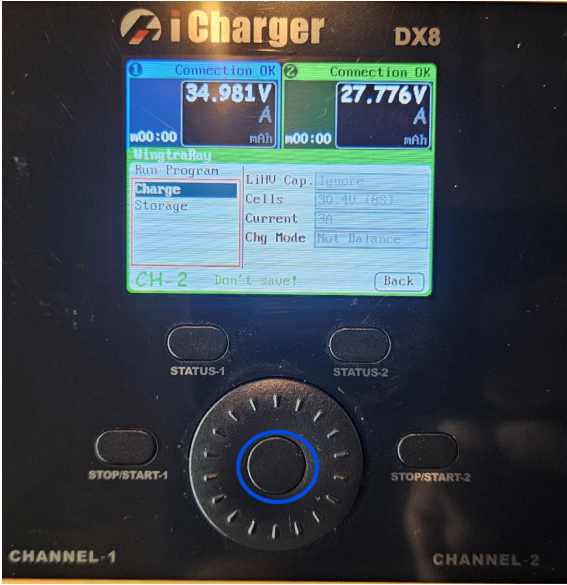
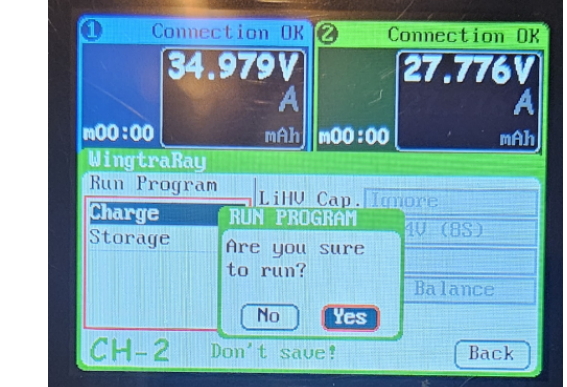
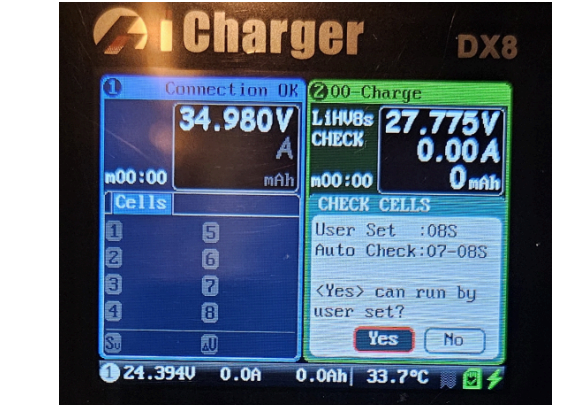
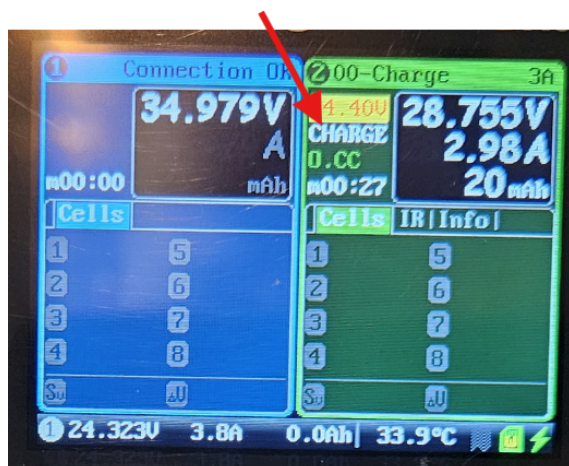


