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THE HOVERMAP WORKFLOW

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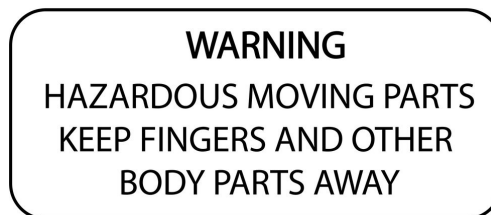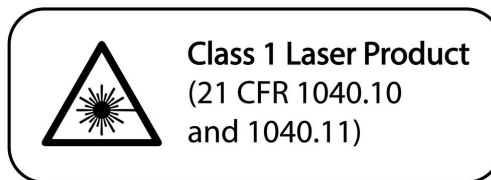
By using this product, you hereby agree that you are solely responsible for your own conduct while using it, and for any consequences thereof. You also agree to use this product only for purposes that are in accordance with all applicable laws, rules and regulations.

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.

Warnings

- This document is legally privileged, confidential under applicable law and is intended only for the use of the individual or entity to whom it is addressed. If you have received this transmission in error, you are hereby notified that any use, dissemination, distribution or reproduction is strictly prohibited. If you are not the intended recipient, please notify the sender and delete the message from your system.

- 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.

Class 1 Laser Product
(21 CFR 1040.10
and 1040.11)

WARNING
HAZARDOUS MOVING PARTS
KEEP FINGERS AND OTHER
BODY PARTS AWAY

Contents

This section outlines the basic operating procedure for Hovermap. For simplicity, we will focus on using Hovermap in Mapping mode.

To ensure a smooth and successful mapping mission, you must have the following essentials in place:

- **Fully-charged Hovermap Battery:** Make sure that the Hovermap's battery is fully charged. A drained battery could result in a premature end to your mission or data loss.

- **Emesent Commander Installed:** Ensure that Emesent Commander application is installed on your tablet. The app should be up-to-date with the latest software version to guarantee optimal performance.

- **Full-charged Android Tablet:** Your tablet should also be fully charged to prevent any interruptions caused by a sudden loss of power.

> ⓘ **Note**
> If the status lights do not follow the sequence outlined in this section, contact Technical Support Services with a description of Hovermap's status and the task you were trying to perform at the time.

1.   Step 1: Connect power to Hovermap

Connect Hovermap to a battery or other approved power source. Hovermap doesn't come with an internal battery, so it will either need to be platform-mounted or powered by an external battery.

> ❗ **Warning**
> Never unplug the battery while Hovermap is running. If you do this, your scan data may be corrupted.

2. Step 2: Start Hovermap

Press the power button to power on Hovermap. The LED will change from OFF to a flashing red indicating that the Hovermap is initializing.

> ⚠ **LED status:** **RED: FLASHING**

3. Step 3: Wait until Hovermap is ready

After completing initialization, the status LEDs will flash orange then switch to a slow pulsing Emesent blue. This indicates that the Hovermap is now ready to scan. Ensure that Hovermap is positioned in a way that allows the LiDAR sensor to rotate freely.

> ⚠ **LED status:** **EMESENT BLUE: SLOW PULSE**

If, after 30 seconds, the status LEDs are not a slow pulsing blue, the start-up checks have been unsuccessful. If this happens, please restart your Hovermap.

4. Step 4: Connect to Hovermap using Emesent Commander

Use the Emesent Commander application to access the Mission workflow.

1. Launch the application then tap either **Connect to Hovermap** or the red Wi-Fi icon on the top banner.
2. Look for **ST_xxxx**, **HVM_xxxx**, or **LRR_xxxx** (where **xxxx** = Hovermap device to connect to) in the list of networks.
3. Select that network then enter the Wi-Fi password (**hovermap**).
4. Once the connection is established, you will hear an audio message indicating that you are "Connected". The red banner is removed from the landing page.

5. Step 5: Complete pre-mission checks

The Mission Workflow in Emesent Commander guides you through the process of starting the scan. Complete the required mission checks then tap the **Start Scan** button in the Scan setup page of the Mission Workflow.

The LiDAR sensor will start spinning. The status LEDs will start by flashing green, and will then change to a slow green pulse. When the status LEDs start to pulse, keep Hovermap still for the first 10 seconds. This gives Hovermap time to start to build a map and to position itself within its environment.

Refer to the Operator Workflow section for more information.

> ⚠️ **LED status:** **GREEN: SLOW PULSE**

> 🔺 **Warning**
> This step is essential! If Hovermap is moved before it has collected enough points to start mapping its environment, it won't be able to create a map successfully.

6. Step 6: Perform the scan

Once you have given Hovermap time to position itself, you can start your scan. Move as slowly as possible, and focus Hovermap as much as you can on your area of interest. For best mapping results, it is recommended to "Close-the-Loop", that is, to stop the scan around the same area where it was started.

> ⚠️ **LED status:** **GREEN: SLOW PULSE**

7.   Step 7: Stop the scan

In the Emesent Commander app, tap the **Stop Scan** button (or short press the power button) to end the mission. The LiDAR sensor will stop spinning after a few seconds, and the status LEDs will return to a slow pulsing blue.

Hovermap is now ready for another scan, or for data retrieval.

> ⚠   **LED status: EMESENT BLUE: SLOW PULSE**

8.   Step 8: Download the data

To download the data from Hovermap, insert a USB flash drive into the USB port at the back of the unit.

The status LEDs will change to a flashing light blue while the data is being transferred to the USB flash drive. All data that has not previously been transferred will be copied to the USB flash drive.

> ⚠   **LED status: LIGHT BLUE: FLASHING**

> ⓘ   **Note**
> - You can only download data when Hovermap is in standby (a slow pulsing blue).
> - To retrieve data, the USB flash drive must be formatted in an exFAT file format.

9.   Step 9: Remove the USB flash drive

Once the transfer is complete, the status LEDs will return to a slow pulsing blue. The USB flash drive can now be removed.

> ⚠ **LED status:** **EMESENT BLUE: SLOW PULSE**

> ⓘ **Note**
> Scans are stored internally until they are deleted manually.

10.   Step 10: Shut down Hovermap

Press the power button for at least 4 seconds (or until the status light turns off) to shut down Hovermap.

> ⚠ **LED status:** **OFF**

11.   Step 11: Process the data

Once the data has been retrieved from Hovermap, it is in a raw state and will need to be processed. Use Emesent Aura to create a rich 3D point cloud.

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