



# FREEFLY ASTRO PREPARATION FOR HOVERMAP OPERATION

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## Using this manual

Hovermap is a powerful system that can be used as a Lidar mapping payload but also as an advanced autopilot for drones. It is therefore recommended to read the user manual thoroughly to make use of all its capabilities in a safe and productive way.

## Disclaimer and safety guidelines

This product is not a toy and must not be used by any person under the age of 18. It must be operated with caution, common sense, and in accordance with the instructions in the user manual. Failure to operate it in a safe and responsible manner could result in product loss or injury.

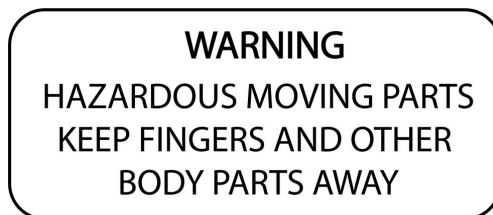
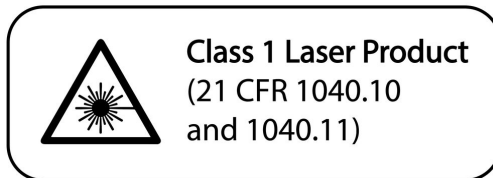
By using this product, you hereby agree that you are solely responsible for your own conduct while using it, and for any consequences thereof. You also agree to use this product only for purposes that are in accordance with all applicable laws, rules and regulations.

The use of Remotely Piloted Aircraft Systems (RPAS) may result in serious injury, death, or property damage if operated without proper training and due care. Before using an RPAS, you must ensure that you are suitably qualified, have received all necessary training, and read all relevant instructions, including the user manual. When using an RPAS, you must adopt safe practices and procedures at all times.



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- Always be aware of moving objects that may cause serious injury, such as spinning propellers or other components. *Never* approach a drone while the propellers are spinning or attempt to catch an airborne drone.





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This instruction outlines how to set up a Freefly Astro so that it can carry the Hovermap. Once set up, it will also be able to send autonomy command data and receive GPS through the electrical interface cable.

The key steps are:

1. [Attach the Hovermap-Astro dovetail mount to the Freefly Astro and mount the Hovermap.](#)
2. [Install Emesent Commander on the Freefly Pilot Pro controller.](#)
3. [Configure Emesent Commander on the Freefly Pilot Pro controller.](#)

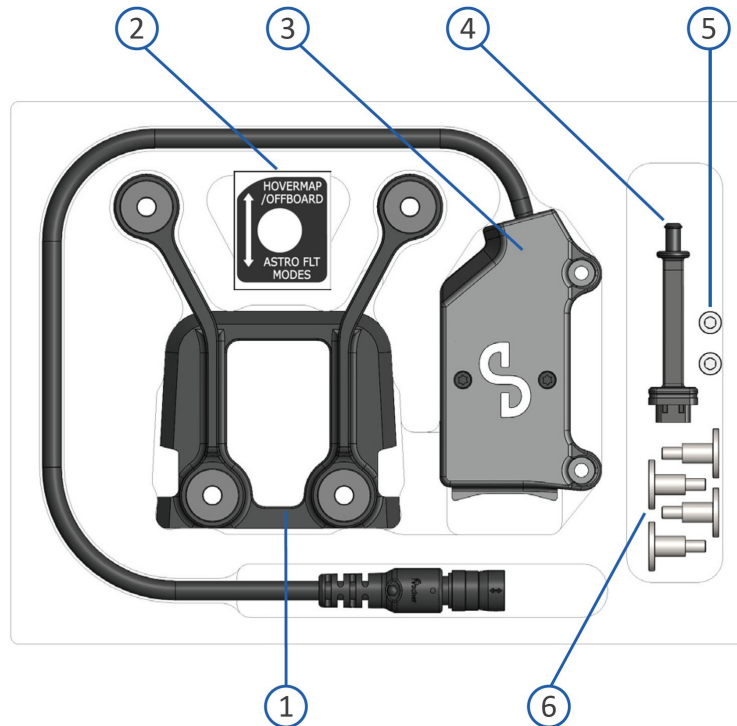
## 1. Before you begin

- Ensure that your Hovermap is running Cortex version 3.2.1 (or higher).
- Ensure that the Freefly PilotPro controller is fully charged.
- Ensure that the Freefly Astro batteries are fully charged.

 Refer to [Freefly Wiki](#) page for more detailed information on the Astro and the Pilot Pro controller that are not covered in this guide.



## 2. Mounting the Hovermap ST-X to the Freefly Astro



### What's in the box

1. Hovermap-Astro dovetail mount
2. Hovermap-Pilot Pro mode sticker
3. Electrical interface
4. USB-C dust cover
5. 2 x Electrical interface attachment screws (M3 x 6 - 2.5 mm hex drive)
6. 4 x Dovetail mount attachment screws (flanged - 2.5 mm hex drive)

