where the use of the device is not authorized or restricted.
- **Keep your Skydio drone within visual line of sight at all times**, unless you have received express permission to fly beyond visual line of sight from a civil aviation authority such as the FAA.



Go to <https://skydio.com/safety> and <https://skydio.com/support> for more information and helpful tips, videos, and articles.

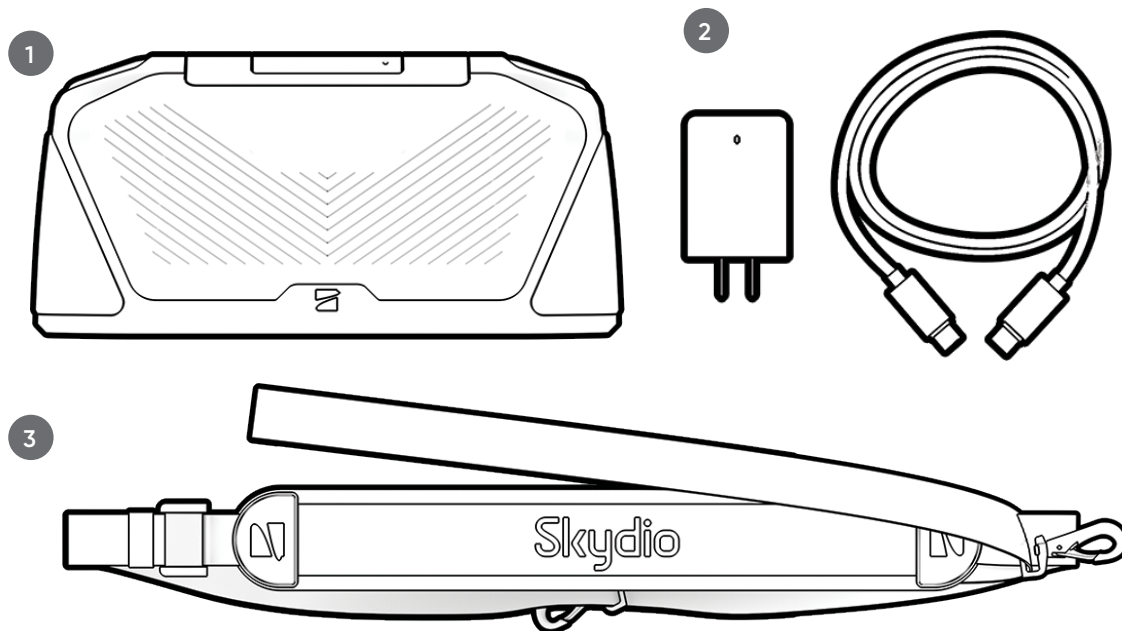
Skydio Enterprise Controller Overview

Skydio Enterprise Controller enables access to the advanced autonomy systems allowing operation of Skydio 2, Skydio 2+ and Skydio X2 with minimal cognitive effort. The Controller needs to be paired with your drone pre-flight and can only be paired with one drone at a time.



Follow the [Skydio Safety and Operating Guide](#) when flying – avoid thin branches, thin wires, and large glass/reflective panes.

Enterprise Controller and Accessories

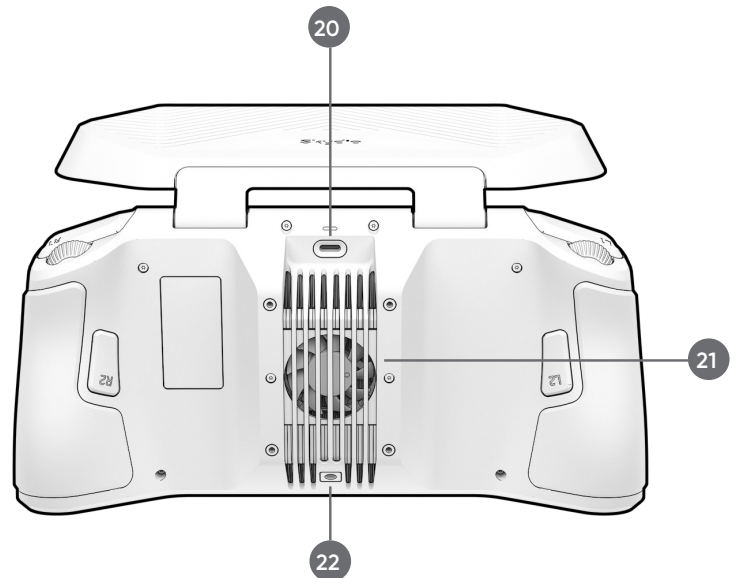
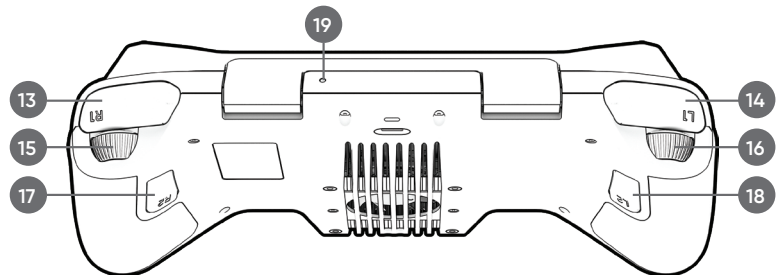
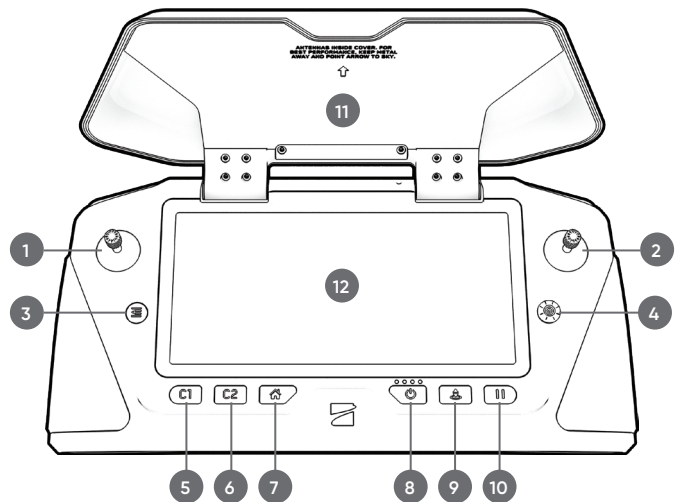


1. Controller
2. USB-C to USB-C cable and 65W power adapter
3. Neckstrap

Skydio Enterprise Controller Overview

Hardware

1. **Left joystick** - height and rotation (*Mode 2, default*)
2. **Right joystick** - lateral movement (*Mode 2, default*)
3. **Back / Menu** - navigate to previous screen
4. **Directional pad** - reserved for future update
5. **C1 button** - toggle Obstacle Avoidance
6. **C2 button** - toggle lights
7. **RTH button** - Return to Home
8. **Power button**
9. **Launch / Land button**
10. **Pause button** - pause an autonomous action
11. **Controller clamshell** - embedded antennas
12. **User interface screen**
13. **R1 button** - shutter / record
14. **L1 button** - boost, temporarily fly at max speed
15. **Right wheel** - zoom
16. **Left wheel** - gimbal tilt
17. **R2 button** - toggle map view
18. **L2 button** - toggle camera view
19. **Reset button**
20. **USB-C port**
21. **Cooling fan**
22. **Neck strap/tripod (1/4-20 mount)**

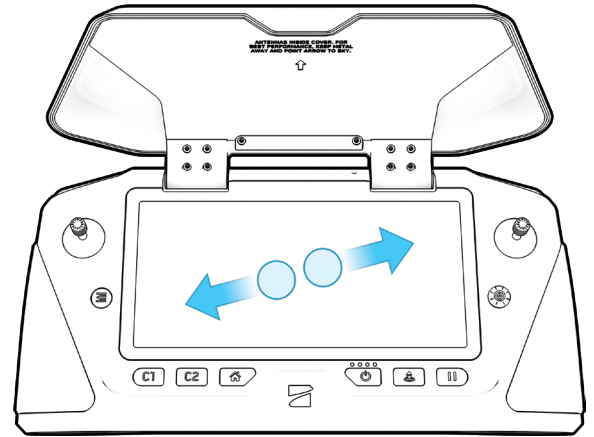


NOTE: There are slight control variations when flying Skydio 3D Scan. Please read the [Skydio 3D Scan Software Manual](#).

