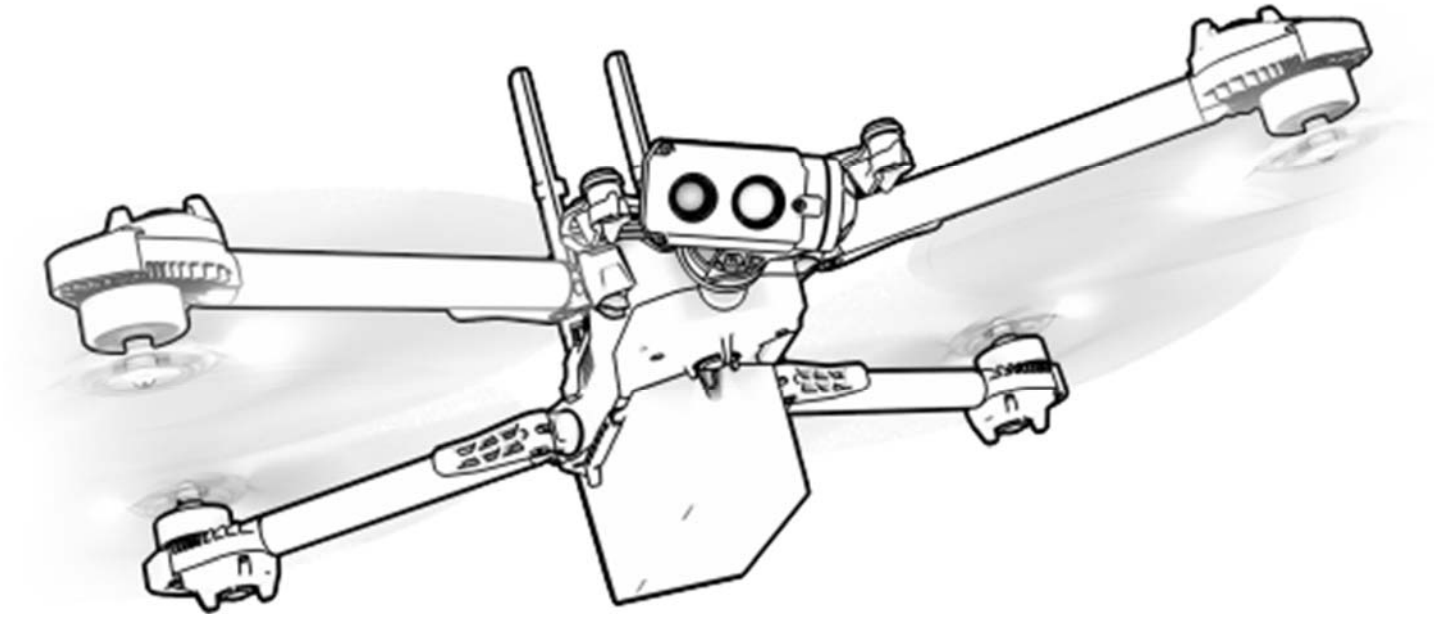
Skydio X2D

User Guide



Effective: **April 6, 2021**

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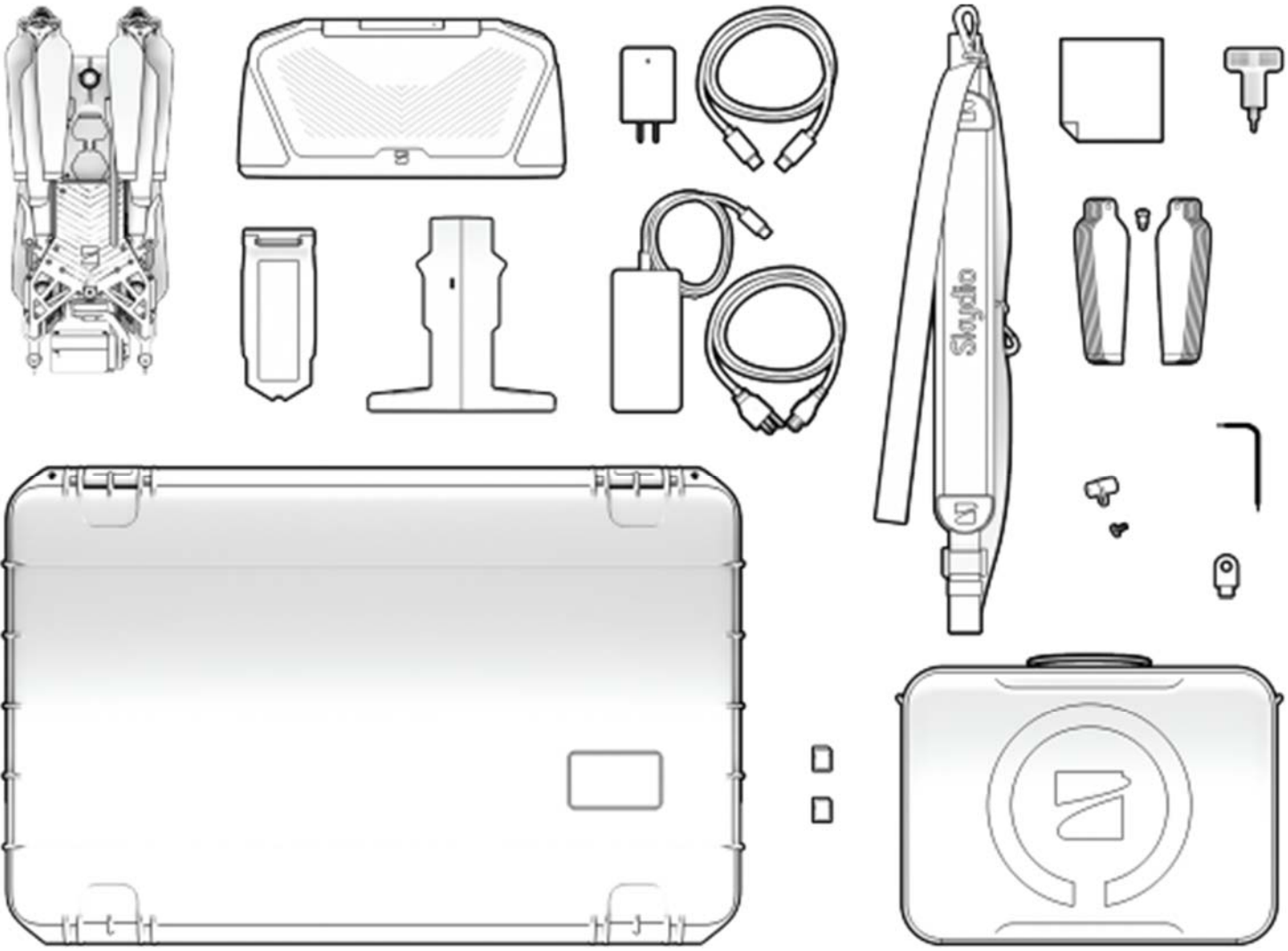
X2 EQUIPMENT AND SOFTWARE

Skydio X2 and accessories

Skydio X2 and its various accessories can be purchased à la carte or in one of our bundles. Below is a list of all Skydio X2 system equipment:



1. Skydio X2 Drone

9. 100W Adaptor & Cable

2. Skydio Enterprise Controller

3. Controller Neck Strap & D-ring Bracket

4. X2 Battery

5. X2 Dual Charger

6. 2x 256GB SD cards (pre installed)

7. Tactical Soft Case

8. Admin Hard Shell Case

10. 65W Adaptor

11. USB-C Cable

12. Microfiber Cloth

13. X2 Propeller Kit (6x CW, 6x CCW, 12x screws)

14. Torque Driver

15. T3 Driver

16. Hard Stops & Hard Stop Screws

17. Security Key (X2D only)

What's included with your Skydio Autonomy Enterprise Foundation (AEF)™ software add-on?

If you purchased the Skydio Autonomy Enterprise Foundation (AEF)™ software add-on, you unlock advanced, enterprise-caliber autonomy functionality for your Skydio X2. AEF for X2 features are listed in the table below:

Close Proximity Obstacle Avoidance	The drone can fly closer to obstacles. **Close (~10")** **Minimal (~4")** **Disabled** **Standard (~34")** (out-of-the-box with X2)	• Situational awareness • Inspection	navigation e.g. through large doorways and up-close inspection of detailed assets
Visual Return-to-Home	Ability to RTH purely using visual wayfinding when flying in GPS denied environments	• Situational awareness • Inspection Allows closer flight for indoor	Provides robust and safe RTH in high-RF or GPS-denied environments (e.g below bridges)
Superzoom	Blends the six 4K navigation cameras to create an omnidirectional view. Allows the user to zoom digitally with	• Situational awareness	algorithmic image stabilization See farther, and in all directions without moving the drone - reduces pilot cognitive load

Point-of-Interest Orbit

Drone will navigate itself while revolving around a user-defined point on a map
• Situational awareness Enables surveillance and overwatch of any structure or locale above the drone

Track-in-place Ability to visually track a car or person from a fixed position from farther away

• Situational awareness Enables covert surveillance from farther standoff distances

Vertical View Gimbal can vertically look straight up

• Inspection Allows for overhung inspections such as ceilings, bridges, and canopies

Additional equipment needed

You will need to purchase a USB-C flash drive which will be used for the following:

- Drone software updates
- Skydio Enterprise Controller software updates
- Transferring offline maps
- Exporting logs

The requirements for the drive are:

- USB-C interface (used on both the drone and Controller)
- User must format the drive filesystem to **ExFat**
- Must be at least as big as the files you plan to transfer (at least 8 GB is recommended)
- We recommend purchasing the Ultra Dual Drive USB Type-C from SanDisk

Safety guidelines

Keep your fingers away from moving propellers at all times.

