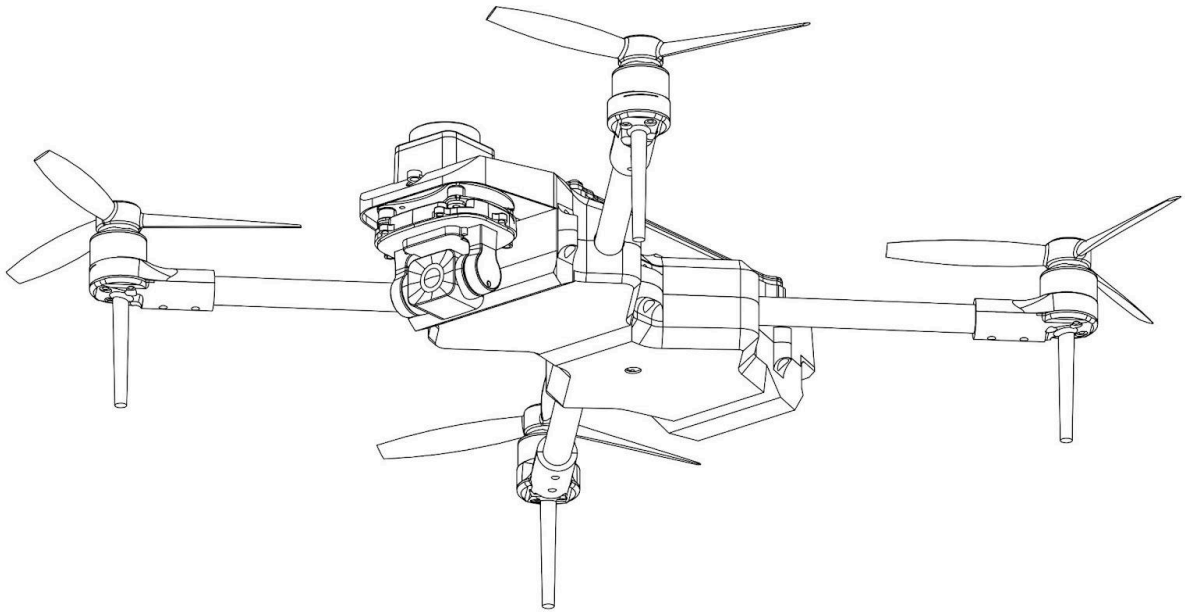
Suparna Indoor Flight Considerations

v1.1 *Sep 26, 2024*

iDronam



MENTHOSA

SOLUTIONS

💡 **Searching for Keywords**
Search for keywords such as “battery” and “install” to find a topic. Press Ctrl+F on Windows or Command+F on Mac to begin a search.

💡 **Printing this Document**
This document supports high resolution printing.

Revision Notes		
v1.0	23-May-2024	Initial Version
v1.1	26-September-2024	Updated Indoor flight precaution

Using this Manual

Legend

🛑Warning ❗ Important 💡 Hints and Tips 📘Reference

Read Before the First Flight

Read the following documents before using the **Suparna**:

1. Disclaimer and Safety Guidelines
2. Quick Start Guide
3. User Manual

❗ It is recommended to watch all tutorial videos on the official Menthosa website and read the disclaimer and safety guidelines before using for the first time. Prepare for your first flight by reviewing the quick start guide and refer to this user manual for more information

🛑 The operating temperature of this product is 0° to 40° C. It does not meet the standard operating temperature for military grade application (-55° to 125° C), which is required to endure greater environmental variability. Operate the product appropriately and only for applications that meet the operating temperature range requirements of that grade.

Content

Indoor Flight Considerations

This section tells you about indoor flight Environment Setup.

Indoor Flight Considerations

Indoor Flight Environment Requirements

These are the safety considerations which are recommended when flying the drone in an indoor environment/research lab. These will help the drone to achieve its optimal performance.

❗ Whenever in **indoor mode**, once the drone is **powered ON.** Do not ***Displace the drone manually(move the drone by hand)***. As this will distort the drone's map and once the map is distorted this will lead to the drone's localization algorithm to malfunction and will lead to an **eventual CRASH.**

💡 If you want to displace it, first remove the battery, place the drone to the new place and then insert the battery and ***continue with the flight.***

Drone's obstacle avoidance triggers when at any point the distance to any obstacle becomes **less than or equal to 1.5m**. At this point the drone will fly away in the opposite direction to the obstacle detected and will maintain a **distance of greater than 2 meters**.

