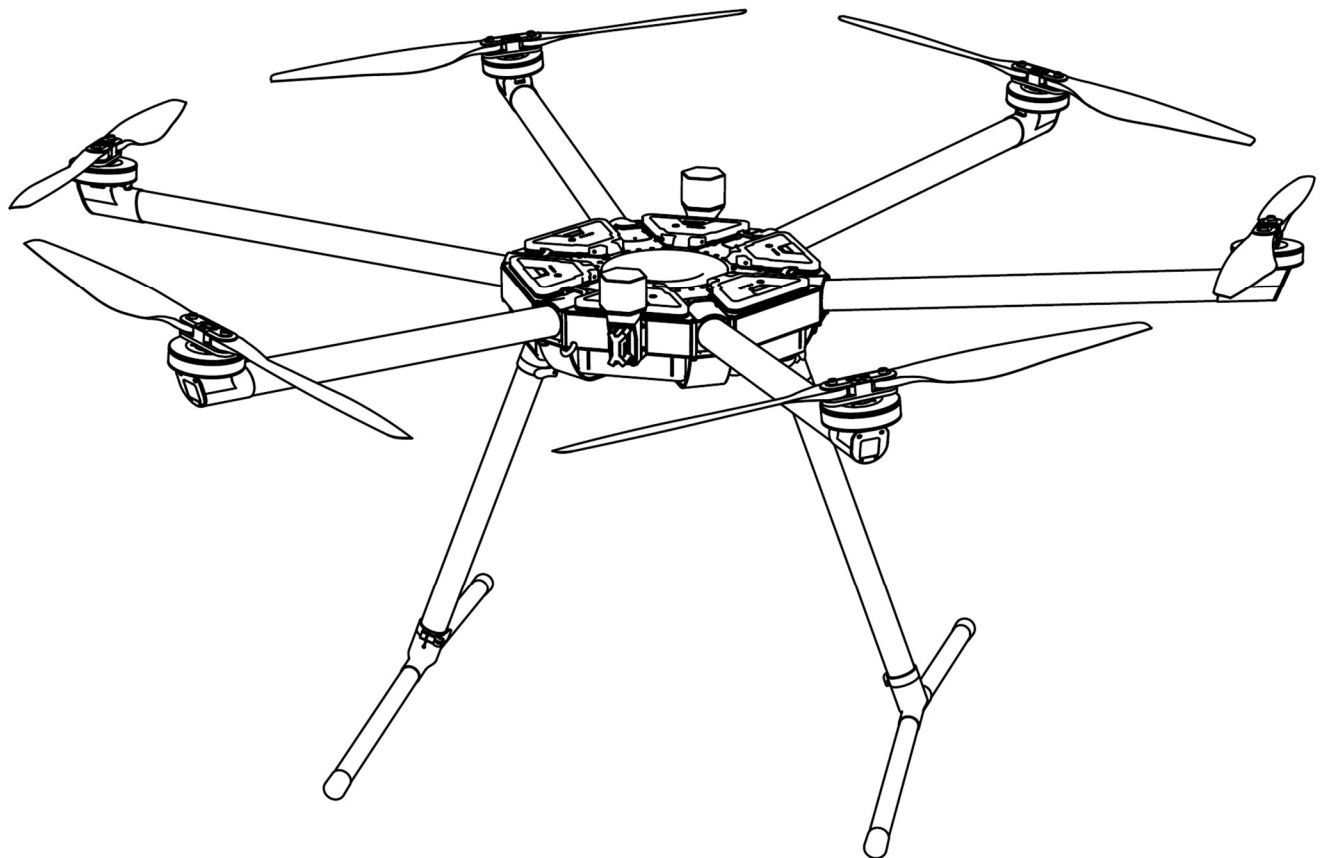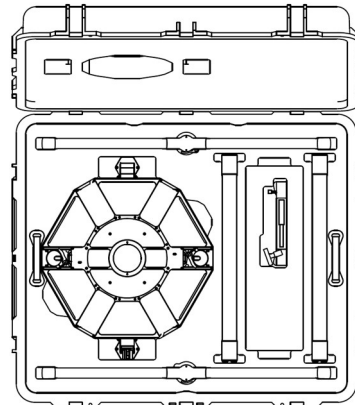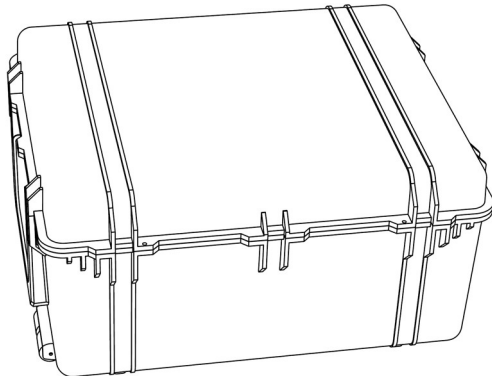# starcopter