### Required tool (provided)

- 2.5mm Hex Driver



## 2.1 Installing the Hovermap-Astro Dovetail Mount

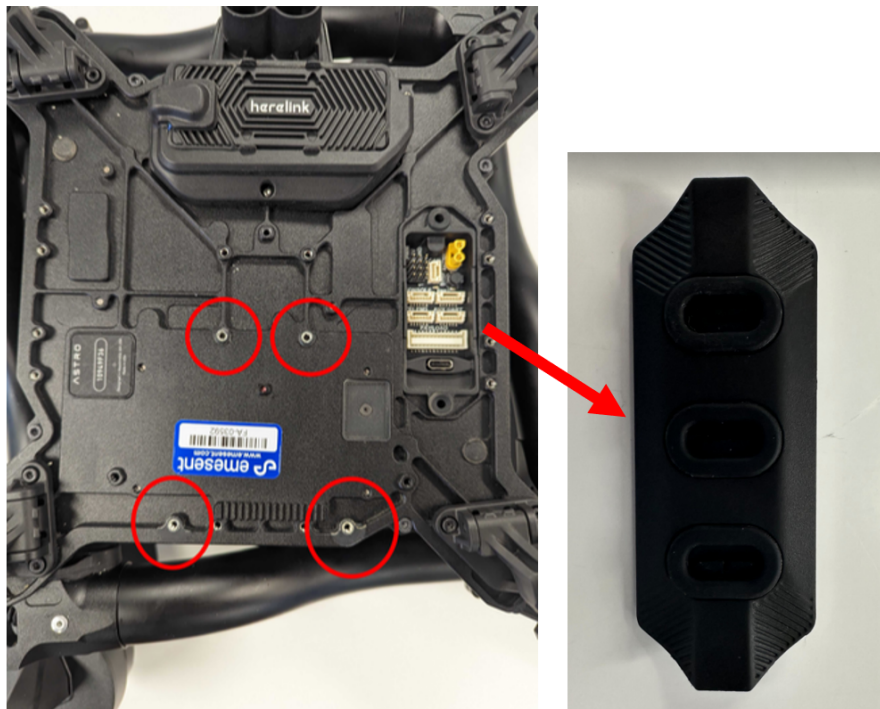
1. Remove the dovetail mount from the box and install the provided mounting screws.



2. Remove the Freefly Astro from its box and flip the aircraft. Remove the existing plastic shield from the I/O panel on the underside of the aircraft.



3. Place the Hovermap dovetail bracket over the mounting holes. Make sure to align the four attachment screws with the mounting holes.

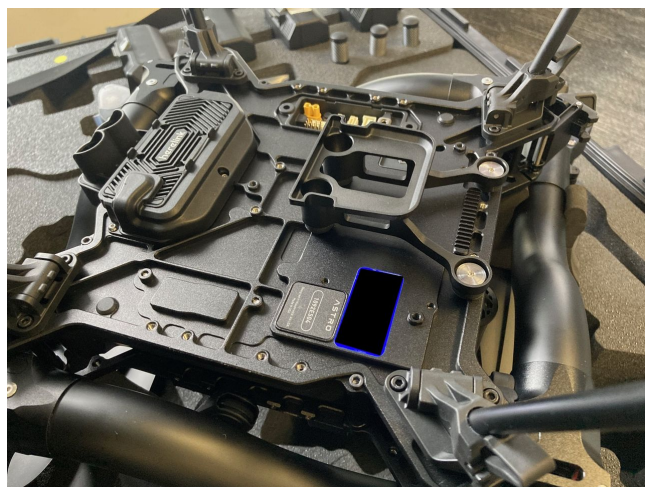


4. Screw in the four mounting screws using the provided 2.5mm hex driver.



**Note**

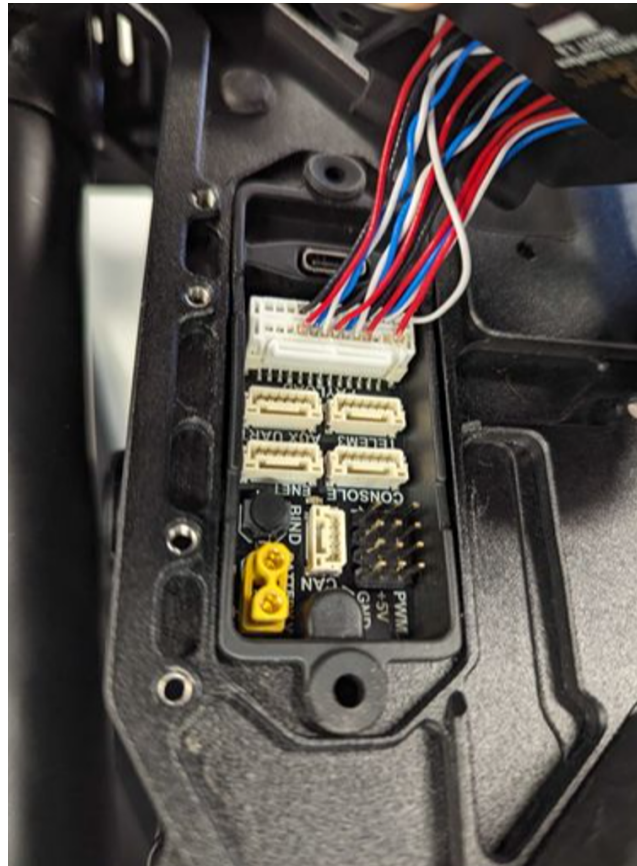
It is important to securely fasten screws until they stop rotating. If available, use a thread-locking fluid such as Loctite 222.