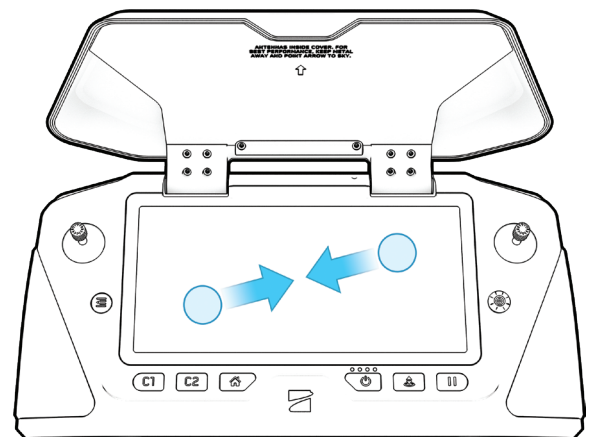
Skydio Enterprise Controller Overview

Touch Gestures

- Drag vertically to increase or decrease gimbal pitch
- Drag horizontally to adjust yaw
- Pinch and drag your fingers away from each other to digitally zoom in up to 16x with Skydio X2 and 3x with Skydio 2/2+
- Pinch and drag your fingers toward each other to zoom out back to 1x, then out to Superzoom
- Double-tap anywhere on the fly screen to select a location and Skydio will fly to that location



Digitally zoom in



Digitally zoom out

Directional pad (D-pad) Controls

- Push up, down, left, or right to navigate through menus and setting screens
- Press down to select
- To adjust a slider setting, scroll until the slider is highlighted and press down to select. The slider will turn blue to indicate it is active. Push left or right to adjust slider values, and press down to confirm



NOTE: Directional pad functionality is not yet compatible with Skydio 3D Scan.

Skydio Enterprise Controller Overview

Customizable Buttons

You have the ability to program the L2 and R2 buttons located on the back of the Enterprise Controller, as well as the Left and Right Wheels.

To customize your buttons:

1. Navigate to **Device Settings** and select the **Controller** tab
2. Scroll until you see **Button Mapping**
3. Select L2 or R2 to customize

L2 and R2 button options:

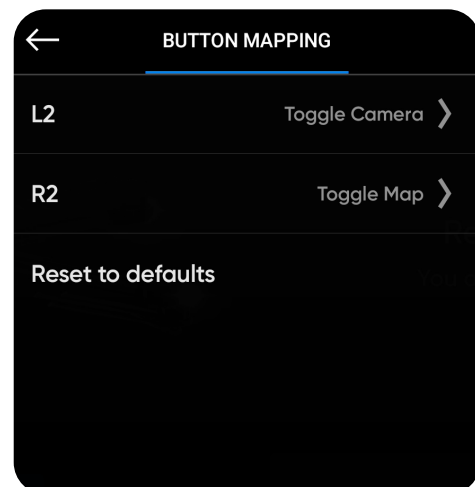
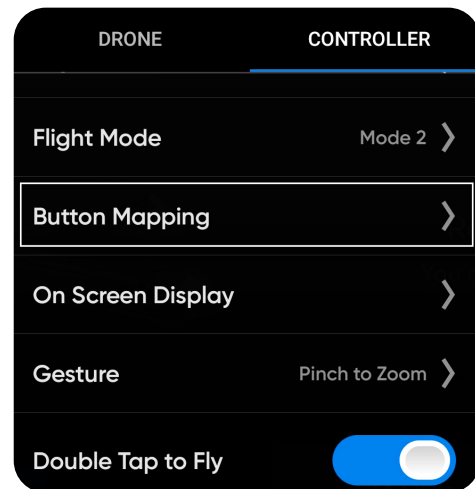
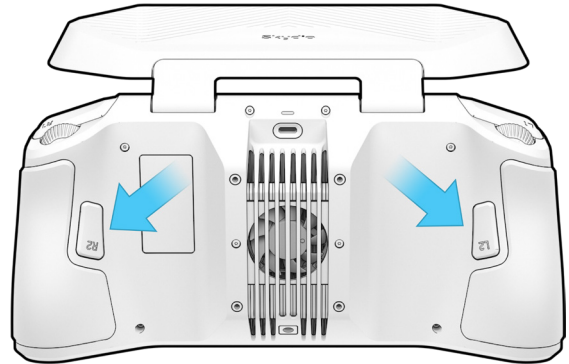
- Toggle Map
- Toggle Camera
- Close Obstacle Avoidance
- Minimal Obstacle Avoidance
- Disabled Obstacle Avoidance
- No Function

Left Wheel customization options:

- Gimbal control
- No function

Right Wheel customization options:

- Digital Zoom
- Physical Zoom
- Exposure Compensation
- No function



NOTE: Customized settings persist across flights and power cycles.

Getting Started

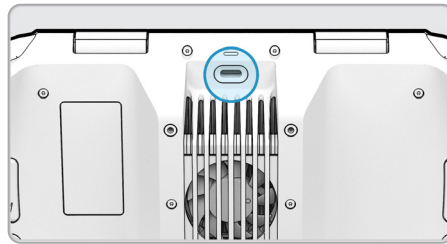
Charging Enterprise Controller

Step 1 - Connect the controller using the USB-C cable and the 65 W power adapter

- or an off-the-shelf 18 W (or above) power adapter

Step 2 - Plug the power adapter into a 100-240 V power source

- flashing lights indicate charging
- the controller will power on and display the charge levels
- lights will remain solid blue for 1 minute and Skydio will power off indicating that the charging is complete



NOTE: The Skydio Enterprise Controller supports charging while in use, including while flying.

Enterprise Controller Charge Levels

When the controller is powered on or charging, the lights on the front of the controller will indicate the current state of charge. When the controller is powered off, you can view the state of charge by pressing the power button.

1 red	●	○	○	○	5% or less
1 yellow	●	○	○	○	6%–15%
1 blue	●	○	○	○	16%–37%
2 blue	●	●	○	○	38%–62%
3 blue	●	●	●	○	63%–87%
4 blue	●	●	●	●	88%–100%



WARNING: Do not fly when the Skydio Enterprise Controller battery is low. If the Controller reaches low battery level while in flight, pilot the drone to a safe location and land immediately.