Skydio X2 is not weatherproof – don’t fly in rain, snow, fog, high winds, etc.

Clean all of the cameras so Skydio X2 can see clearly.

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

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

Check your propellers for damage before flying.

Skydio X2 does not avoid moving objects or cars.

Skydio X2 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.

Follow FAA guidelines and local, state and federal laws when using your Skydio X2.

FLYING SAFELY

- Because Skydio X2 navigates visually during the day, it's essential to keep all of its cameras clean. Use the included cleaning cloth (or any clean microfiber cloth) to ensure that all cameras are dust and smudge-free before every flight.
- **Battery** - Skydio X2 uses magnets to retain the battery which may attract metallic debris. Prior to installing any battery, visually inspect the magnets on the bottom of the Skydio X2 and the end of the battery, including connectors, to make sure the magnets are clean and free of debris so the battery fits securely in place. Verify the battery is fully seated in the aircraft prior to takeoff. **DO NOT use if damage has occurred to magnets or battery**.
- Ensure all propellers are firmly attached and free of nicks, cracks, or other visible damage. *Never fly with damaged propellers.*

WARNING: *Keep your fingers away from the propellers anytime they're spinning such as during launch, flight, and landing. Attempting to touch the propellers or the drone during flight, launch, or landing has a high risk of severe injury. Exercise caution when holding Skydio X2 in windy environments, as gusts may cause the propellers to spin. Skydio X2 should not be flown when winds or gusts are above 25 mph/40kmh.*

- When landing, Skydio X2 descends straight down and **does not avoid obstacles**. Ensure your landing area is flat and clear of obstacles. **Stay clear of the landing area to avoid injury**.
- Do not intentionally try to crash Skydio X2.
- When following a car or other vehicle, follow while off-road or on a closed course. Never use Skydio X2 over public roadways.
- While Skydio X2 is optimized for use outdoors, it can be flown indoors in certain environments with caution. Only fly indoors in large, open areas with good lighting, like large warehouses, gymnasiums, or similar spaces. If you fly indoors, avoid flying near glass, mirrors, solid textureless walls, dark areas, or polished, reflective flooring.
- The Skydio X2's metal frame may become hot to the touch in high-temperature environments or direct sunlight, even if powered off. The metal frame may also become hot if powered on while on the ground for long periods of time.
- Do not fly over bodies of water more than 30 ft. across.
- Skydio X2 can't see certain visually challenging obstacles. Do not fly around thin branches, telephone or power lines, ropes, netting, wires, chain link fencing or other objects less than ½ in. in diameter.
- Do not fly around transparent surfaces like windows or reflective surfaces like mirrors greater than 23 in. wide.
- If your Skydio X2 does hit an obstacle it can't see, it will do its best to stabilize itself and continue the flight.
- When the sun is low on the horizon, it can temporarily blind Skydio X2's cameras depending on the drone's angle. Your drone may be cautious or jerky when flying directly toward the sun.
- Your Skydio X2 can fly up to 35 mph/57 kmh (ground speed) or 25 mph/40 kmh (air speed) under most conditions. When Obstacle Avoidance is set to "Close," "Minimal," "Disabled" (AEF add-on), or when GPS Night Flight is enabled, X2's max speed will be reduced. See **Obstacle Avoidance** under the **Drone Settings** section on page 30 for more information.
- Skydio X2 may instruct you to land if it encounters an error or determines the environment is not safe for flying. When instructed to do so, immediately fly Skydio X2 to the safest area nearby and land.
- Flying at high altitudes may significantly increase the time required to return and safely land the Skydio X2. You, the pilot in command, are responsible for managing the

vehicle's altitude, range, and battery level at all times.

• Be sure to pay attention to any in-app messages.

• **Skydio X2 is NOT A TOY** and should not be used or handled by a person under the age of 18.

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

Where to fly

• You are responsible for your Skydio X2 at all times. Always follow FAA guidelines for flying UAS. Check resources like knowbeforeyoufly.org or apps like B4UFLY for more info.

• DO NOT fly directly over people or crowds.

• Keep Skydio X2 within visual line of sight at all times, unless you have received express permission to fly beyond visual line of sight from a civil aviation authority like the FAA.

• Skydio X2 is not weatherproof and requires good visibility. Do not fly in any precipitation, including rain, fog, or snow.

• Skydio X2 should not be flown when winds or gusts are above 25 mph/40kmh.

• Do not fly your drone in temperatures below 14° F (-10° C) or above 109° F (43° C). When flying in temperatures below 32° F (0° C), ensure your batteries are pre-warmed to 50° F (10° C) prior to takeoff. Endurance may be degraded when operating near temperature limits.

• The Skydio X2 only avoids obstacles that are **not** in motion. Cars, boats, balls, animals, other drones, other people, or similar moving objects may not be avoided. **You should exercise extreme caution and good judgment when flying with other people around**.

First flight

Before you begin your first flight with your Skydio X2, please read and follow all of the safety tips and guidelines listed above and at https://skydio.com/safety.

For your first flight, we recommend finding a clear, open space away from others on level ground with at least 10 feet of clearance in every direction (including above).

Make sure nothing is obstructing the propellers at your launch location. Although flying Skydio X2 is easy and intuitive, it's a good idea to give yourself and others a little space when flying for the first time. Always be alert and aware of your surroundings during use.

CAUTION: *For your first flight with Skydio X2, Skydio strongly recommends flying your Skydio X2 in normal daylight or brightly lit conditions will 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.*

Hardware overview

Skydio X2

1. Chassis

2. Navigation Camera x6

3. Gimbal

4. Motor Pod x4
(includes RGB/IR/Strobe LEDs)

5. Propeller Hub

6. Propeller Blade
(6x clockwise, 6x counter clockwise)

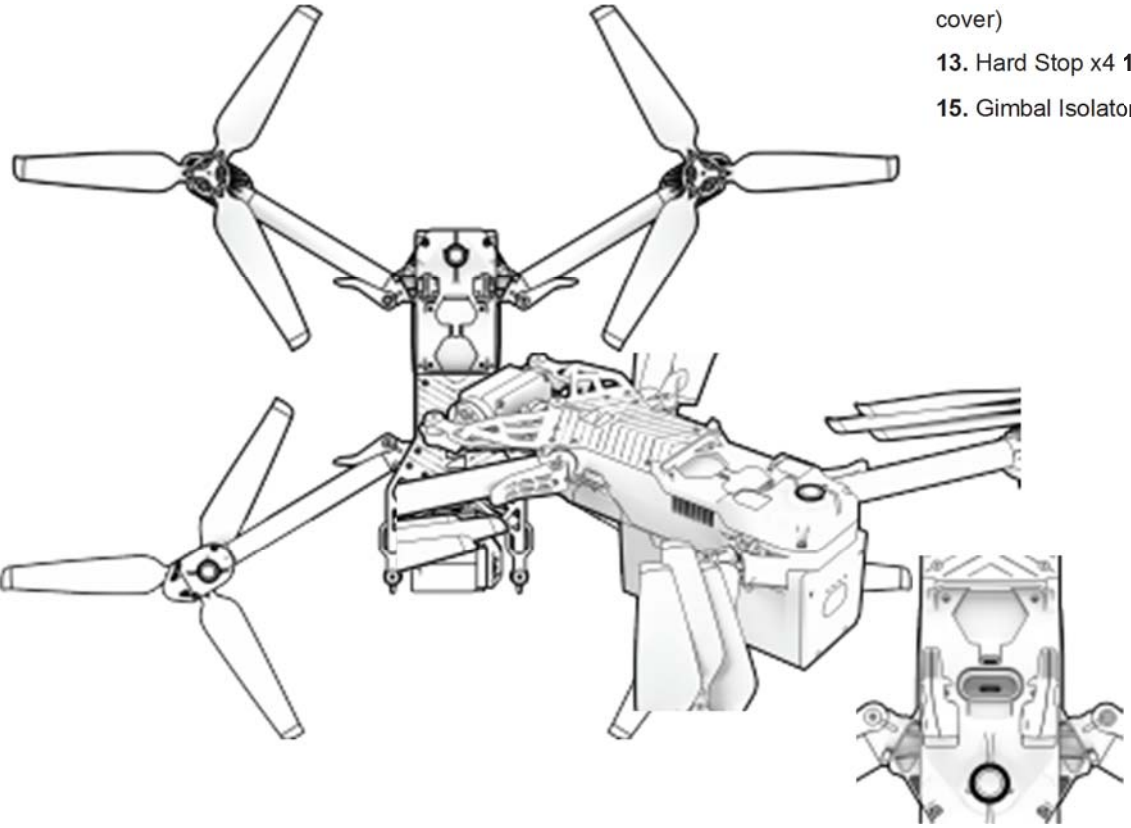
7. Arm x4

8. Arm Clamp x4

9. Antenna(s), depending on radio configuration

10. microSD Card Ports & Seal

11. USB-C Port & Port Seal



cover)

13. Hard Stop x4 **14.** X2 Battery

15. Gimbal Isolator x3

12. Cooling Outlet x2 (do not

21. Skydio X2 Label

OVERVIEW **Skydio X2**

(cont.)