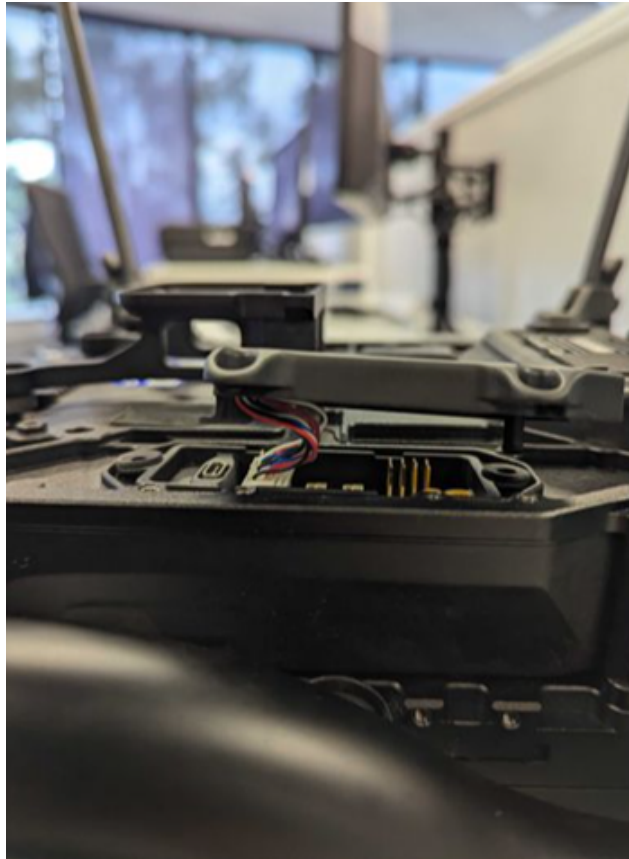


5. Connect the Hovermap cable to the connector labelled **Payload** on the Astro, ensuring it locks into place. A clicking sound indicates the cable has been successfully attached to the aircraft.





6. Gently tuck the cables towards the rear of the Astro (directed towards the yellow connector in the payload bay), then position the plastic cover over the Astro I/O panel, making sure to leave the USB-C port accessible.



**Note**

Be careful not to crush the cables between Astro and the lip of the plastic cover.



7. Place the shield back over the Astro I/O panel ensuring that it sits flush with the aircraft. Use the provided 2.5mm hex driver to secure the screws and fasten the plastic cover in place.

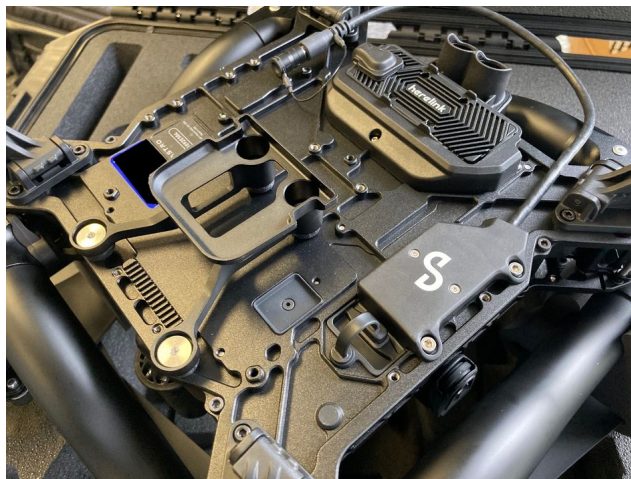




8. Insert the round end of the dust cover into the rubber grommet next to the USB-C port, and then connect the opposite end of the cover to the USB-C port.



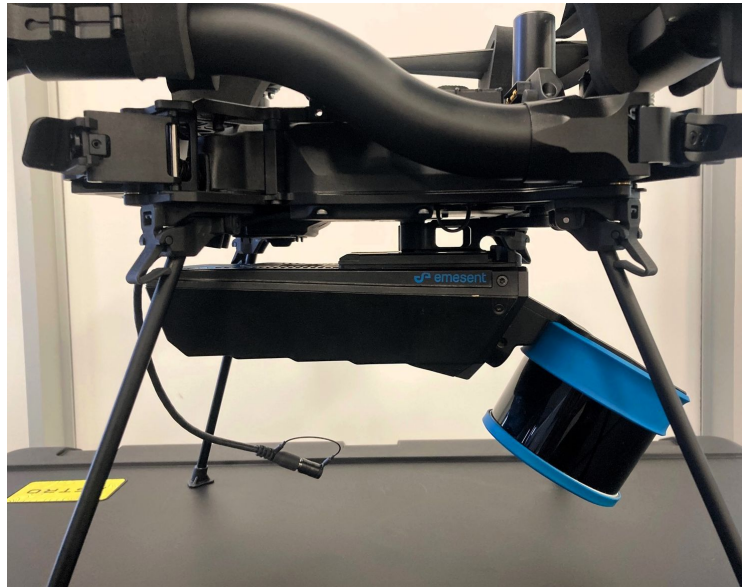
9. The following image shows the I/O shield properly secured and the USB-C dust cover in place. You can now proceed to turn the aircraft upright.



