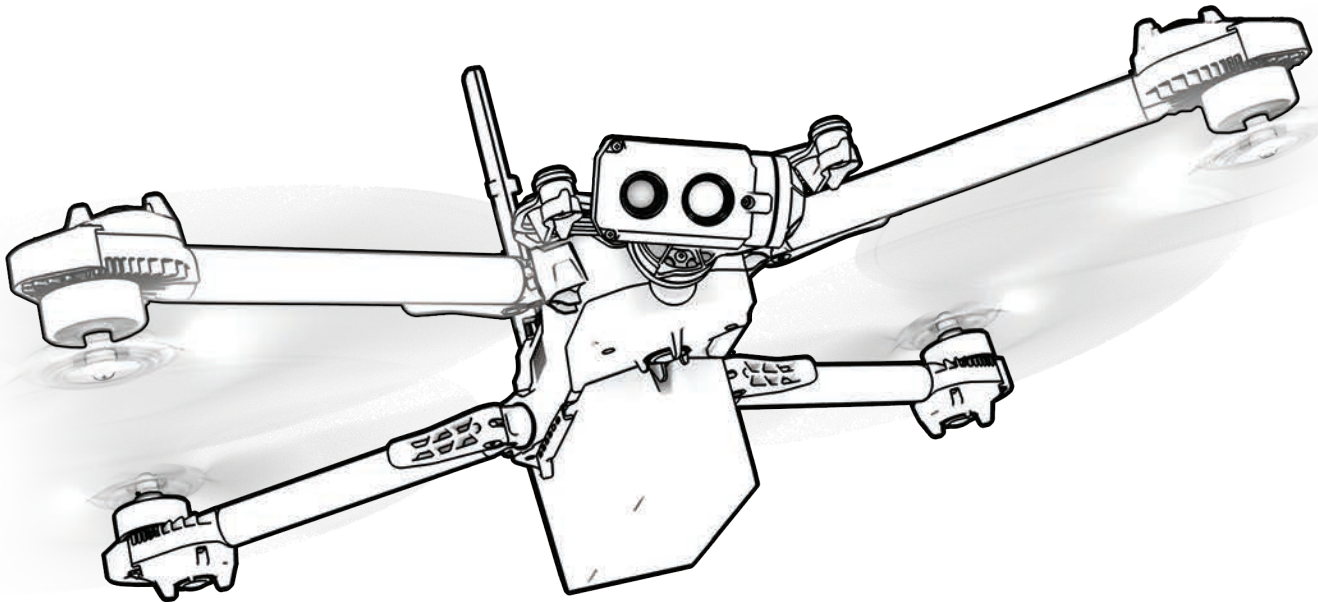




# Operator Manual

Skydio X2D



**WARNING:** Please read all documentation provided with your Skydio X2D. For additional safety and operating resources and information visit: [Support.Skydio.com](https://support.skydio.com)



Effective date: **June 16, 2022**

Version: **19.4**

*This information applies to non-United States government and international operators*

# Contents

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## Overview

Skydio X2D and Accessories .....	1
Skydio Hardware .....	2-4
Skydio Enterprise Controller.....	5
Skydio Autonomy Enterprise .....	6

## Safety

Safety Guidelines .....	7
Flying Safely.....	8

## Getting Started

Charging Batteries.....	9
Charging Enterprise Controller .....	10
Deploy Skydio X2D.....	11-12
Activate Enterprise Controller .....	13
Pair Devices .....	14
Update .....	15-16
Anti Flicker .....	17

## Pre-flight

Configure Maps.....	18-19
Encryption .....	20-21
Radio Channel.....	21
Plan Waypoint Mission.....	22
Configure Drone settings.....	23-25
Configure Controller settings .....	26-28
Vehicle Modes.....	29-30
Flight Controls.....	31
Inspection.....	32

## Flight

First Flight .....	33
Launch.....	34
Flight Screen.....	35-36
Camera settings .....	37
Zoom .....	38-40
Map view .....	41

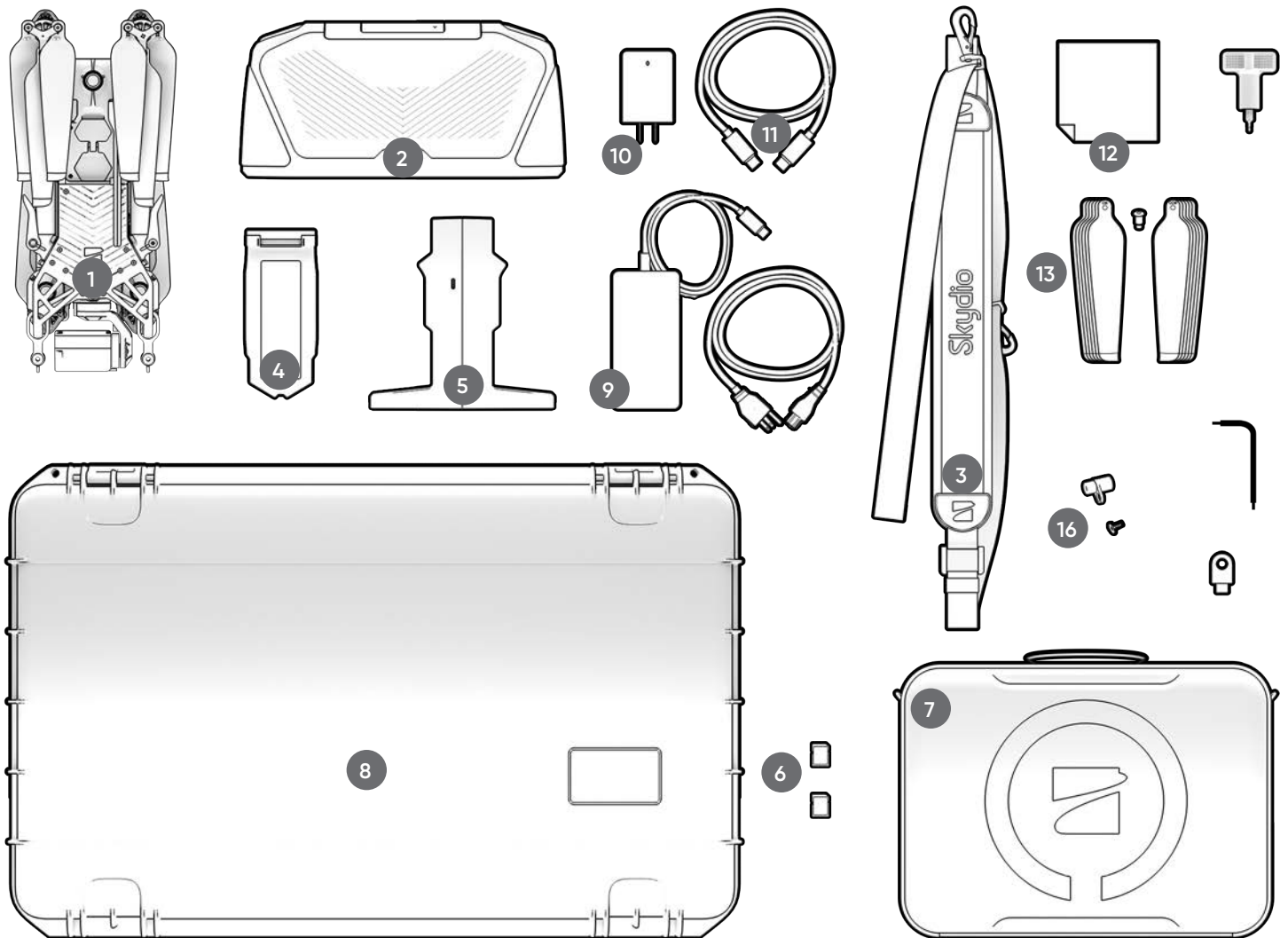
# Contents

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Manual Skill .....	42
Orbit Point Skill.....	43
Track in Place Skill.....	44
Waypoint Skill .....	45-46
KeyFrame Skill .....	47
GPS Night Flight .....	48-50
Return to Home .....	51
Visual Return.....	52
Land .....	53-54
<b>Post-flight</b>	
Reviewing and offloading media.....	55-56
Dismantle Skydio X2D .....	57
<b>Emergency Behaviors</b>	
Lost Connection.....	58
Lost GPS.....	58
Low Battery .....	58
Emergency Landing.....	59
View Last Flight.....	59
<b>Maintenance</b>	
Battery safety guidelines .....	60
Arm clamps.....	61-63
Replace propeller blades.....	64-65
Replace hard stops .....	66-68
Format memory cards .....	69-70
Export flight logs.....	71
<b>Troubleshooting</b>	
Resetting Skydio Enterprise Controller.....	72
Resetting Skydio X2D .....	73
Weak signal.....	74
Specifications	75-77
Legal	78-79

# Overview

## Skydio X2D and Accessories



1. Skydio X2D drone
2. Skydio Enterprise Controller
3. Controller neck strap and bracket
4. Battery
5. Dual Charger
6. 256GB SD cards (pre-installed)
7. Tactical soft case
8. Admin hard shell case
9. 100 W adapter and cable
10. 65 W Adapter
11. USB-C cable
12. Microfiber cloth
13. X2D Propeller Kit  
CW (6) CCW (6) screws (12)
14. Torque driver
15. T3 driver
16. Hard stops and screws
17. Security Key

Also needed - USB-C flash drive to:

- install software updates
- transfer offline maps
- export flight logs

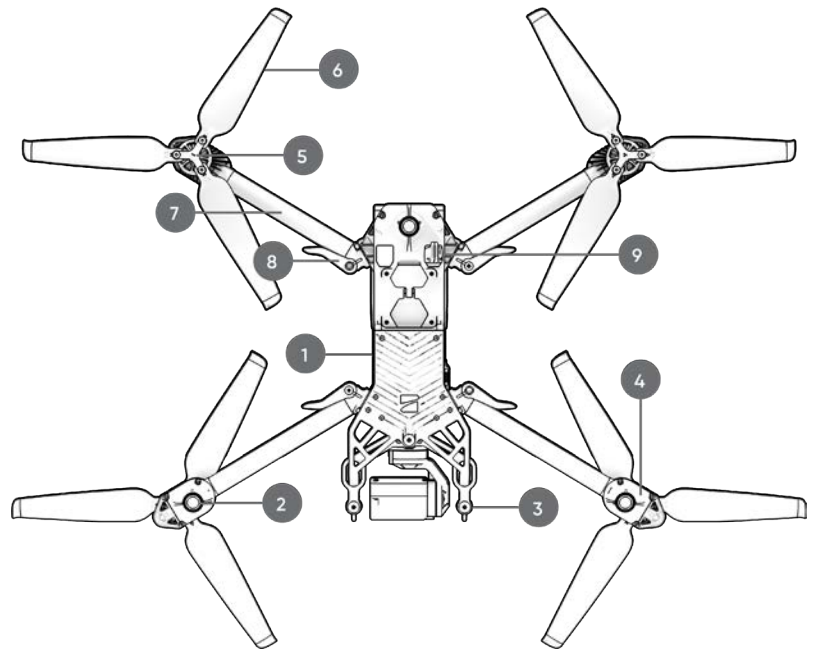
Skydio recommends 8 GB (or more)  
Scandisk Ultra Dual Drive USB Type-C

- format drive file system to ExFat

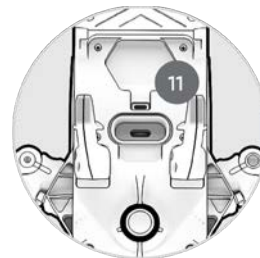
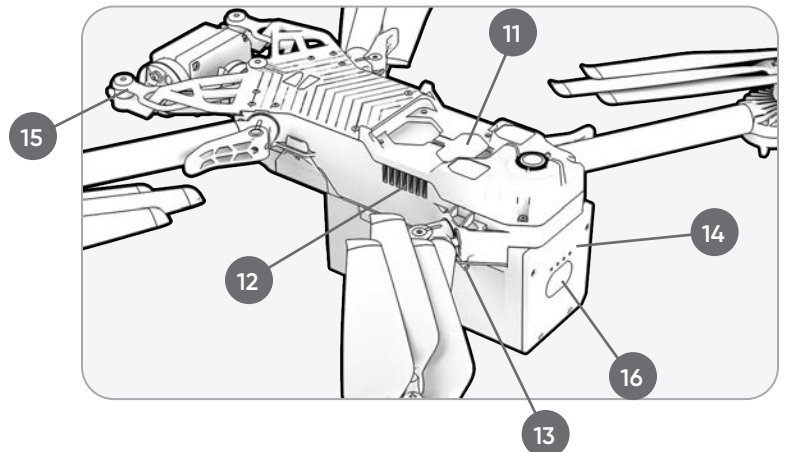
# Overview

## Skydio Hardware

1. Chassis
2. Navigation camera (6)
3. Gimbal
4. Motor pod (4)  
RGB/IR/Strobe navigation lights
5. Propeller hub
6. Propeller blades  
clockwise (6) counter-clockwise (6)
7. Arm (4)
8. Arm clamp (4)
9. Antenna(s)



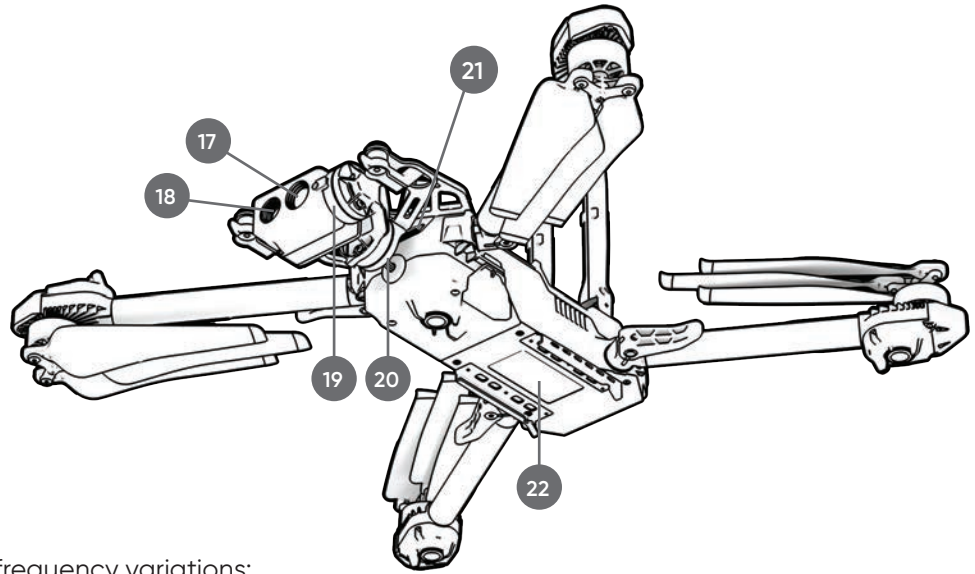
10. microSD card ports & seal
11. USB-C port & seal
12. Cooling outlet (2)  
*do not cover*
13. Hard stop (4)
14. Battery
15. Gimbal isolator (3)
16. Power button



# Overview

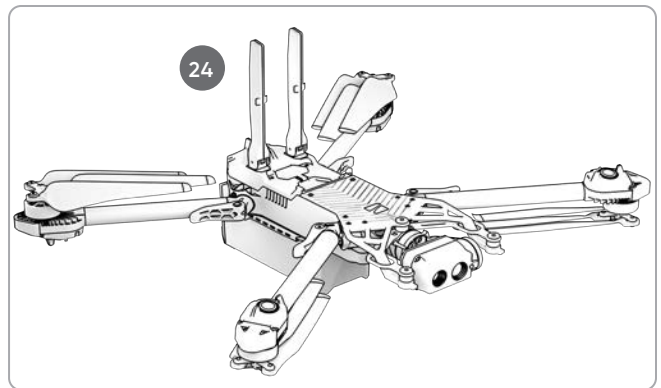
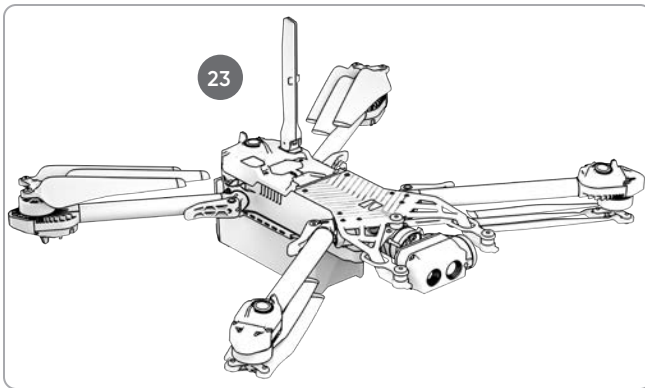
## Skydio Hardware

- 17. Color EO camera
- 18. Thermal IR camera
- 19. Gimbal pitch motor
- 20. Gimbal roll motor
- 21. Cooling inlet
- 22. Skydio X2D label



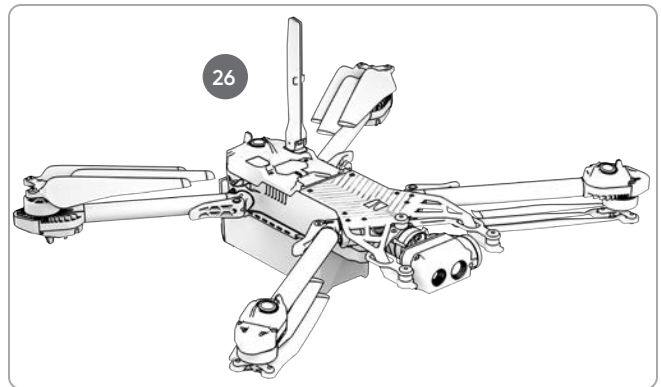
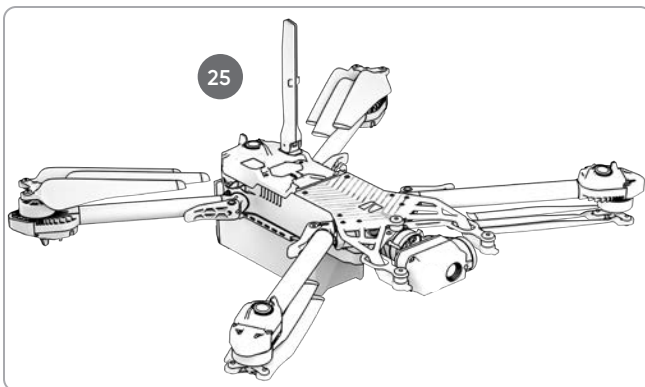
Skydio X2D is available two radio frequency variations:

- 23. one-antenna 1.8 GHz
- 24. two-antennas 5 GHz



Skydio X2D is available two camera variations:

- 25. Color Electro-Optical Camera only
- 26. Color Electro-Optical and Thermal Infrared Camera

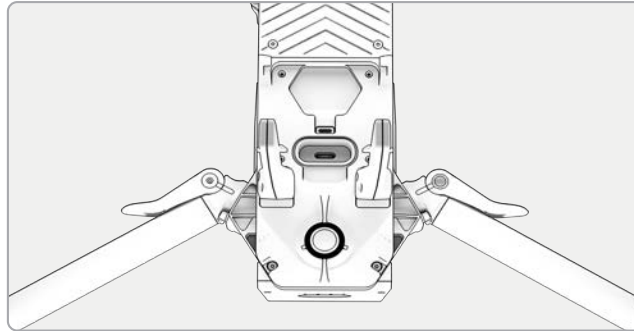


# Overview

## Payload Bay

The Skydio X2D payload bay interface is located on the top of the drone and consists of an indented area with recessed USB Type-C electrical interface receptacle, weatherproof cover, and 4 recessed mounting nuts. The payload bay is designed to accommodate third-party payloads with the following limitations:

- size not to exceed dimensions: 1.75"(L) X 1"(H) X 2"(W)
- weight not exceed: 200 grams
- power not to exceed: 15 Watts



**NOTE:** Powering the vehicle from a payload is not supported

Payloads should be securely mounted to the X2D with no dangling parts or wires. Payload mass should be roughly evenly distributed, and stay within the payload bay area. Loose parts or wires may cause propeller strikes or obstruct the navigation system resulting in loss of flight control.

## Flight Limitations

**Line of sight** - payloads that obstruct the field of view of the navigation system may result in failure to take off, erratic flight, crashes, and fly-aways.

**Flight time** - any payload added to the vehicle will decrease the flight time. The closer the weight gets to 200 grams the shorter the flight time will be.

**Range** - payloads that obstruct the antenna may cause degraded range, sudden loss of connection, slow or unresponsive controls.

**Signal** - payloads that emit a wireless signal may cause degraded range, sudden loss of connection, slow or unresponsive controls.

**GPS antenna** - payloads may interfere with the GPS antenna resulting in poor GPS positioning, and affect features such as Waypoints, GPS Night Flight and Height Ceiling.

**Altitude** - added weight and lower air density may result in slow or unresponsive flight controls. High altitude flight with a payload is not recommended.