Quick Start Guide
V1.0

starcopter HIGHDRA

1. ASSEMBLY

Step 1: To open the transport case, unlock all the seven closures of the transport case and open the lid.

Step 2: To prepare the landing legs, first unlock the leg fasteners on the UAV body. Take the vertical piece of the landing leg out and insert it into the body. Secure the landing leg. Repeat this step for the second vertical piece of the landing leg. Now attach the horizontal parts of the landing legs to the vertical parts and make sure the fasteners are secured.
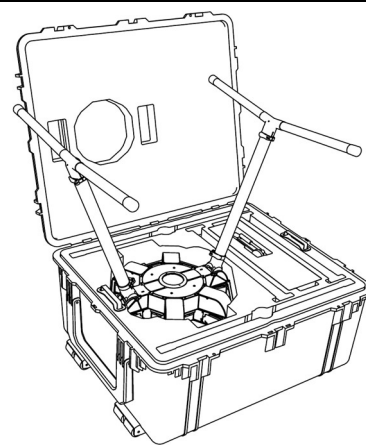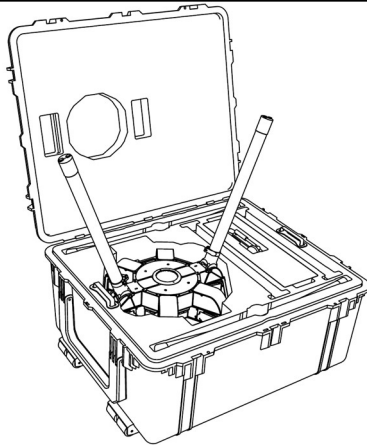
Step 3: Remove the UAV from the transport box and place it on the landing legs. Make sure you pull the UAV out level to remove it being blocked or getting damaged. Remove the top layer of the transport box that the UAV was in to access the arms and propellers. Remove the transport foam that is on the arms.