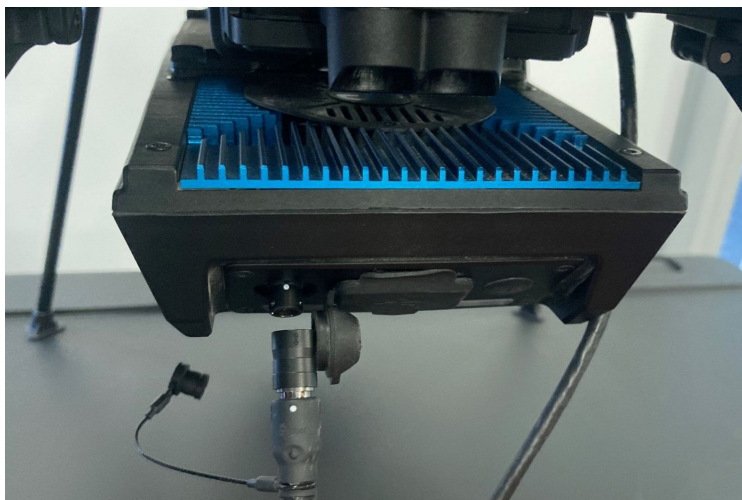


## 2.2 Installing Hovermap ST-X on the Astro

1. Gently slide the Hovermap ST-X onto the Hovermap dovetail mount, positioning it from the front of Astro, ensuring it locks into place. A clicking sound indicates the bracket has locked into the dovetail mount.



2. Align the white dot on the electrical interface with the white dot on the port on the Hovermap ST-X. Press firmly to connect the electrical interface, making sure it locks into place. A clicking sound indicates the cable has been successfully attached to the Hovermap ST-X.





3. Test the cable connection by gently tugging on the cable to ensure it is positively retained on the Hovermap ST-X.



**Note**

If the cable fails to keep connected during this test, it is recommended to get in touch with Emesent support.





## 2.3 Placing the Hovermap Mode Sticker on the Pilot Pro Controller

Follow these steps to install the custom sticker label for switch modes on the Freefly Pilot Pro controller. This sticker is included in the Hovermap-Astro Interface Kit.

1. Locate the S2 toggle switch in the upper-right area of the Freefly Pilot Pro controller.



2. Peel the sticker from its backing sheet and place it as shown below.






## 3. Install Emesent Commander on the Freefly Pilot Pro Controller

Emesent Commander can be installed either from an external storage device or via the Freefly updater app. If you do not have the latest version of the Commander .apk file on external storage, skip to the *Install Commander via the Freefly Updater* section.

### 3.1 Installing via External USB storage

 If you have an earlier version of the Emesent Commander application installed, you will need to uninstall it first.

1. Go to the Emesent [Software Downloads](#) page.
2. Download the software application package to your external USB storage device.





3. Hold the power button on the Pilot Pro tablet for 4 seconds. This will power on both the tablet and the controller. Press again when prompted on the controller to complete powering on.



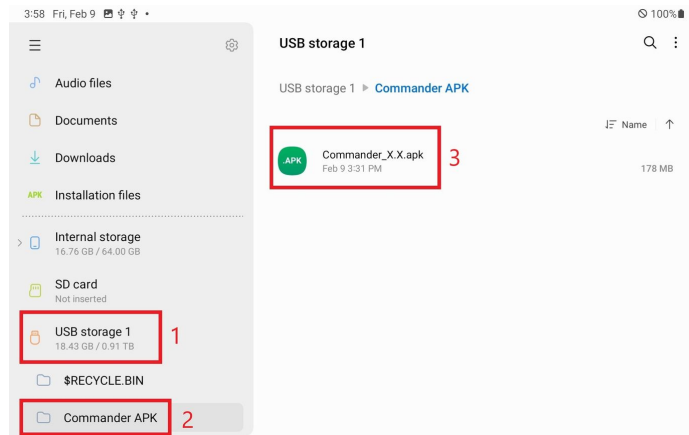
4. Connect the external storage device containing the downloaded .apk file to one of the USB-C ports on the controller.



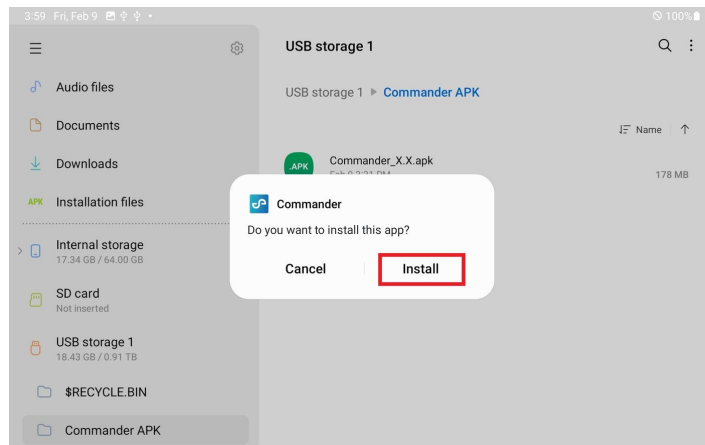
5. Copy the APK file to the Pilot Pro tablet.