**WARNING:** Third-party payloads may result in degraded flight time, wireless range, altitude, GPS performance, and general flight performance



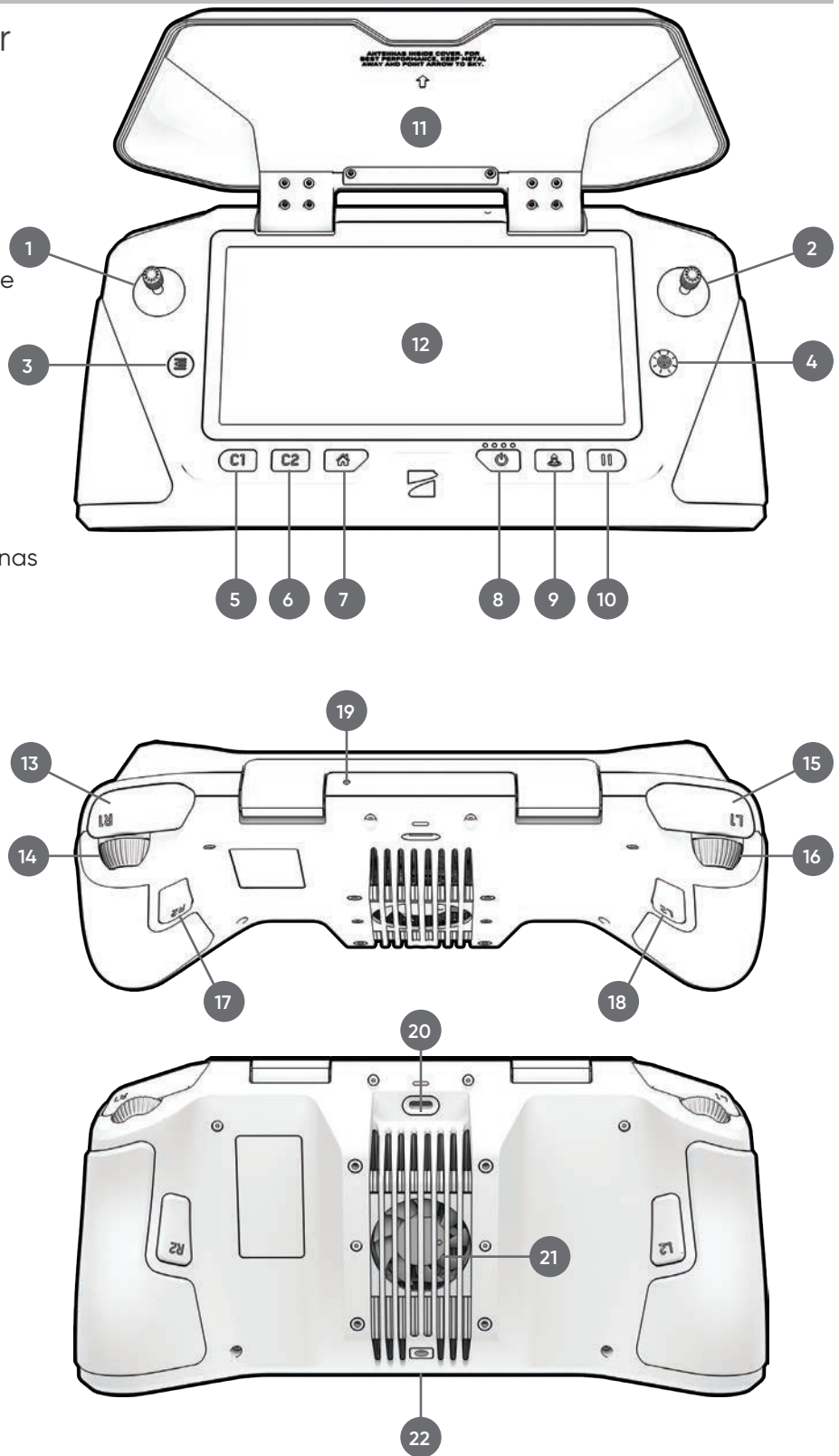
# Overview

## Skydio Enterprise Controller

1. Left joystick
2. Right joystick
3. Menu/back button
4. Directional pad (D-pad)
5. C1 Button - toggle Obstacle Avoidance
6. C2 Button - toggle lights
7. Return to Home (RTH) button
8. Power button
9. Launch/Land button
10. Pause button
11. Controller clamshell embedded antennas
12. User interface screen
13. R1 button - shutter/record
14. Right wheel - zoom
15. L1 button - boost
16. Left wheel - gimbal tilt
17. R2 button - Programmable\*  
toggle map (default)
18. L2 button - Programmable\*  
color to thermal camera (default)
19. Reset button
20. USB-C port
21. Cooling fan
22. Neck strap/tripod (1/4-20 mount)

\* To change L2 and R2 Select Device Settings  
> Controller > Custom Functions:

- Toggle Map
- Toggle thermal or color camera
- Select close, minimal, disabled Obstacle Avoidance
- No Function
- Restore Defaults



**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.



# Overview

## Skydio Autonomy Enterprise

FEATURE	DESCRIPTION	MAIN USE CASES	KEY BENEFITS
<b>CLOSE PROXIMITY OBSTACLE AVOIDANCE</b>	The drone can fly closer to obstacles.  <b>Close (~11", 28 cm)</b> <b>Minimal (~4", 10 cm)</b> <b>Disabled</b> <b>Standard (~34", 86 cm)</b> (out-of-the-box with X2D)	<ul style="list-style-type: none"><li>• Situational awareness</li><li>• Inspection</li></ul>	Allows closer flight for indoor navigation e.g. through large doorways and up-close inspection of detailed assets
<b>VISUAL RETURN-TO-HOME</b>	Ability to RTH purely using visual wayfinding when flying in GPS denied environments	<ul style="list-style-type: none"><li>• Situational awareness</li><li>• Inspection</li></ul>	Provides robust and safe RTH in high-RF or GPS-denied environments (e.g below bridges)
<b>SUPERZOOM</b>	Blends the six 4K navigation cameras to create an omni-directional view. Allows the user to zoom digitally with algorithmic image stabilization	<ul style="list-style-type: none"><li>• Situational awareness</li></ul>	See farther, and in all directions without moving the drone - reduces pilot cognitive load
<b>POINT-OF-INTEREST ORBIT</b>	Drone will navigate itself while revolving around a user-defined point on a map	<ul style="list-style-type: none"><li>• Situational awareness</li></ul>	Enables surveillance and overwatch of any structure or locale
<b>TRACK-IN-PLACE</b>	Ability to visually track a car or person from a fixed position from farther away	<ul style="list-style-type: none"><li>• Situational awareness</li></ul>	Enables covert surveillance from farther standoff distances
<b>VERTICAL VIEW</b>	Gimbal can vertically look straight up above the drone	<ul style="list-style-type: none"><li>• Inspection</li></ul>	Allows for overhung inspections such as ceilings, bridges, and canopies

# Safety

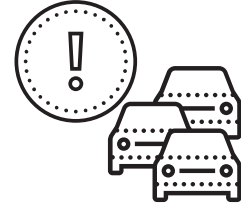
## Safety Guidelines



Keep your fingers away from moving propellers at all times.



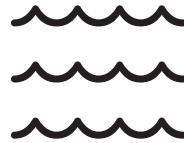
Use caution around thin branches, utility lines, ropes, wires, netting, chain link fencing, etc.



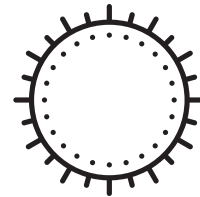
Skydio X2D does not avoid moving objects or cars.



Skydio X2D is not weatherproof – don't fly in rain, snow, fog, high winds, etc.



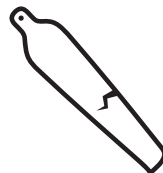
Fly cautiously over bodies of water more than 30ft (9.1m) across.



Skydio X2D obstacle avoidance is off during GPS Night Flight mode and can be impaired when in low light & poor visibility. Fly with **extreme caution** under these conditions.



Clean all of the cameras so Skydio X2D 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

# Safety

---

## 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

### Environment

- Do not fly in precipitation, fog, or snow
- Ensure flight environment has good visibility
- Do not fly in extremely hot temperatures above 104°F (40°C)
- Do not fly in extremely cold temperatures below 14°F (-10°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 23 mph (40 km/h)
- Do not fly over bodies of water more than 30 ft (3 m) across
- 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
- Alert messages will display if Skydio X2D determines the environment is not safe for flight
- When instructed to do so, immediately fly Skydio X2D 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

### Regulations

- Follow all civil aviation, such as the FAA or your countries regulatory agency, rules and regulations
- You are responsible for your Skydio X2D at all times, when operating your Skydio X2D check [knowbeforeyoufly.org](https://skydio.com/safety) / B4UFLY / CASA-verified before flying.
- Do not fly in an environment where the use of the device is not authorized or restricted.



**INFO:** Visit <https://skydio.com/safety> and <https://skydio.com/support> for more information, helpful tips, videos, and articles.

# Getting Started

## Charging Batteries

### Using the Skydio Dual Charger

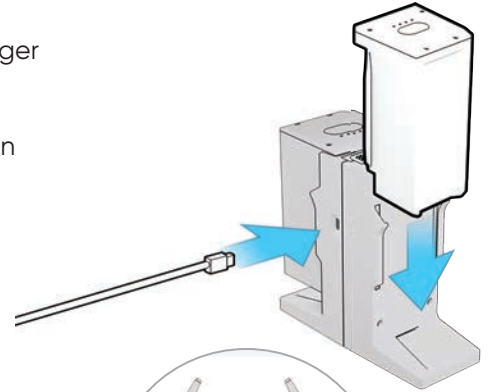
The Skydio Dual Charger simultaneously provides current to two batteries. However, it will prioritize charging the battery with the highest charge, excess input power will begin charging the second battery. Allow approximately two hours to fully charge batteries.

**Step 1** - Slide one or both batteries down the guard rails onto the dual charger

- magnets will engage to seat the battery

**Step 2** - Connect the provided USB-C cable to the 100 W power adapter and

**Step 3** - Plug the power adapter into a 100-240 V power source



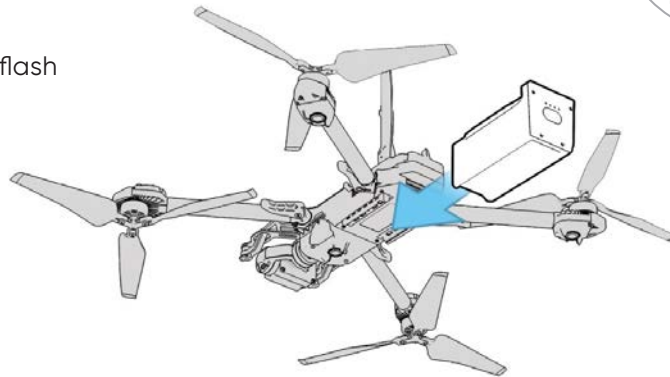
### Using Skydio X2D

**Step 1** - Slide the battery into the battery tray until it is fully seated

**Step 2** - Connect X2D using the USB-C cable and 100 W power adapter

**Step 3** - Plug the power adapter into a 100-240 V power source

- X2D will power on
- the battery lights will begin to flash



**WARNING:** Skydio X2D batteries are seated using magnets that may potentially attract metallic debris. Prior to installing your battery, visually inspect the magnets and connector pins, to ensure that they are clean and free of debris or damage. Do not use batteries if the magnets or connector pins are damaged.

## Battery Charge Levels

The current charge level is accessed by pressing the power button on the battery:

<b>1 light</b>	● ○ ○ ○	0-37% charged
<b>2 lights</b>	● ● ○ ○	38-62% charged
<b>3 lights</b>	● ● ● ○	63-87% charged
<b>4 lights</b>	● ● ● ●	88-100% charged

# 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 X2D will power off indicating that the charging is complete



**NOTE:** The Skydio Enterprise Controller supports charging while in use, including flying X2D.

## 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 controller's state of charge by pressing the power button.

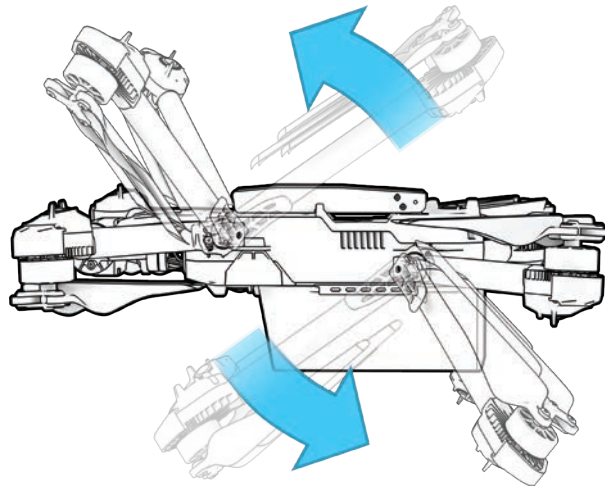
1 red	● ○ ○ ○	5% or less
1 yellow	● ○ ○ ○	6%–15%
1 blue	● ○ ○ ○	16%–37%
2 blue	● ● ○ ○	38%–62%
3 blue	● ● ● ○	63%–87%
4 blue	● ● ● ●	88%–100%



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

# Getting Started

## Deploy Skydio X2D



**Step 1** - Release the 4 arm clamps

**Step 2** - Lift the motor arms out and away from the body

- listen and feel for a click
- if you feel any resistance when opening the arms, push outward (horizontally) on the arm to unseat

**Step 3** - Return the 4 arm clamps to the locked position

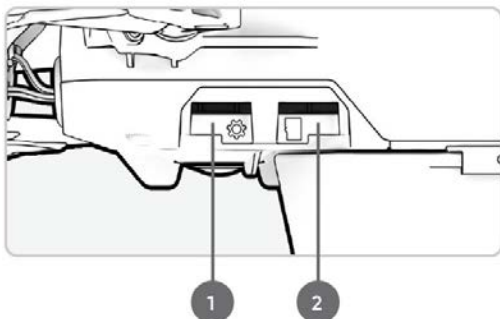
- ensure that the blue marks align



**WARNING:** Propeller blades are sharp. Handle with care.

**Step 4** - Verify that the log and media memory cards are installed

1. Logs card (*do not remove*) – records logs and supports future updates
2. Media card – stores images and video

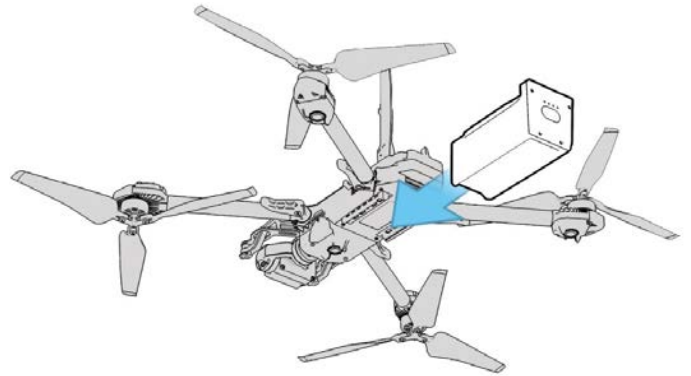




# Getting Started

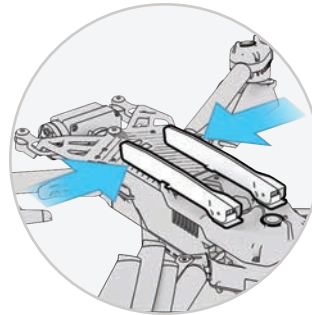
## Deploy Skydio X2D

**Step 5** - Slide the battery on rails towards the camera until the magnets engage



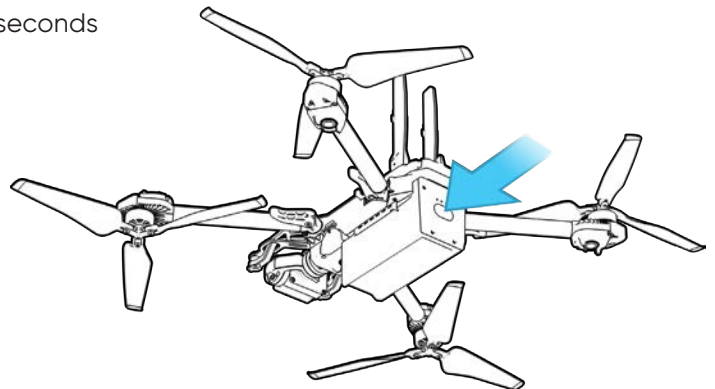
**Step 6** - Gently push the antennas inward to release

- guide into a vertical position



**Step 7** - Power on your Skydio X2D

- press and hold the power button on the battery for 3 seconds



**TIP:** This is the suggested order of operations when assembling your X2D for the first time. It is not necessary to unfold the X2D arms and antennas prior to installing the battery and powering on the drone. On subsequent deployments insert the battery and power on the aircraft first, then unfold the arms and antennas while the drone is booting up.

# Getting Started

## Activate Enterprise Controller

### Step 1 - Open the controller lid gently

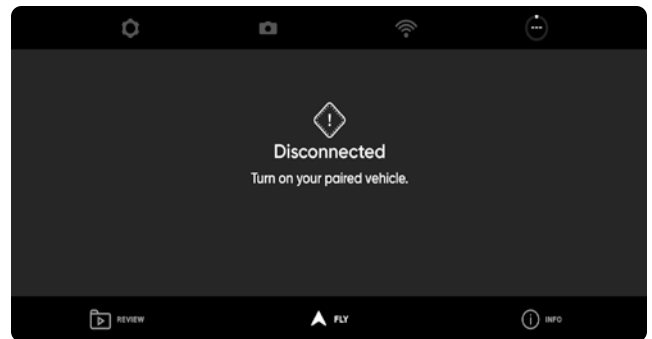
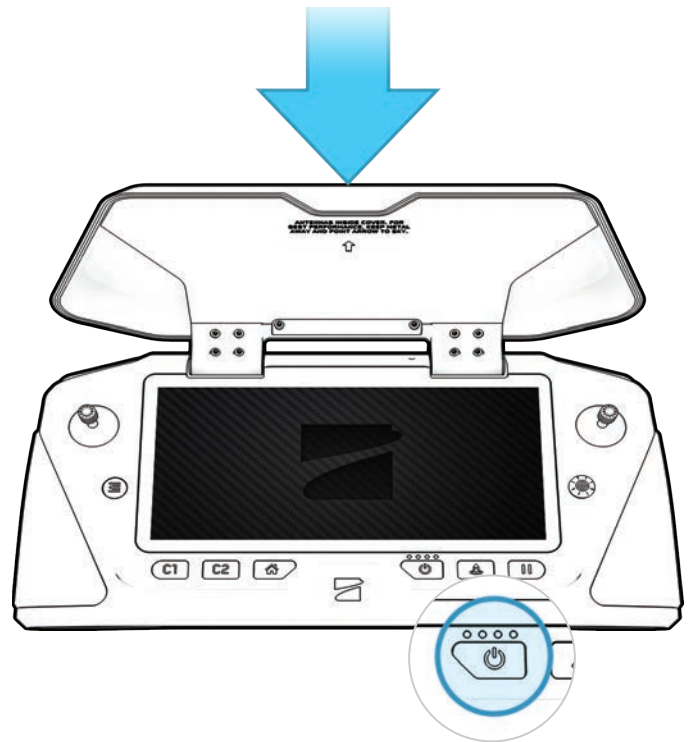
- the antennae are embedded in the controller lid

### Step 2 - Power on the controller

- press and hold power button for 3 seconds

### Step 3 - Activate the controller

- read and accept Purchase Terms
- create a device password to unlock the controller
- the password will be required to unlock the controller when powering on or waking it from a sleep state

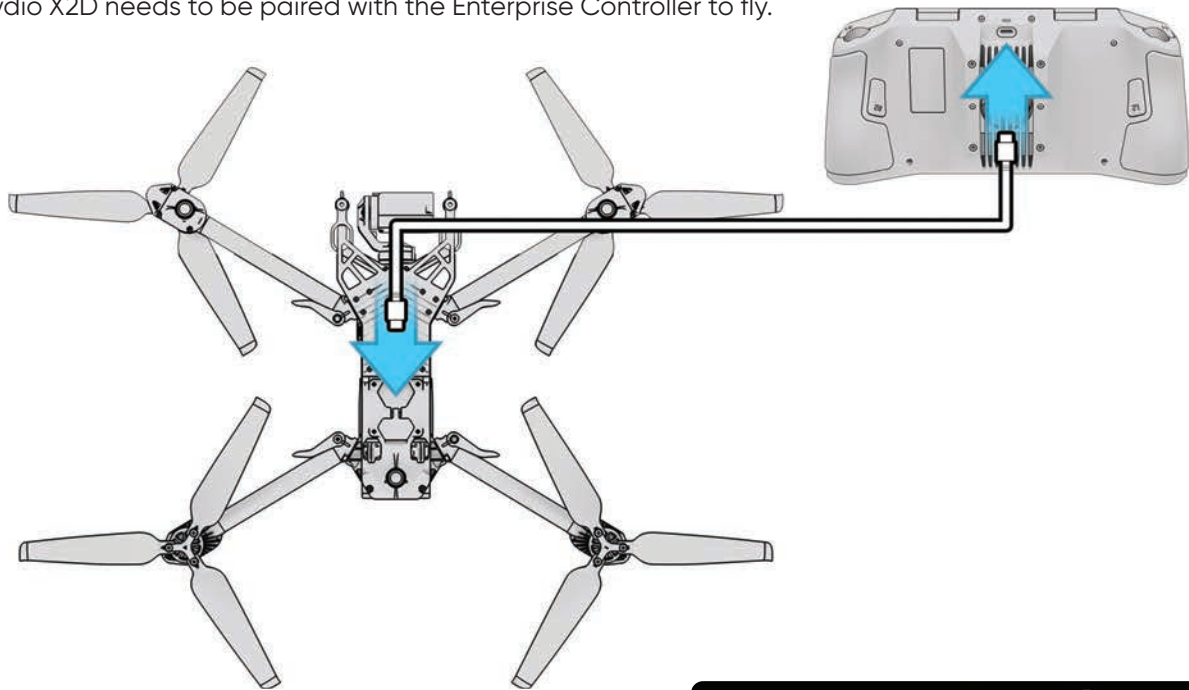


**WARNING:** This password cannot be recovered or reset if forgotten! Ensure it is written down and stored in a safe location. If the password is lost, the controller will no longer be usable and will need to be replaced.

# Getting Started

## Pair devices

Your Skydio X2D needs to be paired with the Enterprise Controller to fly.



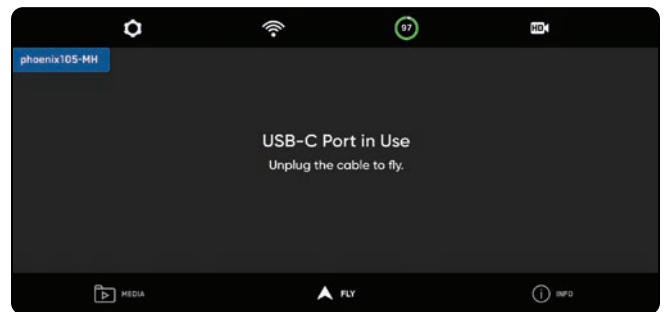
**Step 1** - Power on X2D and Enterprise Controller

**Step 2** - Connect the controller to X2D

- using the USB-C cable
- wait approximately 15 seconds

**Step 3** - Verify that your Skydio X2D was paired

- select the **INFO** menu
- the drone name is listed under Paired Drone



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

# Getting Started

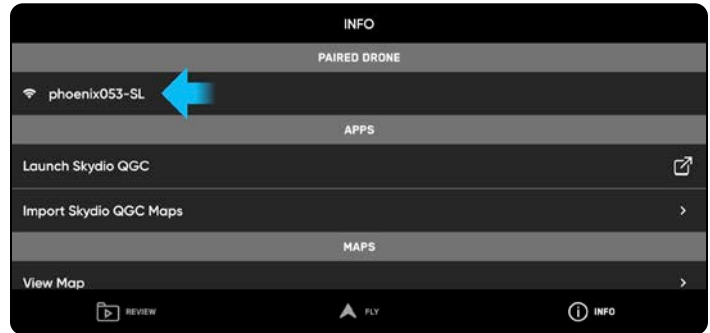
## Update X2D System

Updates from Skydio contain important enhancements and fixes designed to improve performance, optimize flight controls and features for the operation of your Skydio X2D offline system, Enterprise Controller, and Dual Charger. You can update your vehicles and Enterprise Controller in any order, however it is important that you update the Dual Charger last. You may use the same flash drive (or memory card reader) to update one system at a time or load the update onto several flash drives for simultaneous updates.

There are two ways to receive the update package from Skydio: SD memory card and secure download.