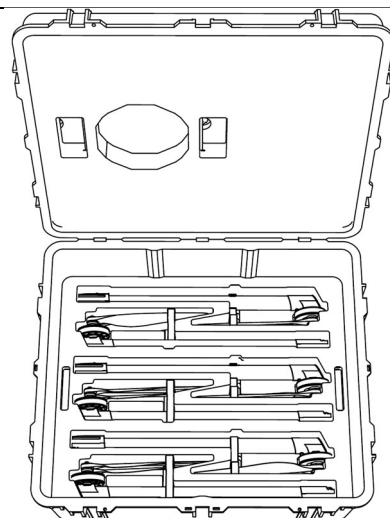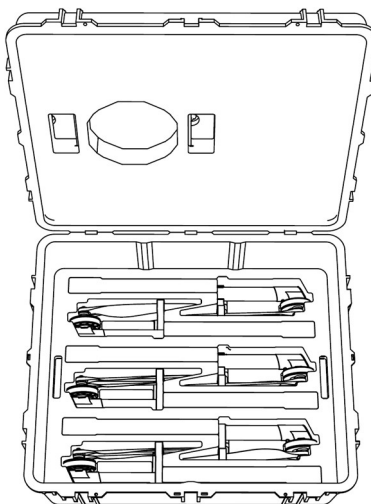
Step 4: To install the arm into the body, open the arm lever, take an arm from the copter case, check the number on the arm, and insert it into the slot with the corresponding number on the UAV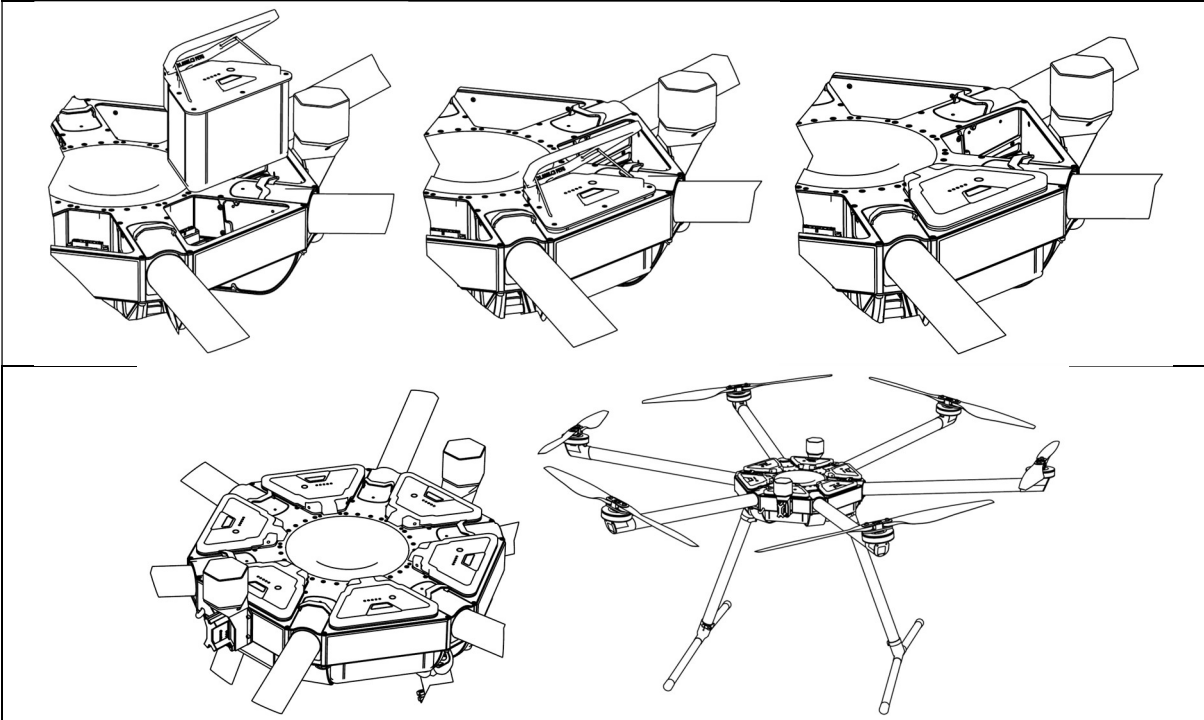 body. The arm has to be inserted very flatly and not angled, otherwise it won't be able to be inserted. Gently press the arm into place and press down the handle to fasten it. Repeat this process for all arms.
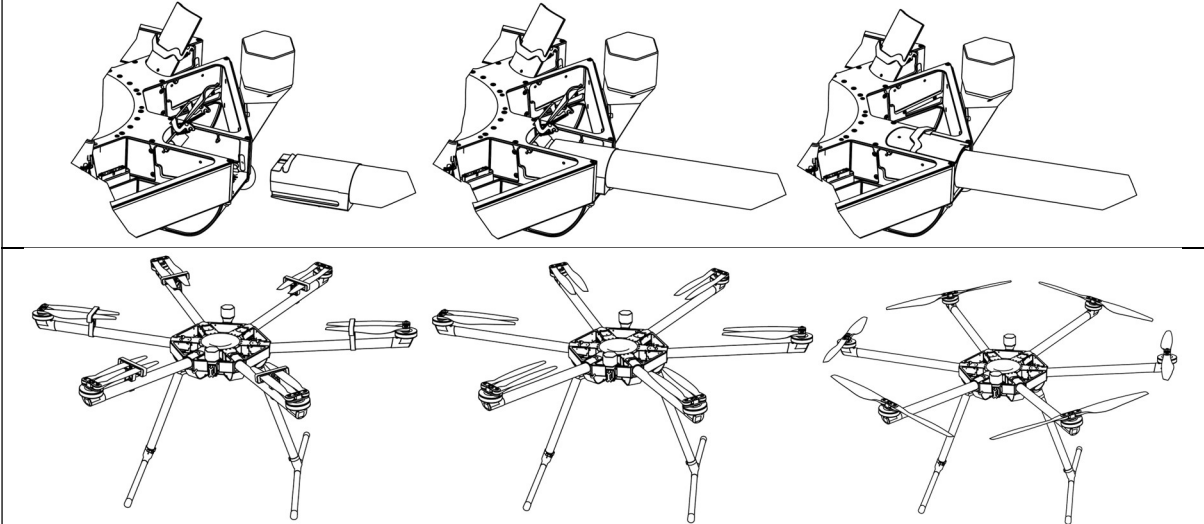
Step 5: Retrieve the batteries from the battery transport case and ensure that each battery pack you use has the same Set-ID as the other batteries. Press on the button to lift the handle, gently insert it into the UAV and close down the handle. Repeat for all batteries.