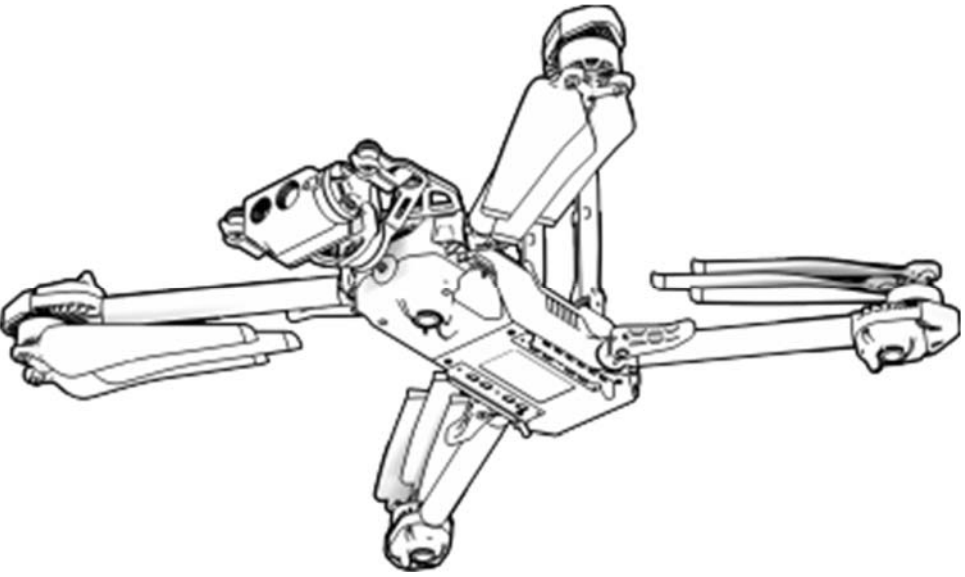
16. Thermal Camera

17. Color Camera

18. Gimbal Pitch Motor

19. Gimbal Roll Motor

20. Cooling Inlet



CAUTION: *The Skydio X2 is not weatherproof. Do not operate in any precipitation, including rain, fog, snow, or similar environments.*

Skydio Enterprise Controller

1. Left Joystick

2. Right Joystick

3. Menu/Back Button

4. D-pad

5. C1 Button - Toggle Obstacle Avoidance (AEF only), customizable

6. C2 Button - Toggle Lights, customizable

7. RTH (Return to Home) Button

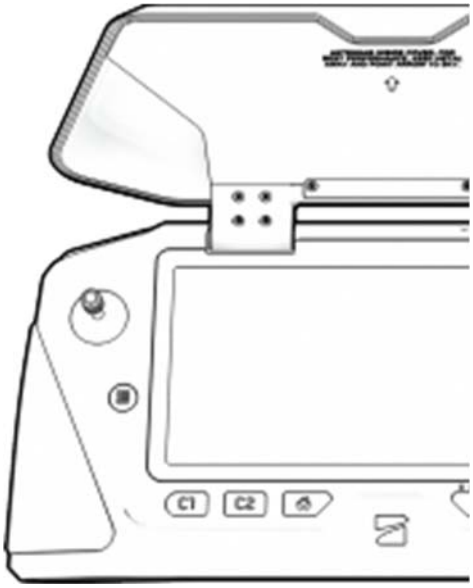
8. Power Button

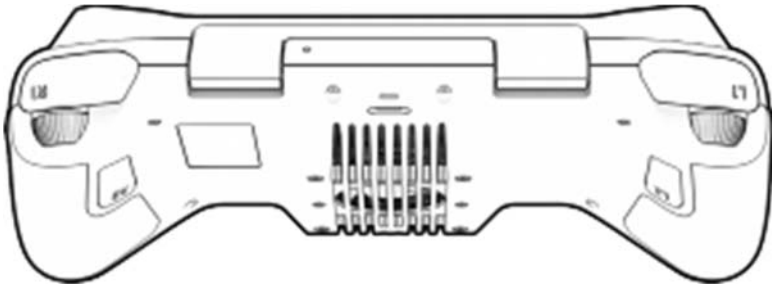
9. Launch/Land Button

10. Pause Button

11. Controller Clamshell (contains embedded antennas) with Quick Start Clip

12. Device Screen





13. R1 Button, Shutter/Record **14.** Right Wheel, Zoom

15. L1 Button, Boost

16. Left Wheel, Gimbal Tilt **17.** R2 Button, Toggle Map

18. L2 Button, Toggle Camera (Thermal to Color)

19. Hard Reset Button

20. USB-C Port

21. Cooling Fan

22. Neckstrap/Tripod (¼-20) Mount

CAUTION: *The Skydio Enterprise Controller is not weatherproof. Do not operate in any precipitation, including rain, fog, snow, or similar environments. The Skydio Enterprise Controller is also not resistant to small debris—do not rest the controller in fine sand, dirt or on similar terrain where particles can get trapped in the fan.*

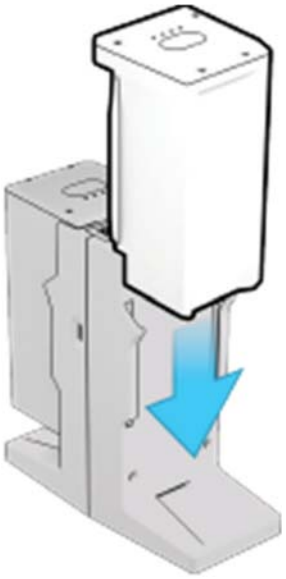
Charging your system

Skydio X2

The best way to charge your Skydio X2 batteries is by using the Skydio X2 Dual Charger. To charge your Skydio X2 batteries, follow the steps below.

WARNING: *Never expose batteries to extreme hot or cold temperatures. Follow instructions and warnings for battery storage and use in the* ***X2 Batteries*** *section of this manual.*

How to charge via X2 Dual Charger



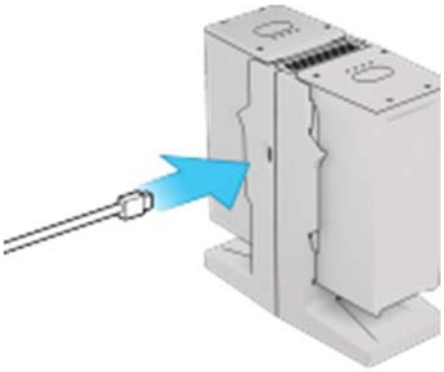
1. Slide your X2 batteries into the Skydio X2 Dual Charger, ensuring that the connector between the charger and each battery is fully seated.

NOTE: *You can also choose to charge a single X2 battery using the Skydio X2 Dual Charger.*

2. Connect your Skydio X2 Dual Charger to the provided 100W power USB-C power adaptor.
3. Plug the power adaptor into a 100-240V power source. The LEDs on the battery will begin to flash when the unit is charging.

NOTE: *The Skydio X2 Dual Charger is capable of simultaneously providing current to two batteries, but the charging system will prioritize fully charging a single battery.*

When charging has completed, the LEDs on the battery will



power off.

(cont.)

How to charge via Skydio X2

1. Slide the X2 battery into the battery tray towards the gimbal until it is magnetically held in place.

2. Connect your Skydio X2 to the provided USB charging cable and 100W adaptor. You may also use the 65W adaptor that comes included with the Skydio Enterprise Controller.

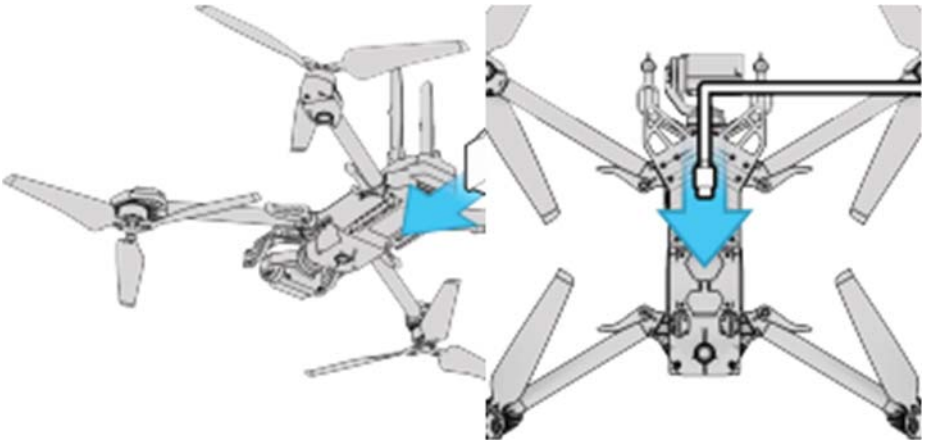
3. Plug the power adaptor into a 100-240V power source. Skydio X2 will power on and the battery LEDs will begin to flash when charging.