To update your Skydio X2D offline system you will need:

- a computer with an Internet connection
- a memory card reader with USB-C connection **OR** a USB-C flash drive
- that has been authorized by command or IT Security
- formatted to exFAT file system



## Update using a memory card

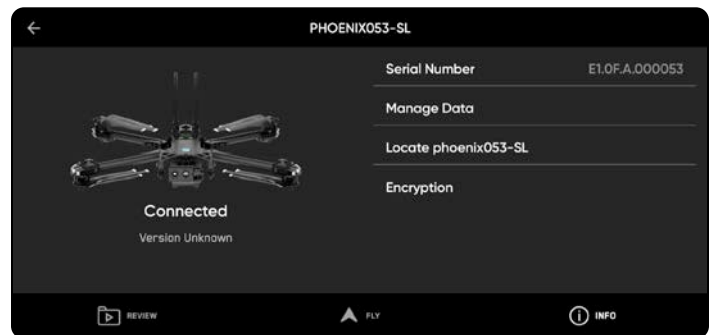
**Step 1** - Insert the SD card that you received from Skydio into a USB-C memory card reader

**Step 2** - Insert the memory card reader into the USB-C port on the vehicle

**Step 3** - Power on the vehicle

- the update will begin automatically
- the lights on your drone will pulse blue
- the camera gimbal will disengage and go slack
- the process may take several minutes
- When the update is complete, the camera gimbal will re-engage

**Step 4** - remove the USB-C flash drive



# Getting Started

## Update using the secure download

**Step 1** - Download the two files using the secure link provided by Skydio

- a **.zip file** which is the update for your X2D vehicle
- a **.tar file** which is the update for your Skydio Enterprise Controller

**Step 2** - Extract the .zip file contents

**Step 3** - Insert the USB-C flash drive into your computer

**Step 4** - Copy the folder named "offline\_ota" into the root level of your flash drive so that it is not contained inside any other folders

**Step 5** - Copy the .tar file onto the root level of your flash drive

**Step 6** - Safely eject the flash drive from your computer

**Step 7** - Insert the flash drive into the USB-C port on the vehicle

**Step 8** - Power on the vehicle

- the update will begin automatically
- the lights on your drone will pulse blue
- the camera gimbal will disengage and go slack
- the process may take several minutes
- when the update is complete, the camera gimbal will re-engage

**Step 9** - remove the USB-C flash drive

**Verify you have correctly installed the update**

**Step 10** - power on your Skydio X2D and Skydio Enterprise Controller and connect

**Step 11** - Select the **INFO** menu

**Step 12** - Select **Paired Drone**

- verify that the software version listed matches the software version provided by Skydio

## Update Skydio Enterprise Controller

**Step 1** - Power on your controller

**Step 2** - Select the **INFO** menu

**Step 3** - Select **Controller Update**

**Step 4** - Insert the flash drive or USB-C card reader into your controller

**Step 5** - Select **Update**

**Step 6** - Navigate to the flash drive or memory card root folder

**Step 7** - Select the update .tar file

**Step 8** - Select **Done**

- the update will begin automatically
- allow up to five minutes for the update to complete
- during this process, your controller may restart multiple times

**Step 9** - Verify that the version number matches the version number provided by Skydio

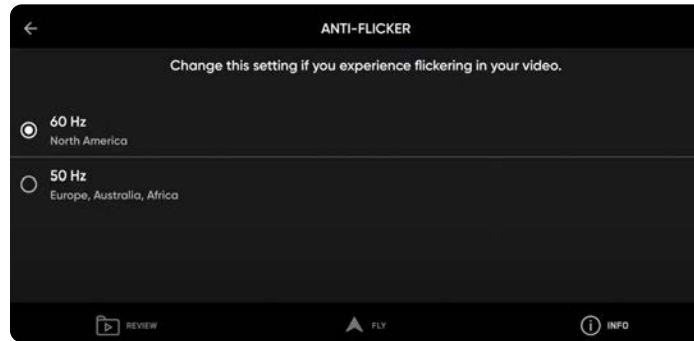


# Getting Started

## Anti-flicker

Adjust anti-flicker settings if you experience flickering in your video. The setting will persist across flights and power cycles.

- 60 Hz (default) – North America
- 50 Hz – Europe, Australia, Africa



## Channel Selection

Manually select your radio frequency channel to avoid congestion from other signals. These are standard 5 GHz WiFi channels that correspond to the following frequencies:

- Auto
- 36: 5180 MHz
- 40: 5200 MHz
- 44: 5220 MHz
- 48: 5240 MHz
- 149: 5745 MHz
- 153: 5765 MHz
- 157: 5785 MHz
- 161: 5805 MHz
- 165: 5825 MHz



**Step 1** – Select the **INFO** menu

**Step 2** – Select your drone under Devices

**Step 3** – Select **Channel Selection**

OR in flight

**Step 1** – Select the Settings icon

**Step 2** – Select the Drone tab

**Step 3** – Select **Radio Channel**



**NOTE:** Skydio recommends leaving the Channel Selection set to Auto for best results.



# Pre-flight

## Configure Maps

Import custom QGC and Mapbox tiles to the Skydio Enterprise Controller via a USB-C drive or SD memory card reader.

### Import maps

**Step 1** - Load your map files onto a USB-C flash drive or SD memory card

**Step 2** - Insert the USB-C drive or adapter into the controller

**Step 3** - Select the **INFO** menu

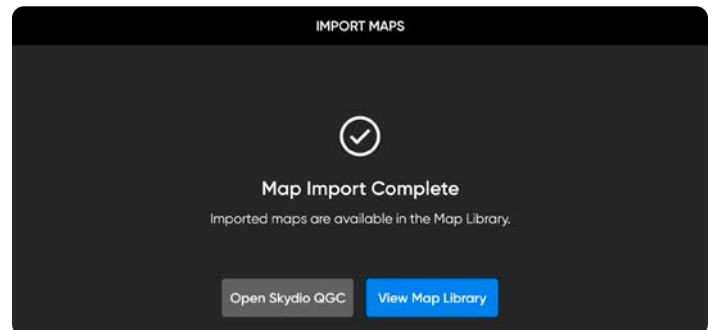
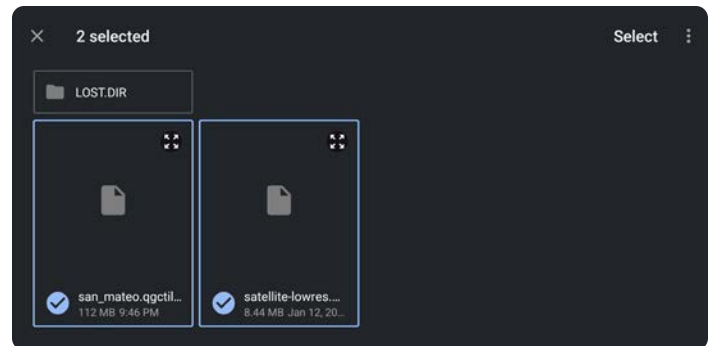
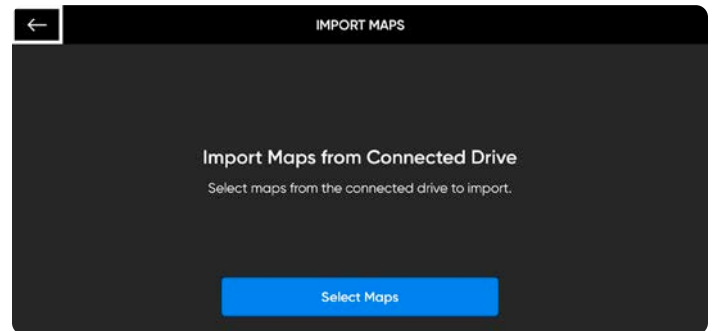
**Step 4** - Select **Import Maps**

**Step 5** - Select **Select Maps**

- navigate to the storage device
- select the maps to import

**Step 6** - Select **Done**

- wait for your maps to import
- select **View Map Library** to review your imported maps
- If you have uploaded a QGC map, you will also see an option to open Skydio QGC



# Pre-flight

## Map Coordinates

When viewing your maps, creating waypoint missions, or orbiting a point of interest, you have the option to enter latitude and longitude coordinates. The enter coordinates setting is enabled by default displaying the Skydio X2D, the Enterprise Controller, and subjects available for tracking, coordinates on the map in real-time. Disable the setting if you do not want the coordinates displayed on the map, your selection will persist across flights and power cycles.

## Coordinates or MGRS

**Step 1** - Select the **Settings** menu icon

**Step 2** - Select the **Controller** tab

**Step 3** - Select **On Screen Display**

**Step 4** - Select **Coordinates**

- toggle on or off



## Enter Coordinates or MGRS

**Step 1** - While on the Map view

**Step 2** - Select the magnifying glass icon

**Step 3** - Enter latitude and longitude coordinates or MGRS



**NOTE:** The map library is able to store 10 maps at a time. Delete unused maps to make room for new maps.

# Pre-flight

## Encryption

Before you can use the encryption feature on your X2D, you need to first provision the vehicle using the security key. You only need to complete this step once.

To set up your vehicle for encryption:

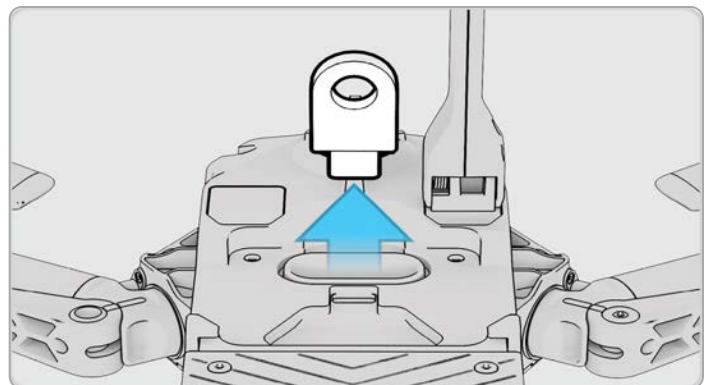
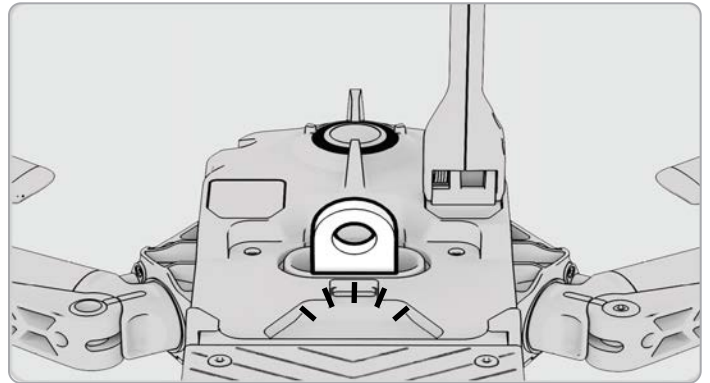
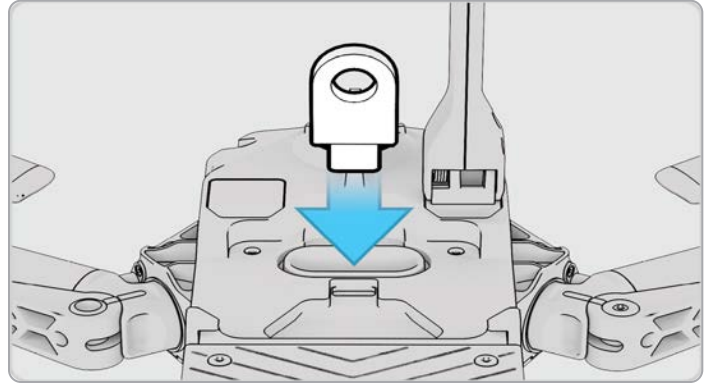
**Step 1** - Power on Skydio X2D

**Step 2** - Insert the security key

- into the USB-C port on the vehicle
- the lights on the key will begin blinking

**Step 3** - Remove the security key when the lights on the key turn off

- Skydio X2D is now provisioned for encryption



# Pre-flight

## Enable (or Disable) Encryption

You have the option to enable or disable encryption. When Enable Encryption is selected, all media captured will be encrypted. When Disable Encryption is selected, all media captured will not be encrypted.

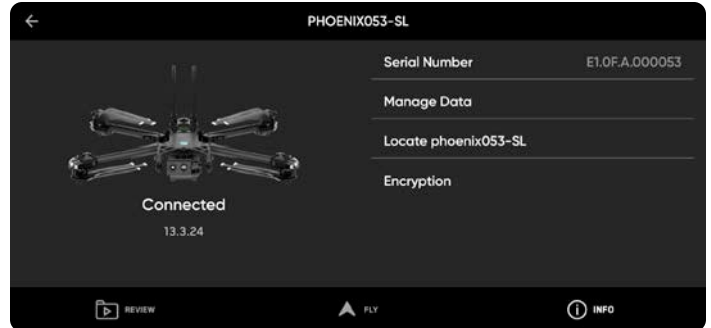
To enable or disable encryption:

**Step 1** – Power on your Skydio Enterprise Controller

- wait for your X2D to connect

**Step 2** – Select the **INFO** menu

**Step 3** – Select your drone under **Paired Devices**



**Step 4** – Select **Encryption**

- Enable Encryption (default) will be selected



# Pre-flight

## Plan Waypoint Mission

**Step 1** - Select the **INFO** menu

**Step 2** - Select Waypoint Mission

**Step 3** - Pinch and drag on the map to set the starting location of your waypoint mission

**Step 4** - Press and hold on the map

**Step 5** - Select **Add Waypoint** to set a waypoint

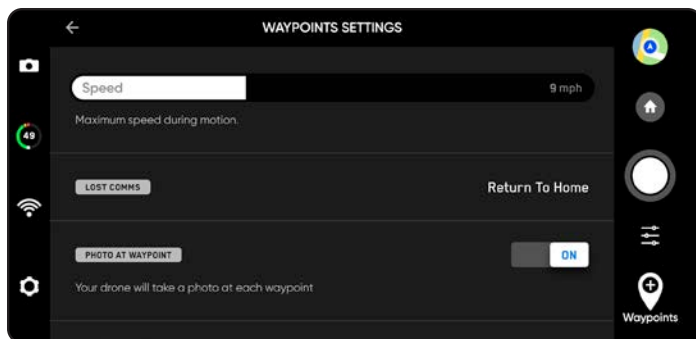
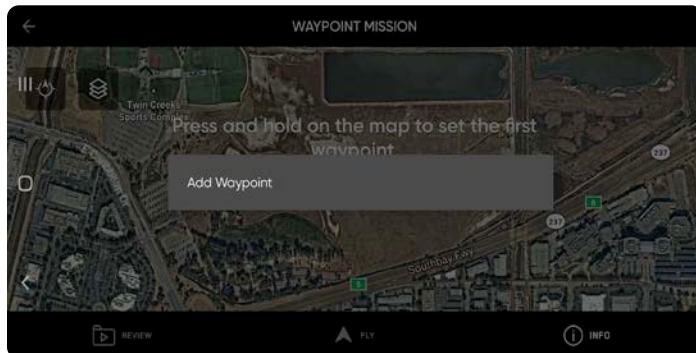
**Step 6** - Press and hold on the map again to set your second waypoint

- the vehicle pose setting will match previous waypoint

**Step 7** - Set the altitude, heading, and gimbal angle for the selected waypoint

**Step 8** - Continue adding waypoints until your mission path is complete

- a mission can support up to 256 waypoints



Mission-level settings such as speed and lost communication behavior can be configured while in flight.

Edit an existing waypoint - tap on that point and adjust the settings.

Drag to adjust the waypoint placement as desired

Delete a waypoint

- long press the point and select **Delete**

Delete the entire mission and clear all waypoints

- select the trash can icon and **OK**

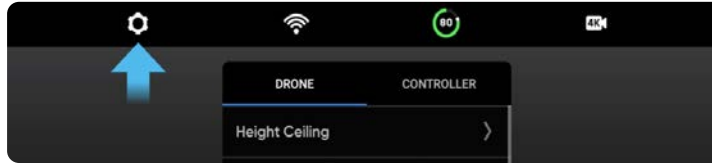


**NOTE:** Waypoint are created using GPS coordinates. A strong GPS signal is required to execute a waypoint mission

# Pre-flight

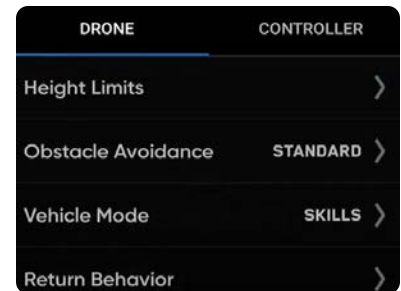
## Configure drone settings

The device settings menu allows for the configuration of in-flight and control of the drone and Enterprise Controller. The controller must be connected to the drone to access the drone settings. View and configure before launch.



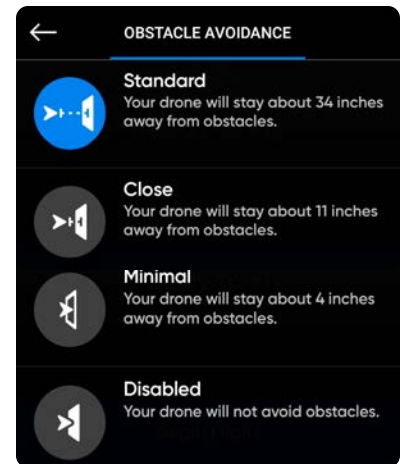
**Height Limits:** set maximum allowed altitude

- **Adjust** - the maximum altitude between 30 ft (10 m) and 1500 ft (457 m)
- **Disable** - the maximum allowed flight altitude
- **Indoor Height Ceiling** - fly indoors without GPS with a standard ceiling height limit of 66 ft (20 m) and the ability to disable the ceiling height limit. The default setting is disabled—enabling the setting does not persist across flights or power cycles ensuring safe and controlled operation.



**Obstacle Avoidance:** adjust the distance X2D will fly from obstacles

- **Standard** (default) - 34 in (86 cm) from obstacles  
top air speed is 25 mph (57 km/h)
- **Close** - 11 in (28 cm) from obstacles  
top ground speed is limited to 18 mph (29 k/m)
- **Minimal** - 4 in (10 cm) from obstacles  
top ground speed is limited to 18 mph (29 k/m)
- **Disabled** - will not avoid obstacles  
top ground speed is limited to 18 mph (29 k/m)



**WARNING:** Flying with Close, Minimal or Disabled obstacle avoidance settings greatly increases risk of collision. Minimal or Disabled obstacle avoidance settings are used to navigate tight spaces and should only be used if you are an experienced pilot. Skydio recommends turning down Controller throttle, roll and pitch sensitivity to the lowest setting and proceeding at a max speed of 2 mph (3 m/s).



# Pre-flight

## Configure drone settings

**Return Behavior** - customize return-to-home behavior

**Drone Looks** - set to look toward or away from destination while returning

**Return Type** - set to either GPS or vision

- set return type to Vision when you fly in GPS-denied environments
- obstacle avoidance setting is respected while returning

**Return Height** - set the height the drone ascends to before returning

- default return height is set to 66 ft (20 m)

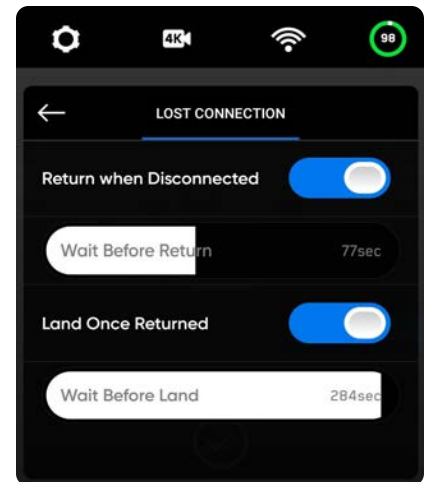
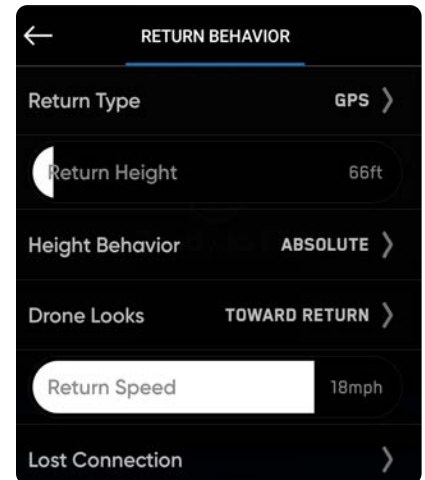
**Height Behavior** - set to Absolute or Relative

- absolute - ascends to a specified Return Height above the launch point before returning
- relative (default) - ascends to a specified Return Height above the drone's current position before returning

**Return Speed** - set the speed the drone will fly when returning

**Lost Connection** -

- **Return when Disconnected** - toggle Off to disable Return when Disconnected and the Lost Connection menu. X2D will not return if it loses connection—it will hover until it reaches low battery and land.
- **Wait Before Return** - set the amount of time that you want X2D to wait before it initiates a return flight, allowing time to reconnect.
- **Land Once Returned** - when enabled, X2D will return, hover for a specified amount of time, and then land.
- **Wait Before Land** - set the amount of time between 0 to 300 seconds (the default is 240 seconds) that you want X2D to wait before landing. This setting is only enabled when **Land Once Return** is toggled on.

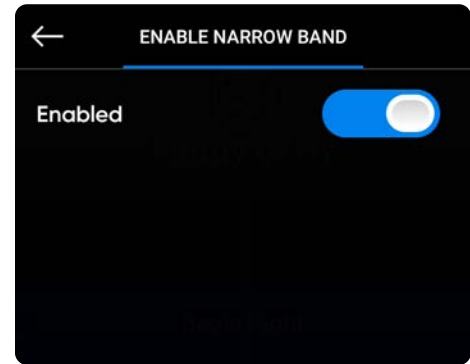


# Pre-flight

## Configure Drone settings

**Enable Narrow Band:** change your radio frequency to a narrower band

- allows you to fly further away without losing connection
- extends controller range in open environments
- video quality may suffer slightly

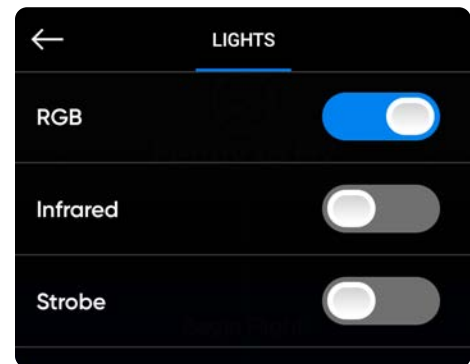


**NOTE:** You should only enable the narrow band to extend control range when in open and clear environments and when you have a clear line of sight.

**Lights:** set the navigation lights

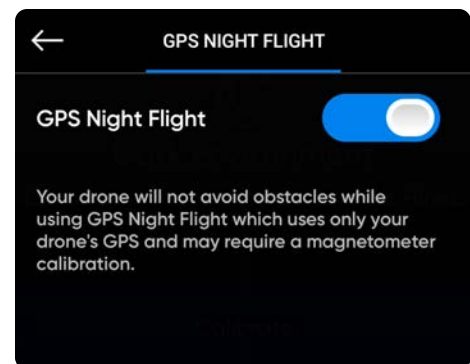
- **RGB On** (default) - blue when the drone is powered on, and red and green when in flight
- **RGB Off** - navigation lights will remain off as the drone powers on and throughout flight. Setting persist through flights and power cycles.
- **Infrared** - cannot be seen by the naked eye
- **Strobe** - visually track drone in low-light conditions at a distance of up to 3 mi (4.8 km)

*Strobe and Infrared cannot be on at the same time*



**GPS Night Flight:** for flight in low-light conditions

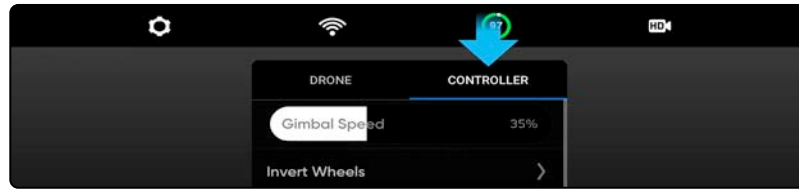
- requires calibrating the magnetometer prior to takeoff
- uses GPS sensors instead of vision system to navigate



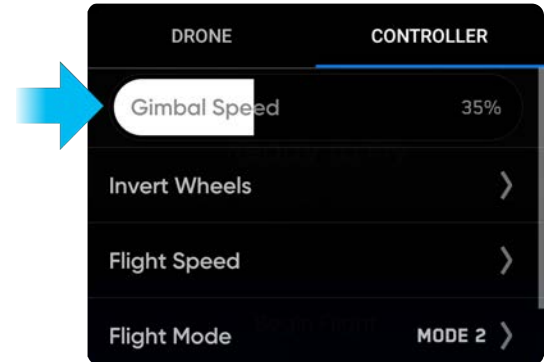
**WARNING:** GPS Night Flight mode requires flying without obstacle avoidance. Skydio X2D may drift slightly when in GPS Night Flight mode, take extra caution when flying in this mode and do not stand near the vehicle.

# Pre-flight

## Configure Controller settings



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

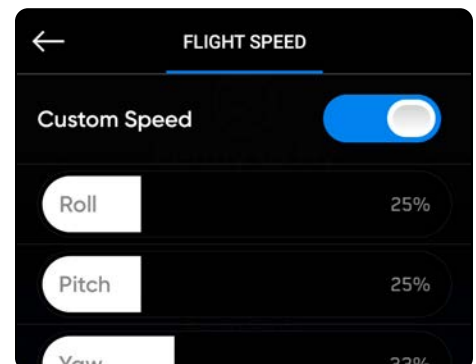


**Invert Wheels:** inverts the default controls for the Left Wheel (gimbal pitch) and Right Wheel (zoom) on the controller.