2. BOOTING OF THE UAV

Step 1: Turn on the batteries, wait until all of them are engaged.
Step 2: Turn on the Dronetag Beacon. While charging, it lights blue. Click the button on the bottom for a second and it will light green and orange. Wait until it flashes white.
Step 3: Turn on the RC.
Step 4: Navigate to the AMC Safety Setup. Click on the AMC Button on the top left. Click on System Overview. Click on Safety. Ensure that the values align with the recommended Failsafe Settings.
Step 4: Navigate to the AMC Pre-Flight Checklist. Click on the AMC Button on the top left. Click on System Overview. Click on Safety. Ensure that you complete every point.
Step 5: Go through the functional checklist and verify that you check all items.
Step 6: Ensure that the takeoff area is clear of people, obstacles or animals. Ensure that the conditions follow named limitations in this manual and legal compliance. Arm the copter with the arming gesture. Take the left stick to the bottom right and hold it there for a second. Once the copter is armed, gently move the stick to the middle position. You can now perform the mission.
Step 7: After landing safely, disarm the copter using the disarm gesture, take the left stick to the bottom left and hold it there for a few moments.

3. ARMING AND DISARMING

The starcopter HIGHDRA can be armed and disarmed. When disarmed, the motors and actuators are completely unpowered, ensuring the UAV is safe to handle. In contrast, when armed, the UAV is fully powered, and the motors or propellers begin spinning, making this state potentially dangerous.

To arm or disarm the UAV, the remote controller can be used with specific **arming gestures**:

- To **arm**, move the left stick to the bottom-right position.

- To **disarm**, move the left stick to the bottom-left position.

For additional safety, the UAV features an **automatic disarming system**. If the UAV does not take off within a set period after being armed, it will automatically disarm. Similarly, after landing, if the UAV is not manually disarmed, it will automatically power down after a short delay. These precautions minimize the risks associated with leaving an armed UAV stationary on the ground.

3.1 KILL SWITCH

When the kill switch is activated, the UAV cannot be armed. If the UAV is already armed, activating the kill switch will immediately disarm the vehicle. Do not use the kill switch while the UAV is in the air, as it will cause an immediate loss of control and will result in a crash. The kill switch must only be used in an emergency where immediate disarming is necessary for safety.

4. DISASSEMBLY

Step 1: To disassemble the UAV, first remove the batteries from the copter. To do that, first press the battery handle button so that the handle is released. Pull the battery out vertically using the handle and place the battery in the box and close the handle. Repeat for all batteries. Turn off the Dronetag.
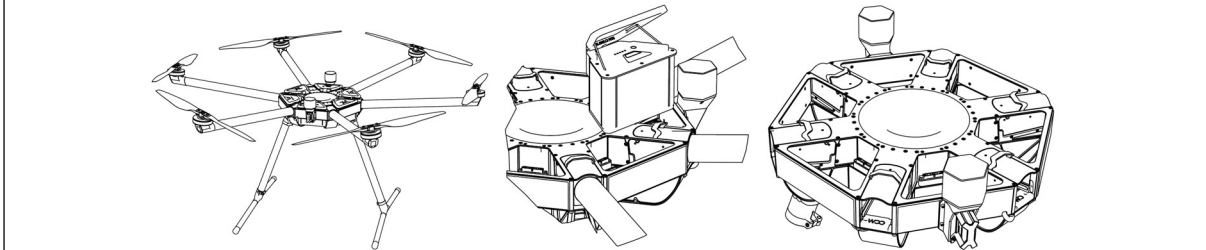