When charging has completed, the drone will power off.

X2 Battery Charge Levels

When X2 is powered on or the battery is charging, the LEDs on the battery will indicate the current state of charge. When X2 is powered off or the battery is detached, you can view the battery's state of charge by tapping on the battery button to light up the LEDs.

1 LED 2 LEDs 3 LEDs 4 LEDs



0–37% charged 38–62% charged 63–87% charged 88–100% charged

Enterprise Controller

How to charge

Connect your Skydio Enterprise Controller to the provided USB charging cable and 65W adaptor. You may also use the 100W adaptor that comes included with the X2 Dual Charger, or any adaptor that is 18W or above, to charge your controller.

• The controller will boot up and the LEDs on the front of the controller will begin to flash blue when charging, as well as a single LED next to the USB-C charging port. You will also see a charge level displayed on the controller screen.

• When charging has completed, the LEDs will show solid blue for 1 minute and then power OFF.

NOTE: *The Skydio Enterprise Controller supports charging while in use, including flying X2.*

Skydio Enterprise Controller Charge Levels

When the controller is powered on or charging, the LEDs 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 tapping on the power button to light up the LEDs.

1 LED, solid red 1 LED, solid yellow 1 LED, solid blue 2 LEDs, solid blue 3 LEDs,	**solid blue 4 LEDs, solid blue**	5% or less 6%–15% 16%–37% 38%–62% 63%–87% 88%–100%

CAUTION: *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.*

Assembly

Skydio X2

Step 1 — Extend arms

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

NOTE: *When unfolding the arms, exercise care to ensure arms are rotated in the correct direction.*

1. To unfold arms, start by opening the arm clamp located where the arm attaches to the body.
2. Rotate all 4 motor arms 180 degrees. You will feel a “click” when the motor arm has reached the correct position.

NOTE: *If you feel any resistance when opening the arms, you may need to push outward (horizontally) on the arm to unseat it before unfolding.*

3. Fold the arm clamps to the locked position on all four arms. Ensure that the paint on the arm clamp lines up with the paint on the arm.

Skydio X2 (cont.)

Step 2 - Verify microSD cards are installed

Verify that 2 UHS Speed Class 3 (or faster) microSD cards are inserted in the microSD card slots located on the left side of the aircraft.

1. Logs Card - For supporting future software offerings. **Do not remove**.

2. Media Card (closest to battery) — Stores all media captured by the drone. Offload your media by connecting your X2 to a computer using the provided USB-C cable, or remove this card and use a microSD card reader.

Step 3 — Insert battery

Hold Skydio X2 upside down and slide the X2 battery into the battery tray towards the gimbal until it is magnetically held in place.

To remove, simply pull on the battery and slide it out of the battery tray.

Step 4 - Deploy antennas

Gently push each antenna inward to release it from the storage position. Once released, the antennas will spring into a vertical position perpendicular to the drone body.

Skydio X2 (cont.)

Step 5 - Power on Skydio X2

Power on your Skydio X2 by holding the power button on the battery for 3 seconds.

NOTE: *This is the suggested order of operations when assembling your X2 for the first time. However, it is not necessary to unfold the X2 arms and antennas prior to installing the battery and powering on the drone. On subsequent setups, you can insert the battery and power on the aircraft first, then unfold the arms and antennas while the drone is booting up. This is a great way to reduce the overall time from assembly to flight.*

Skydio Enterprise Controller

Step 1 — Open the controller

NOTE: *Exercise care when lifting the lid open of the controller.*

Step 2 — Power it on

Press and hold the **Power** button on the controller for 3 seconds to power it on.

Skydio Enterprise Controller (cont.)

Step 3 - Activate the controller

Follow the on-screen prompts to activate your controller and get started with the Skydio Enterprise app.

a. Read and accept Skydio's purchase terms.

b. Set a password for the controller. Once set, this password will be required to unlock the controller when powering on or waking it from a sleep state.

NOTE: *This password cannot be recovered or reset if forgotten. Please make sure to enter in your password correctly and 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.*

c. Once the activation process is complete, the Skydio Enterprise app is set up and you will see the following screen:

Pairing devices

Once you have assembled your Skydio X2 and Skydio Enterprise Controller, connect one end of

the provided USB-C to USB-C cable to Skydio X2 and the other end of the cable to the USB-C charging port on the controller.

If pairing is successful, you will see the following screen:

Once your devices are paired, you will be able to find your drone by navigating to **INFO** > **Paired Drone**.

NOTE: *The Skydio Enterprise Controller may only be paired to one drone at a time. To pair a new X2, you will need to unpair the first drone.*

Check software versions

Before flying, ensure that your Skydio X2 and Skydio Enterprise Controller are up-to-date. You can verify your software versions in the following locations:

Skydio X2

To check what software version is installed on your X2, navigate to the **INFO** tab and select your drone under **PAIRED DRONE**.

To update your drone, follow the steps listed in the **Software Updates** section on page 80.

PRE-FLIGHT OPERATIONS / CHECK SOFTWARE VERSIONS

Skydio Enterprise Controller

To check what software versions are installed on your Skydio Enterprise Controller, navigate to the **INFO** tab and select **Controller Update**.

To update your controller, follow the steps listed in the **Software Updates** section on page 80.

Import maps

If you have custom Mapbox tiles, you can import them onto the Skydio Enterprise Controller via a USB-C drive or card reader.

NOTE: *You can save up to 10 maps per day and can store at most 10 maps at a time in the map library. You may need to clear out maps from time to time to make room for more.*

Importing maps

1. Load your map files onto a USB-C drive or SD card
2. Insert the USB-C drive or adapter into the controller
3. Navigate to **INFO** > **Import Maps**

4. Select **Select Maps**

5. Navigate to the USB storage device, then select which maps to import
6. Select **Done**, then wait for your maps to import

7. Once the map import is complete, select **View Map Library** to review your imported maps

Plan your waypoint mission

A Waypoint Mission may be created at any point during flight, however you can save battery life by planning your waypoint mission ahead of time.

NOTE: *Waypoint missions require the use of the map view in the Skydio Enterprise app. Before creating your waypoint mission, you should first prepare your maps by following the steps in the previous section.*

Plan a mission

To plan a mission offline, follow these steps:

1. Tap INFO, then select Waypoint Mission.

2. Pinch and drag on the map to arrive at the starting location of your waypoint mission.

3. Tap and hold on the map and select Add Waypoint to set your first waypoint.

4. Set the drone's altitude, heading, and gimbal angle for the selected waypoint.

NOTE: *The waypoint altitude represents the drone's height above the launch point.*

Plan a mission (cont.)

5. Long press on the map again to set your second waypoint. Your drone's pose settings will match those of the previous waypoint, however you can adjust the settings as desired.
6. Tap and hold on the map and select Add Waypoint to set your first waypoint.

NOTE: *Missions can support up to 256 waypoints*

Edit an existing waypoint

To edit an existing waypoint, simply tap on that point and adjust the settings. You may also drag to adjust the waypoint placement as desired.

Delete a waypoint

To delete a waypoint, long press on that point, then select **Delete**.

Delete entire mission

To delete the entire mission and clear all waypoints, tap the **trash can** icon and select **OK**.

NOTE: *Missions can support up to 256 waypoints*

Configure mission settings

Mission-level settings such as speed and lost communication behavior can be configured while in flight. Reference the **Flight Skills – Waypoints** section under **Flying Skydio X2** on page 51 for more information.

Pre-flight inspection

Before each flight, perform a pre-flight inspection to ensure your Skydio X2 is safe and ready to fly. **DO NOT fly if there is any damage noticed upon inspection.**

1. **Inspect drone body**. Inspect your drone's body to ensure it is free of damage.
2. **Inspect arms**. Verify that Skydio X2's arms 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 X2 uses magnets to retain the battery which may attract metallic debris that could compromise the safe fitment of the battery. Prior to installing any battery, visually inspect the bottom of

   Skydio X2 and the battery, including connectors, to ensure they are free of objects, debris, or damage. Verify the battery is fully seated in the aircraft prior to takeoff.
4. **Inspect propellers**. Ensure all propellers are firmly attached and free of nicks, cracks, or other visible damage. **Never fly with damaged propellers**.
5. **Clean all cameras**. Because Skydio X2 navigates visually, it is essential to keep all of its cameras clean. Use the included cleaning cloth (or any clean

   microfiber cloth) to ensure that all cameras are dust

and smudge-free before every flight.

6. **Ensure motors on arms and gimbal move easily and are free and clear of debris**. If you find that there is something restricting the arm motion, try rotating, gently knocking, or blowing on it to clear any debris.

Configure device settings

Ensure the critical settings for your Skydio X2 and controller are set up as desired before your flight. Information about the various settings can be found in the next section, **Device Settings** on page 28.

Encrypt media

To encrypt the media you will be capturing, follow the steps below.