**Flight Speed:** customize the maximum allowed speed for roll, pitch, yaw, and throttle. Off - the Flight Speed are set to defaults:

- Roll - 25%
- Pitch - 25%
- Yaw - 25%
- Throttle - 25%



# Pre-flight

## Configure Controller settings

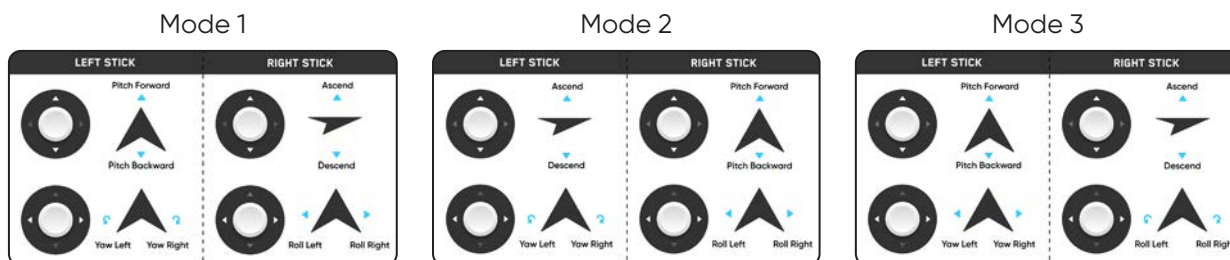
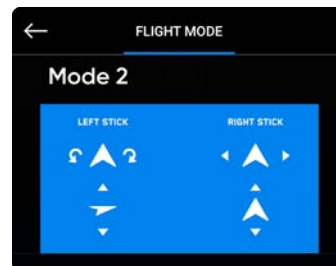
**Flight Mode:** determines how your Controller joysticks will maneuver X2D. You may switch between Mode 1, 2 (default), and 3 style. To change your flight mode:

**Step 1** - Select the Settings icon

**Step 2** - Select **Controller**

**Step 3** - Select **Flight Mode**

- choose the flight mode that best suits your operating style



### On Screen Display:

- Coordinate System - latitude/longitude or MGRS
- Coordinates - enter latitude and longitude
- Flight telemetry - speed, height above launch point, range from launch point, and camera angle (gimbal pitch) are displayed while in flight



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

**Double Tap to Fly:** toggle on/off double tap to fly

### 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
- 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 X2D will fly to that location

# Pre-flight

## Configure Controller settings

**Thermal Palette** (X2D Color/Thermal only) - the thermal camera assigns each pixel a unique color or shade based on a specific temperature data point. Changing the thermal palette can help highlight specific warm or cold people, objects, or points of interest for better identification confidence and decision-making. Thermal palette selection persists across flights and power cycles.

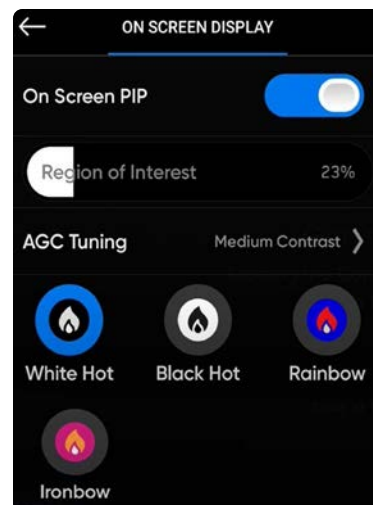
**Step 1** - Select the **Device settings** menu icon

**Step 2** - Select the **Controller** tab

**Step 3** - Select **On Screen Display**

**Step 4** - Select **Thermal**

- toggle **On Screen PIP** on or off
- select a thermal palette



**White Hot** (default) - displays warmer objects in white and cooler objects in black to generate detailed images—well suited for use in urban environments.



**Black Hot** - is an inverted White Hot, displaying warmer objects as black and cooler objects as white.



**Rainbow** - uses colors to display subtle variations in scenes with low-contrast heat differentials.



**Ironbow** - uses color to display heat distribution and thermal anomalies. Warmer objects are presented in lighter colors and colder objects in darker colors.

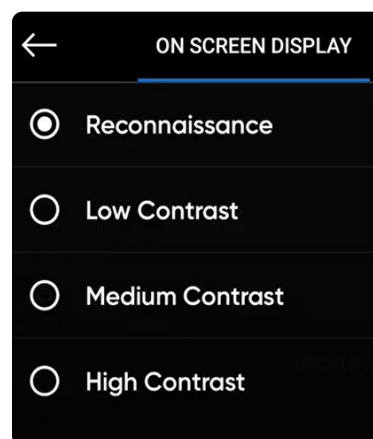
## Thermal camera presets

**Step 5** - Select the **Region of Interest** between 10% - 100%

**Step 6** - Select the thermal pallet

**Step 7** - Select the **AGC Tuning**

- Reconnaissance
- Low contrast
- Medium contrast (default)
- High contrast

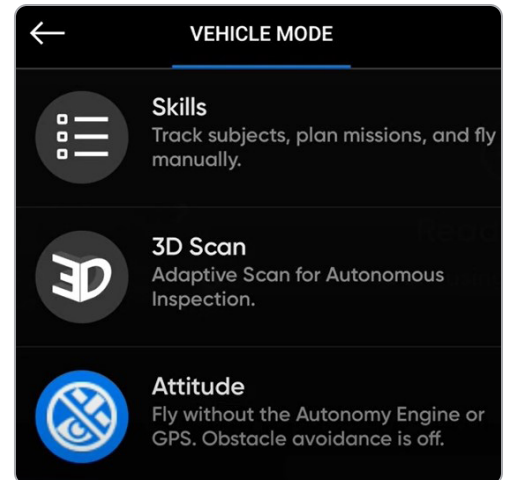


# Pre-flight

## Vehicle Mode

Skydio offers three vehicle modes selected pre-flight for a customized flight experience. Vehicle Modes persist across flights and power cycles. To exit, land and select a new vehicle mode. Vehicle modes include:

- Skills (default)
- 3D Scan (*additional license required*)
- Attitude



## Skills

Skydio offers a range of manual and autonomous controls called flight skills. Select your desired skill and Skydio X2 will intelligently fly itself to get the best shot. Access available skills by selecting the Skill Menu and adjust the controls by selecting the Skills Settings. Skills include:

- Manual
- Orbit
- Track
- Waypoints
- KeyFrame

## 3D Scan

To initiate a 3D Capture or 2D Capture you need to change the Vehicle Mode from Skills to 3D Scan. Your Vehicle Mode will persist through flights and power cycles.

**Step 1** - Power on your drone and controlling device

**Step 2** - Select **Use 3D Scan**

**Step 3** - Confirm reboot

- the drone will automatically restart and reconnect to the controlling device
- ensure your Logs Card has been formatted before starting a scan



# Pre-flight

## Vehicle Mode

### Attitude

Attitude Mode allows you to disable the visual and GPS navigation systems. Designed to be flown by expert pilots, in GPS-denied environments, or where there is the potential for jamming, Attitude Mode offers a pure manual flight experience. You have direct stick control of the aircraft's throttle, yaw rate, pitch and roll angles, rather than relying on automatic altitude and position stabilization. All autonomous functions, such as Return to Home and Obstacle Avoidance, are disabled.



**WARNING:** accidents resulting from an Attitude Mode flight are not covered under warranty and may result in injury or property damage. Attitude Mode should only be used by Expert Pilots. Please fly cautiously and conservatively as the Skydio safety features are disabled. Do not hand launch or hand land.

#### To Launch:

**Step 1** - Select the **Settings** menu icon

- Attitude Mode selection is only available pre-flight

**Step 2** - Select the **Drone** tab

**Step 3** - Select **Vehicle Mode**

**Step 4** - Select **Attitude**

- the drone will reboot and calibrate

**Step 5** - Select **Begin Flight**

**Step 6** - Arm the motors

- hold the throttle joystick down in a full-throttle down position and then press and hold the launch/land button for 1 second
- the motors will start to spin at idle speed

**Step 7** - Maintain a full-throttle down until you are ready to launch

**Step 8** - Launch

#### To Land:

There are no autonomous landing features while in Attitude Mode. You will need to manually disarm as Skydio X2D will not automatically detect touchdown.

**Step 1** - Fly to a clear, level, and safe landing area

**Step 2** - Slowly descend using the throttle joystick

**Step 3** - Minimize lateral drift

- correct the roll and pitch to minimize lateral drift as your drone touches down

**Step 4** - Simultaneously press L2 and R2 to disarm

- the propeller blades will stop spinning

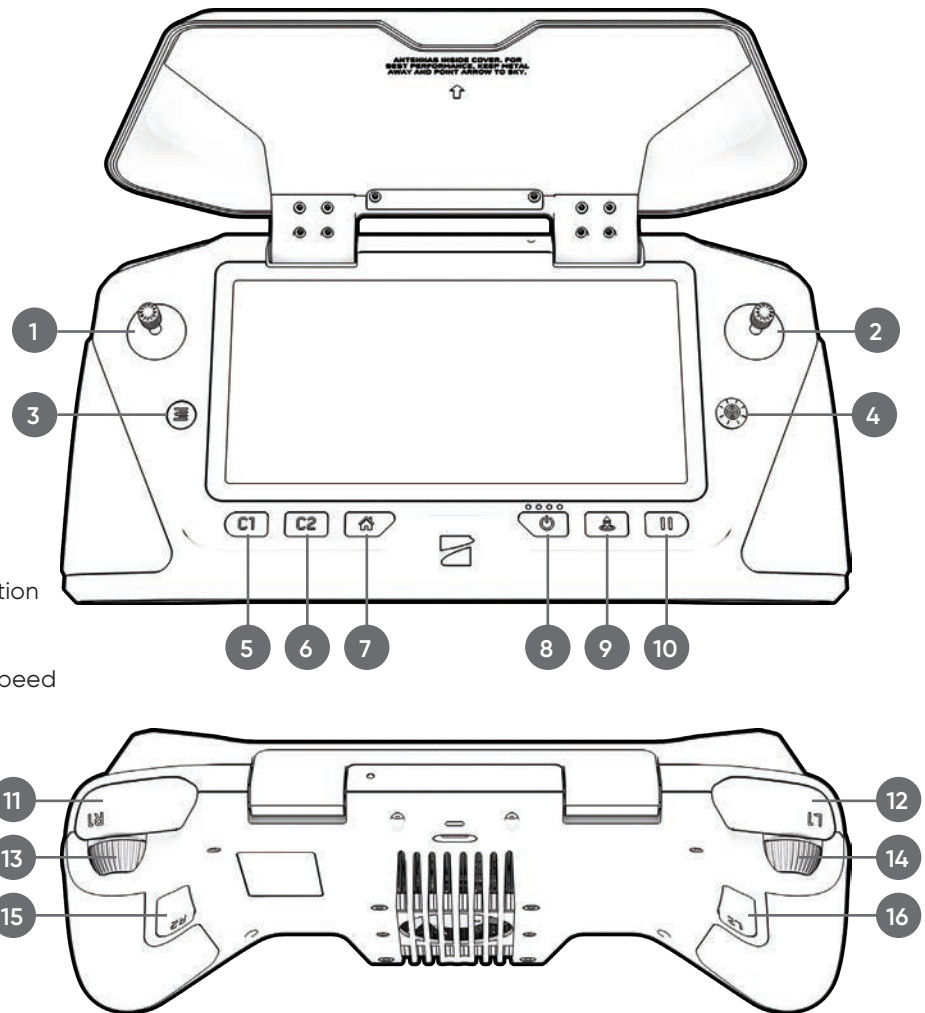


**WARNING:** pressing L2 and R2 simultaneously at any time during the flight will disarm the drone and stop the propeller blades resulting in a free fall.

# Pre-flight

## Flight controls

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. **D-pad**
5. **C1 button** - toggle Obstacle Avoidance
6. **C2 button** - toggle lights
7. **RTH button** - Return to Home
8. **Power button** -
  - press once to sleep/wake the screen
  - press and hold to power on/off
9. **Launch/Land button**
10. **Pause button** - pause an autonomous action
11. **R1 button** - shutter/record
12. **L1 button** - boost, temporarily fly at max speed
13. **Right wheel** - zoom
14. **Left wheel** - gimbal tilt
15. **R2 button** - toggle map view
16. **L2 Button** - toggle camera color/thermal



### Directional pad (D-pad) controls:

- Navigate through settings and screens: push up, down, left, or right
- Select: press in
- Adjust sliders:
  - Scroll until the slider is highlighted
  - Press in to select—the slider will turn blue to indicate it is active
    - Push left or right to adjust slider values, then press in to confirm
    - Use Back button to exit a menu

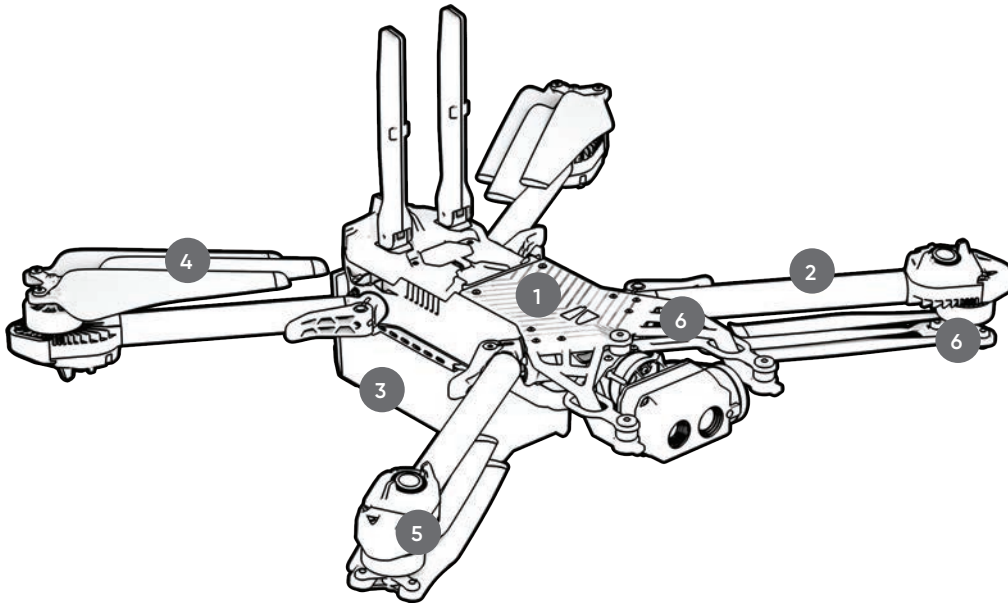
### Touch gestures:

- 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
- 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 X2D will fly to that location

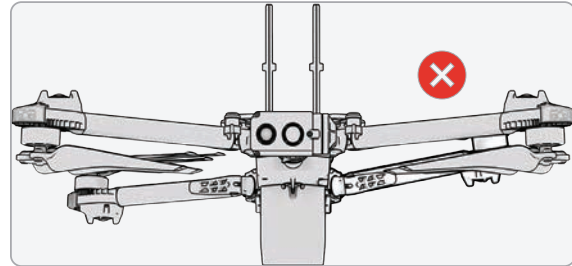
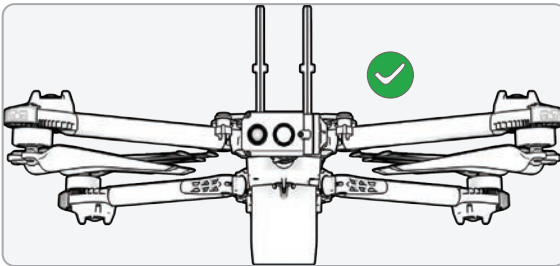
# Pre-flight

## Inspection

Before each flight, perform a pre-flight inspection to ensure your Skydio X2D is safe and ready to fly.



1. **Inspect chassis** - inspect the vehicle chassis to ensure it is free of damage.
2. **Inspect motor arms** - verify that they are free of damage and assembled properly. When assembled and viewing the drone head-on, arms should be parallel to the chassis.

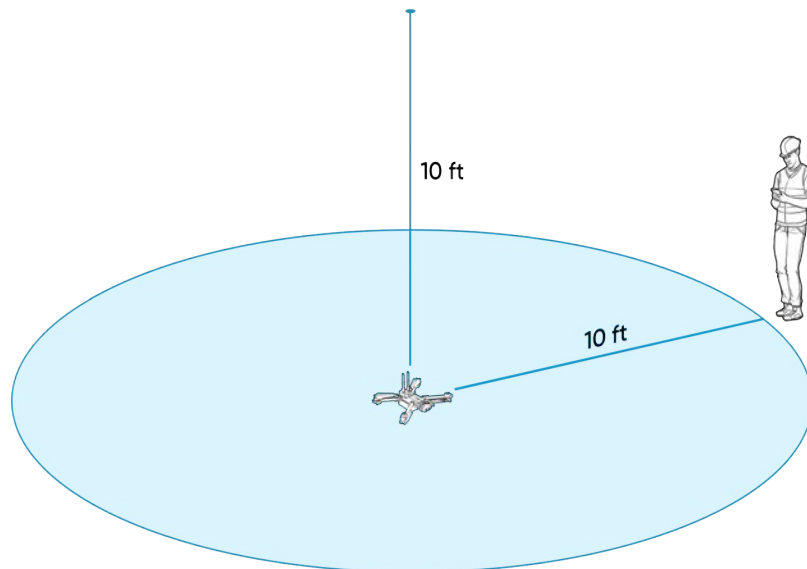


3. **Inspect battery** - Skydio X2D uses magnets to seat the battery that may attract metallic debris. Visually inspect the battery and connector pins to ensure they are free of debris and damage. Verify the battery is fully seated in the vehicle prior to takeoff.
4. **Inspect propellers** - Ensure that propellers are firmly attached and free of nicks, cracks, and damage. Do not fly with damaged propellers. Fan propellers out so that the blades are separated.
5. **Clean cameras lenses** - use a clean microfiber cloth to ensure that all cameras are dust and smudge-free before every flight.
6. **Inspect motor hubs** - ensure that they are free of damage and debris.

# Flight

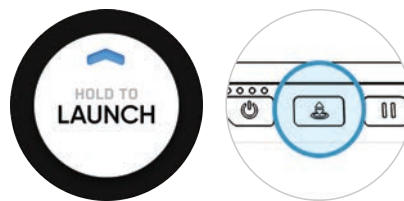
## First flight

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



**WARNING:** Skydio recommends flying your Skydio X2 in normal daylight or brightly lit conditions with full obstacle avoidance to get comfortable with the system before attempting to fly at night or with reduced obstacle avoidance. Obstacle avoidance is disabled when in GPS Night Flight Mode.

## Launch



**Step 1** - Find a clear area to launch

**Step 2** - Place X2D on a flat, stable surface

**Step 3** - Select **Launch** on the Fly screen or Press and hold the **Launch/Land** button on the Controller

- X2D will arm and ascend to 10 ft (3 m) and hover in place



**NOTE:** Skydio X2D requires a stable GPS connection to fly greater than 33 ft (10 m) above the launch point. To fly higher than 33 ft (10 m), lateral flight in all directions may be required to establish heading.

# Flight

## Hand launch



**WARNING:** Launching and landing X2D from your hand is an advanced maneuver only to be used when it is necessary, and it is advised that you do so only if you are an experienced pilot. Exercise extreme care to avoid injury if the drone takes off from your hand. **NEVER hand launch your X2D when in GPS Night Flight mode**, as it may cause severe injury. To avoid injury stay away from and do not touch rotating propellers when they are spinning.

**Step 1** - Identify a clear area to launch, 10 ft (3 m) above, 15 ft (4.5 m) in front, and 3 ft (1 m) on either side

- Do not hand launch on windy days. If there is any wind, for your safety ensure that it is not blowing towards you
- If the wind is gusty or coming from different directions, consider a ground launch

**Step 2** - Create a launch pad on your open hand by lightly gripping the battery to stabilize, keeping the drone level and still

- Keep your fingers below the chassis and away from the propellers at all times
- Hold X2D at arm's length from your body

**Step 3** - Point the camera away from you

**Step 4** - Ensure that the rear propellers will not make contact with your arm

**Step 5** - Initiate a launch

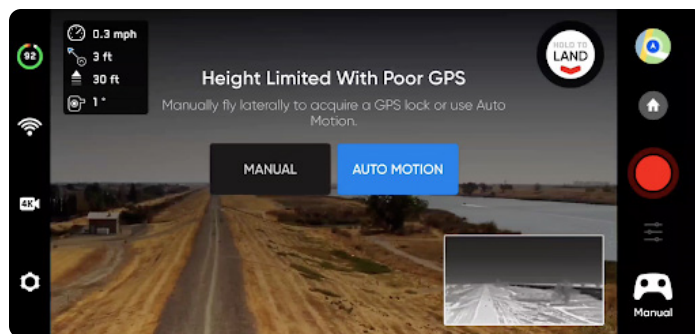
**Step 6** - Release as the propellers begin to spin up by slowly relaxing your grip. Keep your hand still and level.

- X2D will slide off your palm and take flight
- Do not push or throw the vehicle up in the air

## Acquire GPS Lock

Immediately after launching, fly laterally to acquire a GPS lock. This is a critical step that must be taken if you are going to fly your drone over water.

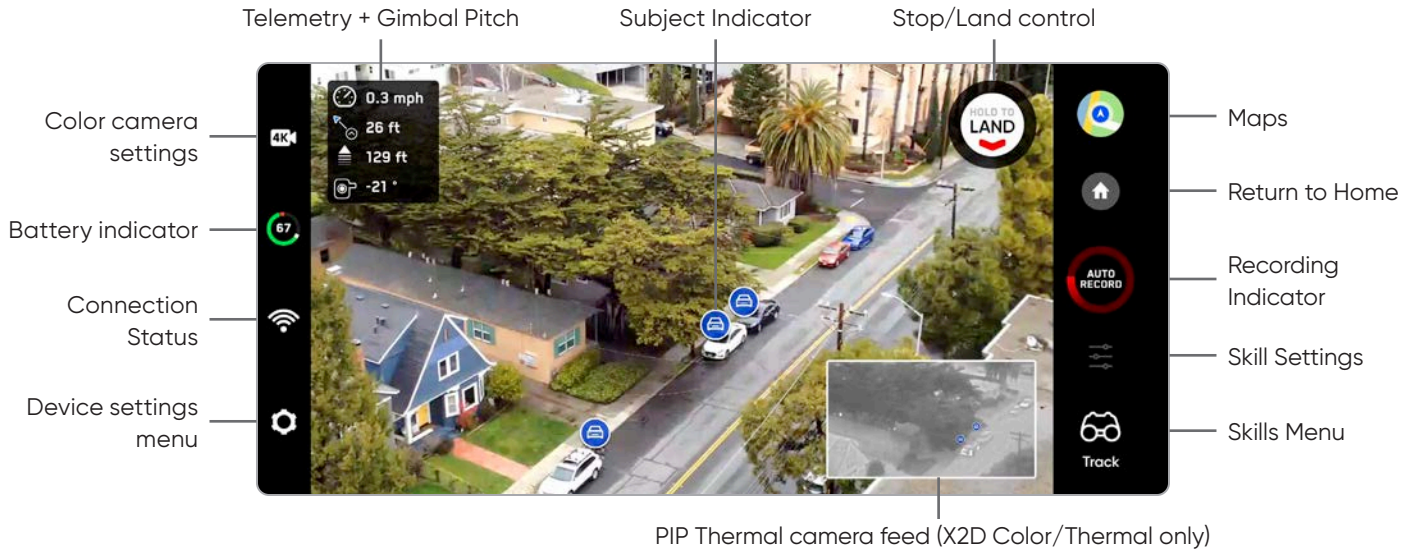
- If you can fly your drone 33 ft (10 m) above ground level when outdoors you have acquired a GPS lock



**WARNING:** Failure to acquire GPS lock prior to flight over water may result in erratic flight and/or emergency landing.