Getting Started

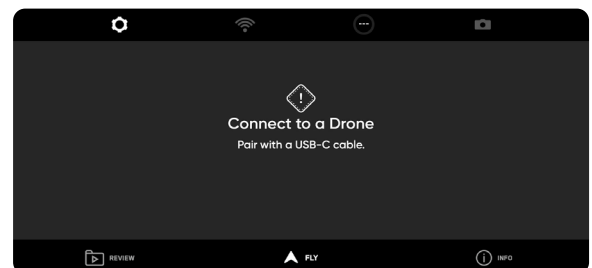
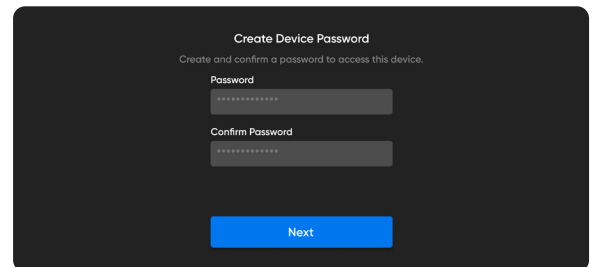
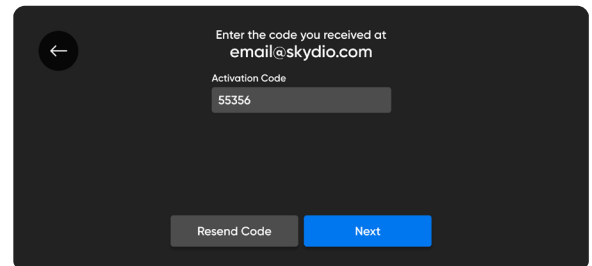
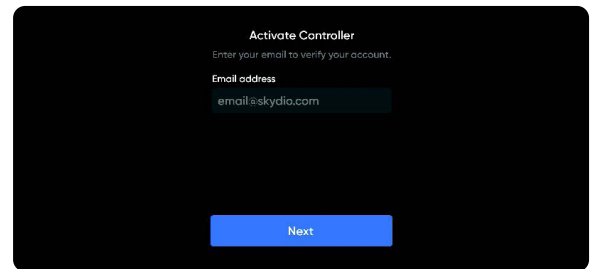
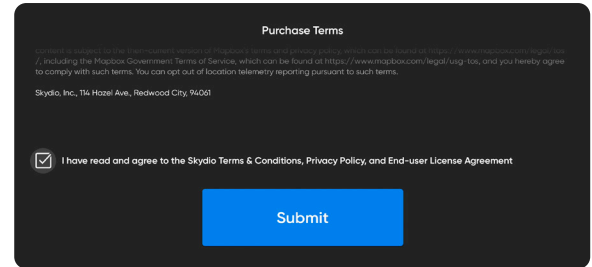
Activating your Enterprise Controller

Activate the Controller using your organization email account that has been provisioned in Skydio Cloud.*

*does not apply to Skydio X2D users

To complete the activation process, follow the steps below:

1. Power on your Controller.
2. Read and accept the Skydio Purchase Terms.
3. Connect to the Internet. When prompted, enter your email address for verification (*does not apply to Skydio X2D users*).
4. You will receive an activation code to the email address you provided. Enter the code and select **Next**. (*does not apply to Skydio X2D users*)
5. (Optional) Set a password for the Controller. The password will be used to unlock the Controller after powering on and to wake it from a sleep state.
6. Once activation is complete, you will see a message prompting you to pair the Controller with your drone.



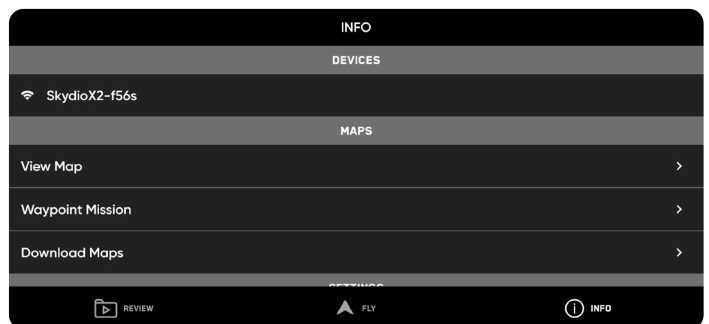
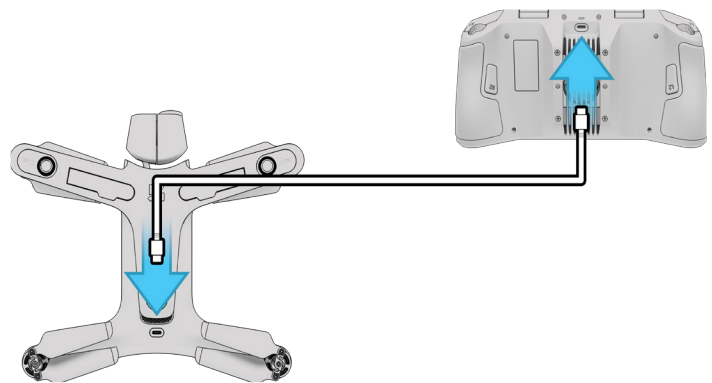
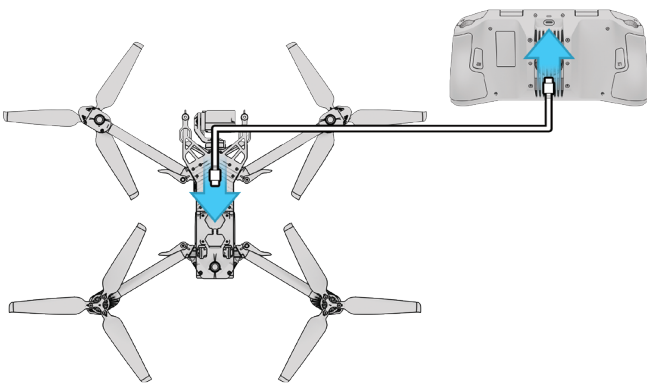
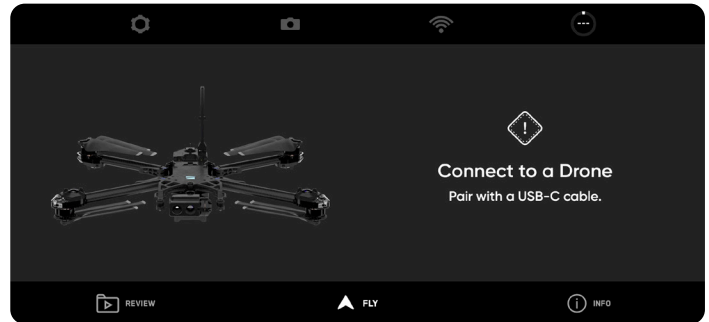
CAUTION: If you set a password, this password cannot be recovered or reset if forgotten! Ensure it is written down and stored in a safe location. If the password is lost, the controller will no longer be usable and will need to be replaced.

Getting Started

How to pair with your drone

Your drone needs to be paired with the Enterprise Controller to fly. To pair your Skydio Enterprise Controller with your drone, follow the steps below:

1. Power on both your drone and Controller. You will see a message alerting you to pair the Controller.
2. Connect the Controller to your drone using the USB-C cable.
3. Once paired, you will see the name of your drone under **INFO > DEVICES** tab and select the name of your drone under **DEVICES**.