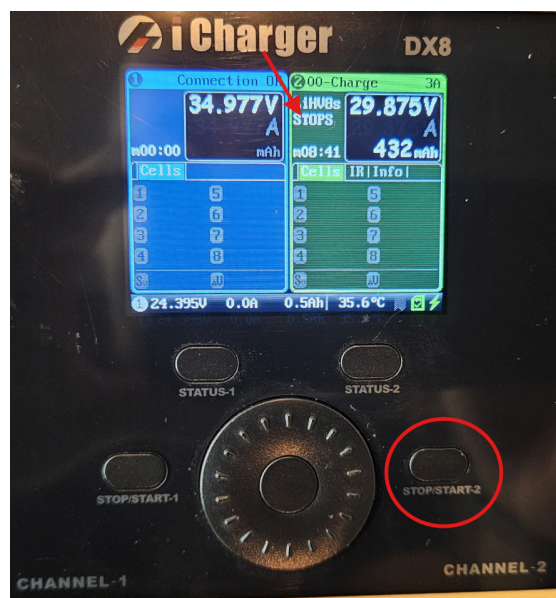
5.		<p>Upon selecting the charging profile, a popup appears to choose between Charge or Storage. Select Charge by pressing <b>Enter</b>.</p> <p>Please note: Charging/discharging to storage voltage is required if the batteries are unused for a prolonged time. It is recommended to select Storage before shipping batteries.</p>
6.		<p>Confirm again by pressing Enter.</p>
7.		<p>Since the WingtraRay charging profile is a custom setting, there is one more confirmation required by pressing Enter</p>

8.



Charging now starts with the indication CHARGE.

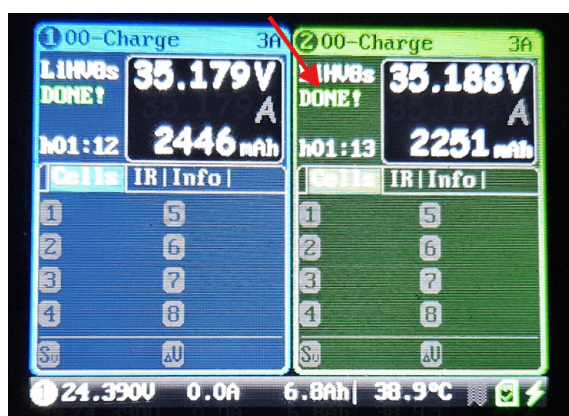
9.



The charging process can be stopped at any time by pressing the **STOP/START** button of the respective channel.

The charger confirms by indicating STOPS. Once the indicated charging current drops to zero, the battery can be removed from the dock.

10.



Once charging is complete, the charger indicates DONE. Batteries can be removed from the dock.

## 7 Operational guidelines & limitations

### 7.1 Remote pilot competency & health precautions

Make sure you are physically and mentally fit before every flight. You can answer the following question using the IM SAFE principle to check that:

<b>I</b>	Illness	Do you have any symptoms?
<b>M</b>	Medication	Have you taken any medicines?
<b>S</b>	Stress	Do you have any financial, family or health stressors?
<b>A</b>	Alcohol	Have you been drinking within the last 12 hours?
<b>F</b>	Fatigue	Are you tired and not adequately rested?
<b>E</b>	Emotion	Are you extremely emotionally upset?

### 7.2 Ground handling, transport & storage

#### Ground handling pre-and post-flight

It's important to handle the WingtraRay and its equipment carefully.

You can lift the drone from the leading edge of the wing, motor mounts and from the back plate. Do not lift from the control surfaces and do not touch the control surfaces when the drone is powered on.

Always perform a visual inspection of the drone and batteries to check that they are free of damages post-flight. Apart from this no further post-flight checks have to be performed.

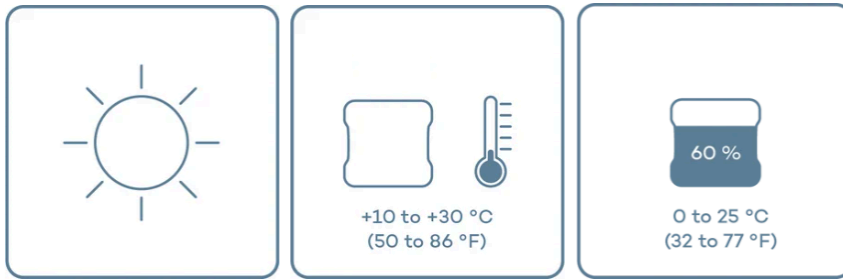
The pre-flight checklists will guide you through all mandatory safety checks and inspection before each flight and the WingtraRay will monitor the health of the different subsystems in the background and will warn you if a part requires replacing or maintenance. It is recommended to remove any dirt from the drone and its equipment after flight, before putting it back into its packaging.