# Flight

## Flight screen



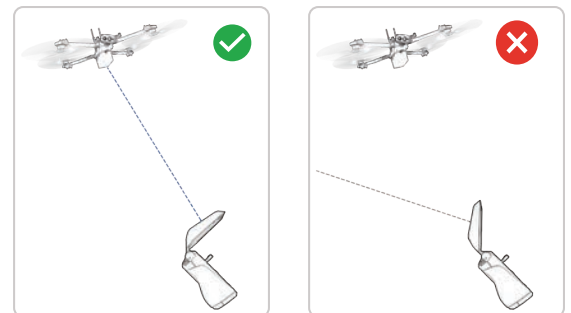
## Connection Status

The connection status indicator displays the current strength of the signal connection between your controlling device and your X2, the GPS quality and the number of satellites your drone is connected to. Select the connection status icon to view.



For the best signal connection:

- maintain a direct line of sight between the controller and X2
- for close range high altitude flight - point the controller cover (broad side) toward X2
- max range flight - point the controller cover (broad side) toward X2 while keeping the controller as far away from your body as possible. Bringing the controller too close to your body will impact wireless performance.



**NOTE:** Signal strength and maximum control range may be affected when flying in areas with electromagnetic interference. As signal strength decreases, users may experience a lower quality video feed or a delay in their controls.



# Flight

## Flight screen

### Battery indicator

Battery indicator messaging displays how much battery is available for flight, how much battery capacity available for a return trip, and how much battery is required to land.

- **Percentage** - displays battery charge remaining
- **Green** - indicates battery capacity for nominal flight before the time limit required to safely return and land
- **Yellow** - indicates how much battery capacity is required to safely return
- **Red** - indicates how much battery capacity is required to land
- **Countdown** - battery capacity has less than two-minutes of flight time available for landing the indicator will change to a countdown
- **Landing** - battery capacity is zero the indicator will change to an alert symbol and X2D will land



**NOTE:** Flight time dynamically changes based on altitude and distance to home.

**Show Thermal** (X2D Color/Thermal only) - toggles the display of the thermal camera live feed.

- On (default) displays live feed from the color and thermal cameras as well as a small picture-in-picture (PIP) feed from the thermal camera
- Off and only the live feed from the color camera will display



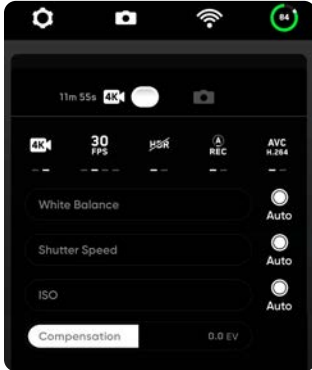
**Picture-in-picture (PIP)** (X2D Color/Thermal only) - live feed of the thermal camera. Tap on the PIP to toggle between viewing the thermal camera feed full screen and the color camera feed full screen.



# Flight

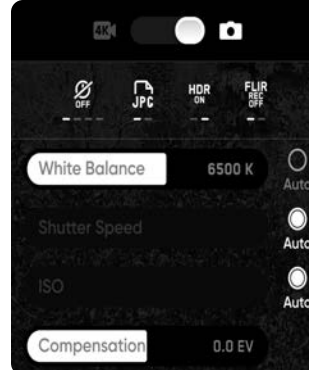
## Camera settings

Change between Video and Photo recording modes. Skydio X2D can capture photos or video but not both at the same time, and your color and thermal cameras will always be in the same recording mode. Whenever X2D captures a photo or video, it will capture one file with the color camera and a second with the thermal camera.



### Video Capture Settings

- Resolution
- Frame rate
- HDR On/Off\*
- Auto / Manual Recording
- Video Codec\*\*
- White Balance
- Shutter Speed
- ISO
- Exposure



### Photo Capture Settings

- Photo Interval\*\*\*
- Off / 1s or 2s\*\*\*\* / 5s / 10s
- HDR On/Off
- JPG / JPG+DNG\*\*\*\*\*
- White Balance
- Shutter Speed
- Exposure
- FLIR on/off



**NOTE:** Changing the camera settings before launch may cause Skydio X2D to return to the preflight screen and recalibrate its vision system. Some video capture settings (such as video resolution and frame rate) cannot be changed while the drone is actively zooming. Digital 16x zoom (8x for thermal camera) is not supported in all video resolutions and framerates.

## Recording indicators



Recording Video: Auto

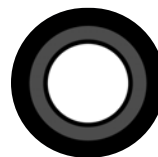


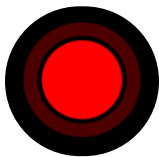
Photo Button



Recording Video: Manual



Interval Photos



Recording Paused: Manual

\* HDR is not supported in all video resolutions and framerates.

\*\* Skydio X2D can record video in either AVC (H.264) or HEVC (H.265). Different mobile devices and personal computers have different compatibility with these encoding standards. Be sure to choose the encoding standard that is best suited to your desired workflow.

\*\*\* When Photo Interval is enabled X2D will continuously capture photos at the specified time interval until the setting is disabled or the flight ends.

\*\*\*\* The fastest interval photo setting when capturing in raw DNG is two seconds. Capture a photo every one second when capturing in JPG mode.

\*\*\*\*\* DNG photos are not displayed in the media tab and may be retrieved directly from the microSD card.



# Flight

## Zoom

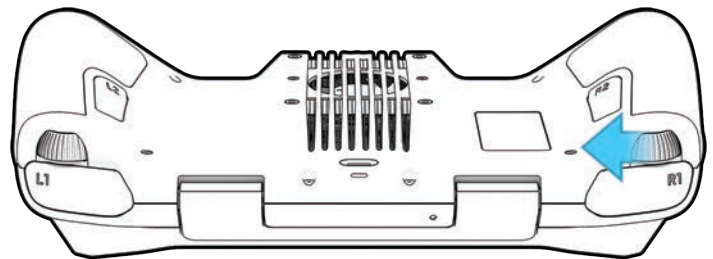
**Zoom-in while Tracking Subject** - provides a clear and enlarged view of the individual or vehicle being tracked, allowing you to initiate a track skill and digitally zoom-in, 3x with color and 1.5x with thermal.

Zoom for your thermal camera is correlated to that of your color camera. For example, when you are at 8x zoom on the color camera (50% of the 16x max zoom level), the thermal view is at 4x zoom (50% of its full zoom of 8x). When at 100% of the color camera 16x zoom, the thermal camera is at 100% of its zoom of 8x.



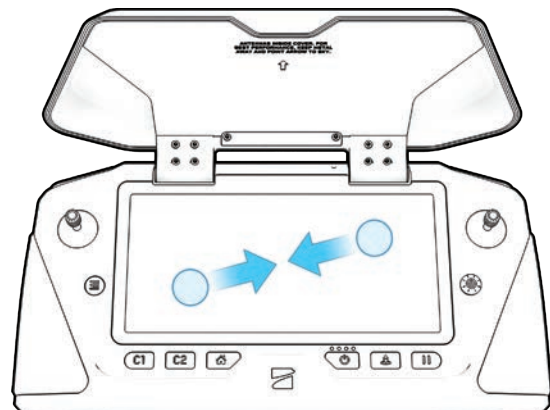
**NOTE:** As you zoom in, X2D camera tilt and yaw will be exponentially reduced for smoother movement.

To zoom in digitally, place your finger on the right controller wheel, then push it to the left.



You may also pinch-to-zoom on the controller touch screen.

Tap on the zoom indicator at the top of the screen to quickly snap back to 1x zoom (MIN).



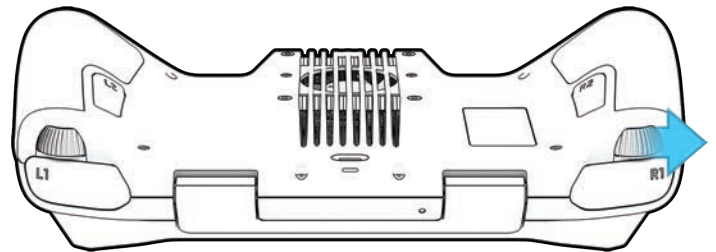
# Flight

## Superzoom

Zoom out to an equirectangular view of your surroundings. Skydio X2D uses six, 4k navigation cameras to create this omni-directional view in real-time, allowing you to maximize your in-flight situational awareness.



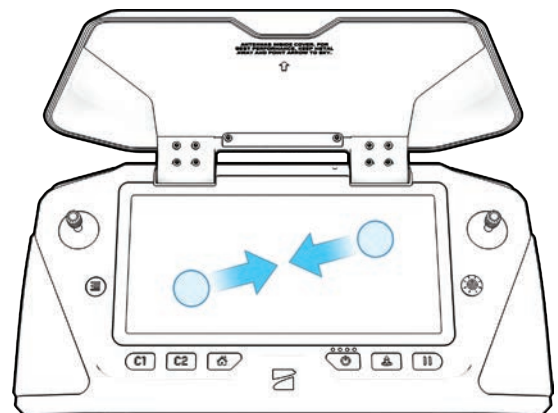
To zoom out to Superzoom, place your finger on the right controller wheel, then pull it to the right.



Pinch-to-zoom on the controller touch screen.

If Skydio X2D screen view is already zoomed in, you will first need to zoom out to 1x before you can zoom out again to Superzoom.

Select the zoom indicator at the top of the screen to quickly snap back to 1x zoom (MIN).



# Flight

## Zoom Recording

### Recorded Footage

Depending on your recording mode and zoom setting in flight, your recorded footage may or may not be zoomed in:

- If the video is zoomed in while recording, the resulting video file will also be zoomed in.
- photos taken while zoomed in will reflect the zoom level
- If video is being recorded or photos are taken while zoomed out to Superzoom, the resulting photos and video will remain at 1x zoom.

### Video Capture Settings

While actively zooming in, the video capture settings will be locked:

- Resolution
- Framerate
- HDR On/Off
- Auto/Manual Recording
- Video Codec

To change your video capture settings, reset the zoom level back to 1x.

### Compatibility

Zoom and Superzoom as well as camera tilt are currently only available while in flight. You will not be able to activate the zoom feature while the drone is grounded.

Digital zoom - Digital Zoom is not compatible with all video recording modes. To enable zoom while recording video, switch your video mode:

Video Mode	Zoom Compatible
1080p @ 30fps	<b>YES</b>
4k @ 30fps	<b>YES</b>
4k @ 60fps	<b>NO</b>



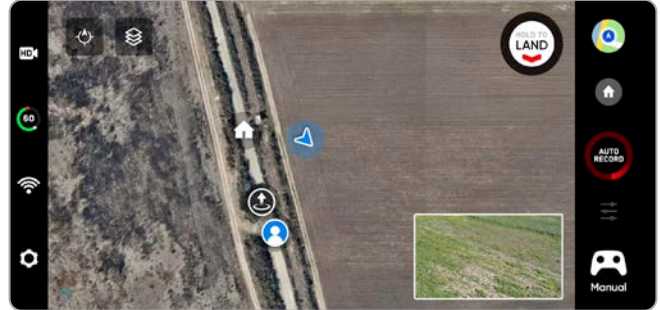
**INFO:** Zoom is possible up to 3x when using the Track in Place skill

# Flight

## Map view

Select the map icon for map view, for the GPS location of your controller, Skydio X2D, and the launch are all indicated on the map.

- select the map icon to exit map view
- long-press on the map and select **Fly Here Now** from the menu. Skydio X2D will warn you if the selected destination is far away or outside the expected battery range



Skydio X2D



Controller



Home Point



Launch Point

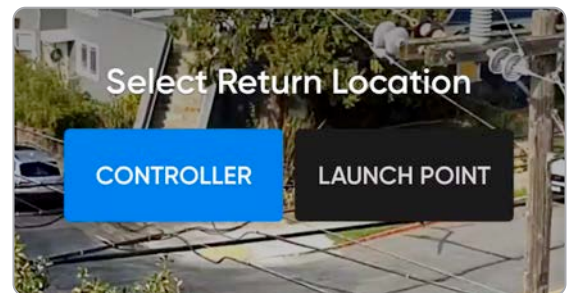
## Home points

Create a Home Point (or move the existing Home Point) by long-pressing on the map and selecting Set Home Point from the menu. Home points are optional and are not saved between flights. If a Home Point is present during a flight, Skydio X2D will automatically return to that location in the event of a loss of communication link (unless otherwise specified in the waypoint settings). Selecting the Home Point on the map allows you to fly X2D to that location immediately or remove it from the map.

## Return to Home (RTH)

Selecting the **Return to Home** button to set return to either the launch location or the controller's current location.

- if a Home Point has been set for this flight, the **Launch Point** option will be replaced with **Home Point**
- ensure that there are no obstacles (e.g., people, animals, etc.) in the drone's return pathway. Skydio X2D will retain its current obstacle avoidance setting when returning.



**TIP:** To ensure an accurate flight a strong, sustained GPS signal is required. If Skydio X2D loses GPS or the GPS signal becomes weak, X2D will do its best to estimate and return to the Home Point position.

# Flight

## Skills

Skydio offers a range of manual and autonomous controls called flight skills. Select your desired skill and Skydio X2 will intelligently fly itself to get the best shot. Access available skills by selecting the Skill Menu and adjust the controls by selecting the Skills Settings.



**Manual**

Traditional flying experience using on-screen controls or the Skydio Controller.



**Orbit Point**

Rotate around a user-selected point-of-interest in either a clockwise or counter-clockwise direction, keeping the point in the center of the frame.



**Track in Place**

Hover in a fixed position, as if affixed to a virtual tripod, rotating and tilting the camera to look at the subject as they move.



**Waypoints**

Create and execute multi-waypoint GPS missions.



**KeyFrame**

X2 will capture continuous shots along a user defined spline with complex, cinematic, and smooth camera motion.

## Skills settings

Each skill may have its own custom settings which only affect the selected skill. Select the skill settings icon to customize each of the settings to suit your needs.

## Manual

The default skill is Manual flight. The Manual flight skill offers a traditional flying experience using the Skydio Enterprise Controller.

Your obstacle avoidance settings will persist when flying manually. Obstacle avoidance allows Skydio X2 to route itself around obstacles, modifying any commands that could potentially cause a collision.





# Flight

## Orbit Point

Skydio X2D will rotate around a user-selected point-of-interest in either a clockwise or counter-clockwise direction, keeping the point in the center of the frame enabling situational awareness, surveillance, and over-watch of any structure or locale.

**Step 1** - Select **Orbit Point** from the Skills Menu

**Step 2** - Select **Map View**

**Step 3** - Fly to the edge of your orbit

**Step 4** - Long-press on the map

**Step 5** - Select **Set Focus Point**

- the range of the orbit is set to the current distance of X2D from the focus point

**Step 6** - Set the direction and speed for the orbit

- use the on-screen slider to set the direction and speed of the orbit using the on-screen slider or controller joystick that controls roll

**Step 7** - Skydio X2D will continue moving after lifting your finger from the screen

- the farther you move the slider in either direction, the faster Skydio X2D will orbit
- using the joystick, the drone will move only while joystick inputs are active
- when the joystick is placed back in the center position, the drone will stop moving and the on-screen slider will snap back to the center

**Step 8** - Select **View**

- toggle between the map view and live view
- control camera gimbal pitch and zoom using the controller wheel
- adjust orbit range and altitude
- drag the orbit on the controller screen to increase or decrease the orbit range
- manually pilot X2D and the orbit range will dynamically adjust

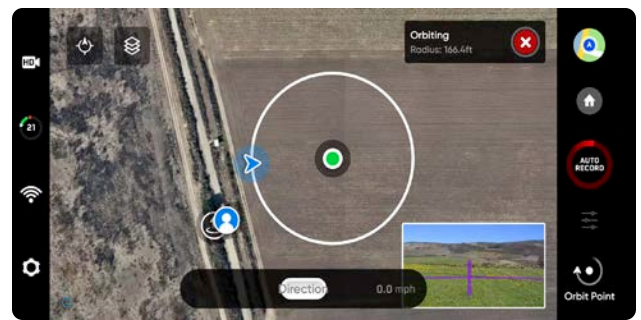
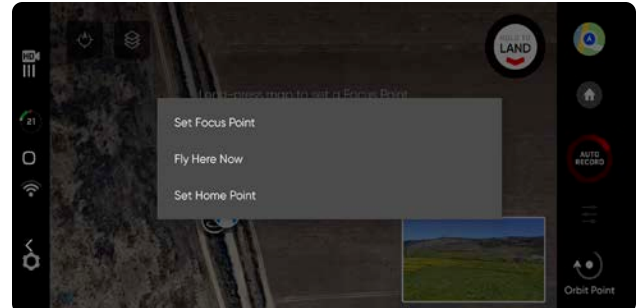
**Step 9** - Pause the orbit, manually pilot the drone to a new position, then resume

**Step 10** - Adjust Focus Point

- tap and hold on the map and select **Move Focus Point**
- replaces the current focus point and sets the new orbit radius to match the drone's current location
- this will stop the current autonomous action allowing you to take manual control

**To Pause Autonomous Flight** - select the Stop button

- this will stop the current autonomous action allowing you to take manual control



# Flight

## Track in Place

To visually track a subject, select the Track in Place skill, identify a subject of interest, then fly the vehicle to within 100 ft (30 m) if your subject is a person or 140 ft (40 m) if your subject is a vehicle so that Skydio X2D will detect it.

Select the subject indicator to start tracking a subject

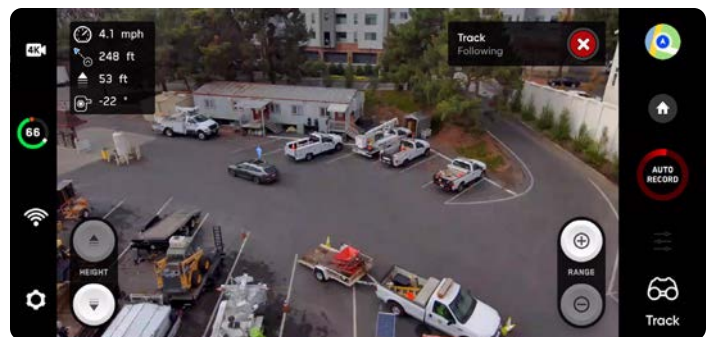
- X2D will hover in place, rotating and tilting the camera to track the subject as it moves

Use the controller joystick or on-screen controls to control the pitch, roll, and altitude

- X2D will adjust yaw and gimbal pitch automatically according to the subject's position
- lateral movement speed limited to 4 mph (6.4 km/h)

While actively tracking a subject, Skydio X2D will hover in place, maintaining the track

- 800 ft (240 m) away if the subject is a person
- 1,000 ft (300 m) away if the subject is a vehicle



### Zoom-in while Tracking Subject

Provides a clear and enlarged view of the individual or vehicle being tracked. Allows you to start tracking a subject and digitally zoom-in 16x. Zoom-in while tracking also provides a more robust case landing experience.



**NOTE:** Tracking will continue until the subject is too far away or blocked by an obstruction.

## Subject indicator



The subject icons represent a person or vehicle that is available for tracking. When in the Track skill, tapping the indicator will command X2D to enter autonomous flight mode with the selected object as the tracking subject.

Tips for best tracking performance:

- track one person or vehicle at a time. Skydio X2D does not track pets or animals.
- to be available for track the subject must be visible on the Fly screen
- if the subject indicator does not display, fly closer and ensure that the subject is framed in the center of screen

# Flight

## Waypoints

The Waypoints skill allows you to design and execute multi-waypoint GPS missions. Skydio X2D uses AI-enabled path planning algorithms to avoid obstacles. To create a mission:

**Step 1** - Select **Waypoints** from the skills menu

**Step 2** - Select map view

**Step 3** - Long-press anywhere on the map

**Step 4** - Select **Add Waypoint** to set the first waypoint

- the first waypoint will automatically be the current position of X2

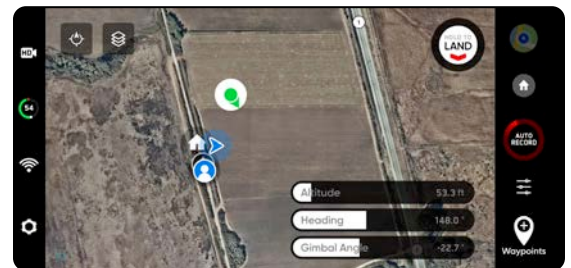
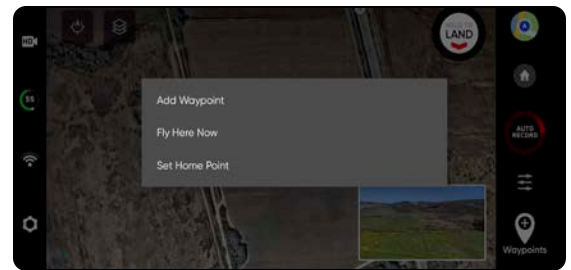
**Step 5** - Customize settings by selecting the newly created waypoint

- set the altitude, heading, and camera angle for that waypoint

**Step 6** - Long-press on the map to set your second waypoint

**Step 7** - Continue to add waypoints until your path is complete

- missions can support up to 256 waypoints.
- waypoints that are added while a mission is in progress will be included in the current mission
- if a waypoint is added after a mission is complete, the flight will restart before including the newly added waypoint



**NOTE:** Waypoints are created using GPS coordinates. Skydio X2D must have a good GPS signal prior to executing a waypoint mission.

**Step 1** - Select **Play** to start the mission and Skydio X2D will autonomously move through each waypoint.

- only one waypoint mission may be defined at a time
- you cannot save and load between multiple missions
- when the mission is complete X2D will hover in place
- waypoint missions are stored on the controller and will persist across flights and reboots

**Step 2** - Delete a waypoint

- long-press and select **Delete**

**Step 3** - Clear all waypoints

- select the trash icon



# Flight

## Waypoints

Adjust the Waypoint settings menu to further customize the mission behavior.

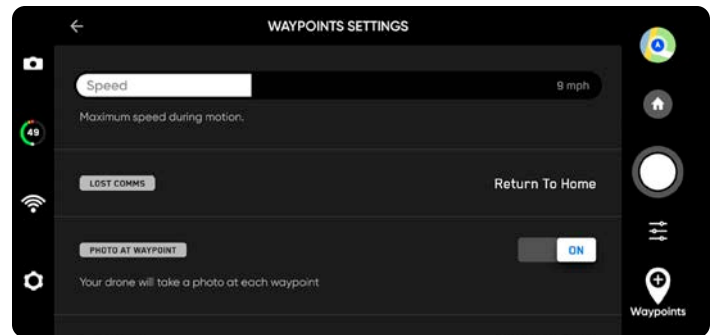
**Speed** - set the speed at which Skydio X2D will move between waypoints.

**Lost Comms** - defines the lost link protocol if the signal connection to the controller is disrupted during a mission:

- Return to Home (default)
- Continue the mission
- if X2D does not regain connection after continuing and completing the mission it will return home

**Photo at Waypoint** - Set to take a photo at each waypoint

- when resuming a mission video mode will automatically switch to photo mode. The drone will switch back into Video mode upon pausing a mission, completing a mission, or exiting the Waypoints skill.
- if you switch to Video mode while a mission is active the drone will automatically switch back to Photo mode at each waypoint, capture the image, then switch back to Video mode. This will result in a separate video file for each flight segment between waypoints.