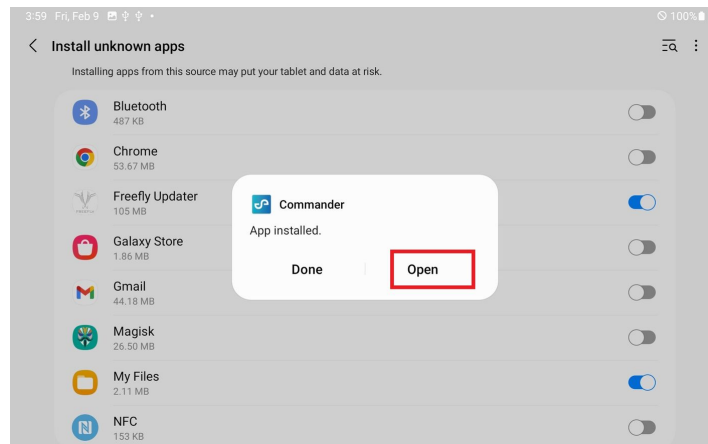
- 6. Open the **My Files** app on your tablet then go to the **Internal storage** section to access the external USB device that contains the APK file.



- 7. Locate and tap on the .apk file then tap **Install** to begin.



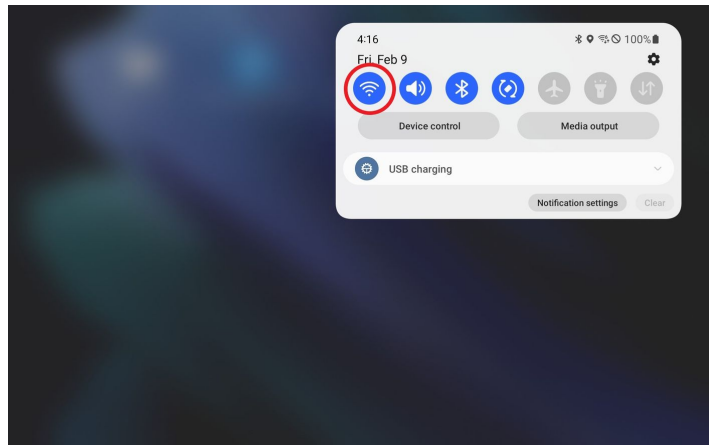
- 8. Follow the installation steps. If necessary, grant the file browser permission to install apps.
- 9. Wait for the installation to complete.



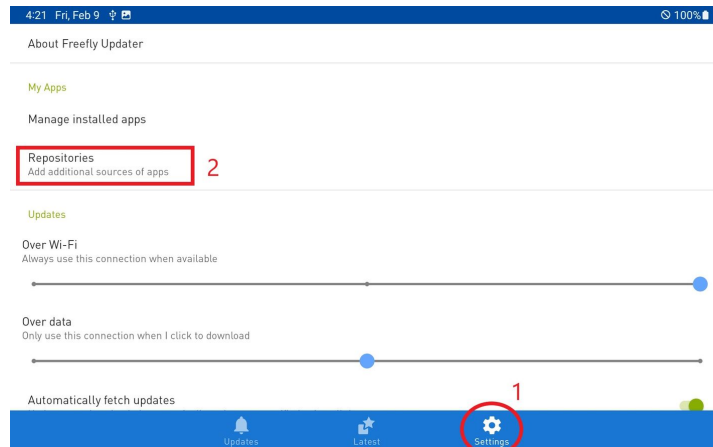


### 3.2 Installing via the Freefly Updater App

1. Hold the power button on the Pilot Pro tablet for 4 seconds. This will power on both the tablet and the controller. Press again when prompted on the controller to complete powering on.
2. Enable Wi-Fi on the tablet and connect to a nearby wireless network or hotspot that has internet access.



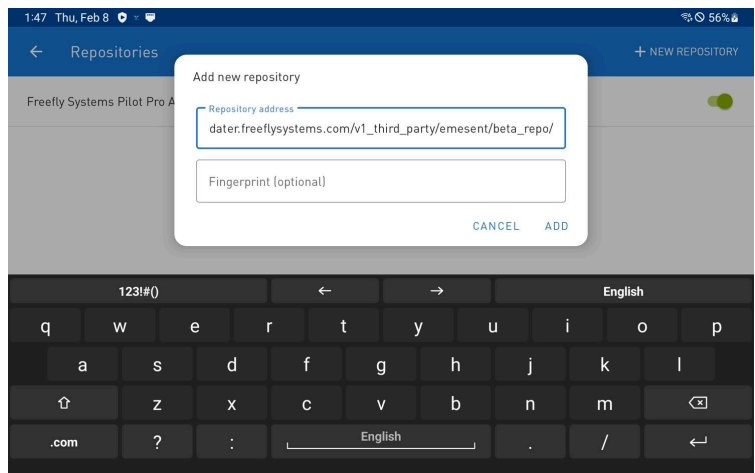
3. Open the Freefly Updater app.
4. Tap the **Settings** icon then go to the **Repositories** menu.



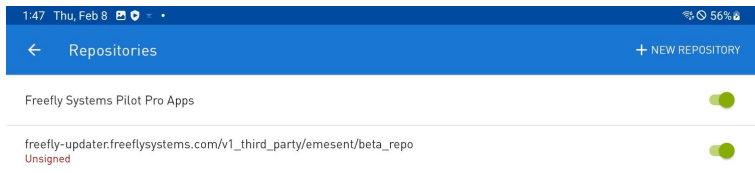


5. Tap **New Repository** on the top right.
6. In the repository address, enter the following address and click **ADD**:  
[http://freefly-updater.freeflysystems.com/v1\\_third\\_party/emesent/stable\\_repo/](http://freefly-updater.freeflysystems.com/v1_third_party/emesent/stable_repo/)

**Note**  
The above address begins with **http://** not **https://** - you will need to clear out the pre-entered text entirely and enter the one above.