Step 1 – Provision your vehicle

Before you can use the encryption feature on your X2, you need to first provision the vehicle using the security key. You only need to complete this step once.

To set up your drone for encryption:

a. Power on Skydio X2.

b. Insert the security key into the USB-C port on the drone. The LEDs on the key will begin blinking.

c. When the LEDs on the key turn off, remove it from your vehicle. Your Skydio X2 is now provisioned for encryption.

Step 2 – Enable (or disable) encryption

Now that your drone has been provisioned, you will have the option to enable or disable encryption in the Skydio Enterprise app on your controller. By default, your drone will be set to enable 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:

a. Power on your Skydio Enterprise Controller and wait for your X2 to connect.

b. Once connected, tap **INFO** and then select your drone under **Paired Devices**.

c. Select **Encryption**.

d. By default, **Enable Encryption** will be selected. You can choose to leave this selected, or select **Disable Encryption**. Whatever setting you choose will persist through power cycles.

Device settings

The Device Settings menu gives you access to in-flight settings for the Skydio X2 and Skydio Enterprise Controller.

Unless specified otherwise, your device settings will persist after swapping batteries and powering

your devices on and off.

Drone settings

Once you are connected to your drone, you may configure these settings before or during flight. It is highly recommended to view and configure your settings before taking off to ensure you understand how the drone will behave in flight.

Height Ceiling

Height Ceiling sets the maximum allowed altitude your Skydio X2 will be able to ascend to when in flight. This is a great setting to enable when flying in controlled airspace, or when you simply need to prevent the drone from climbing too high.

NOTE: *The Height Ceiling is an estimate which the drone will do its best to respect, however there may be some vertical drift above or below that limit.*

Obstacle Avoidance (AEF only)

NOTE: *This setting does not persist over battery swaps and power cycles. Each time you power on your drone, you will need to re-configure your Obstacle Avoidance setting.*

If you purchased the AEF software add-on, this setting allows you to switch between **Standard**, **Close**, **Minimal**, and **Disabled** obstacle avoidance settings for your X2:

- **Standard** - Default obstacle avoidance setting. Skydio X2 will stay about 33 in (84 cm) away from obstacles. When in this mode, X2's top ground speed is 35mph (16 m/s).
- **Close** - Skydio X2 will stay about 11 in (28 cm) away from obstacles. When in this mode, X2's top ground speed is limited to 18 mph (8 m/s).
- **Minimal** - Skydio X2 will stay about 4 in (10 cm) away from obstacles. When in this mode, X2's top ground speed is limited to 18 mph (8 m/s).
- **Disabled** - Skydio X2 will not avoid obstacles. When in this mode, X2's top ground speed is limited to 18 mph (8 m/s).

WARNING: *Flying with Close, Minimal or Disabled obstacle avoidance settings greatly increases Skydio X2's risk of collision. Take caution when flying in these modes. Minimal or Disabled obstacle avoidance settings are for limited use cases to slowly and carefully 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 (1 m/s).*

NOTE: *When Obstacle Avoidance is set to any mode other than Standard, the drone's top speed of 18 mph (8 m/s) will be observed for automated actions such as Return to Home and flight between waypoints. This top speed will override any speed settings you have set in the app.*

Show Thermal

Toggles the display of the thermal camera live feed. On by default, when in flight you will see the live feed from the color camera in the app, as well as a small picture-in-picture (PIP) feed from the thermal camera.

If you toggle **Show Thermal** to **off**, you will only see the live feed from the color camera.

Return Behavior

The **Return Behavior** settings allows you to customize the way

Skydio X2 behaves after initiating a return.

- **Drone Looks** - Skydio X2 will either look toward or away from the return destination while returning.
- **Return Type (AEF Only)** - Unique to the Autonomy Enterprise Foundation, this setting tells the drone to return using GPS or the drone's vision system. Set your return type to Vision when you fly in GPS-denied environments. X2 will retain its obstacle avoidance setting when returning with Vision or GPS. For more information about Skydio X2's return behavior, see the **Returning** section on page 58.
- **Wait Before Return** - Set how long Skydio X2 should wait after it loses communication before it returns to the launch point (or Home Point if one was set). This wait time gives X2 time to try to re-establish a connection to the controller. When the drone and controller are still connected and you command a return, X2 will return immediately without waiting.
- **Return Height** - Set the height to which Skydio X2 should ascend before returning. By default the return height is set to 66 ft/20m, meaning Skydio X2 will ascend to that height before returning.
  - **Height Behavior** - When set to Absolute, the drone will ascend to the specified Return Height (above the launch point) before returning. When set to Relative, Skydio X2 will ascend by the specified Return Height above the current position before returning. Skydio X2's default Height Behavior is set to Relative. See the **Returning** section on page 58 for more information.
- **Return Speed** - Set the speed at which Skydio X2 should fly when returning.

Reference the **Returning** section on page 58 for more information.

Enable Narrow Band (5 GHz radio only)

This setting allows you to switch your radio frequency to a narrower band. The narrow band will allow you to fly further away without losing connection, however 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

***NOTE:** This setting does not persist over battery swaps and power cycles. Each time you power on your drone, you will need to re-configure your Lights setting.*

Toggle the lights on your X2 motors to display the colored LEDs (RGB), infrared sensors, or white strobe lights:

• **RGB** - Toggled on by default. These are the standard LEDs on the motors that are blue when the drone is powered on, and red and green when in flight. You can choose to toggle these off.

• **Infrared** - Infrared sensors that cannot be seen by the naked eye. Toggle these on when needing to fly more discreetly, and use night vision goggles to view the infrared lights on the drone.

• **Strobe** - Displays a white strobe light on the motors. Helps visually keep track of the drone, especially in low-light conditions. Skydio X2's strobe lights are visible at a distance of 3 statute miles.

***NOTE:** You can toggle on either Strobe or Infrared lights, but not both at the same time.*

GPS Night Flight

***NOTE:** This setting does not persist over battery swaps and power cycles. Each time you power on your drone, you will need to re-enter GPS Night Flight mode if desired.*

Enable GPS Night Flight when planning to fly in low-light conditions. When in this mode, Skydio X2 will use GPS sensors, instead of its vision system, to navigate.

WARNING: *Skydio X2's GPS Night Flight mode requires flying without obstacle avoidance. Skydio X2 may drift slightly when in GPS Night Flight mode; take extra caution when flying in this mode and do not stand near the vehicle.*

NOTE: *This mode requires calibrating the X2's magnetometer prior to takeoff. The first time you toggle on GPS Night Flight, the app will prompt you to calibrate the drone. Follow the onscreen instructions to calibrate X2, rotating the drone once on each axis. Once calibrated, you may not need to calibrate the drone again for several weeks or even months, depending on the environment. Calibration is not necessary when entering GPS Night Flight during a flight. Whenever a calibration is needed, you will be notified in the app. If you are unable to switch out of GPS Night Flight, this may be because the conditions are not clear enough for Skydio X2's obstacle avoidance and vision system. Wait 10-20 seconds and if the issue persists, land the vehicle. See* ***GPS Night Flight*** *on page 70 for more information.*

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

When **Custom Speed** is toggled on, you can customize the maximum allowed speed setting for roll, pitch, yaw, and throttle.

NOTE: *Flying with reduced or disabled obstacle avoidance settings greatly increases Skydio X2's risk of collision. When flying in these modes, Skydio recommends turning down Controller throttle, roll and pitch sensitivity to the lowest setting and proceeding at a max speed of 2-4.5 mph (1-2 m/s).*

When **Custom Speed** is toggled off, the Flight Speed settings are set to defaults and cannot be changed.

Flight Mode

This setting determines how your Controller joysticks will maneuver X2. You may switch between Mode 1, Mode 2 (default), and Mode 3 style flight controls. For more information about how each mode controls your drone, refer to the **Flight Controls** section on page 47.

SETTINGS

Flight Telemetry

Toggles the display of vehicle telemetry data. When enabled, Skydio X2's current speed, height above launch point, range from launch point, and camera angle (gimbal pitch) are displayed on-screen while in flight.

Launching

Set your Skydio X2 down on clear, flat ground at least 10 feet away from you. You may also use the top of Skydio X2's case as a convenient launch and landing pad.

Launching Skydio X2 is as simple as holding the Launch button in the app or on the Skydio Enterprise Controller.

Once Skydio X2 is in the air, it will hover in place until you initiate a skill or use the controller to start flying.

NOTE: *Skydio X2 requires a stable GPS connection to fly greater than 33 ft (10 m) above its point of takeoff. This may not be possible when flying in GPS denied environments such as indoors, heavy urban areas, and deep canyons; or when flying near large metal structures such as radio towers and bridges. If you are having any difficulty getting your Skydio X2 to fly above 33 ft (10 m), you may need to fly a few feet in a lateral motion (forward, backward, left, or right) to establish heading.*

The flight screen

Telemetry + Gimbal

Pitch Stop/Land

control Subject

Indicator

Color camera settings

Battery indicator

Signal strength indicator

Device settings menu

Thermal Camera PIP

Device Settings Menu

Maps

Return to Home

Recording Indicator

Skill Settings Skills Menu

Gives you access to in-flight settings for the Skydio X2 as well as control settings for Controller (when connected). See the **Device Settings** section on page 28 for more information.