**NOTE:** Waypoint missions are stored on the controller, however the skill settings for the mission are stored on X2D. If you run the same mission with different vehicles, set your Waypoint skill settings for each X2D

# Flight

## KeyFrame

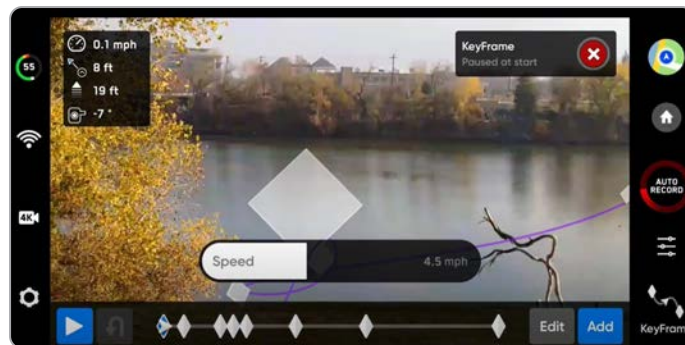
Use the KeyFrame skill to choreograph professional cinematic aerial shots by capturing continuous, complex video with smooth camera motion. KeyFrame flights can be flown repeatedly, with varying degrees of complexity, subtle camera moves, speed adjustments, and obstacle avoidance. Set up your sequence by adding up to 100 keyFrames in a 3D space. Adjust the camera framing at each keyFrame to create complex, multi-point flight paths.

**Step 1** - Select the **Cinematic** tab from the skills menu

**Step 2** - Select **KeyFrame**

**Step 3** - Fly to your first keyFrame location

- adjust the drone and camera position



**NOTE:** Placing your initial keyframe close to your Launch Point will improve the accuracy of your flight path. KeyFrame paths set far away from your launch point may be less accurate.

**Step 4** - Select **Add** to lock in the keyframe location and position

- add up to 100 KeyFrames

**Step 5** - Select **Done** when you have completed your sequence

**Step 6** - Select Play to fly

**Step 7** - Adjust the speed at which the drone will fly to each KeyFrame

- X2D will not fly the exact same path at two different speeds

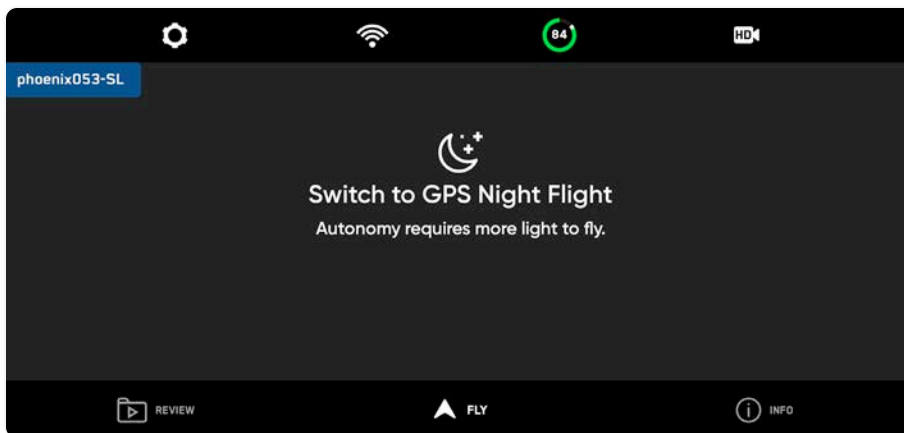
X2D will begin at the last KeyFrame added and fly through your sequence along the spline until it reaches the first KeyFrame added.

- **Edit** or **Add** KeyFrames to your sequence along the spline at anytime
- press the red X button in the top right to return to the Manual flight skill
- KeyFrames will automatically be saved

# Flight

## GPS Night Flight

Enable GPS Night Flight when flying in low-light conditions. When in this mode, Skydio X2D will disable obstacle avoidance and use GPS sensors, instead of its vision system, to navigate. Skydio X2D will display an alert message if the environment is too dark to fly using the vision navigation system and will prompt you to fly using GPS Night Flight.



**Step 1** - Select Device Settings gear icon

**Step 2** - Select the **Drone** tab and scroll down

**Step 3** - Select **GPS Night Flight** and toggle on

**Step 4** - Select Lights

- toggle on RGB navigation, Infrared, or Strobe lights
- Infrared and Strobe lights cannot be on at the same time

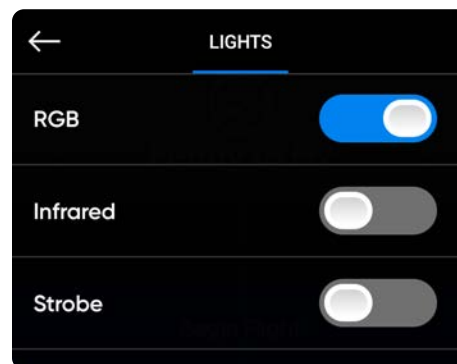
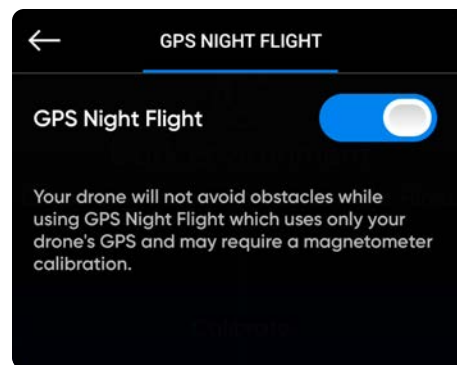
**Step 5** - Complete calibration if required

- see instructions on the next page

**Step 6** - Navigate back to the fly screen

**Step 7** - Launch Skydio X2D

- X2D will automatically rotate 360° to establish a heading
- obstacle avoidance will be disabled



**WARNING:** GPS Night Flight mode requires flying without obstacle avoidance. Skydio X2D may drift slightly when in GPS Night Flight mode; take extra caution when flying in this mode and do not stand near the vehicle.

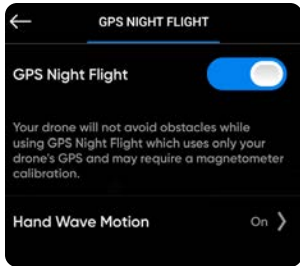
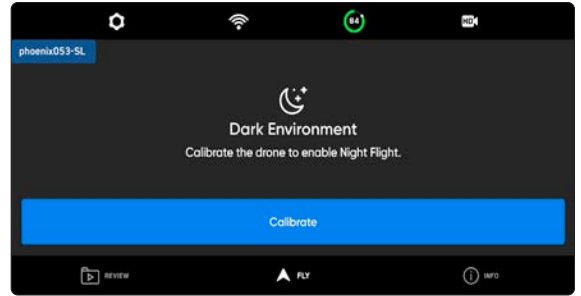
# Flight

## GPS Night Flight

If this is your first time enabling GPS Night Flight mode, you will need to complete a calibration before flight.

Select your calibration method

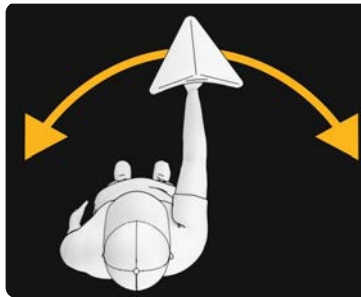
- Hand Wave calibration
- Multi-step calibration



### Hand Wave:

Toggle Hand Wave calibration on

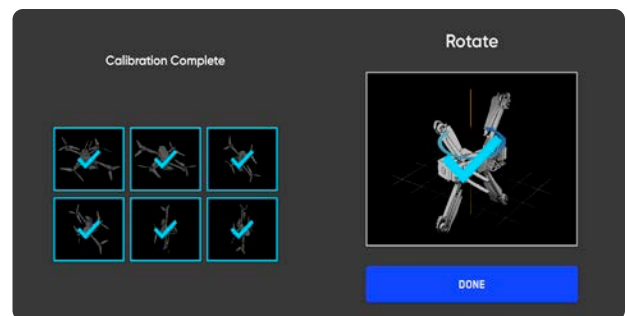
- select the Settings menu
- select the Drone tab and scroll down
- select GPS Night Flight
- toggle Hand Wave On



### Rotate:

Toggle Hand Wave calibration off

- Rotate X2 to match the orientations
- as shown by the corresponding animations
- the rotations steps do not need to be completed in any particular order
- select **Done** when all of the calibrations are checked



**NOTE:** The multi-step calibration may not be required for several weeks or even months, depending on the environment. You will be prompted when another calibration is necessary.

# Flight

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## GPS Night Flight safety considerations



**WARNING:** Obstacle Avoidance is **disabled** in GPS Night Flight. **Do not** hand land or launch in GPS Flight Mode

### Obstacle Avoidance

When GPS Night Flight is enabled, Skydio X2D does not use vision navigation and **Obstacle Avoidance is disabled**. Take extra caution when piloting the vehicle to avoid obstacles and stay clear of people.

### Visibility

Improve visibility by enabling infrared or visible strobe lights. Skydio X2D strobe lights meet the FAA requirement of being visible at a distance of 3 statute miles.

### Return behavior

Review the return behavior height setting in the Drone Settings menu. Skydio X2D does not avoid obstacles when in GPS Night Flight mode, so you may want to set the drone's return height such that it will be above any potential obstacles.

### Launch and land

When landing, use the controller joystick to descend down to 15 feet (4.6 meters), when you are ready to land, press and hold the LAND button on the screen or the controller.

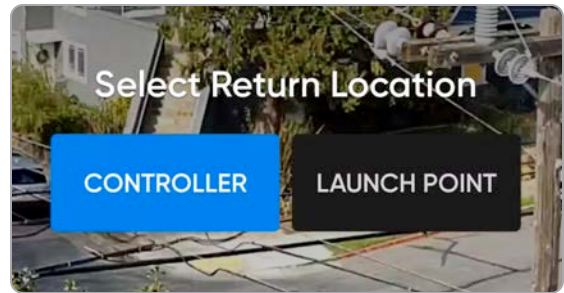
# Flight

## Return to Home

Any time a return is triggered, either manually or autonomously, Skydio X2 will first ascend to a specified height before returning. You can customize this return height, and other return settings, in the Drone Settings menu. Select Return to Home, and ensure that no obstacles, people, or animals have moved into the return pathway. Skydio X2 will retain the current obstacle avoidance setting while returning.

Return to Home - set to either the launch location or the controller location. If a Home Point has been set for this flight, the Launch Point option will be replaced with Home Point.

The Return Button on the Enterprise Controller commands Skydio X2 to return to its launch location. If you have set a Home Point on the map, pressing the Return Button will command Skydio X2 to return to the Home Point instead of the launch location.



## Return height and behavior

Customize return behaviors in the Drone Settings menu:

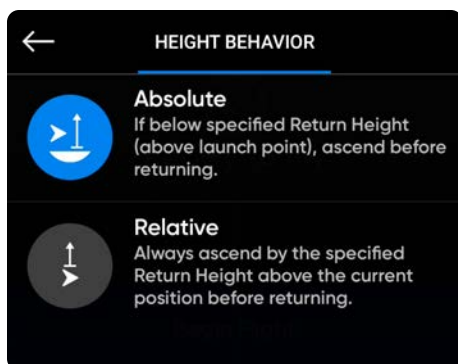
**Absolute return height** - X2 will ascend to the specified Return height (above the launch point) before returning

**Relative return height** - X2 will ascend by the specified Return Height above the drone's current position before returning.

**Drone Looks** - X2 will either look toward or away from the return destination

**Return Type** - set X2 to return using GPS or the vision system. Set your return type to Vision in GPS-denied environments.

**Return Speed** - set the speed of X2 while returning



# Flight

## Visual Return

Your return flight will use either GPS or the vision navigation system to return to the launch location. Visual return is an option for flight in GPS-denied environments. When the Return Type is set to Vision, X2 will use the vision navigation system to return. **Visual return will only work with the Launch Point.** Flying to a set Home Point or to your controller will require GPS.



Skydio X2 returns based on Return Type:

	RETURN TYPE = GPS	RETURN TYPE = VISION
Launch Point	GPS to return to launch point	Visual navigation to return to launch point
Phone	GPS to return to controller location	Not supported in visual navigation. X2 will use GPS to return to controller location
Home Point	GPS to return to home point	Not supported in visual navigation. X2 will use GPS to return to home point
Fly Here Now	GPS to fly to specified location	Not supported in visual navigation. X2 will use GPS to fly to specified location

# Flight

## Land

When you are ready to land your drone, stop any subject tracking or autonomous actions and manually fly the drone to a stable landing spot that is clear of debris and people.

**Step 1** - Descend to 15 ft (4.6 m)

**Step 2** - Select and hold Land

- Skydio X2D will descend
- below 10 ft (3 m) obstacle avoidance will be disabled for the remainder of the landing
- during landing you may nudge the drone forward, backward, left, or right
- yaw control is disabled during landing
- cancel the landing by increasing altitude or selecting Cancel Landing



## Case landing

Use the case for a landing pad to avoid disturbing dirt and debris:

**Step 1** - Position the drone about 10 ft (3 m) above the case

**Step 2** - Tilt the camera down so the case and Skydio logo are clearly in view

**Step 3** - Select and hold Land

- a yellow ring will circle the Skydio logo
- if you do not see the yellow ring, cancel the landing and try again



**CAUTION:** Piloting or nudging the vehicle during a case landing will cancel the case landing and continue with a normal landing. Be careful not to accidentally touch the controller joysticks while X2 is performing a case landing.



**INFO:** Skydio X2D may identify bushes, trees, and similar obstacles as potential surfaces. Pilot the drone to an open area free of obstacles before initiating a landing. If a flight is initiated by taking off from a case (or a case is placed at exact launch point), GPS positional accuracy cannot be relied upon to guarantee a case landing when using the Return to Home function (or in the case of a Return To Home triggered by lost communication).



# Flight

## Hand landing



**WARNING:** Exercise extreme care to avoid injury when attempting to land a drone on your hand. Do not attempt to hand-land before X2D is in a landing state as it may cause severe injury. Attempting to hand-land while obstacle avoidance is active will cause X2D to avoid your hand and crashing into you or surrounding objects. Hand-landing should only be used when surrounding surface conditions are unfavorable. Land on a flat surface when possible. NEVER hand-land when in GPS Night Flight mode, as it may cause severe injury.

### Step 1 - Ensure that:

- landing conditions are safe, including low winds
- X2D is hovering stationary within a few feet (~1 m)
- X2D is not following a subject
- X2D is over level and stable ground
- you have ample space to physically move yourself beneath the drone

### Step 2 - Orient so that the camera faces away from you

### Step 3 - Initiate a landing

**Step 4** - While X2D is landing, move yourself into a position that will allow X2D to safely land in your hand.

- you will be able to nudge the drone forward, backward, left, or right, however it is best and safest to adjust your position to meet the drone.
- do not attempt to hand land before obstacle avoidance has been disabled. Obstacle avoidance is disabled when altitude is below 10 ft (3 m). You will be notified when obstacle avoidance is disabled.

**Step 5** - After obstacle avoidance has been disabled, allow the drone battery to land gently onto your hand. Grasp the battery on the sides and hold the drone in the same position until the propellers completely stop spinning.

- During landing X2D is verifying that it is supported by a stable surface and motionless for several seconds to ensure that a safe touchdown has been achieved. It may take several seconds to stop the propellers after touch down.
- If X2D is not level and motionless, the propellers may start spinning again. If this happens, maintain a firm grip on the battery and keep the vehicle stable and motionless.
- Do not attempt to rotate or flip the vehicle during a hand landing. Doing so may cause the battery to become dislodged.

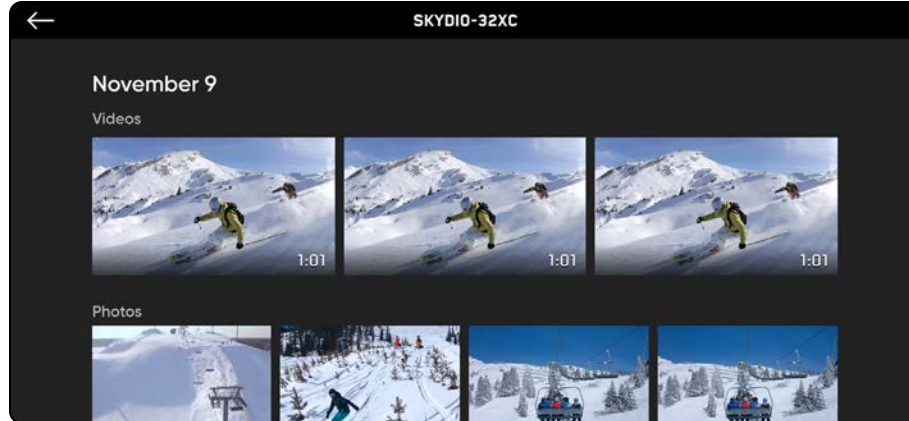
### Only use hand landing when absolutely necessary.

Do not attempt a hand landing if:

- in GPS Night Flight mode
- the wind is strong
- X2D is not stable in flight for any reason
- X2D is performing an emergency landing after an accident or crash
- you are in an area where you do not have stable footing
- you are on a moving vehicle or boat
- you are not an experienced pilot

# Post-flight

## Reviewing and offloading media



### To view the images and videos captured:

**Step 1** - Select the Review tab

**Step 2** - Select an image or video to review it

- Interval photo mode - all photos captured will appear as a single stack of photos. Selecting the stack will allow you to scroll through individual images one by one.
- only the JPG files will display

### To transfer your media to your computer:

**Step 1** - Power on your Skydio X2

**Step 2** - Connect X2 to your computer using the provided USB-C cable

**Step 3** - Import your media

Windows - your Skydio X2 will serve as an external hard drive

Apple - use the Photos app or the Image Capture app to transfer

- download the DNG image files directly from the SD memory card
- images contain embedded EXIF data to enable post-flight analysis

### To delete media:

**Step 1** - Press and hold the image or video to enter selection mode

**Step 2** - Select your desired media

**Step 3** - Select delete



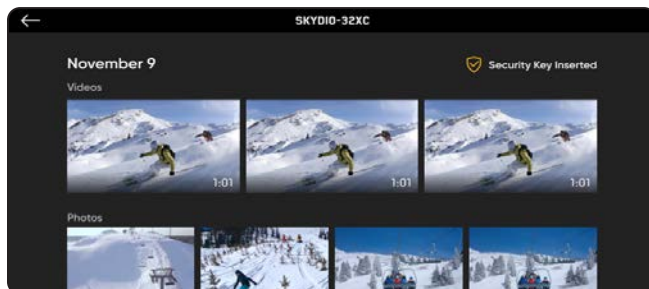
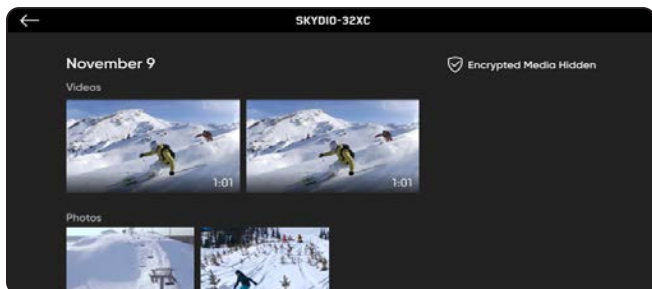
**INFO:** Connecting via USB to a computer that does not supply charging power will cause Skydio X2D to run off of battery power and may drain the battery.

# Post-flight

## Reviewing and offloading media

If Encryption was Enabled for your flight, your encrypted media will not display in the Review tab.

To review your encrypted media, power on the vehicle and insert the security key into the vehicle. When the lights on the key stop flashing, your encrypted media will be visible in the app for you to review.

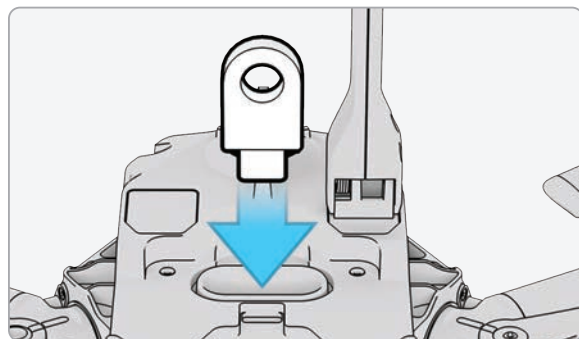


To review and copy your encrypted media on your device:

**Step 1** - Power on the vehicle

**Step 2** - Insert the security key into the USB-C port on the vehicle

- this will decrypt your media
- media will stay decrypted until you power off your X2D or begin a new flight
- reinsert the security key to decrypt your media again

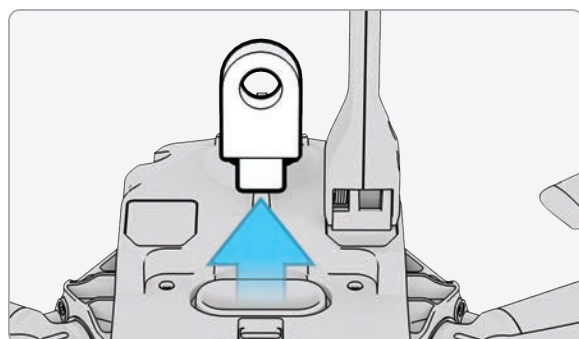


**Step 3** - Remove the key

- when the lights on the key stop flashing

**Step 4** - connect the vehicle to a computer using a USB-C cable

- import your decrypted media
- decrypted media will remain decrypted



**INFO:** Windows computer, your Skydio X2D will serve as an external drive. For Mac, use the Photos app to transfer your footage to your desired location (the Photos app is included with any current Mac, or are available from the macOS App Store). You will not be able to use the Image Capture app on Mac to import your decrypted media.

# Post-flight

## Dismantle Skydio X2D

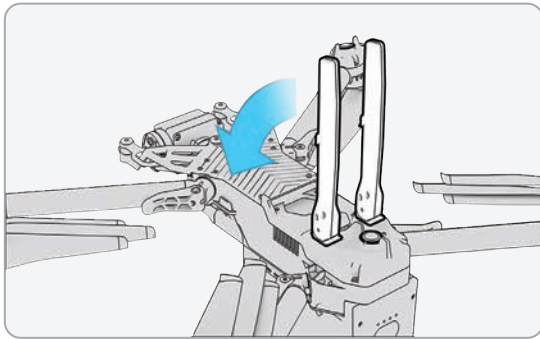
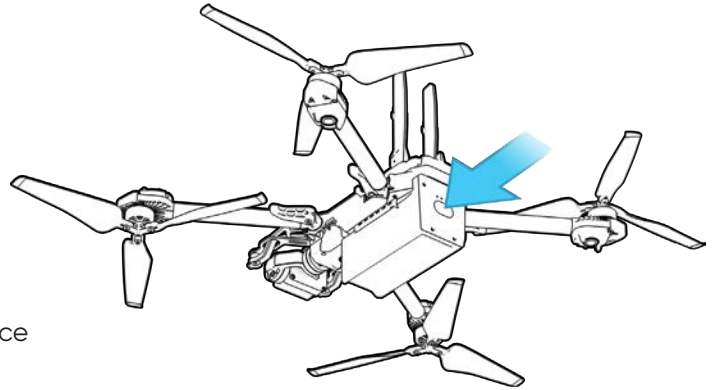
### Step 1 - Power off Skydio X2D

- press and hold the battery button for three seconds

### Step 2 - Power off Skydio Enterprise Controller

- press and hold the power button for three seconds
- select Power Off

### Step 3 - Gently push in and down antenna(s) to lock in place



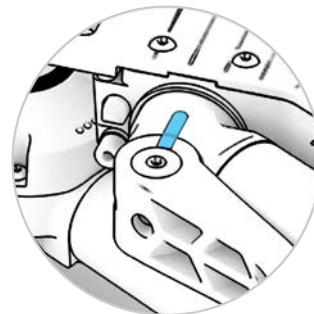
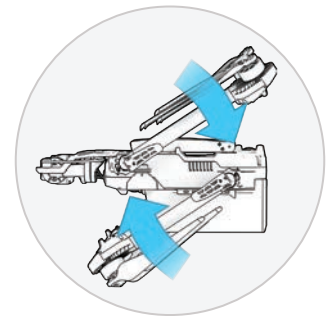
### Step 4 - Release the 4 arm clamps

### Step 5 - Lift the motor arms and fold in towards the body

- if you feel any resistance when opening the arms, push outward (horizontally) on the arm to unseat

### Step 6 - Return the 4 arm clamps to the locked position

- ensure that the blue marks align



**WARNING:** Propeller blades are sharp. Handle with care.

# Emergency Behaviors

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## Lost Connection

If Skydio X2D loses connection to the Skydio Enterprise Controller during flight, it will return to the Launch Point, or the Home Point if one was created. Establishing lost signal connection return behaviors is a critical component in pre-flight planning to ensure that your Skydio X2D returns safely and lands in an accessible location.

