Pre-Flight Checklist for RTK Scans

☐ **Flight Plan Preparation**

- Incorporate convergence maneuvers for best IMU initialization:
    - Take off vertically to mission altitude.
    - Fly forward laterally for at least 5 seconds at 5 m/s or faster.
    - Perform at least one figure eight at constant altitude.
    - After mapping, fly forward again for at least 5 seconds at 5 m/s or faster before landing.
    - Land vertically with minimal lateral motion.

☐ **Mission Area Assessment**

- Choose a take-off and landing location with strong GNSS signal quality.
- Avoid proximity to trees, buildings, or reflective surfaces.
- Confirm no nearby interference from radios or obstructions.

☐ **High Altitude Flight Preparation**

- If flying above 50 meters AGL and using a Livox Avia, enable High Sensitivity Mode:
    - GUI → Settings > LiDAR Service → Enable “High Sensitivity Mode”
- For Hesai scanners, no change is required.

☐ **Base Station Setup (if applicable)**

- Set up base station in an open area with clear sky view.
- Ensure all GNSS constellations are recorded (GPS, GLONASS, Galileo, BeiDou, QZSS, Navic).
- Confirm output format is compatible with PCMasterPro.
- If using a public base station, ensure it is within 40 km of the flight area (preferably closer).

☐ **Connect USB Modem**

- Insert the USB modem into an available USB port.
- Ensure the modem has a valid SIM card (not provided by Inertial Labs).
- Avoid ports already in use by the camera or other peripherals.

☐ **Power Connection**

- Connect RESEPI to power via one of the following:
    - XT60
    - Skyport/Other
    - Binder Connector
    - Ethernet (GEN-II only)
- Ensure power supply is 9–36VDC (up to 45V max) with 24–28W available.

☐ **Web Interface Access**

- Connect to the RESEPI's Wi-Fi.
    - SSID is printed on the unit label.
    - Password: LidarAndINS
    - Access the Web GUI at 192.168.12.1 using a laptop or mobile device.

☐ **Data Management**

- Offload all data and flights from the USB drive and/or SSD to ensure adequate space.

☐ **USB and Storage Verification**

- Use only the provided RESEPI-certified USB drive.
- Confirm that the USB is securely inserted into a supported port.
- Avoid using ports reserved for other onboard components (e.g., camera).

☐ **Firmware Check**

- Ensure the RESEPI is running the latest firmware version.
- You can find the firmware version in the top right corner of the GUI.

☐ **Connect to Base Station**

- Open the GUI → Settings > Connectivity > RTCM Corrections.
- Enter base station connection info (refer to base station documentation).
- Click "Save" before refreshing the page.

☐ **Verify Base Station Connection**

- Go to the GUI Status page.
- Confirm latitude, longitude, and altitude appear under base station section.
- If not shown, revisit RTCM Corrections settings and re-enter values.

☐ **Vehicle to IMU Rotation**

- Go to Settings > Geometry > Vehicle to IMU Rotation.
- Verify the values match the RESEPI's mounted orientation.
- Click "Save" after adjusting if needed.

☐ **Antenna Lever Arm Offsets (REQUIRED)**

- Navigate to Settings > Geometry > IMU to Antenna Offset.
- Enter precise lever arm values (X, Y, Z) in meters.
- RTK mode does not estimate lever arm — manual input is required for accuracy.

☐ **GNSS Time Fix (REQUIRED)**

- Securely connect the GNSS antenna to RESEPI.
- Power on the system in an area with visible sky.
- In the GUI, confirm the INS Status shows:
    - Valid current date and time
    - Message: "Ready to log"
- Do not begin recording until this message appears.

☐ **Camera Trigger Configuration**

- Set the trigger period based on your flight speed:
    - 5 m/s → 5 seconds
    - 10 m/s → 2.5 seconds
- Avoid high trigger rates at slow speeds to prevent blur or oversampling.
- Apply trigger settings through the GUI.

☐ **Final System Check**

- Confirm all connections are secure: power, GNSS, USB, trigger, modem, etc.
- Verify LiDAR sensor is clear of any physical obstructions.
- Confirm USB/SSD is visible in the GUI.
- Keep drone static during recording startup to allow IMU alignment.