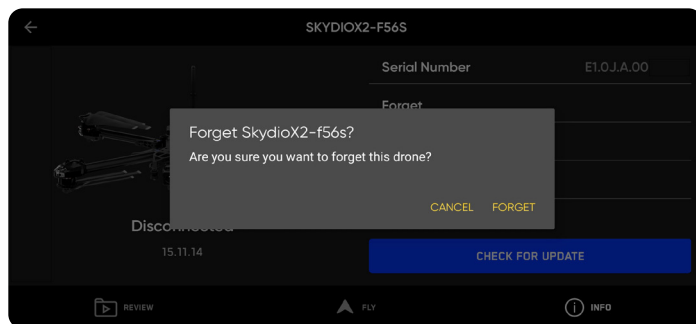
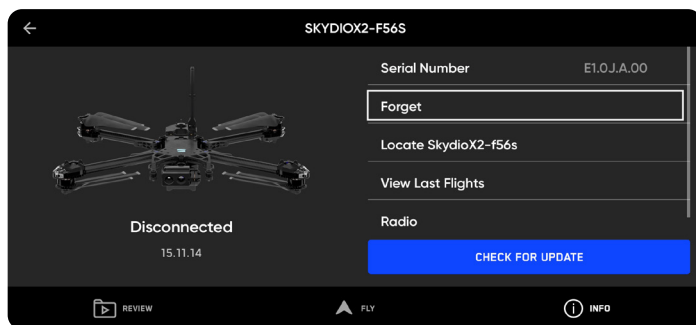
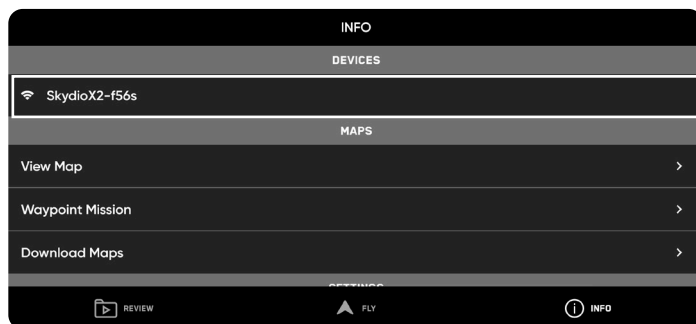
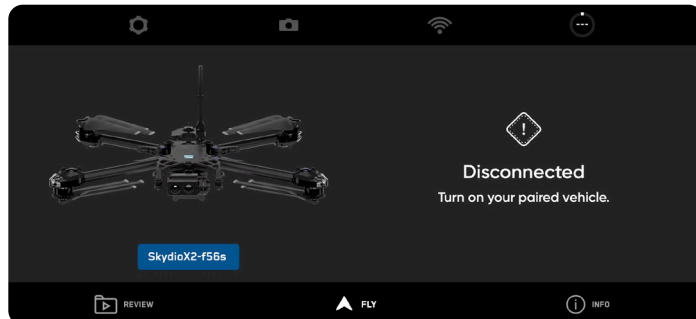
NOTE: Skydio Enterprise Controller can only be paired with one drone at a time.

Getting Started

How to unpair with your drone

To unpair your Skydio Enterprise Controller and your drone, follow the steps below:

1. Power off your drone.
2. Navigate to the **INFO** tab and select the name of your drone under **DEVICES**.
3. Select **Forget**.
4. Select **Forget** once more to confirm unpairing.



Controller Settings

Settings Overview

To access Controller settings, select **Device Settings** (⚙️) in the top left of your screen. Select the Controller tab.

Gimbal Speed: controls how quickly the camera gimbal pitches up and down



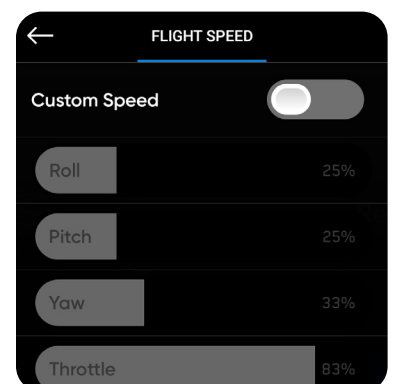
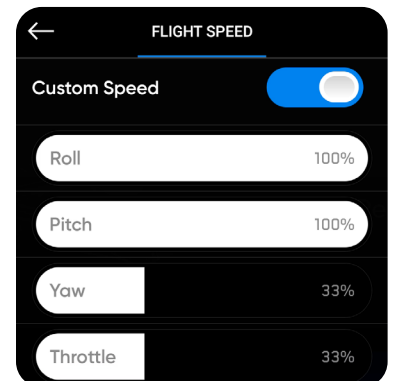
Invert Wheels: inverts the default controls for the Left Wheel (gimbal pitch) and Right Wheel (zoom) on the controller



Flight Speed: customize the maximum allowed speed for roll, pitch, yaw, and throttle.

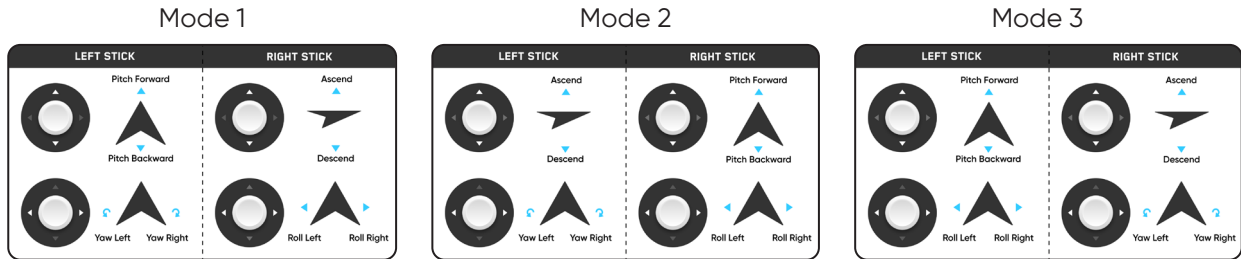
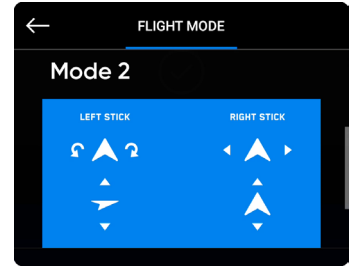
When toggled off, the Flight Speed options are set to defaults:

- Roll - 25%
- Pitch - 25%
- Yaw - 33%
- Throttle - 83%



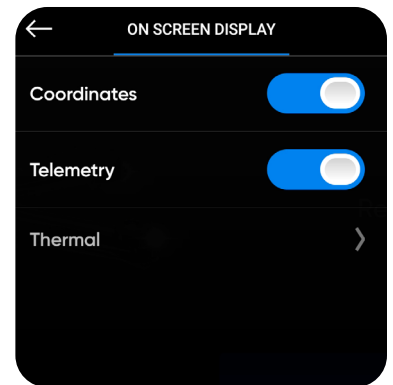
Controller Settings

Flight Mode: determines how your Controller joysticks will maneuver your drone. You may switch between Mode 1, 2 (default), and 3 style.

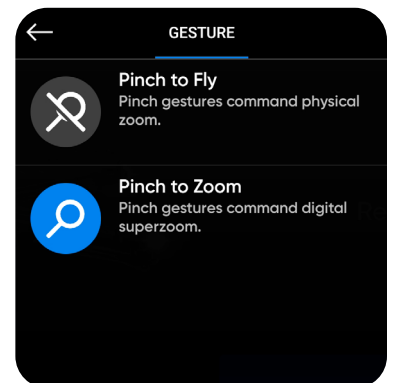


On Screen Display: toggle the information you want displayed while flying on or off

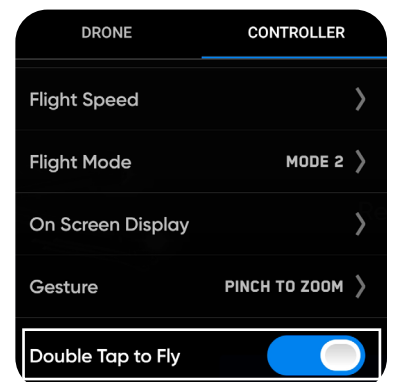
- **Coordinates** - GPS location
- **Telemetry** - speed, height above launch point, range from launch point and gimbal pitch (camera angle) are displayed while in flight
- **Thermal** - toggle picture-in-picture (PiP) and select the thermal palette (*Skydio X2 Color-Thermal only*)



Gesture: opens sub menu to toggle **Pinch to Fly** and **Pinch to Zoom** on or off