**Return when Disconnected** – toggle Off to disable Return when Disconnected and the Lost Connection menu. X2D will not return if it loses connection—it will hover until it reaches low battery and land.

**Wait before Return** – specify the amount of time that you want X2D to wait before it initiates a return flight, allowing time to reconnect.

**Land Once Returned** –

- Enabled (default): X2D will return, hover for a specified amount of time, and then land
- Disabled: X2D will hover in place until it runs out of battery

**Wait Before Land** – specify the amount of time between that you want X2D to wait before landing.

- 0 to 300 seconds (default – 240 seconds)
- only available when Land Once Return is toggled on

## Lost GPS

### Skydio X2D loses GPS

- In the event that the GPS signal is lost, the drone will continue flying as normal. You will still be able to Return Home and fly to waypoints, however the flight will be less accurate. If Skydio X2D loses GPS for an extended period of time, actions that require GPS (Return to Home/Controller, fly to a waypoint, Waypoint missions) will be disabled.
- When Skydio X2D is flying at high altitude or over large bodies of water, visual positioning becomes more difficult and the drone relies on GPS to assist with lateral positioning. In the event that GPS is lost in such conditions, lateral positioning will be affected and the drone may initiate an emergency landing.

### Skydio X2D loses GPS during Waypoint Mission

- X2D will attempt to fly to each waypoint, but may experience some location inaccuracies. At the final waypoint a GPS Lost alert message will display. Manually pilot the drone and attempt to regain a GPS signal and restart the mission.

### Skydio X2D loses GPS during GPS Night Flight

- If Skydio X2D loses GPS while in GPS Night Flight mode, it will initiate an emergency landing.

### Skydio X2 never had GPS

- If Skydio X2D never obtains a strong GPS signal, you may not be able to set a Home Point, fly to a waypoint, or return to Controller/Home. If your Return Type is set to Vision, however, you will be able to reliably return to the Launch Point using the vision navigation system.

## Find Drone

If the Map Coordinate setting is enabled the coordinates of the current or last known location are available making it easier for you to locate your lost drone:

**Step 1** – Select the **INFO** menu

**Step 2** – Select your device name

**Step 3** – Select **Find Drone**

# Emergency Behaviors

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## Low battery

When Skydio X2D battery is low, there will be a series of notifications and actions to ensure a safe landing:

- X2D will assess your altitude and distance from the Home Point, then warn you when it is time to return home. It is recommended to you initiate a return or land at this time, however you can choose to keep flying.
- X2D will then notify you when it has 2 minutes of flight time left based on its current altitude and the battery indicator will begin a two-minute countdown. You may choose to continue flying, however it is strongly recommended that you fly to a safe location and land.
- When the two-minute countdown is complete, X2D will initiate an automatic landing that you will be unable to cancel. You will maintain the ability to nudge the drone in roll, pitch, and yaw to avoid any obstacles.

## Emergency landing

If X2D enters an unexpected state that it cannot recover from, it will automatically initiate an emergency landing. An alert notification will display that X2D is initiating an emergency landing.

- X2D will try to use the navigation cameras and GPS system to descend vertically. If these are not available, the vehicle will descend quickly using only the barometer which may result in lateral drift.
- If the emergency has been resolved X2D will stop emergency landing and you will regain control of the drone.

## View Last Flight

Designed to assist with locating your drone in the event of a crash, emergency landing, or low battery landing in an unintended location. Review the video of your 10 most recent flights, even when your phone or controller is not connected to X2D.

**Step 1** - Select the **INFO** menu

**Step 2** - Select the Device menu

**Step 3** - Select your vehicle

**Step 4** - Select **View last Flights**

**Step 5** - Select the Review menu review video stored on the controller





# Maintenance

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## Battery safety guidelines

Skydio X2D uses rechargeable lithium polymer batteries (LiPo).

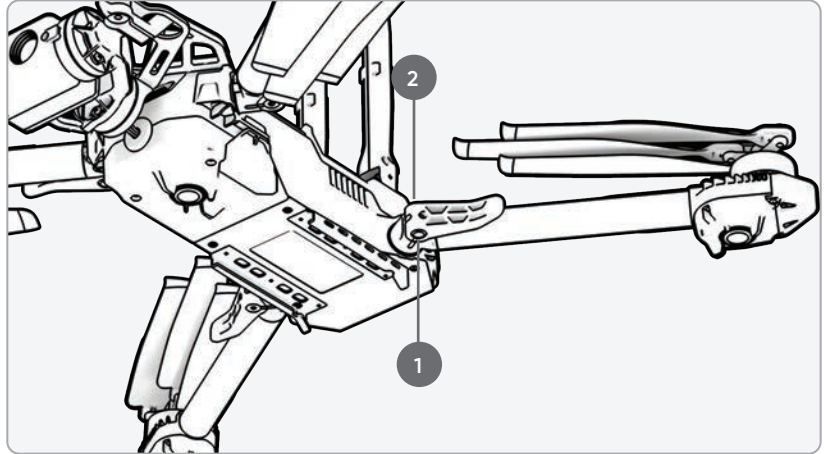
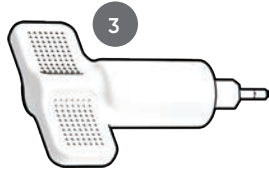
- Charge your Skydio X2D batteries using only the Skydio supplied charging power adapter or dual charger accessory (dual charger sold separately). We recommend using the provided power adapter; however, most USB-C power adapters that are rated from 40W up to 100W should be compatible as well (charge time may be affected when using non-Skydio chargers).
- While charging, the Skydio X2D or X2D Dual Charger should be in an open area as it is normal for the device to become warm to the touch.
- TSA and FAA guidelines state that spare (uninstalled) lithium batteries must be transported in carry-on baggage only. When traveling with Skydio X2D in the United States, be sure to pack your batteries in your carry-on luggage only. For more info, please see this FAA page. When traveling with Skydio X2D outside of the United States, be sure to check local regulations before transporting batteries.
- Do not use your Skydio X2D batteries at temperatures below 14°F (-10°C), as they will not function properly below that temperature. If your batteries do get cold, warm them up in a room-temperature environment - DO NOT use higher heat (hairdryer, etc.) to accelerate heating.
- Do not charge your batteries when ambient temperature is above 95°F (35°C) or below 50°F (10°C). Batteries will not charge when too hot or too cold.
- If storing your batteries long-term, we recommend fully charging and discharging them every two months. Store batteries at room temperature 71°F - 82°F 22°C - 28°C) and away from any moisture (less than 75% relative humidity).
- Battery idle state: If the battery is above 60% state of charge, after 14 days of idle time (no flights) it will start to self-discharge down to 60%. This self-discharge helps retain capacity over the life of the battery and may take several days to complete. It is normal for the battery to be slightly warm during this discharge process. Charge your battery as you would normally to exit this idle state.
- Do not disassemble the batteries, power adapter, or dual charging docks. Do not strike the battery with high force.
- Do not use any batteries which have become dented or begin to split apart (after a crash or drop).
- Do not immerse the batteries, charger, or charging docks in water or other liquids.
- Lithium polymer batteries can leak, overheat, melt, release harmful gas, burst or ignite when exposed to heat, water, and other liquids or when pierced, punctured or ruptured.
- If any substances from the battery pack get into your eyes, do not rub them. Seek medical attention immediately.
- Take care when disposing of the battery pack. Contact your local waste facility to verify if lithium polymer batteries are permitted in your regular waste. Many stores also offer free recycling.
- Never insert any other materials into the Skydio X2D battery terminals.

# Maintenance

## Arm clamps

If during your pre-flight inspection you observe that the arm clamps on Skydio X2D are not tight, you should inspect and tighten the tension bolts on the clamps. This process involves loosening and tightening the tension bolt set screws.

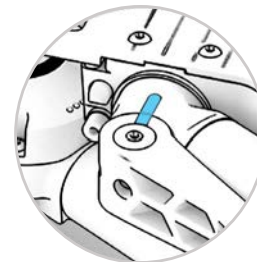
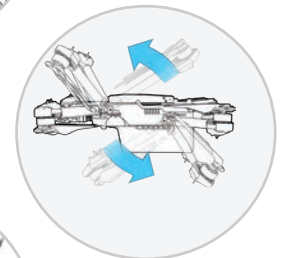
1. Tension bolt set screw
2. Tension bolt
3. Torque driver



**WARNING:** Do not lubricate any of the hinges on your X2D arm, even if they squeak. Doing so may compromise the position of the arms when in flight, resulting in erratic flight and possible collision.

Extend the motor arm:

- Step 1** - Open the arm clamp located at the base of the arm
- Step 2** - Lift the arm out and away from the body of the vehicle and rotate 180 degrees
  - listen and feel for a click when the motor arm are fully extended
- Step 3** - Fold the arm clamp to the locked position on the arm
  - ensure that the blue marks align



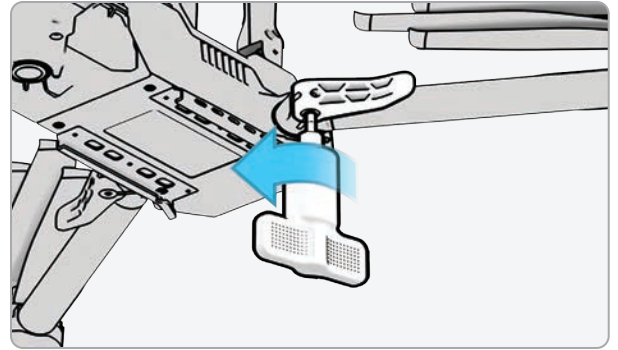


# Maintenance

## Arm clamps

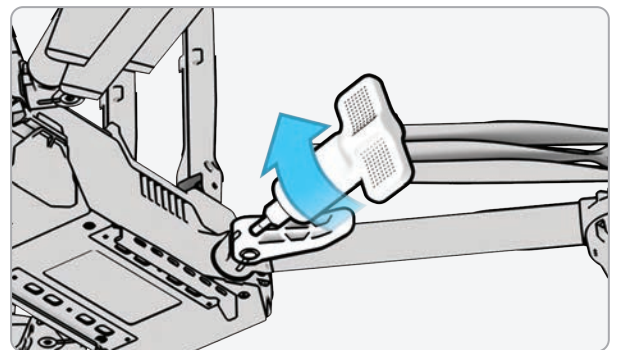
### Step 4 - Loosen the tension bolt set screw

- on the arm clamp tension bolt using the torque driver



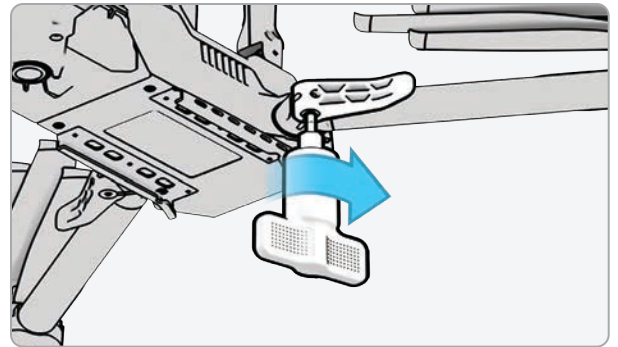
### Step 5 - Tighten the tension bolt

- using the torque driver
- turn the driver clockwise until you hear a click indicating the desired torque level has been achieved



### Step 6 - Tighten the tension bolt set screw

- turn the torque driver clockwise until you hear a click indicating the desired torque level has been achieved



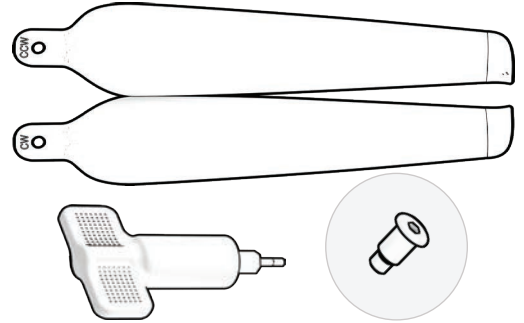
### Step 7 - Repeat steps 1-8 on the remaining arms

# Maintenance

## Replace propeller blades

If you purchased the Skydio X2D Propeller Kit or an X2D bundle, you received the equipment necessary to replace your propellers:

- clockwise (CW) propellers blades (6)
- counter clockwise (CCW) propeller blades (6)
- replacement propeller screws (12)
- torque driver tool that is included with your Skydio X2D



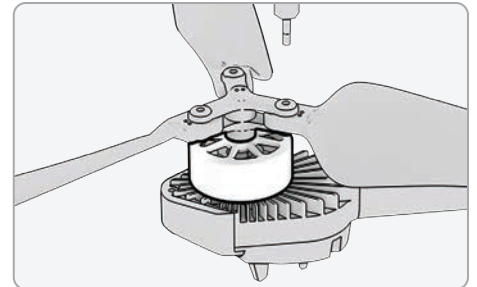
For optimal performance, Skydio recommends replacing your propellers after **100 hours** of flight time or if they are damaged. **Always replace all three propellers in the hub.** Replacing all three propellers will reduce any potential variation between the propellers and track propeller flight time.



**WARNING:** Propellers with hairline cracks or large breaks, chops, or bends should be replaced immediately. Do NOT fly the X2D with propellers that are not in good condition as serious bodily harm or injury may occur.

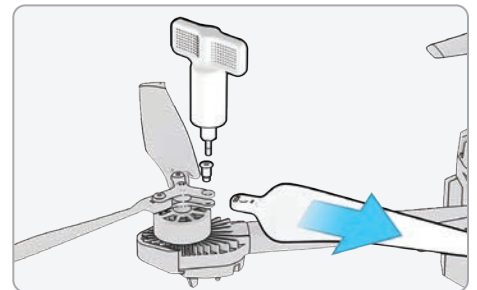
**Step 1** - Identify the damaged propeller

**Step 2** - Hold onto the motor or the propeller hub to stabilize the motor



**Step 3** - Unscrew the propeller pin using the Torque driver

- slide the propeller out of the propeller hub, then repeat with the remaining two propellers in the hub
- replace all three propellers in that hub. All three replacement propellers must come from the same replacement kit
- dispose of the removed propellers



**WARNING:** Propeller blades are sharp. Handle with care. Always ensure X2D is turned off before replacing the propellers to avoid injury. Do NOT attempt to replace the propellers while the Skydio X2D is powered on. Doing so is an extreme safety risk and may lead to serious bodily harm or injury.

# Maintenance

## Replace propeller blades

**Step 4** - Identify the propeller blade markings that match the propeller hub

**Step 5** - Install the propeller with matching marks facing upward

**Step 6** - Ensure that the propellers are oriented in the correct direction clockwise or counter-clockwise

- located on both sides of the propeller blades are distinct markings
- find the markings that match the propeller hub and install with the markings facing upward, to ensure that the propeller are in the correct direction (clockwise or counter-clockwise) and orientation.

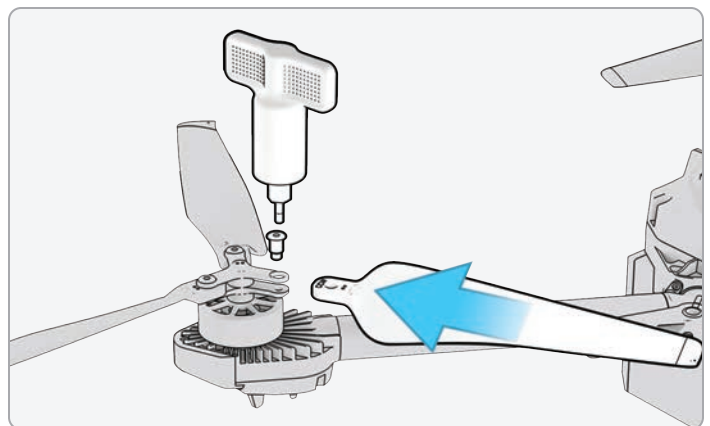
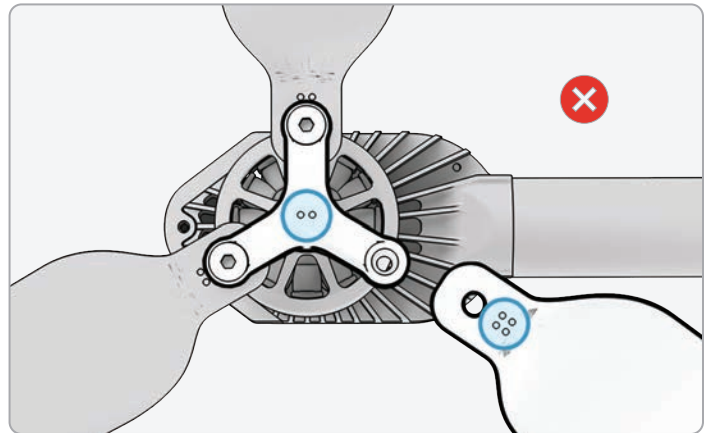
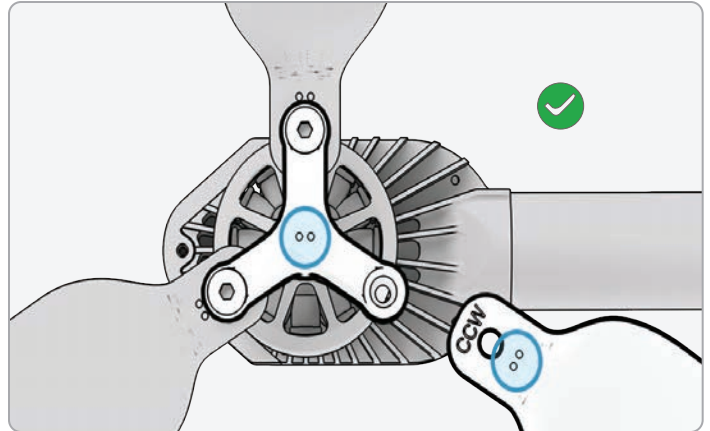
**Step 7** - Slide the new propeller into the hub

**Step 8** - Insert a new screw from your replacement kit

- slightly wiggle the screw as you insert the screw to ensure that it seats properly into the hub
- hold the motor hub to stabilize

**Step 9** - Fasten the screw using the torque driver

- turn clockwise until you hear a click indicating the desired torque level has been achieved



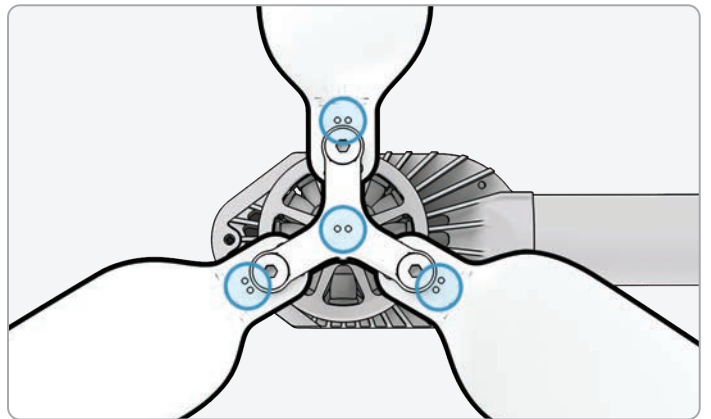
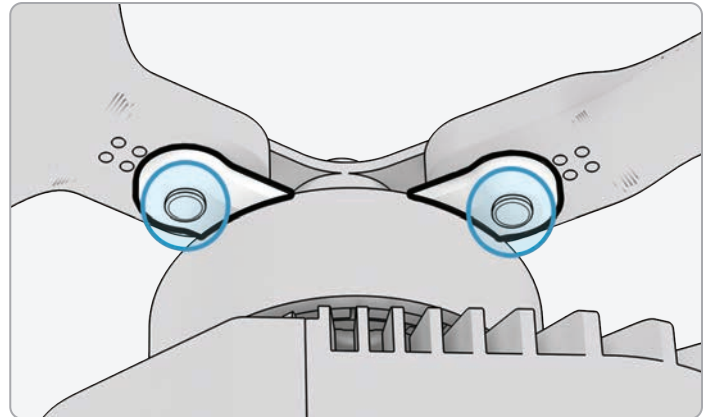
**INFO:** Do not reuse screws even if they look to be in good condition. Whenever you replace your X2D propellers, use the new screws provided in your replacement kit.

# Maintenance

## Replace propeller blades

**Step 10** - Inspect to ensure successful installation:

- propeller screw threads should extend slightly beyond the bottom of the propeller hub
- dot patterns match between propeller blades and hub
- propellers can rotate through full range of motion with minimal friction around the propeller screws and do not bind with the hub spokes

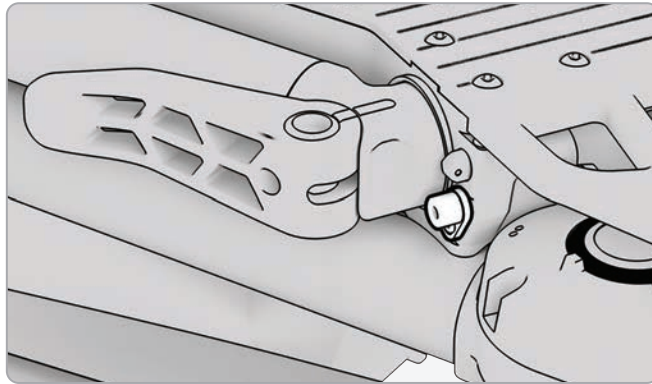


**WARNING:** *Incorrect propeller installation (i.e. failure to match the markings on the propeller to those on the propeller hub) is a safety hazard and may result in potential serious damage to the aircraft and serious bodily harm or injury to you and bystanders.*

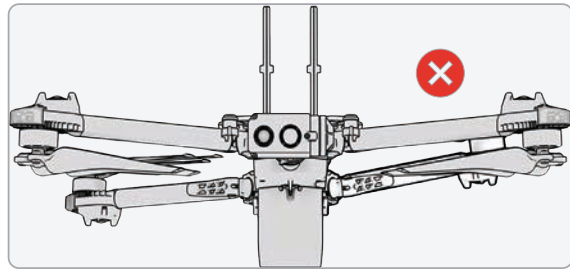
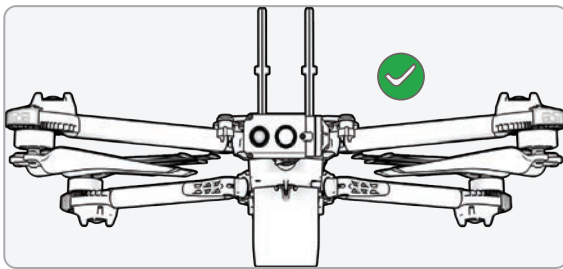
# Maintenance

## Replace hard stops

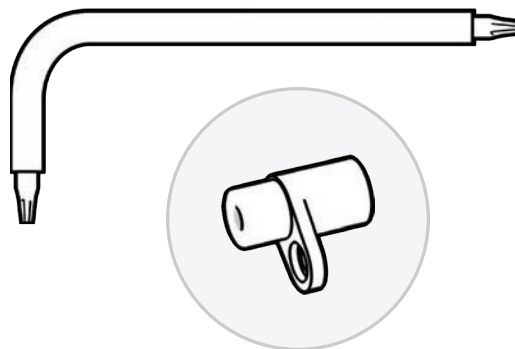
The hard stops prevent the motor arms from over-extending when deployed.