❗ Drone should not be kept **Hovering** at a single place for **more than 5 minutes**, as the drone internals do not get enough air for cooling, this will result in unexpected movements.

❗ Drone is being flown in a confined area, any **external turbulent air** will cause the drone to show **erratic behavior** as the drone will try to counter forces caused by external turbulences. To avoid this, whenever the drone flight is to be done, **Turn OFF** all the fans, exhausts and any other source of turbulent air. Air Conditioners are not an issue and they can be left as is.

The drone will fly at an **acceleration of 1 m/s^2**. This means the drone will have an immediate response to the obstacle detection and avoidance, thus the drone may show

some unexpected behavior from the pilot's perspective. Due to the momentum of the drone it may be seen as if the drone is moving unexpectedly but it is all in the operating range of the drone. **The Pilot must not panic when observing this situation.**

❗If the drone flies in an unwanted direction, the pilot must not panic and should take control of the drone and if the drone is still unresponsive to pilot's input, switch to **LAND mode**.

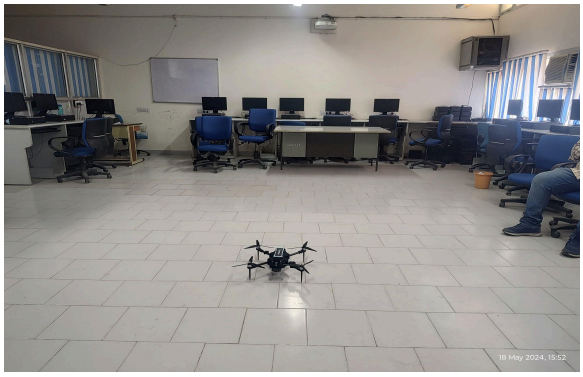
🛑After all of this, still drone behaves in a random/erratic manner the pilot should disarm the drone in mid-air. Please be aware that this is an **emergency stop to the drone motors which will cause damage to the drone and may cause injuries.**

For optimal performance the drone should be flown in an area having dimensions of at least - **7.5m x 5m**, height of at least **3m** and obstacles are at the minimum.

The drone can be flown in area smaller than the mentioned dimensions but drone performance will be not optimal as it will not have much clearance for avoiding any obstacle and if the drone goes into a state of oscillation that is - the clearance of **any 2 opposite directions is less than 1.5m**, the drone in order to avoid collision from one direction will try to move in opposite direction and there the distance **is already less than 1.5m** thus a **state of oscillation** will occur.

To resolve state of oscillation - **Land the drone**, remove the battery and make the flying area larger before proceeding further.

💡For reference we have attached some images of indoor drone environments/labs.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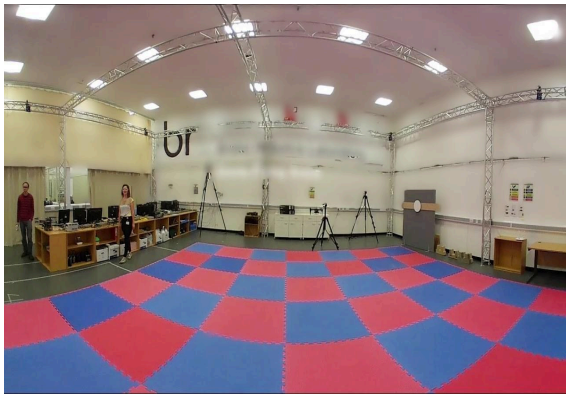

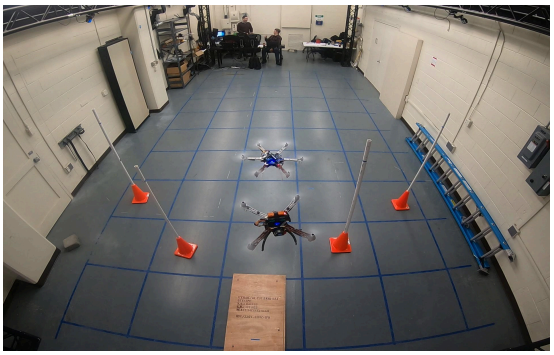

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