Double Tap to Fly: toggle double tap to fly on or off

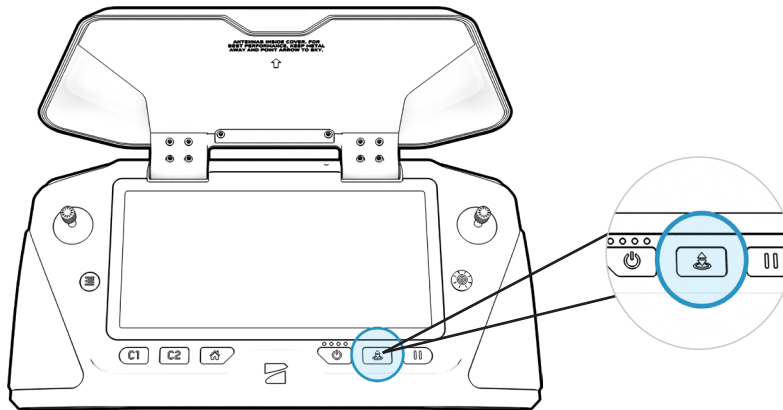


Launching, Returning and Landing

Launch

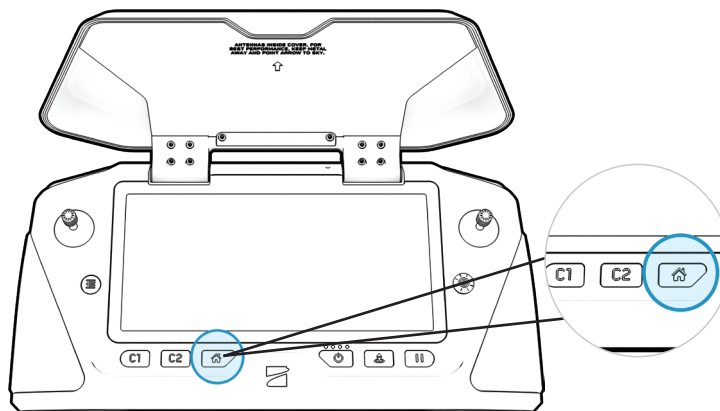
Before you begin your first flight, please read and follow the safety guidelines found at <https://skydio.com/safety>.

1. Find a clear area to launch.
2. Place your drone on a flat, stable surface.
3. Press and hold the **Launch/Land** button on the Controller.
 - You may also launch by pressing and holding the on-screen Launch button



Return to Home

The Return Button on the Enterprise Controller commands your drone to return to its Launch location. If you have set a Home Point on the map, pressing the Return Button will command Skydio to return to the Home Point instead of the Launch location.

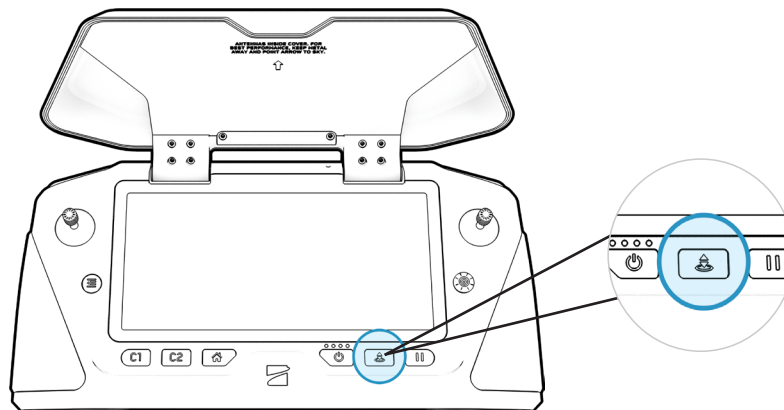


Launching, Returning and Landing

Land

To land your drone using the Controller:

1. Stop any subject tracking or autonomous actions and manually fly the drone to a stable landing spot that is clear of debris and people.
2. To land, press and hold the **Launch/Land** button on the Controller.
 - You may also land by pressing and holding the on-screen Land button

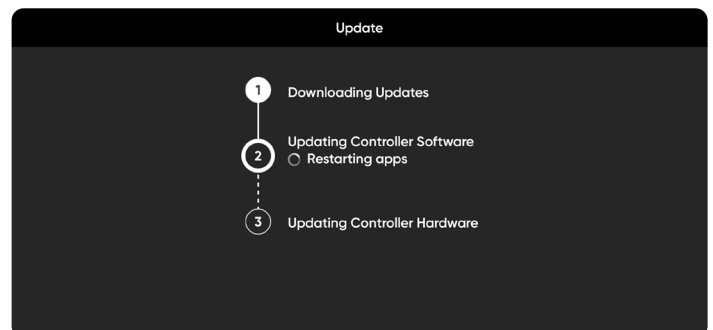
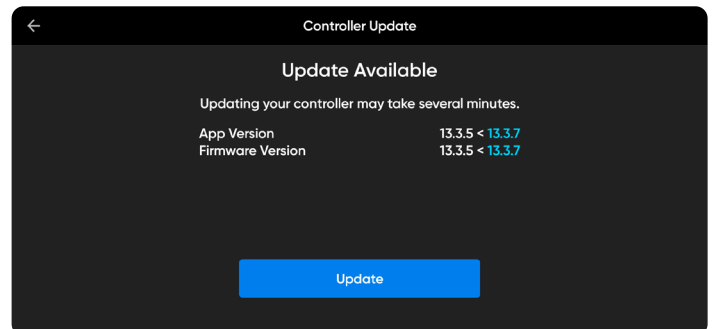
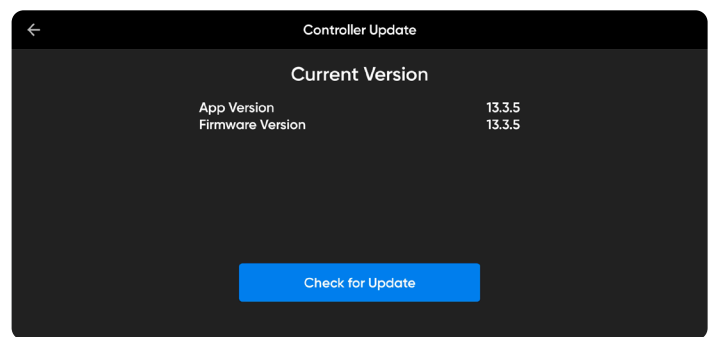
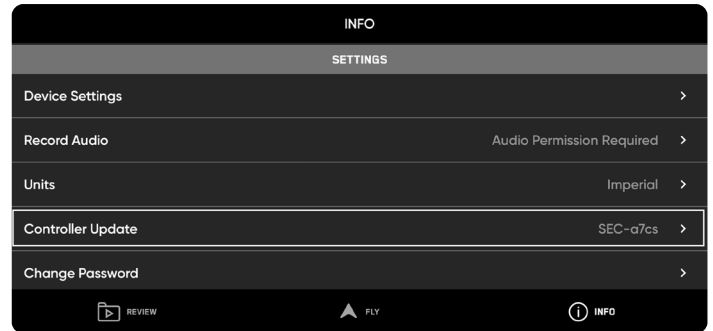


Updating the Enterprise Controller

How to Update

Before flying, ensure that your Skydio Enterprise Controller is up-to-date. Verify your software version in the following location:

1. Navigate to **INFO > Settings**.
2. Select **Controller Update**. You will see a screen which displays the app and firmware versions of your device.
3. Tap the blue **Check for Update** button. The Enterprise Controller will automatically search for updates and notify you if one is available.
4. Select **UPDATE** to start the process.
5. Wait as the Controller completes three steps:
 - Downloading updates
 - Updating Controller software
 - Updating Controller hardware
6. You will see a screen displaying the new app and firmware versions once the update is complete. Select **Done**.