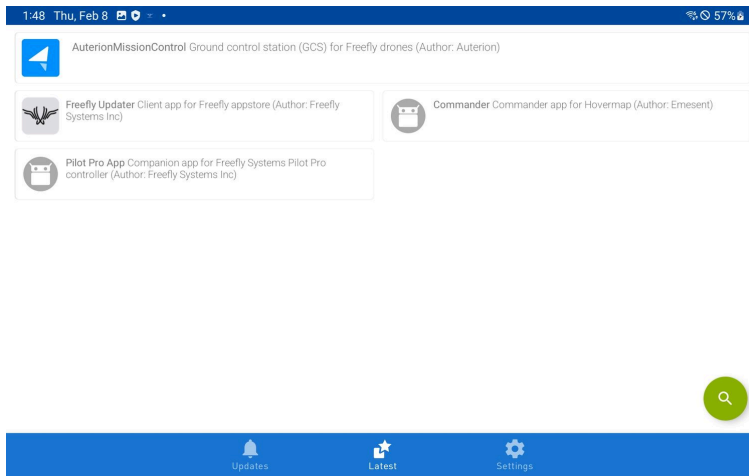


7. Once the new repository has been added, it is marked as "Unsigned" in red. Ignore this and continue with the installation process. Make sure the toggle for the repository is enabled

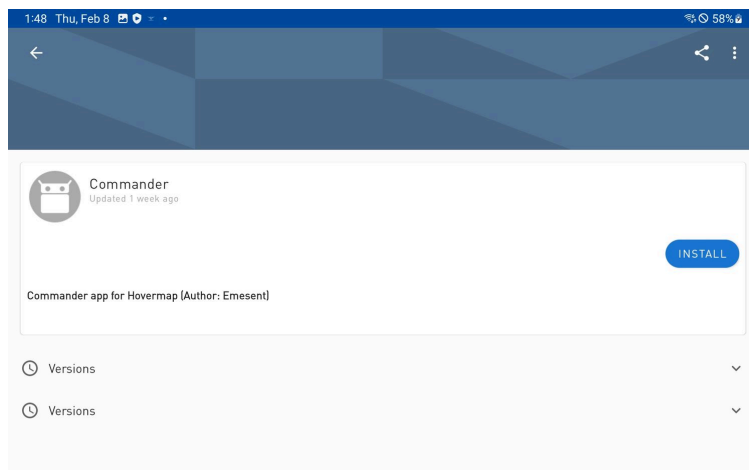




8. Tap the back arrow and go to the **Latest** menu. Pull down to refresh the list of apps.



9. Tap the Commander app entry to open it then tap **Install**.
10. Follow the installation steps and wait for the process to complete.

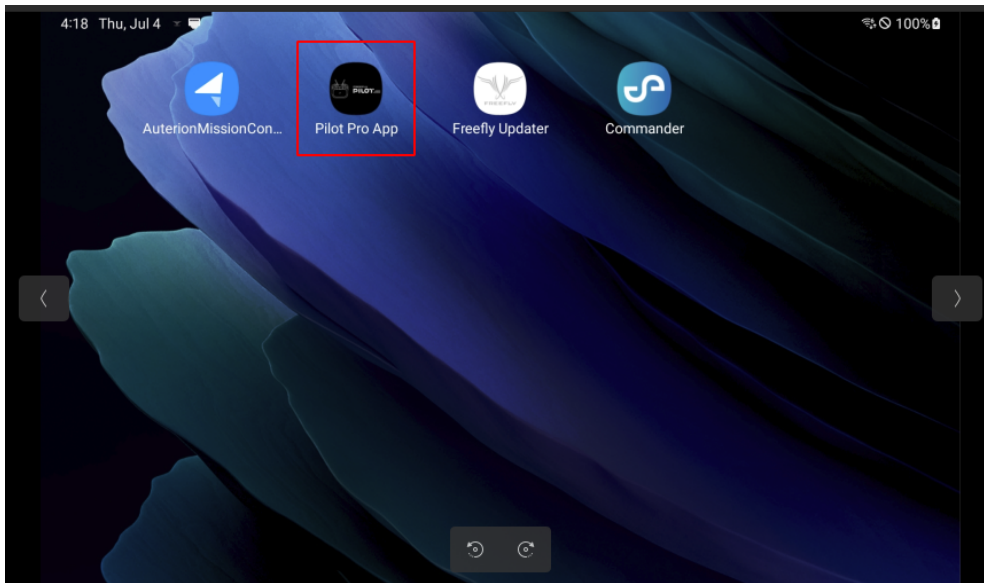




### 3.3 Disabling USBHID Mode

To prevent Emesent Commander from being minimized when using the Hovermap switch (S2) on the PilotPro controller, follow these steps:

1. Open the **PilotPro** app.

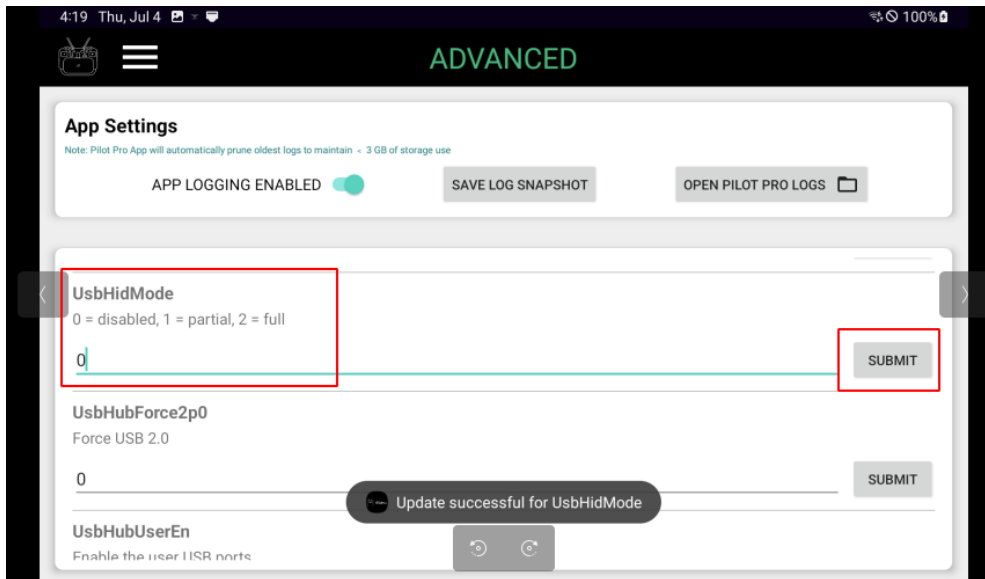


2. Tap the Hamburger button the select **Advanced**.





3. Set **UsbHidMode** to **0** (zero) then tap **Submit**.





## 4. Basic Hovermap ST-X and Astro Operations

### 4.1 Powering on the Hovermap ST-X

1. Press the button at the back of the Hovermap ST-X.
2. Wait as the Hovermap ST-X cycles through several stages. The status LEDs at the back of the Hovermap ST-X will flash red for approximately 30 seconds as the system boots. Hovermap ST-X is ready when the status LEDs show a breathing blue pattern.



#### Note

The Emesent blue **Ready-SLAM** status can take up to a minute.



#### Tip

You can configure Hovermap ST-X to power on automatically as soon as power is supplied through the Web UI.





## 4.2 Setting the Pilot Pro to Hovermap Mode

1. Set **Switch 2 (S2)** on the Pilot Pro controller to **Hovermap/Offboard** mode (highest position away from the pilot).



2. Check that the status screen shows **Position**.



**Note**

The status will change to **Offboard** once the Astro is armed.



## 4.3 Connecting to the Hovermap ST-X

**Note**

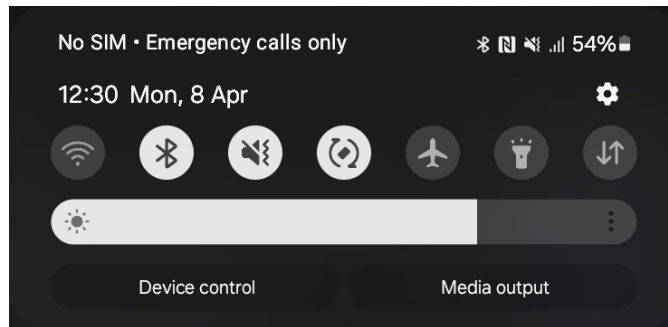
Emesent Commander communicates directly with the Hovermap ST-X via the Freefly PilotPro controller. Connection to the Hovermap's Wi-Fi network is not required.

1. Power on the Hovermap ST-X.
2. Hold the power button on the Pilot Pro tablet for 4 seconds. This will power on both the tablet and the controller. Press again when prompted on the controller to complete powering on.





3. Turn off the Wi-Fi on the Pilo Pro tablet.



**⚠ Important**  
 As stated above, communication with the Hovermap ST-X is done via the controller. The Wi-Fi on the Pilot Pro tablet **MUST BE DISABLED.**

4. Launch Emesent Commander then tap **Change Hostname** at the top of the landing page.
5. In the dialog box that displays, set **Hostname** to **192.168.144.101**.
6. Tap **Confirm**.
7. Once the connection is established, you will hear an audio message indicating that you are “Connected” and the mission tiles are enabled.

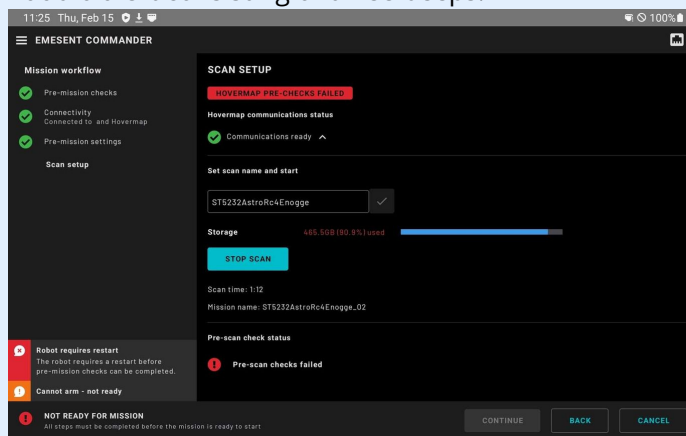
**📘 Note**  
 Due to interference caused by the Pilot Pro controller to nearby Wi-Fi connections, the Observer Mode feature is only available via an Ethernet connection when using the Freefly Astro. For more information on using the Observer Mode, refer to the <https://4999118.hs-sites.com/en/knowledge/hovermap-mapping-and-autonomy-payload-user-manual>.