#### Storage

- WingtraRAY and associated equipment should be stored in the hard case (depending on what you purchased), on a levelled surface.
  - Store the plane on a regular surface without leaving equipment on the top of the wing.
- Other equipment such as the tablet, charger, other components and spare parts should be stored in the transport box.
- Additional payloads should be stored in their respective cases.
- For charging and storage of the batteries please note the following:

**Lithium-Ion battery packs may get hot, explode or ignite, and cause serious injury if exposed to abusive conditions.**

## Keep your batteries healthy



1. Do not expose them to sun
2. Before flying, keep them at a moderate temperature
3. For longer storage, keep them at room temperature and charged at 60% capacity

For long-term storage of batteries please check chapter 12.2.

## Transportation

The WingtraRay can be transported as airfreight. For transportation as air freight, the hard case has to be used to avoid damages to the wing.

## 7.3 Operating conditions and limitations

These limitations apply for all flights with WingtraRay. There are more specific regional and operation type specific limitations which can be found in chapters 13 & 14.

### Only Daytime flights

WingtraRay is intended to fly at daytime without the need for any lighting. Night flights are not allowed with WingtraRay.

### Data collection

Before starting a data collection mission you must ensure that local aerial photography and privacy laws are followed. This may require authorizations from local government entities or surrounding uninvolved people.



### Environmental conditions

Do not fly in:



1. Fog, Snow or rain
2. Strong continuous winds exceeding 8 m/s
  - a. More restrictive limits may apply based on your operation type see chapters 13 and 14
3. Extreme temperatures

**Use return to home (RTH) if conditions change while flying!**

## 7.4 Flight time

The flight time which can be achieved with the WingtraRay is influenced by many factors. WingtraRay's maximum tested flight time is 59 minutes. However, the flight time of any drone is influenced by many factors and should not be expected to be uniform. In many cases, the coverage and job time are more important than flight time.

### **Factors affecting flight time**

Payload mass, Flight altitude, Transition height, Wind speed, Temperature and Battery performance.

## 7.5 Check all applicable operational limitations

Check chapters 13 and 14 to ensure you follow all the correct operational limitations applicable to your region and operation type.

## 8 Troubleshooting

If the drone does not power up at all, you should perform the following steps:

- Make sure the batteries are installed, charged and properly connected to the drone
- If that is the case and the issue persists: try powering up the drone with a different set of batteries
- If the issue persists: reach out to the Wingtra customer support team

### 8.1 Error messages and warnings

You may encounter the following error messages from WingtraRay and WingtraApp as a user.

Please note that all error messages are formulated in an actionable way, meaning that if you as a user have to take an action, this will always be explained directly in the error message.

#### **Estimator error**

WingtraRay flight controller uses information from different on-board sensors (accelerometers, gyroscopes, GNSS antennas, magnetometer, etc.) together with an estimation algorithm for the drones own state meaning position, orientation, velocity and so on. This algorithm is called the state estimator.

Try repowering your drone to fix this error.

#### **Magnetometer error**

The magnetometer uses the Earth's magnetic field to define the WingtraRay's heading. Flying with a bad magnetometer will cause the accuracy of your flight to reduce.

Keep WingtraRay away from any magnetic objects such as power lines, big metal objects, or bodies of water.

#### **Batteries error**

WingtraRay uses two smart flight batteries as the power source. The smart batteries allow the WingtraRay to read the state of charge, temperature, health, etc - about the batteries. The batteries are 99 Wh in capacity allowing you to transport them on an airline flight. WingtraRay can land safely with just one battery working.

If you receive the battery error on the ground simply swap the faulty battery to a new one.