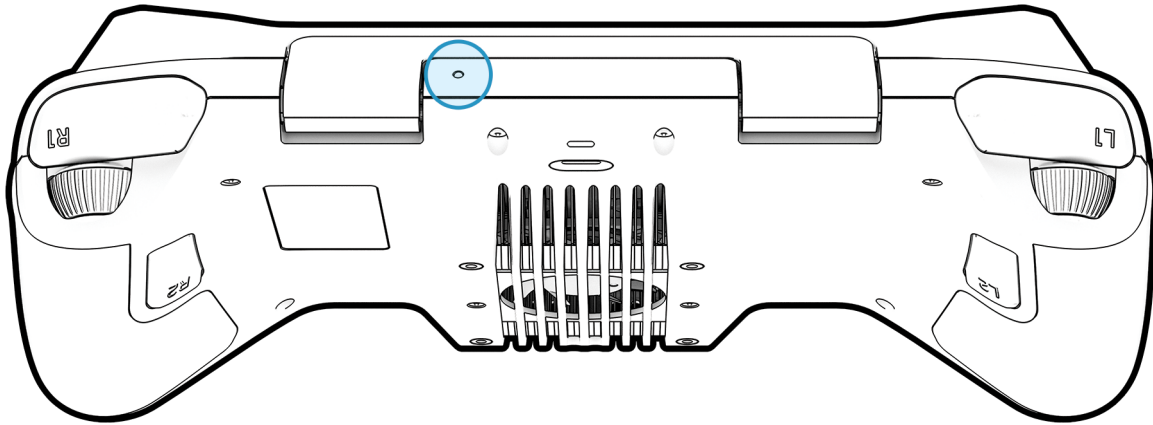
Resetting the Enterprise Controller

How to Reset

If your Skydio Enterprise Controller is in an unresponsive or other off-nominal state, you may need to perform a hard reset. This will power off the controller and allow you to reboot.

To reset your Controller:

1. Press the hard reset button on the top of the Controller.
2. Select either **Power Off** or **Restart**.
 - the controller will restart or power off, allowing you to power it back on again



Downloading Maps

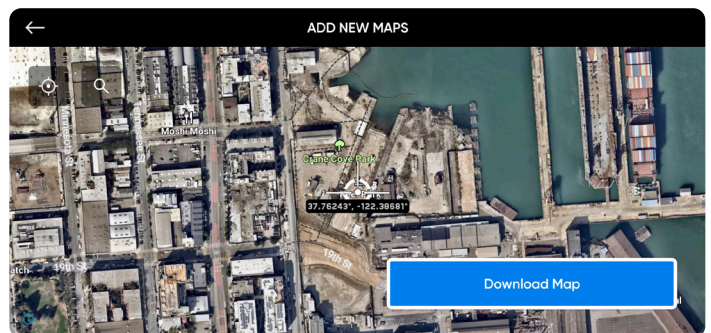
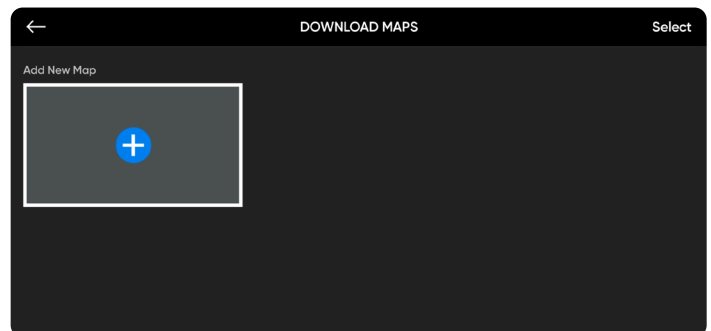
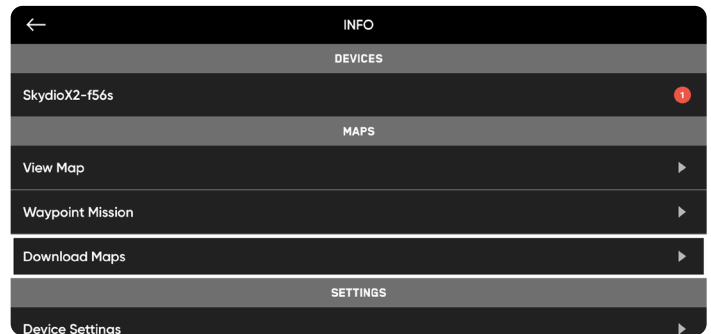


NOTE: Refer to this section if your Controller is an **online** unit.

If you plan to fly in an area without WiFi connection, you will need to download the map data for that region prior to your flight. You may save up to 10 maps in the Map Library.

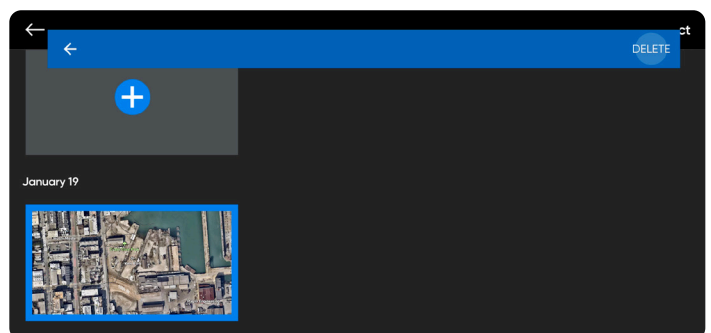
How to Download Maps

1. Ensure you have Internet access.
2. Navigate to **INFO > Maps**.
3. Select **Download Maps**.
4. Under **New Map** select the **plus (+)** icon.
 - a satellite view of your location will display
5. Navigate to your desired location using Touch Gestures.
 - center your location
6. Select **Download Map**.



How to Delete Maps

1. Navigate to **INFO > Maps**.
2. Select **Download Maps**.
3. Select **Select** in the top left corner.
4. Choose the map you wish to delete and select **Delete** in the blue bar to confirm.



Delete maps

Downloading Maps

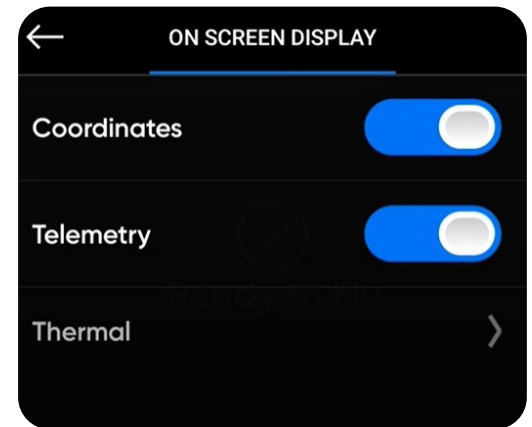
Map Coordinates

When viewing maps or creating a waypoint mission, you have the option to enter latitude and longitude coordinates. The Coordinates setting is enabled by default and displays the coordinates of your drone, the Enterprise Controller, Home Point, and Fly Here Now on the map in real-time.

Disable this setting if you do not want the coordinates displayed on the map. Your selection will persist across flights and power cycles.

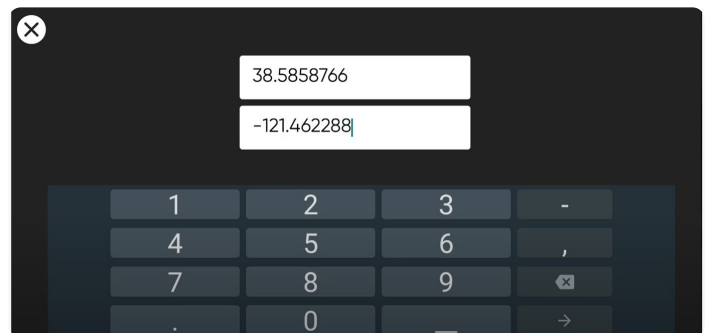
To enable or disable displaying coordinates on the map:

1. Navigate to the Device Settings menu and select the **Drone** tab.
2. Select **On Screen Display**.
3. Select **Coordinates**.