## 4.4 Initial Hovermap ST-X and Astro Startup

1. Power on the Hovermap ST-X and the Astro.
2. Ensure the **Hostname** is set to **192.168.144.101** as per the instructions outlined in the "Connecting to the Hovermap ST-X" section.
3. Start a scan to allow Hovermap to initialize settings on Astro.

**Note:** This initial scan will fail as indicated in the image below. You will also be notified via an audio alert consisting of three beeps.



3. Turn off the Astro.
4. Turn off the Pilot Pro controller.
5. Turn off the Hovermap ST-X on.
6. Turn everything back on and wait for the "**Hovermap Ready**" alert sound indicating you are ready to fly.



## 4.5 Resetting the Astro

If the Hovermap ST-X is disconnected from the Astro, reset the aircraft to its default parameters.

1. Open Auterion Mission Control (AMC).
2. Activate **Advanced Mode** by tapping the AMC icon 6 times and confirming at the pop-up screen.



### Note

The icon will change to an outline when **Advanced Mode** is active.

3. Connect AMC to the Astro.
4. Go to **Vehicle setup** > **Parameters** > **Tools** then tap **Reset to vehicle's configuration defaults**.
5. After resetting, go to **Vehicle setup** > **Parameters** > **Tools** then tap **Reboot Vehicle**.
6. Calibrate sensors as required.

## 4.6 Powering on the Astro

1. Extend the arms of the Freefly Astro to allow you to access the battery bays. Each arm must be extended and locked into place.





2. Place both batteries on top of the Freefly Astro and slide them into place. Firmly press to ensure proper connection. Each battery will make two clicks when installed.



**Note**

The Freefly Astro will not arm if only one battery is installed.

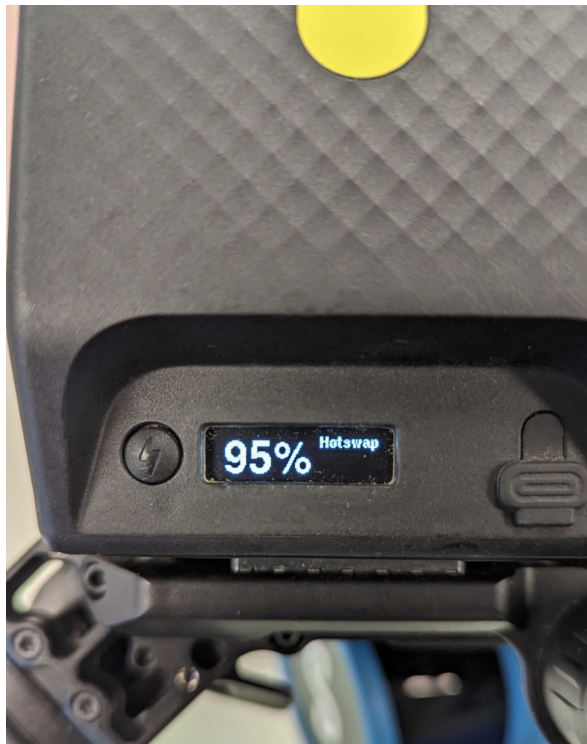




3. Press the power button on either of the batteries twice to power the aircraft.



The battery display should read Hotswap after the second press.





The second battery automatically powers up (and also shows Hotswap on the display) when the first battery is turned on. The green and red LEDs should light up at the end of the aircraft's arms.



## 4.7 Arming the Freefly Astro

1. Push the left control stick downwards and towards the center of the controller for three (3) seconds.



### Note

For safety reasons, The Freefly Astro will disarm 10 seconds after arming if no input is detected.

2. Wait until the status LEDs at the end of each arm of the Astro increase in brightness and the motors start to spin. The status screen on the Freefly Pilot Pro changes from **Position** to **Offboard**. This indicates that the Hovermap ST-X has control of the aircraft.





**Note**

The Freefly Astro and Hovermap ST-X are now ready to fly. To learn more about Hovermap operations, refer to the <https://4999118.hs-sites.com/en/knowledge/hovermap-mapping-and-autonomy-payload-user-manual>.

## 4.8 Disarming the Freefly Astro

1. Continue to hold the throttle down for two seconds.
2. Wait until the status LEDs at the end of each arm dim and the motors stop.



## 4.9 Powering down the Freefly Astro and Hovermap ST-X

1. Hold down the power button on either of the batteries for approximately five (5) seconds
2. Wait until **Entering Standby** is shown on the battery status screen.



### **Note**

The Hovermap ST-X will automatically shut off when the Freefly Astro is powered down.



## 4.10 Powering Down the Pilot Pro Controller

1. Hold down the power button on the tablet until the power menu appears then select **Shut Down**.
2. The Pilot Pro controller should power down with the tablet. If this does not occur, hold down the power button on the controller until the progress bar on the status screen reaches the end.





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