Signal Strength Indicator

Displays the current strength of your radio link to the Skydio X2 while in flight. As the signal strength decreases, you may experience a lower quality video feed or a delay in their controls.

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

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

When flying at max range, point the controller cover (broad side) 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.

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

Battery Indicator

Displays the current battery level of the Skydio X2 drone. Skydio X2's battery level is based on the battery's remaining capacity.

The **green** portion of the battery indicator represents flight time available before return and landing is recommended. As the drone's distance from the launch point increases, the **yellow** portion of the battery indicator will increase. As the drone's altitude increases, the **red** portion of the battery indicator increases.

When Skydio X2 reaches low battery, it will notify you in time to return home. Reference the **Low Battery** section on page 78 under **Emergency Procedures** for more information.

Camera Settings

Allows you to change between Video and Photo recording modes. Skydio X2 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 X2 captures a photo or video, it will capture one file with the color camera and a second with the thermal camera.

Camera Settings (cont.)

Color Camera Settings

This menu also provides access to the settings for X2's color camera. You may change your camera settings at any time before or during flight.

NOTE: *Changing the camera settings before launch may cause Skydio X2 to return to the preflight screen and re-calibrate its vision system. Some video capture settings (such as video resolution and frame rate) cannot be changed while the drone is actively zooming. See the* ***Zoom*** *section on page 55 for more information.*

Skydio X2 in video capture mode

Video Capture Settings

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

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

Skydio X2 in photo capture mode

Photo Capture Settings

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

*** Skydio X2 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 Skydio X2 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. You may capture a photo every one second when capturing in JPG mode.*

****** DNG photos are not displayed in the media tab of the Skydio Enterprise app and may be retrieved directly from the microSD card.*

NOTE: *Digital 16x zoom (8x for thermal camera) is not supported in all video resolutions and framerates. Reference the Zoom section for more information on compatibility.*

Camera Settings (cont.)

Thermal Camera Settings

Thermal camera settings are not currently available in the Skydio Enterprise app. Skydio X2's thermal camera is available in a single palette, White Hot. Flat Field Correction is always set to auto and is usually performed at power up, when the camera changes temperature, and periodically during operation.

Subject Indicator

The blue & white icon indicates a person or vehicle the Skydio X2 is capable of tracking. When in the Track skill, tapping the indicator will command the Skydio X2 to enter autonomous flight mode with the selected object as the tracking subject.

Tips for best tracking performance:

- The Skydio X2 can track a single person or vehicle at a time. Skydio X2 does not track pets or other animals.
- The subject you wish to track must be visible in the camera view in order to become available for tracking.
- If the indicator is not appearing for the subject you wish to track, try moving the Skydio X2 closer and ensure they are framed in the center of the camera view.

Subject available for tracking

Subject being actively tracked

Thermal Camera PIP

Picture-in-picture (PIP) 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.

Skills Settings

Skills Menu

The skills menu (located in the lower-right corner of the flight screen) gives access to Skydio X2's various flight skills. Each skill has a different function. See the **Flight Skills** section on page 50 of this guide for more details.

Each skill may have its own custom settings which only affect the selected skill. Tap the skill settings button to customize each skill's behavior to suit your needs. You can read about specific settings available for each skill in the **Flight Skills** section on page [X].

Recording Indicator

Recoding Video: Auto Photo Button Recoding Video:

Manual Interval Photos Recording Paused: Manual

Return to Home

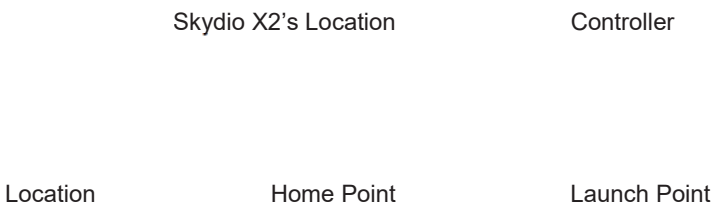
Tapping the **Return to Home** button gives you the ability to have Skydio X2 automatically return to either the launch location or the controller's current location. Prior to tapping the **Return to Home** button, make sure no obstacles (e.g., people, animals, etc.) have moved into the drone's return pathway. Skydio X2 will retain its current obstacle avoidance setting when returning.

If a Home Point has been set for this flight, the **Launch Point** option will be replaced with **Home Point**.

Map view

Tap the map icon to enter the map view. The location of your controller, Skydio X2, and Skydio X2's launch location are all indicated on the map. To exit the map view, tap the map icon again.

Fly to Waypoint



You may fly to a specific GPS location by long-pressing on the map and selecting "Fly Here Now" from the menu. Skydio X2 will warn you if the selected destination is far away or outside the vehicle's expected battery range. Keep Skydio X2 within visual line of sight at all times (unless you have received express permission to fly beyond visual line of sight from a civil aviation authority like the FAA).

Home Points

You may 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.

NOTE: *Home Points are created using GPS coordinates. Skydio X2 must have a good GPS signal prior to creating a Home Point.*

If a Home Point is present during a flight, Skydio X2 will automatically return to that location in the event of a loss of communication (unless otherwise specified in the waypoint settings). Tapping on a Home Point on the map gives you the option to fly the drone to that location immediately or remove it from the map.

NOTE: *The better and more sustained the GPS signal, the more accurate Skydio X2's flight will be when returning to that Home Point. If Skydio X2 loses GPS or the GPS signal becomes weak, the drone will do its best to estimate and return to the Home Point position.*

CONTROLS **Flight**

controls

1. **Left Joystick** - Height & Rotation (Mode 2 - default)
2. **Right Joystick** - Lateral Movement (Mode 2 - default)
3. **Back/Menu** - Navigates to previous screen
4. **D-pad** - Unassigned
5. **C1 Button** - Toggle Obstacle Avoidance (AEF only);

   Standard <-> Close
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 controller
9. **Launch/Land Button** - Launch or land X2
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 Type (Color/Thermal)

Joystick controls (flight mode)

By default, your Skydio Enterprise Controller is set to Mode 2. In Mode 2, the left stick controls the drone's height and rotation, while the right stick moves the drone forward, backward, and side to side.

Mode 2 (default)

In the Drone Settings menu, you can change your Flight Mode to 1 or 3 if you would like to change the way the controller joysticks maneuver the drone.

To change your flight mode:

1. Tap on the Settings icon to enter the Device Settings menu
2. Select **Controller**
3. Select **Flight Mode**
4. Choose the flight mode that best suits your operating style

Mode 1

Mode 3

On-screen controls (touch gestures)

In addition to the controller button controls, you can use on-screen touch gestures to do things like zoom, adjust gimbal pitch, and fly to a visible location:

- Drag vertically on-screen to increase or decrease gimbal pitch.
- Drag horizontally on-screen to adjust yaw.
- Pinch and drag your fingers away from each other to digitally zoom in up to 16x (8x with thermal camera). • Pinch and drag your fingers toward each other to zoom out back to 1x, then out to Superzoom. • Double-tap anywhere on the flight screen to fly directly towards that spot.

Flight skills

With the Skydio Enterprise app, you have a range of control over your drone via a unique set of flight skills. Simply choose your skill and put your drone to the task—Skydio X2 will intelligently fly itself to get the best shot.

Any time you want to change your flight technique, just select a different skill in the app. With most skills, you can adjust the height and range Skydio X2 will film from, as well as other skill-specific controls and settings.

Skills

Manual - Use this skill any time you want the traditional flying experience.

Waypoints - Create and execute multi-waypoint GPS missions.

Track - Skydio X2 will 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.

Orbit Point - Skydio X2 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.

Manual

By default you will start in the Manual flight skill. The Manual flight skill will give you 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.

Waypoints

The Waypoints skill allows you to design and execute multi-waypoint GPS missions. Skydio X2 uses AI-enabled path planning algorithms to avoid obstacles.

NOTE: *Waypoints are created using GPS coordinates. Skydio X2 must have a good GPS signal prior to executing a waypoint mission.*

To set up a mission, select **Waypoints** from the skills menu, then tap on the map view. Long press on the map and select **Add Waypoint** to set the first waypoint.

The drone's current pose settings will automatically be applied to the first waypoint. To customize these settings, **tap on the newly created waypoint** and set the drone's altitude, heading and gimbal angle for that waypoint as desired.

Long press on the map again to set your second waypoint. Your drone's pose settings will match those of the previous waypoint, however you can always tap on the waypoint to adjust the settings as needed.

Continue adding waypoints until your mission path is complete.

NOTE: *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 completes, the flight will restart before including the newly added waypoint.*

Waypoints (cont.)

If you need to delete a waypoint, long press on that point, then select **Delete**. You can also tap the **trash can** icon to clear all waypoints.

Once you've created your waypoint mission, enter the Waypoint Skill settings menu to further customize the mission behavior.

- **Speed** - Set the speed at which Skydio X2 will move between waypoints.
- **Lost Comms** - Tell Skydio X2 what to do if it loses connection to the controller during a mission. By default the drone will Return to Home if it loses connection, however you can set it to Continue the mission instead. If Skydio X2 does not regain connection upon completion of the mission, it will then Return to Home once the mission is complete.
- **Photo at Waypoint** - Set Skydio X2 to take a photo at each waypoint.