Step 2: Fold the propellers and attach the propeller guards to the propellers. To remove the propeller, click on the mechanism and gently open it up while holding the arm. Gently remove the arm from the body and put it into the transport box. Repeat for all arms. Close all locking mechanisms. Remove the payload according to the payload information sheet.
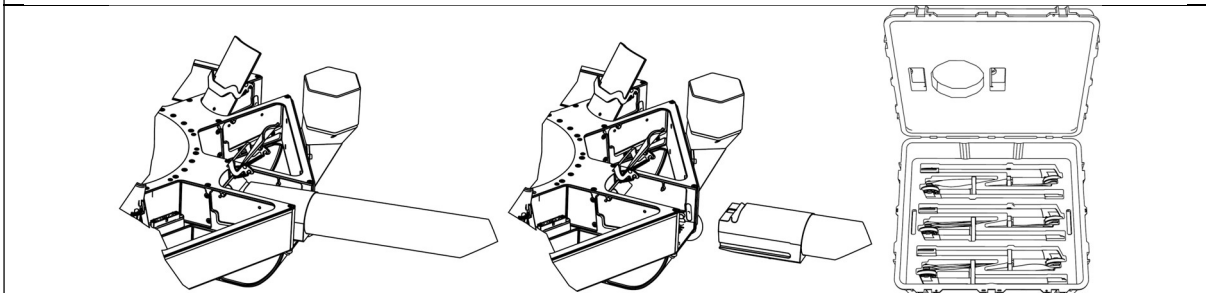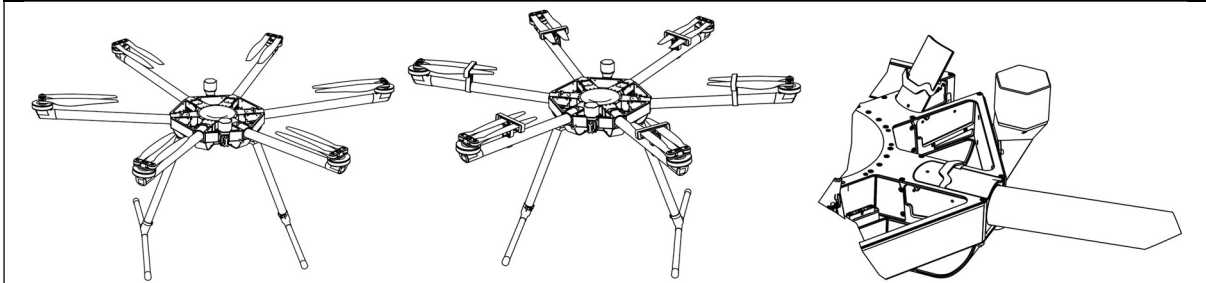
Step 3: Add the foam propeller transport protectors and put them on the arms again. Ensure that all propellers are not higher than the surrounding foam layer. Add the top layer of the transport box again. Put the body back into the transport box. Insert it as level as possible