Inspect all four hard stops to ensure they are free of damage and working properly. With motor arms extended and viewing the drone head-on, X2D motor arms should be parallel to the chassis. If an arm is angled upward or downward when fully extended, this is an indication that there is a broken hard stop and it should be replaced.



To replace your hard stops, you will need the T3 driver and replacement hard stops.



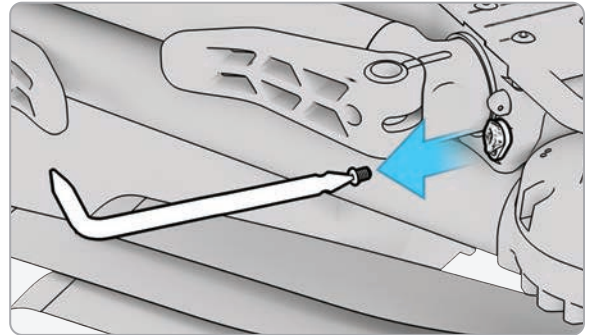
# Maintenance

## Replace hard stops

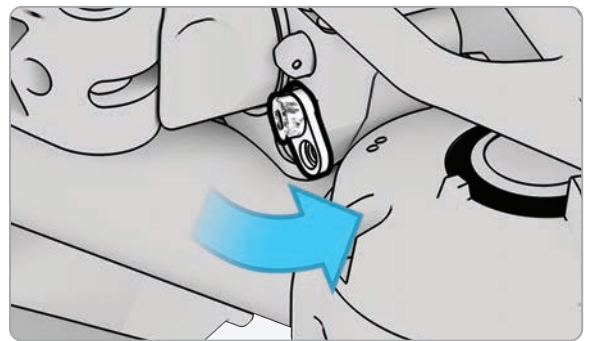
**Step 1** - Identify the damaged hard stop

**Step 2** - Remove the damaged hard stop(s)

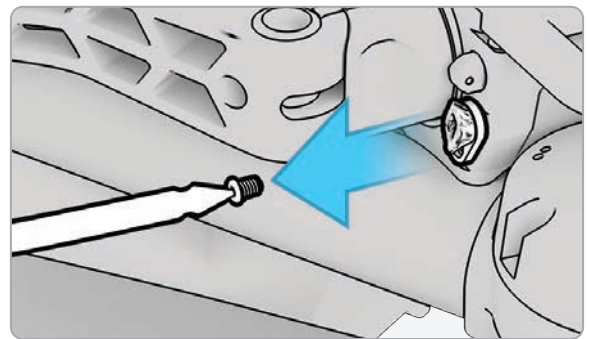
- extend the arm that is either above or below the arm with the damaged hard stop
- leave the arm with the damaged hard stop folded in
- loosen the hard stop screw using the T3 driver
- remove the screw and set aside - you will reuse it



- rotate the hard stop so the flange protrudes from the drone



- grab the hard stop by the flange and pull out to remove - rotate the hard stop back and forth to dislodge it from the drone



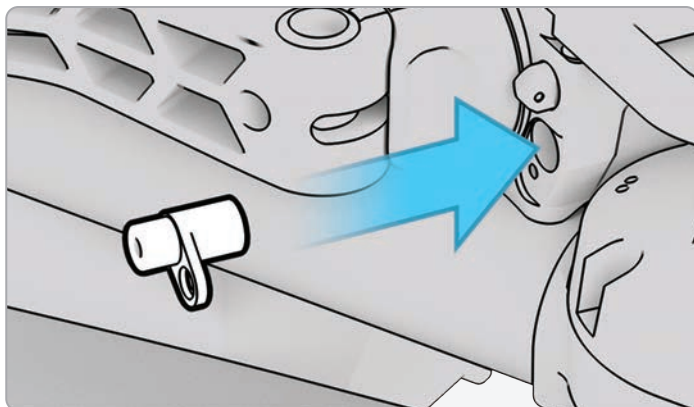


# Maintenance

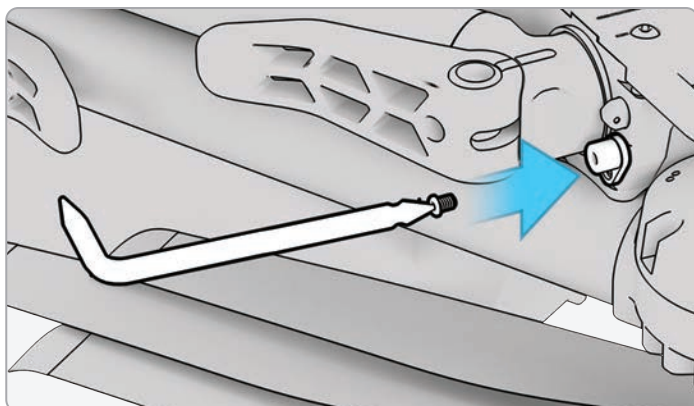
## Replace hard stops

### Step 3 - Install the new hard stop(s)

- place the new hard stop in the socket - the larger diameter pin should be inserted into the drone, and the smaller diameter pin should face outward



- line up the hole in the hard stop flange with the hole in the drone and insert the screw
- tighten until the hard stop is secure



**NOTE:** The torque value should be approximately 6 cNm.



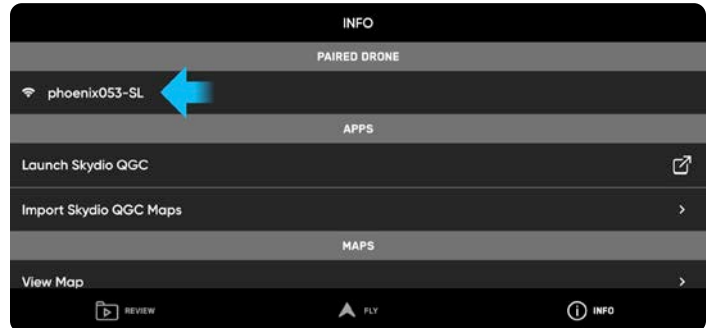
# Maintenance

## Format memory cards

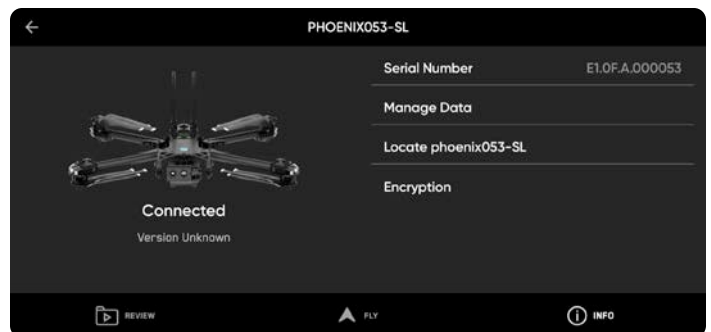
Skydio X2D has two SD memory cards, one for storing media and another for recording flight logs. Each card will need to be formatted separately as-needed. Before formatting your SD card, please ensure any data has been copied or saved on another device.

**Step 1** - Select the **INFO** menu

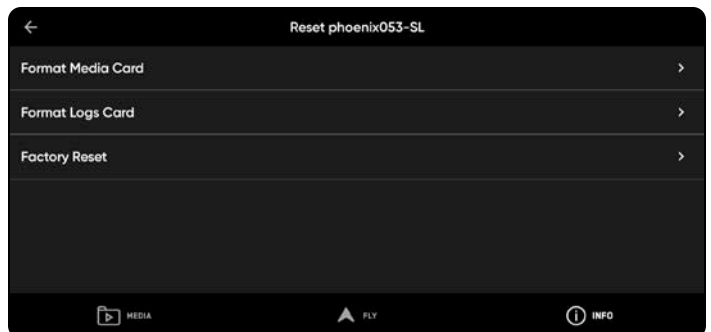
**Step 2** - Select the vehicle name under Paired Drone



**Step 3** - Select Manage Data



**Step 4** - Select Format Media Card or Format Logs Card, depending on which card needs to be cleared



## Memory Card Overwrite

- manage your media storage space by automatically deleting old media ensuring that you always have enough storage space to conduct a full flight. Toggle this setting on to automatically delete the oldest media stored on the SD memory card. This setting will persist across flights and power cycles.

# Maintenance

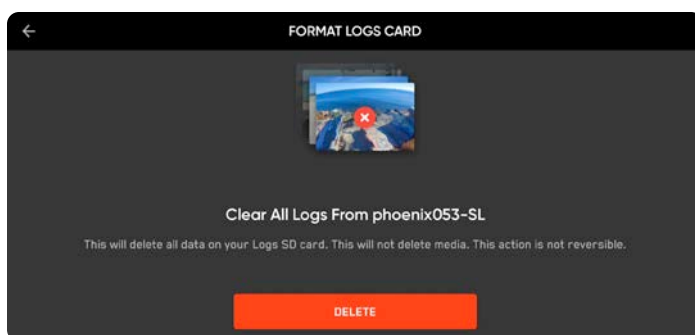
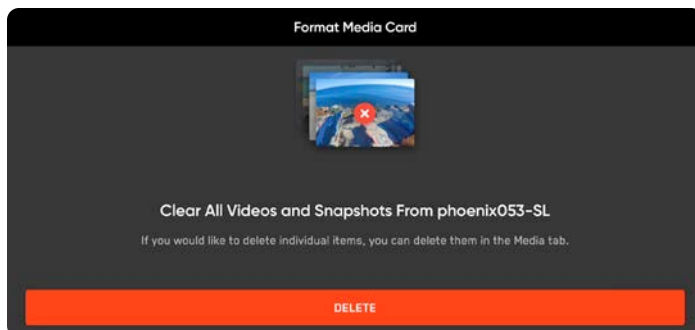
## Format memory cards

### Step 5 - Select Delete

- a confirmation will display that all data has been cleared

### Step 6 - Select OK

- you will return to the **INFO** menu
- your SD card is now formatted



# Maintenance

## Export flight logs

To export to a flash drive:

**Step 1** - Ensure your controller battery is fully charged

- you cannot export and charge your controller simultaneously.

**Step 2** - Select the **INFO** menu

**Step 3** - Select Settings

**Step 4** - Select Flight Logs

**Step 5** - Insert your USB flash drive into the controller

**Step 6** - Select Export to drive

**Step 7** - Navigate to the USB drive folder you want to export your flight logs to

**Step 8** - Select Allow

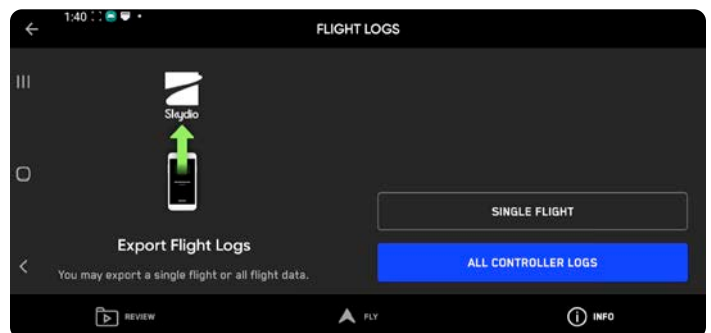
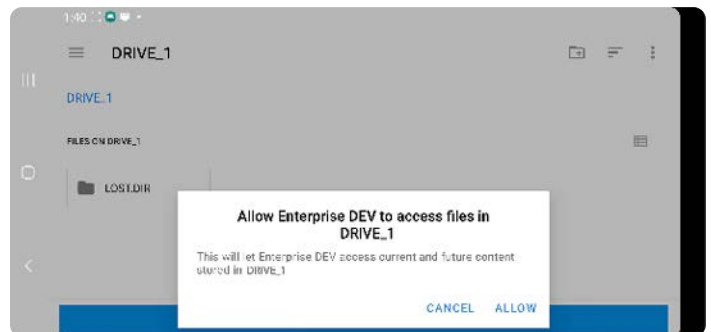
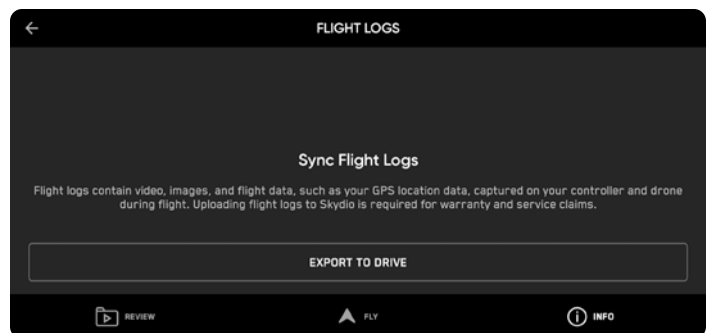
You will be prompted to select between exporting a Single Flight or All Controller Logs:

- **Single Flight** - Includes all logs from a specified flight. This option will show you the history of all flights, organized by date and time. Select which individual flight you wish to upload. This download may take a few minutes.
- **Controller Logs** - Exports all logs saved on the controller from all flight history. This option allows you to sync logs whether you are connected to the vehicle or not.

### Flight history .CSV

Save flight information to a flight\_log.csv file in the root folder of the media SD card containing the following flight data:

- Vehicle name
- Flight ID
- Launch latitude/longitude and time
- Land latitude/longitude and time

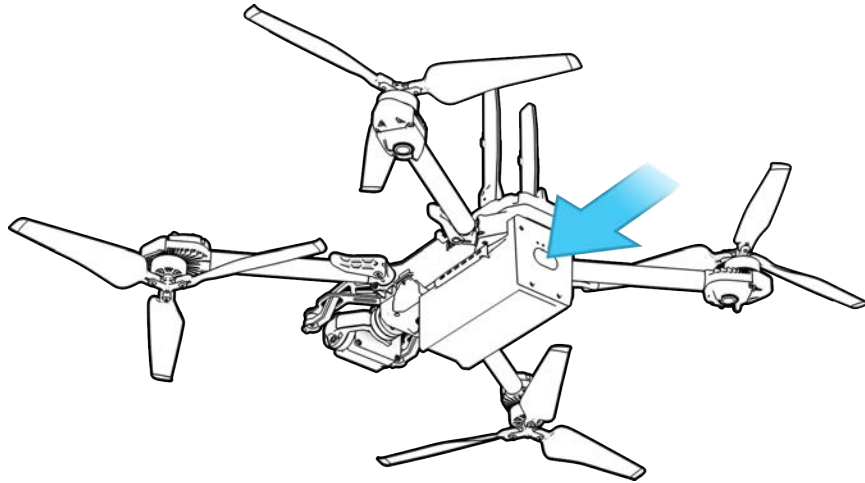


# Troubleshooting

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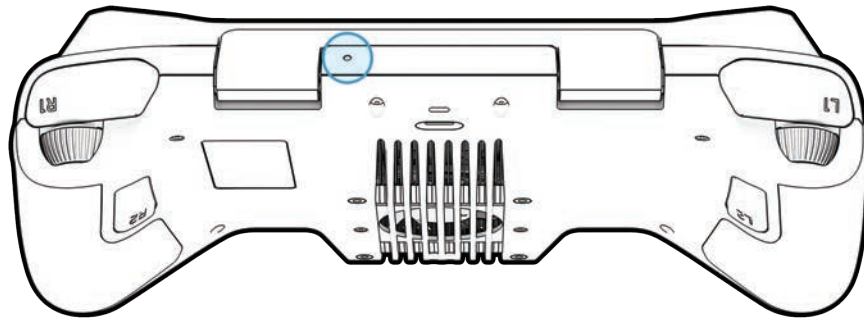
## Resetting Skydio X2D

If Skydio X2D is unresponsive or off-nominal state, power-cycle the drone either using the power button or removing the battery.



## Resetting Skydio Enterprise Controller

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, hopefully resolving any issues.



To reset your Controller:

- press the hard reset button using the tip of a paper clip
- select either Power Off or Restart

Your Controller will restart or power off, allowing you to power it back on again.

# Troubleshooting

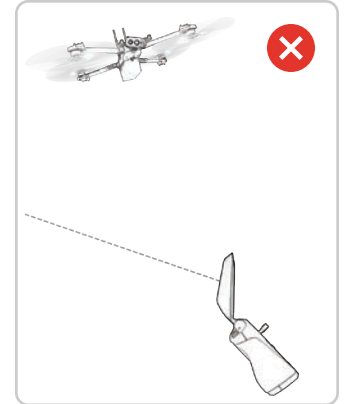
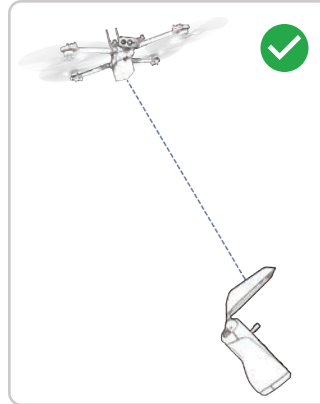
## Weak signal

For best signal quality, always maintain a direct line of sight between the controller and Skydio X2D.

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.



# Specifications

AIRCRAFT	
<b>DIMENSIONS (UNFOLDED, FLYING)</b>	26.1" X 22.4" X 8.3" 66.3 cm X 56.9 cm X 21.1 cm
<b>DIMENSIONS (FOLDED, NO BATTERY)</b>	11.9" X 5.5" X 3.6" 30.2 cm X 14 cm X 9.1 cm
<b>WEIGHT (WITH BATTERY)</b>	1325 g
<b>FLIGHT TIME</b>	Up to 35 minutes
<b>MAX FLIGHT SPEED (SEA LEVEL, NO WIND)</b>	25 mph (40 km/h) fully autonomous
<b>MAX WIND SPEED RESISTANCE</b>	23 mph (37 km/h)
<b>MAX SERVICE CEILING (ABOVE SEA LEVEL)</b>	11,200 ft (3,414 m) MSL, 113°F (45°C) 12,000 ft (3,658 m) density altitude
<b>OPERATIONAL TEMPERATURE RANGE</b>	14°F (-10°C) to 109°F (43°C)
<b>GPS SATELLITE CONSTELLATIONS</b>	GPS and GLONASS

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

PAYLOAD	
<b>DIMENSIONS NOT TO EXCEED</b>	1.75" x 1.0 x 2.0" 4.5 cm X 2.5 cm X 5 cm
<b>WEIGHT NOT TO EXCEED</b>	200 g
<b>POWER NOT TO EXCEED</b>	15 Watts

# 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

SKYDIO AUTONOMY	
MAIN PROCESSOR	NVIDIA Tegra X2 SOC
GPU	256-core NVIDIA Pascal™ GPU
CPU	Dual-Core NVIDIA Denver 2 64-bit CPU Quad-Core ARM®-A57 MPCore
RAM	4GB 128-bit LPDDR4
OBSTACLE AVOIDANCE COVERAGE	Omnidirectional and above/below super fisheye lenses for 360° view
3D WORLD MODEL UPDATE RATE	> 1 million points per second
WORLD MODEL-TO-ACTION UPDATE RATE	500 iterations per second
ONBOARD AI	9 custom deep networks used in flight
USER-SELECTABLE SUBJECTS FOR TRACKING	People and motor vehicles
OBJECT TRACKING AND IDENTIFICATION	Up to 20 simultaneous objects of interest
CALIBRATION	Automated online calibration of lens parameters, camera rotations, wind speed, and air density



# Specifications

PRIMARY CAMERA SYSTEM	
SENSOR TYPE	Sony IMX577 1/2.3" 12.3MP CMOS
SENSOR ACTIVE PIXELS	4056 (H) x 3040 (V)
LENS APERTURE	f/2.2
LENS FOCAL LENGTH	41mm (35mm format equivalent)
LENS DEPTH OF FIELD	1m - ∞
SHUTTER SPEED	electronic shutter 1 to 1/1920s
ISO RANGE	video 100-6400 photo 100-6400
EXPOSURE CONTROL	-2.0, -1.5, -1.0, -0.5, 0, 0.5, 1.0, 1.5, 2.0
IMAGE SIGNAL PROCESSOR	Qualcomm QCS605
GPU	Adreno™ 615
CPU	64-bit octa-core Kryo™ 300
DSP	Hexagon™ 685, 2x HVX
RESOLUTION AND MODES	3840x2160 30 fps 3840x2160 60 fps 1920x1080 30 fps
BITRATE	100 Mbps
VIDEO FORMAT	MPEG-4 (AVC/H.264, HEVC/H.265)
STILL RESOLUTION	4056x3040 (12 MP)
STILL FORMATS	JPEG, DNG (RAW)
STILL MODES	Single, Interval
DYNAMIC RANGE	13 stops
STORAGE	Removable Micro SD Card UHS Speed Class 3 / V30
STABILIZATION MECHANICAL RANGE	pitch ±124°, roll ±120
PITCH CONTROLLABLE RANGE	-110° to +90°

# Specifications

THERMAL CAMERA SYSTEM	
SENSOR TYPE	Uncooled VOx microbolometer
RESOLUTION	320X2D56
LENS APERTURE	1.02
LENS FOCAL LENGTH	9.1mm
LENS DEPTH OF FIELD	2m - ∞
FRAMERATE	30fps

NAVIGATION CAMERA SYSTEM	
CONFIGURATION	6x cameras in trinocular configuration top and bottom
SENSOR TYPE	Sony 1/3" 4K color CMOS
LENS APERTURE	f/1.8
FIELD-OF-VIEW	200°
ENVIRONMENT COVERAGE	True 360°
FRAME RATE	30 FPS

SYSTEM SECURITY	
WIRELESS ENCRYPTION	AES-256
FIRMWARE	Signed and encrypted
MEDIA ENCRYPTION	4 / 8 MHz (1.8GHz radio) and 5 / 20 MHz (5GHz radio)
CONTROLS	Ability to provision and deprovision devices
INFRASTRUCTURE	Key provisioning burned-in at time of manufacture

# Legal

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## Warranty

Skydio warrants the included hardware product will be free from defects in materials and workmanship under normal use in accordance with Skydio published user documentation for one year from the date of original retail purchase in its original packaging by you (the "Limited Warranty"). Skydio published user documentation includes the Safety Guide and the User Guide.

Skydio does not warrant against normal wear and tear, nor damage caused by accident or abuse. The Limited Warranty is not applicable to any software provided with the hardware product or any propellers. Subject to the full terms and detailed information on obtaining service available at [www.skydio.com/legal/warranty/products/X2D](http://www.skydio.com/legal/warranty/products/X2D), if you submit a valid claim under this warranty, Skydio will either repair, replace, or refund your Skydio X2D at its own discretion. Warranty benefits are in addition to rights provided under local consumer laws. You may be required to furnish proof of purchase details when making a claim under this warranty.

## California Prop 65 Warning

**For the Skydio X2D Battery:** Lithium-ion Batteries and / or products that contain Lithium-ion batteries can expose you to chemicals including cobalt lithium nickel oxide and nickel, which are 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](http://www.P65Warnings.ca.gov).

**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](http://www.P65Warnings.ca.gov).

# Legal

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## 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.

## Software license

The Skydio software end-user license agreement (available at [www.skydio.com/legal/eula](http://www.skydio.com/legal/eula)) governs the use of any Skydio software that is pre-installed, downloaded, installed or otherwise provided in connection with any included hardware.

## Additional Resources

For all the latest information about Skydio and our products, visit [www.skydio.com](http://www.skydio.com).

For legal information, visit [www.skydio.com/legal](http://www.skydio.com/legal).

Skydio products are protected by patents and trademarks, registered in the U.S. and other countries. More information can be found at [www.skydio.com/legal/ip](http://www.skydio.com/legal/ip).