NOTE: *If this setting is toggled on, and the drone is in* ***Video*** *mode, Skydio X2 will automatically switch to* ***Photo*** *mode upon starting or resuming a mission. 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.*

When you're ready to begin your mission, tap the **Play** button to start. Skydio X2 will autonomously move through each waypoint in the mission, and then once complete it will **hover in place**.

Once you've created your mission, it is stored on the controller and will persist across flights and reboots. However, **only one waypoint mission may be defined at a time** – you cannot save and load between multiple missions.

NOTE: *Waypoint missions are stored on the controller, however the skill settings for that mission (speed between waypoints, lost communication behavior, and photo at waypoint) are stored on the vehicle. If you run the same mission with different vehicles, make sure to set your Waypoint skill settings for each drone.*

Waypoint missions can be created and edited offline without being connected to a drone. See the **Plan your Waypoint Mission** section on page 22 for more information.

Orbit Point (AEF only)

To start orbiting a point of interest, select Orbit Point from the skills menu, then tap on the map view.

Fly your Skydio X2 to where the edge of your orbit will be, then long press on the map and select Set Focus Point.

NOTE: *The range of the orbit is automatically set to the drone's current distance from the focus point.*

Next, use the on-screen slider to set the direction and speed for the orbit. The drone will then start moving in that direction.

Once moving, there are a few ways you can adjust your orbit:

- As with other skills, you can use touch gestures or Controller wheel to **adjust gimbal pitch and zoom**.
- To **change speed and direction**, use the on-screen slider or Controller joystick that controls the drone's roll. When using the slider, Skydio X2 will continue moving after lifting your finger from the screen. When 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 center.
- To modify your **orbit range**, you have three options:
  1. Drag the orbit on-screen to increase or decrease the orbit range.
  2. Manually pilot the drone while in orbit. The orbit range will dynamically adjust to match the drone's pitch, roll and altitude.
  3. Pause the orbit, manually pilot the drone to a new position, then resume. Range or altitude will adjust to the drone's new distance from the Focus Point.
- To change your Focus Point, tap and hold on the map and select **Move Focus Point**. This replaces the current focus point and sets the new orbit radius to match the drone's current location.

Track in Place (AEF only)

To visually track a subject, first select the Track skill in the app. Identify a subject of interest, then fly the drone within 100 ft (30 m) if your subject is a person or 140 ft (40 m) if your subject is a vehicle in order for Skydio X2 to detect it.

Tap on the or icon to lock onto the subject. The drone will then hover in place, rotating and tilting the camera to look at the subject as it moves.

While X2 is tracking the subject, you can also use the on screen controls or controller joysticks to control the pitch, roll, and altitude of the vehicle. The drone will adjust yaw and gimbal pitch automatically according to the subject's position.

NOTE: *While in the Track skill, Skydio X2's lateral movement speed will be limited to 4 mph (6.4 kph)*

While the Track still is actively tracking a subject, Skydio X2 will hover in place, staying visually locked onto that subject up to 800 ft (240 m) away if that subject is a person, and 1,000 ft (300 m) away if a vehicle. As the subject moves or you fly the drone, tracking will continue until the subject is too far away or blocked by an obstruction.

Zoom

Digital Zoom with Color and Thermal Cameras

When flying your Skydio X2, you have the ability to digitally zoom in up to 16x with your color camera, or up to 8x with your thermal camera.

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, X2's 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).

Superzoom (AEF Only)

You can zoom out to an equirectangular view of your drone's surroundings. Skydio X2 uses its six, 4k navigation cameras to create this omnidirectional 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.

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

NOTE: *If Skydio X2's feed is already zoomed in, you will first need to zoom out to 1x before you can zoom out again to Superzoom.*

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

Zoom Recording Behavior and Compatibility

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.
- If photos are taken while zoomed in, the resulting photos will remain at 1x zoom (they will not be zoomed in).
- 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 following 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. Once you're happy with the settings, and they are compatible with zoom (see below), you can begin zooming.

NOTE: *When switching from photo mode to video mode, the zoom may be reset to 1x if the video mode you are switching back into does not support digital zoom.*

Compatibility

Zoom and Superzoom as well as camera tilt are currently only available when 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 to one of the compatible modes listed below:

	1080p @ 30fps
YES	
4k @ 30fps	**YES**
4k @ 60fps	NO

Subject tracking - Zooming is currently not compatible with subject tracking. To detect a subject, the drone must be at the default 1x zoom level.

Returning

When you're ready to return home, tap the **Return to Home** button in the app or on the Skydio Enterprise Controller:

NOTE: *Prior to tapping the Return to Home button, make sure no obstacles (e.g., people, animals, etc.) have moved into the*

drone's return pathway. Skydio X2 will retain its current obstacle avoidance setting when returning.

In the app - The Return to Home button gives you the ability to have Skydio X2 automatically return 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**.

Skydio Enterprise Controller - The Return Button 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 & Behavior

Any time a return is triggered, either by the pilot or an emergency procedure, Skydio X2 will first **ascend to a specified height before returning**. You can customize this return height in the Drone Settings menu.

If the Height Behavior is set to **Absolute**, the drone will ascend to the specified Return Height (above the launch point) before returning. When set to **Relative**, Skydio X2 will ascend by the specified Return Height above the current position before returning.

Relative Return Example: If the Return Height is 32 ft and the drone is at 20 ft at the time the return is commanded, Skydio X2 will ascend 32 ft and then return at a height of 52 ft.

In addition to **Return Height** and **Height Behavior**, you can also customize the following return settings:

- **Drone Looks** - Skydio X2 will either look toward or away from the return destination while returning.
- **Return Type (AEF Only)** - Unique to the Autonomy Enterprise Foundation, this setting tells the drone to return using GPS or the drone's vision system. Set your return type to Vision when you fly in GPS-denied environments.
- **Wait Before Return** - Set how long Skydio X2 should wait after it loses communication before it returns to the launch point (or Home Point if one was set). This wait time gives X2 time to try to re-establish a connection to the controller. When the drone and controller are still connected and you command a return, X2 will return immediately without waiting.
- **Return Speed** - Set the speed at which Skydio X2 should fly when returning.

GPS vs Visual Return (AEF Only)

Based on the Return Type you selected in the Drone Settings menu, your Skydio X2 will use either GPS or its vision navigation system to return to the launch location.

Visual return is a great option when you're planning to fly in GPS-denied environments, while GPS is best when performing longer-distance returns with your Skydio X2.

How does Visual Return work?

When the Return Type is set to Vision, and you initiate a return to the Launch Point, Skydio X2 does not require a GPS signal and will use its vision navigation system to return to that point.

Visual return will ONLY work with the Launch Point. Flying to a set Home Point or to your controller will require GPS. Reference the table below to see how Skydio X2 returns based on Return Type.

	specified location
Return to Launch Point Skydio X2 will use GPS to return to launch point	**Skydio X2 will use Visual Navigation to return to launch point**
Return to Controller Skydio X2 will use GPS to return to controller location	Not supported in visual navigation. Skydio X2 will use GPS to return to Controller location
	Not supported in visual navigation. Skydio X2 will use GPS to return to home point
Return to Home Point Skydio X2 will use GPS to return to home point	Not supported in visual navigation. Skydio X2 will use GPS to fly to specified location
Fly Here Now Skydio X2 will use GPS to fly to	

GPS vs Visual Return (AEF Only) (cont.)

If Skydio X2 does not have a GPS signal, and Return Type is set to Vision, when you tap the **Return to Home** button in the app

you will see the options: **CONTROLLER** or **LAUNCH POINT**

Select **Launch Point** as your Return Location, since this point has been saved in Skydio X2's vision navigation system and does not require GPS to return. If you select **Controller**, Skydio X2 will return using GPS and may not return reliably if flying in a GPS-denied environment.

Landing

When you are ready to end your flight and land your drone, first stop any subject tracking and

manually fly the drone to a safe landing spot that is flat, clear of debris, and not overhead of any people or animals.

Use the controller joystick to descend down to **15 ft.**, then once you're ready to land, press and hold the "LAND" button on the screen or the controller.

Skydio X2 will descend until it is 10 ft (3 m) above the surface below it. Once Skydio X2 is less than 10 ft from the surface, all obstacle avoidance will be disabled for the remainder of the landing. You will be notified of this change on screen if flying with the Skydio Enterprise app. When in GPS Night Flight mode, obstacle avoidance is always disabled, regardless of Skydio X2's height above ground.

> ***WARNING:*** *Skydio may recognize bushes, trees, and similar obstacles as potential surfaces. Make sure to first pilot the drone to an open area free of obstacles before initiating a landing.*

While Skydio X2 is landing you may nudge the drone forwards, backward, left, or right using Controller or digital thumbsticks in the app. Yaw control is disabled during landing. Increasing the drone's altitude will cancel the landing.