to prevent damage. Remove the legs from the body, disassemble them and place everything, including the RC, back in the transport box. Close the transport box.
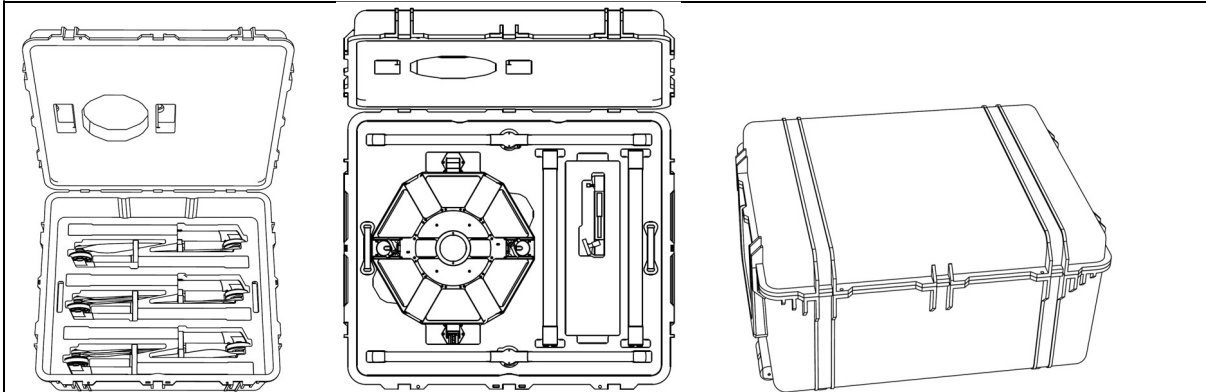
5. REMOTE CONTROL
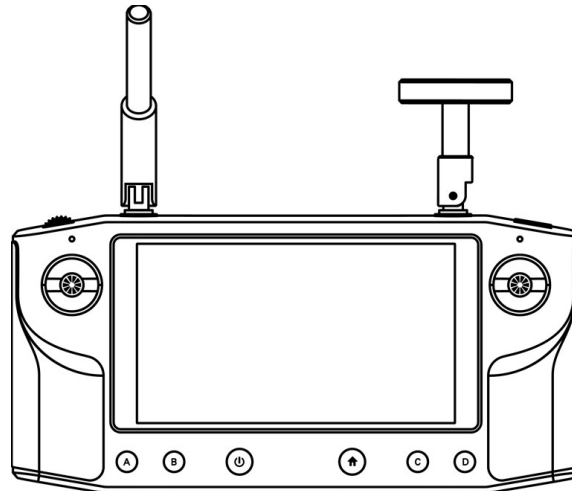
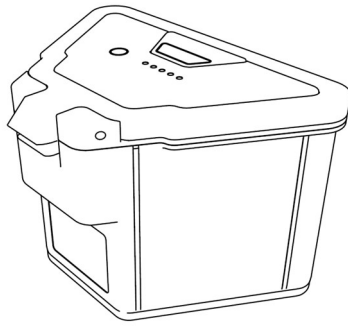| Button/Joystick	Description
Stick (left)	X-axis: Yaw Y-axis: Throttle
Stick (right)	X-axis: Roll Y-axis: Pitch
Button A	Position Mode
Button B	Altitude Mode
Power button	Turn on/off the RC
Home button	Return to Launch (RTL)
Button C	Kill
Button D	No function
Upper right button	No function
Upper Left Wheel	No function
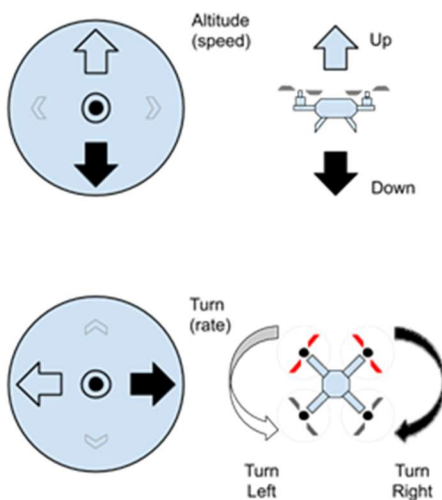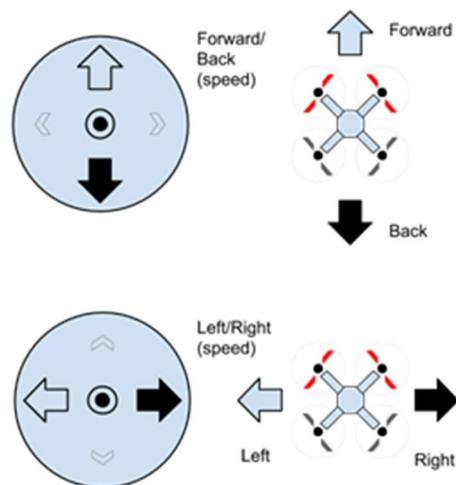
6. BATTERY