To enter latitude and longitude coordinates:

1. Navigate to the Map View.
2. Select the magnifying glass icon.
3. Use the touch-screen to enter your coordinates.



Importing Mapbox and QGC Maps

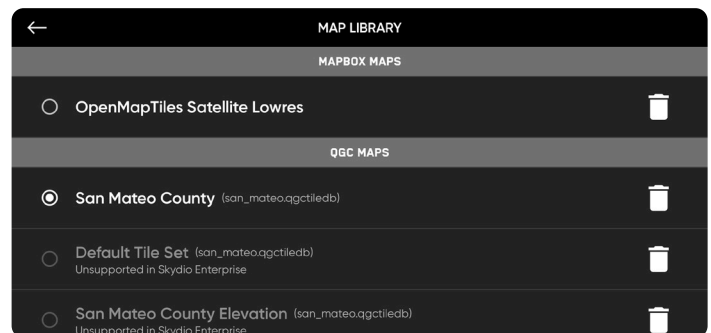
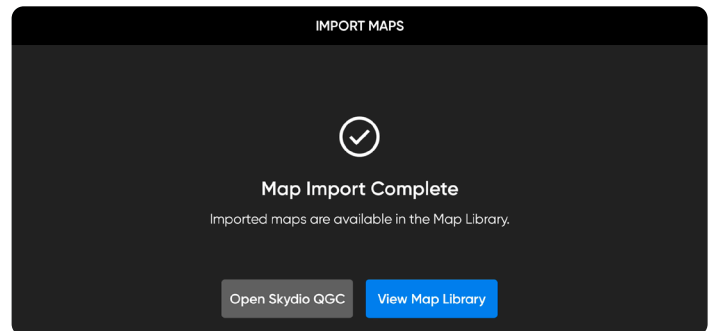
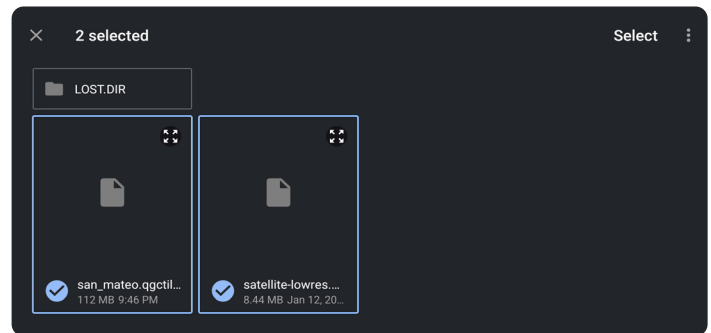
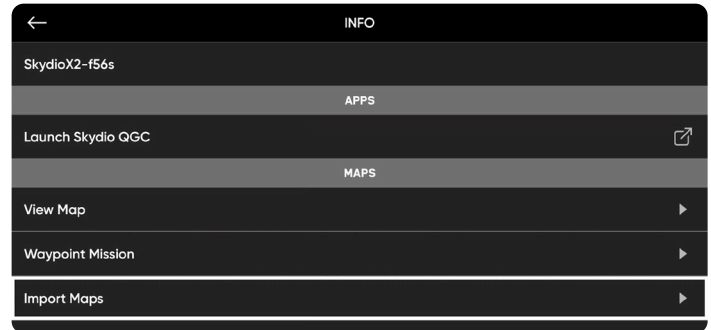


NOTE: Refer to this section if your Controller is an **offline** unit.

You have the ability to import custom QGroundControl (QGC) or Mapbox tiles to the Skydio Enterprise Controller via a USB-C drive or SD memory card reader. You may save up to 10 maps in the Map Library.

How to Import Maps

1. Save your map files onto a USB-C flash drive or SD memory card.
2. Insert the USB-C flash drive or SD card adapter into the Controller.
3. Navigate to **INFO > Maps**.
4. Select **Import Maps**.
5. Select **Select Maps**.
 - Navigate to your storage device
 - Select the maps to import. Press and hold on a file to multi-select maps.
6. Tap **Select** in the top right corner and wait a moment as your maps import.
7. To view your maps, select **View Map Library**.
 - If you have uploaded a QGC map, you will also see an option to open Skydio QGC



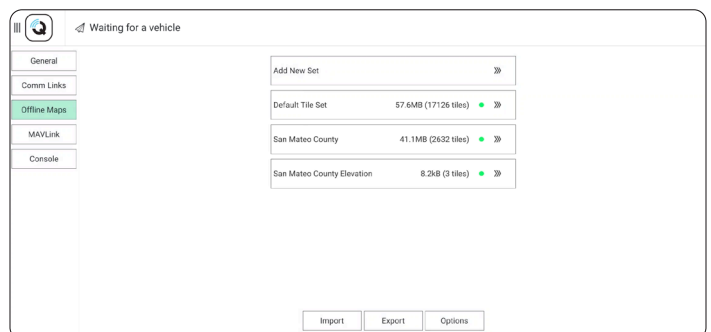
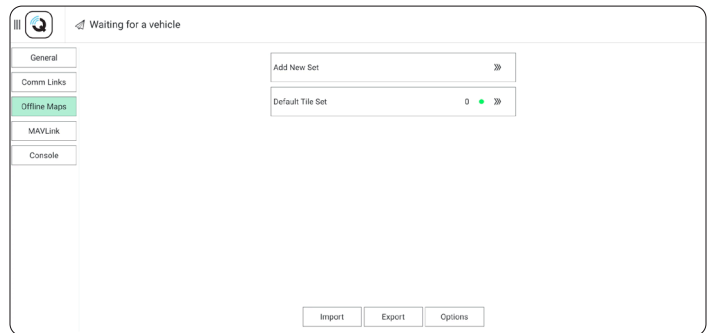
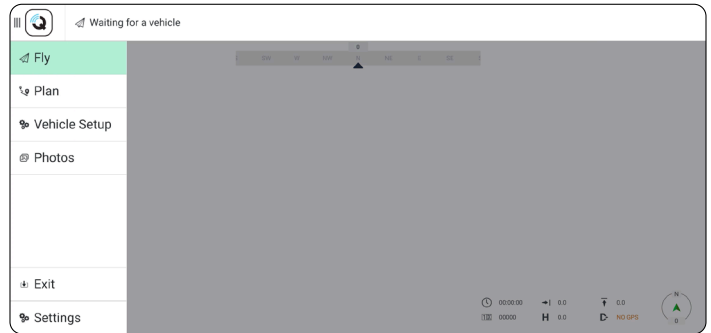
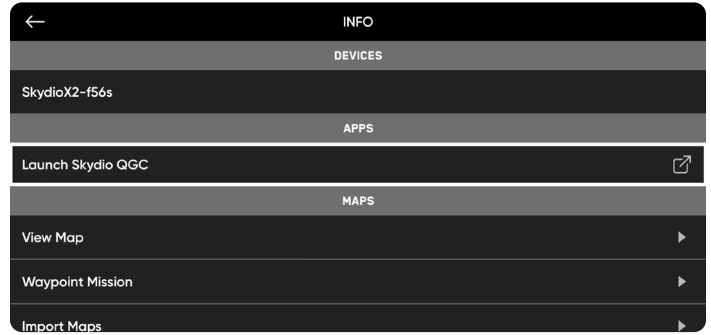
How to Delete Maps

1. Navigate to **INFO > Maps**.
2. Select **Download Maps**.
3. Select **Select** in the top left corner.
4. Choose the map you wish to delete and select **Delete** in the blue bar to confirm.