> ***WARNING:*** *Do not attempt hand-landing Skydio X2 before obstacle avoidance is disabled. Attempting to hand-land Skydio X2 while obstacle avoidance is active will cause it to attempt to avoid your hand and may result in Skydio X2 impacting yourself or another nearby object. Please review the Hand Launching and Landing section for step-by-step instructions and safety guidelines for this procedure.*

You may also cancel any non-emergency landing by tapping the Cancel button before the landing completes, or using the controller to increase the drone's altitude.

Case landing

When you are unable to find a level area to land your Skydio X2, case landing is a great way to

precisely land your drone a few inches above dirt or vegetation.

To perform a case landing:

1. Position the drone about 10 ft above the case.
2. Use the gimbal control to tilt the camera down so the case and Skydio logo are clearly in view.
3. Press and hold the land button in the app or on the controller to initiate a landing. If the drone locks on to the case, a yellow ring will circle the Skydio logo.
4. If you do not see the yellow ring, cancel the landing and try again.

NOTE: *To initiate a case landing, the Skydio case must be in view of Skydio X2's camera while it is landing. A yellow ring will appear around the case in the live video feed to indicate that Skydio X2 has seen the case and will land on it. If you do not see the yellow ring, Skydio X2 will not land on the case and will continue to descend straight down.*

> ***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.*

NOTE: *If a flight is initiated by taking off from a case (or a case is placed at Skydio X2's exact take off 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).*

Reviewing and offloading content

Review tab

After your flight, you may view all photos and videos captured on your drone's microSD card in the Review tab of the Skydio Enterprise app.

- Tap on any photo or video to review it.
- To delete media, tap and hold on any photo or video to enter selection mode, select your desired media, then tap delete.
- When using the Interval photo mode, all photos captured will appear as a single stack of photos. Tapping on the stack will allow you to scroll through individual photos one by one.
- When capturing photos in JPG+DNG mode, only the JPG files will be displayed in the Skydio Enterprise app. You may download the DNG image files directly from the SD card.
- If **Encryption** was **Enabled** for your flight, your encrypted media will be hidden in the Review tab until it has been decrypted with the security key. See **Reviewing and Offloading Encrypted Media** for more information.

NOTE: *All photos taken by the Skydio X2 have EXIF data embedded to enable postflight image analysis.*

On your computer

You may also attach Skydio X2 to a computer with the USB-C cable to view and copy your full resolution videos and photos directly off of the microSD card.

To transfer your media to your computer:

1. Power on your Skydio X2
2. Connect X2 to your computer using the provided USB-C cable
3. Import your media

NOTE: *If using a Windows computer, your Skydio X2 will mount (just like a hard drive) to your desktop. You can also look for it under Devices. If on a Mac, you can use the Photos app or the Image Capture app to transfer your footage to your desired location (both apps are included with any current Mac, or are available from the macOS App Store).*

Connecting via USB to a computer that does not supply charging power will cause Skydio X2 to run off of battery power and may drain the battery.

Reviewing and offloading encrypted Media Review tab

If **Encryption** was **Enabled** for your flight, your encrypted media will be hidden in the Review tab.

To review your encrypted media, insert the security key into the drone while it is powered on. Once the LEDs on the key have stopped flashing, your encrypted media will be visible in the app for you to review.

On your computer

To review and copy your encrypted media on your computer:

1. Insert the security key into the drone while it is powered on. This will decrypt your media. Your media will stay decrypted until you power off your X2 or begin a new flight, after which you will need to reinsert the security key to decrypt your media again.

On your computer (cont.)

2. Once the LEDs on the key have stopped flashing, remove the key and then connect your drone to the compute using the provided USB-C to USB-C cable..

3. Import your decrypted media. Once transferred to your computer, the decrypted media will stay decrypted.

NOTE: *If using a Windows computer, your Skydio X2 will mount (just like a hard drive) to your desktop. You can also look for it under Devices. If on a Mac, you can 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.*

Disassembly

Step 1 - Power off Skydio X2 and Skydio Enterprise Controller

When you are finished flying, press and hold the battery

button for three seconds then select Power Off to power off your Skydio X2.

To power off the Skydio Enterprise Controller, press and hold the power button for **three seconds**, then select the **Power Off** button.

Step 2 - Fold and lock antennas

Gently push down on each antenna until it locks in place.

Step 3 - Fold arms

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

NOTE: *Exercise care when folding in the two front and two back arms.*

To fold in the arms, start by opening the arm clamp located where the arm attaches to the body.

Lift all four arms up and in toward the body of the drone and rotate 180 degrees.

NOTE: *If you feel any resistance when folding the arms, you may need to push outward (horizontally) on the arm to unseat it before folding.*

Fold the arm clamps to the locked position on all four arms. Ensure that the blue paint on the arm clamp lines up with the paint on the arm.

GPS Night Flight

Enable GPS Night Flight when flying in low-light conditions. When in this mode, Skydio X2 will

disable obstacle avoidance and use GPS sensors, instead of its vision system, to navigate.

> ***NOTE:*** *Skydio X2 will notify you in the app if the environment is too dark to fly using the vision navigation system and will prompt you to fly using GPS Night Flight.*

> ***WARNING:*** *Skydio X2's GPS Night Flight mode requires flying without obstacle avoidance. Skydio X2 may drift slightly when in GPS Night Flight mode; take extra caution when flying in this mode and do not stand near the vehicle.*

How to fly in GPS Night Flight mode

Step 1 - Enable GPS Night Flight mode

a. Enter the **Device Settings** menu by tapping on the gear/settings icon

b. Under **Drone**, scroll down and select **GPS Night Flight**

c. Toggle on **GPS Night Flight**

NOTE: *This will automatically disable obstacle avoidance. You will not be able to customize your obstacle avoidance settings until you disable GPS Night flight.*

d. Navigate back to the Fly screen

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Step 2 - Calibrate the drone

If this is your first time enabling GPS Night Flight mode, the app will prompt you to calibrate your X2. You must complete this calibration step before you can fly.

To calibrate your drone, follow the steps below:

a. On the Fly screen, tap Calibrate

b. You will see a screen prompting you to rotate X2 in various orientations. Hold the drone as pictured on the left, then complete the rotation as shown by the corresponding animation on the right:

NOTE: *You do not need to complete these steps in any particular order.*

c. Once all steps are complete, tap Done

Once calibrated, you may not need to calibrate the drone again for several weeks or even months, depending on the environment. When another calibration is needed, you will be prompted by the app.

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Step 3 - Toggle lights

When flying at night or in low-light conditions, you may want to enable infrared or visible strobe lights depending on your use case.

To toggle the lights on your X2, navigate to **Device Settings**, then select **Lights** under **Drone**. Both Infrared and Strobe LEDs cannot be on at the same time.

Step 4 - Launch Skydio X2

Launch X2 by holding the **Launch button** in the app or on the Skydio Enterprise Controller. After taking off, the drone will automatically rotate 360° to establish heading.

Safety considerations for GPS Night Flight

Obstacle avoidance

When GPS Night Flight is enabled, Skydio X2 does not use its vision system and obstacle avoidance is disabled. Take extra caution when piloting the drone to avoid obstacles and stay clear of people.

Visibility

Improve visibility by enabling X2's infrared or visible strobe lights. Skydio X2's strobe lights meet the FAA requirement of being visible at a distance of 3 statute miles.

Return behavior

Review X2's return behavior in the Drone Settings menu, paying particular attention to the return height setting. Skydio X2 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.

Landing

When landing, use the controller joystick to descend down to **15 ft.**, then once you're ready to land, press and hold the "LAND" button on the screen or the controller.

> ***WARNING:*** *Never hand launch or land Skydio X2 when in GPS Night Flight mode.*

Hand launching and landing

> ***WARNING:*** *Launching and landing of the Skydio X2 drone 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 and you cannot find a clear flat spot to take off or*

land.

Hand launching

CAUTION: High risk of injury. *To avoid injury stay away from and do not touch rotating propellers when they are spinning. Skydio does not recommend launching the drone while holding the drone in your hand.*

WARNING: *Exercise extreme care to avoid injury if the drone takes off from your hand.* ***NEVER hand launch your X2 when in GPS Night Flight mode, as it may cause severe injury.***

1. Find a clear spot to launch your Skydio X2. When hand launching, the area 10 feet (3 m) above you, 15 feet (4.5 m) in front of you, and 3 feet (1 m) on either side of you should be clear.

2. DO NOT hand launch on windy days. If there is any wind, for your safety make sure that it is blowing at your back, and never towards you. If the wind is gusty or coming from different directions, consider launching from the ground, or flying at another time.

3. Hold your Skydio X2 from behind and pointed away from you, with your hand lightly gripping the battery from underneath. It's critical that you keep your fingers below the Skydio X2 chassis and away from the propellers at all times.

4. Point the front camera away from you and hold your Skydio X2 away from your body, level and still. Ensure your arm is extended such that the rear propellers will not make contact with your arm.

5. Using your other hand, initiate a launch of the Skydio X2 using the controller Launch/Land button.

6. Release Skydio X2 carefully as the propellers begin to spin up by slowly relaxing your grip. Keep your hand still - Skydio X2 will simply slide off your palm and take flight on its own. There is no need to push the drone up in the air - just release your grip and use your flattened hand as a takeoff platform.