starcopter
HIGHDRA® Power Pack
Rechargeable Lithium Ion Battery
21.6 V   12.6 Ah   272 Wh

MFG: XXXX-XX-XX
SN: XXXX XXXX   Set-ID: XXX

🛑 Never mix batteries with different Set-IDs or color-codes.

6.1   INSERTING / REMOVING THE BATTERY

To install the batteries into the UAV, first press the battery unlocking button so that the handle is lifted. Gently lower it into the one of the free battery slots and press the handle down until it locks into place. To remove the battery, press the battery unlocking button so that the handle is lifted. Gently take the battery out of the copter using the battery handle.
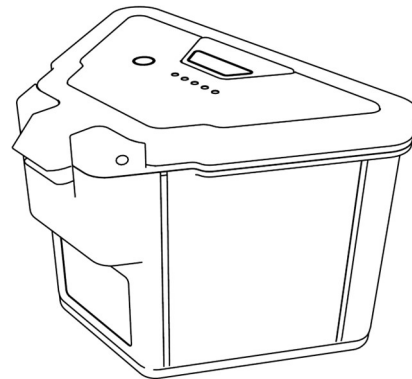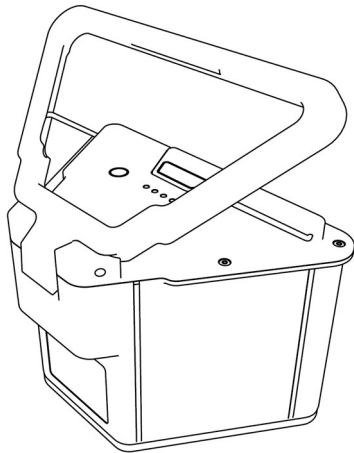
To power the batteries on, hold the power button for a second. Powering on a single battery in the UAV will also turn on all other batteries. To deactivate the batteries, remove them from the UAV or charger and they will revert to the idle state.

6.2 BATTERY STATES

Idle:

Pattern	State of Charge
○●●●●	≤ 25%
○○●●●	≤ 50%
○○○●●	≤ 90%
○○○○●	> 90%

hen the pack is outside the copter or charger, it is in the idle state. The LEDs will be off, and the output is disabled. The pack's state of charge can be displayed by pressing the button. The battery charge level LEDs will show the (voltage-based) state of charge in white color. The battery status LED will remain off. After the button is released, the pack will revert to the idle state after one second-

Pattern	Description
●●●●●	Idle
●●●●○	Button pressed
●●●●🟡	Standby

Standby:

When the pack is **inside the copter or charger**, it initially is also in idle state. It can be activated by holding the power button pressed for one second. The battery status LED will light up as soon as the button is pressed to provide visual feedback to the user. The pack will transition to standby state when the button is pressed for a second. In standby state, the pack provides limited output power. The battery status LED will turn amber, indicating the user can release their finger from the button. The pack will precharge the charger/copter, which will cause the other packs to also enter standby. Once voltage levels have stabilized and no short-circuit was detected, all packs will transition to engaged state.
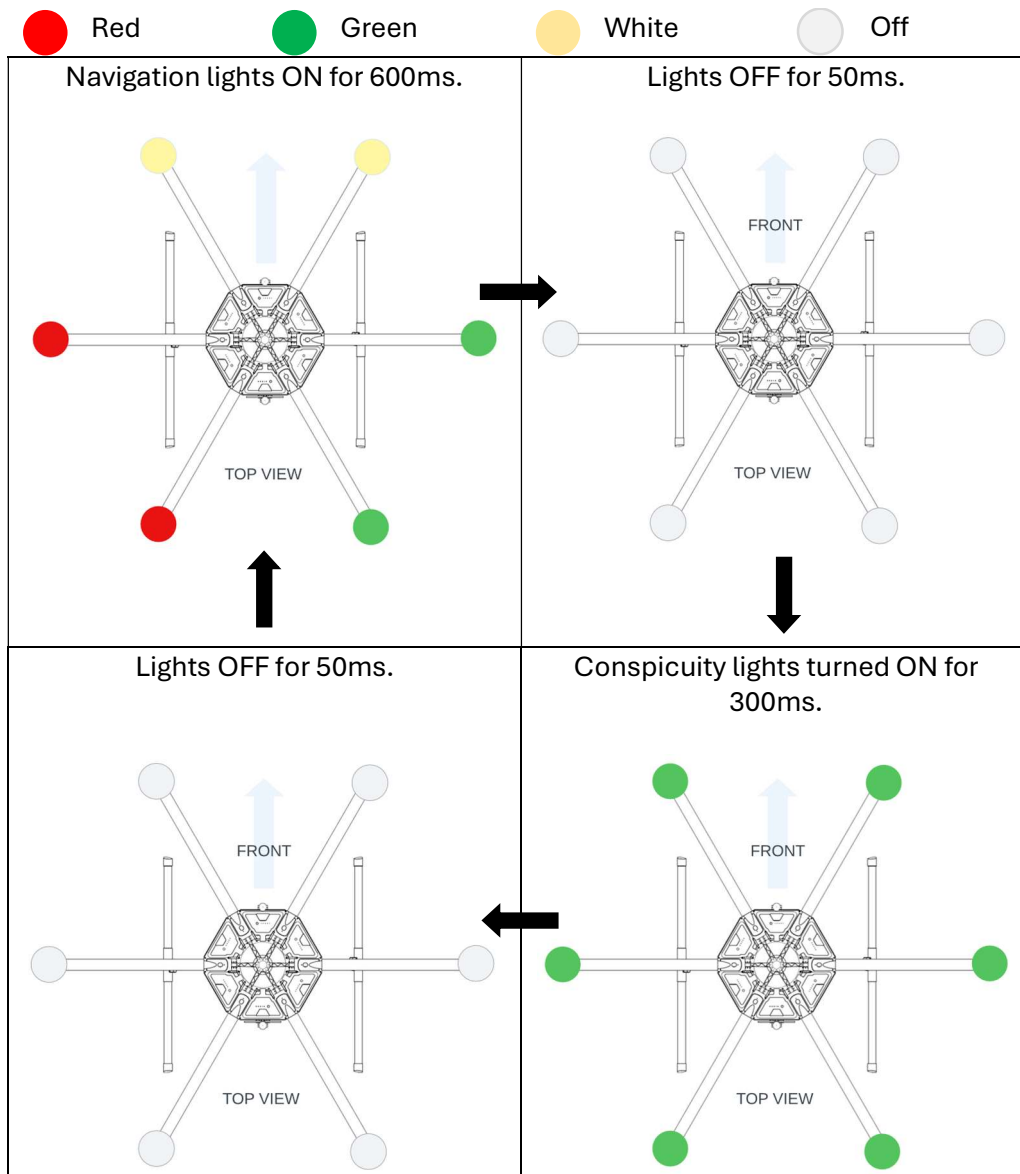
Engaged:

Pattern	State	State of Charge
○●●●🟢	Engaged	≤ 25%
○○●●🟢	Engaged	≤ 50%
○○○●🟢	Engaged	≤ 90%
○○○○🟢	Engaged	> 90%

In engaged state, the pack is fully operational. The main power FETs are active, and the pack is ready for flight operations or charging. The LEDs will show the state of charge on the four leftmost LEDs and the battery status LED will be green.

Battery Error

Pattern	State	Description
🔴🔴🔴🔴●	Overvoltage	Pack voltage has exceeded a safe threshold, likely while charging.
●🔴🔴●●	Overload	Charge or discharge current has exceeded the safe operating area.
●🔴●🔴●	Other	Catch-all for undefined errors. This includes short circuit protection.

7. LIGHTS

| ● Red | ● Green | ● White | ○ Off |

Navigation lights ON for 600ms.	Lights OFF for 50ms.
TOP VIEW	FRONT / TOP VIEW
Lights OFF for 50ms.	**Conspicuity lights turned ON for 300ms.**
FRONT / TOP VIEW	FRONT / TOP VIEW

8. FLIGHT MODES

Flight Mode	Description
Position Mode	Helps maintain the UAV'S horizontal and vertical position using GPS and barometric sensors. It also assists with lateral movements by controlling lateral speed. The mode derives its name from the UAV's ability to hover in place when the control sticks are centred.
Altitude Mode	Altitude Mode allows the operator to control the horizontal movements of the UAV while maintaining its vertical position. Keeping both sticks centered maintains the UAV's altitude and a level attitude, but it will continue moving forward with existing momentum until slowed by air resistance and it may drift in response to wind and other forces.
Return to Launch	Enables the UAV to automatically navigate back to a designated home location or a pre-set safe landing point.
Takeoff	Do not use!
Land	Directs the UAV to descend and land at the location where the mode was engaged. Upon completing the landing sequence, the vehicle will disarm automatically by default, ensuring a safe and controlled landing.
Mission	Enables a UAV to autonomously execute a predefined flight plan or mission. Mission Mode operates automatically, requiring no user intervention once engaged, but it does allow manual overrides if necessary.