Importing Mapbox and QGC Maps

Adding QGC maps to Skydio QGC

1. After importing your QGC maps, navigate to **INFO > Apps**.
2. Select **Launch Skydio QGC**.
3. In the Skydio QGC app, select the QGC logo in the top left corner of your screen.
4. Select **Settings** at the bottom of the list.
5. Select **Offline Maps**.
6. Select **Import** and choose the map you want to import.



Importing Mapbox and QGC Maps

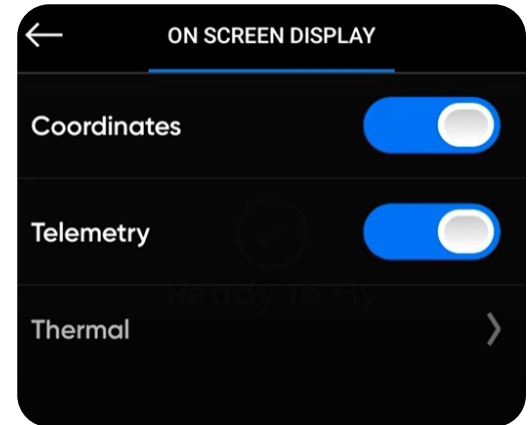
Map Coordinates or MGRS

When viewing maps or creating a waypoint mission, you have the option to enter latitude and longitude coordinates. The Coordinates setting is enabled by default and displays the coordinates of your drone, the Enterprise Controller, Home Point, and Fly Here Now on the map in real-time.

Disable this setting if you do not want the coordinates displayed on the map. Your selection will persist across flights and power cycles.

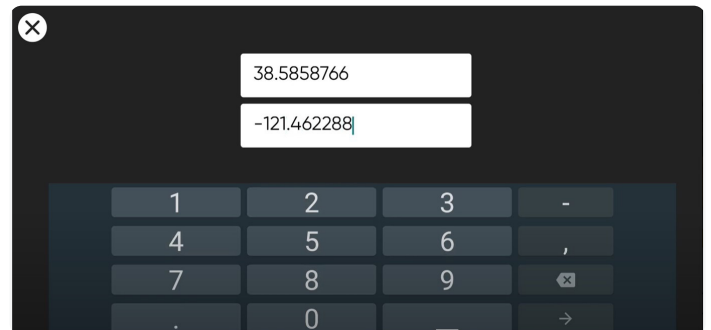
To enable or disable displaying coordinates on the map:

1. Navigate to the Device Settings menu and select the **Drone** tab.
2. Select **On Screen Display**.
3. Select **Coordinates**.
 - MGRS
 - Latitude/Longitude



To enter coordinates:


1. Navigate to the **Map View**.
2. Select the magnifying glass icon.
3. Use the touch-screen to enter your coordinates.



Best Practices

Connection Status

View the strength of the connection between your controlling device and drone, as well as the GPS quality and the number of satellites your drone is connected to.

Select the **Connection Status icon**  to display connected drone status, signal strength, GPS quality, and satellite count.



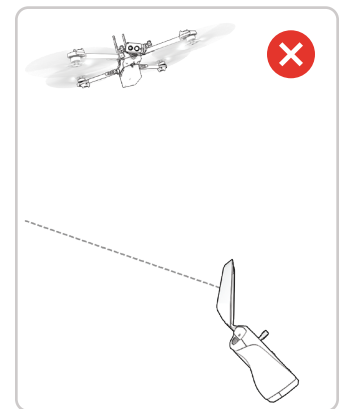
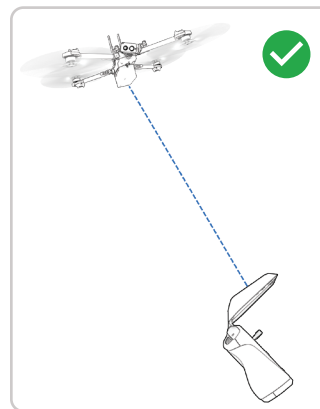
Signal Quality

For best signal quality, always maintain a direct line of sight between the controller and Skydio X2.

When flying at close range high altitude, point the controller cover toward the drone for maximum wireless performance.

When flying at max range, point the controller cover toward the drone while also keeping the controller as far away from your body as possible. Bringing the controller too close to your body will impact wireless performance.

Signal strength and maximum control range may be affected when flying in areas with electromagnetic interference.

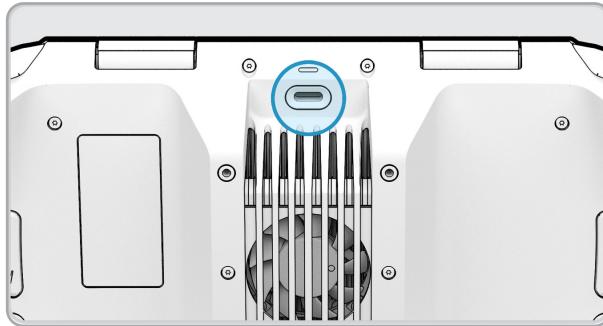


Best Practices

HDMI Output

You have the ability to display your Controller screen to an external HD monitor that has an HDMI port.

1. Power on your Enterprise Controller.
2. Connect the Controller to a third-party USB-C to HDMI cable.



3. Connect the HDMI end of the cable into the monitor.
4. Your Controller screen will automatically display on the monitor.



NOTE: Resolution is compatible up to 1080p.

Specifications

CONTROLLER SOFTWARE	
APPLICATIONS	Skydio Enterprise
WIRELESS LINKS	--
WIRED LINKS	USB 3.1, (via dongle) HDMI
OPERATING FREQUENCIES	1.8 GHz / 5 GHz
MAX RANGE	Expected up to 10 km (1.8 GHz) / expected up to 6 km (5 GHz)
CHANNEL BANDWIDTH	4 / 8 MHz (1.8GHz radio) and 5 / 20 MHz (5GHz radio)
VIDEO	720p30
ENCRYPTION	AES-256

CONTROLLER HARDWARE	
DIMENSIONS	10.75" x 5.25 x 3.0" 27.3 cm X 13.3 cm X 7.6 cm
WEIGHT	1130 g
INPUT	Dual 2-axis joysticks, dual rockers & 10 buttons
SENSORS	GPS, Barometer, Compass, Gyro, ACC
MEMORY	256 GB disk
PROCESSOR	Qualcomm Snapdragon 855

Legal

California Prop 65 Warning

For the Skydio Enterprise Controller: This product can expose you to chemicals including cadmium, which is known to the State of California to cause cancer and birth defects or other reproductive harm. For more information, go to www.P65Warnings.ca.gov.

Compliance statement

These devices comply with Part 15 of the FCC Rules and with ISED Canada license-exempt RSS standard(s). Operation is subject to the following two conditions: (1) these devices may not cause harmful interference, and (2) these devices must accept any interference received, including interference that may cause undesired operation.

Ces appareils sont conformes aux normes RSS exemptes de licence d'ISDE Canada. Leur fonctionnement est soumis aux deux conditions suivantes: (1) ces appareils ne doivent pas causer d'interférences nuisibles, et (2) ces appareils doivent accepter toutes interférences reçues, y compris les interférences susceptibles d'entraîner un fonctionnement indésirable.

Changes or modifications not expressly approved by Skydio could void the user's authority to operate these devices.

These devices have been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when these devices are operated in a commercial environment. These devices generate, use and can radiate radio frequency energy and, if not installed and used in accordance with the user guides, may cause harmful interference to radio communications. Operation of these devices in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

This Class A digital apparatus complies with Canadian ICES-003. Cet appareil numérique de classe A est conforme à la norme Canadienne NMB-003.

Additional Resources

For all the latest information about Skydio and our products, visit www.skydio.com.

For legal information, visit www.skydio.com/legal.

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