

ComNav Technology

User Guide

E300 RTK Drone



Version 1.0
January 2022

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Use and Care

The drone can withstand the rough treatment that typically occurs in the field. However, the drone is high-precision electronic equipment and should be treated with reasonable care.

Warning and Caution

An absence of specific alerts does not mean that there are no safety risks involved. A Warning or Caution information is intended to minimize the risk of personal injury and/or damage to the equipment.

WARNING-A Warning alerts you to a potential risk of serious injury to your person and/or damage to the equipment, because of improper operations or wrong settings of the equipment.

CAUTION- A Caution alerts you to a possible risk of damage to the equipment and/or data loss.

Warranty Notice

ComNav Technology does not warranty devices damage because of force majeure (lighting, high voltage or collision).

ComNav Technology does not warranty the disassembled devices.

Technical Assistance

If you have any question and can't find the answer in this manual, please contact your local dealer from which you purchased the E300. Alternatively, request technical support from ComNav Technology Website: www.comnavtech.com or technical support email: support@comnavtech.com. Your feedback about this Guide will help us to improve it with future revisions. Please email your comments to: support@comnavtech.com.

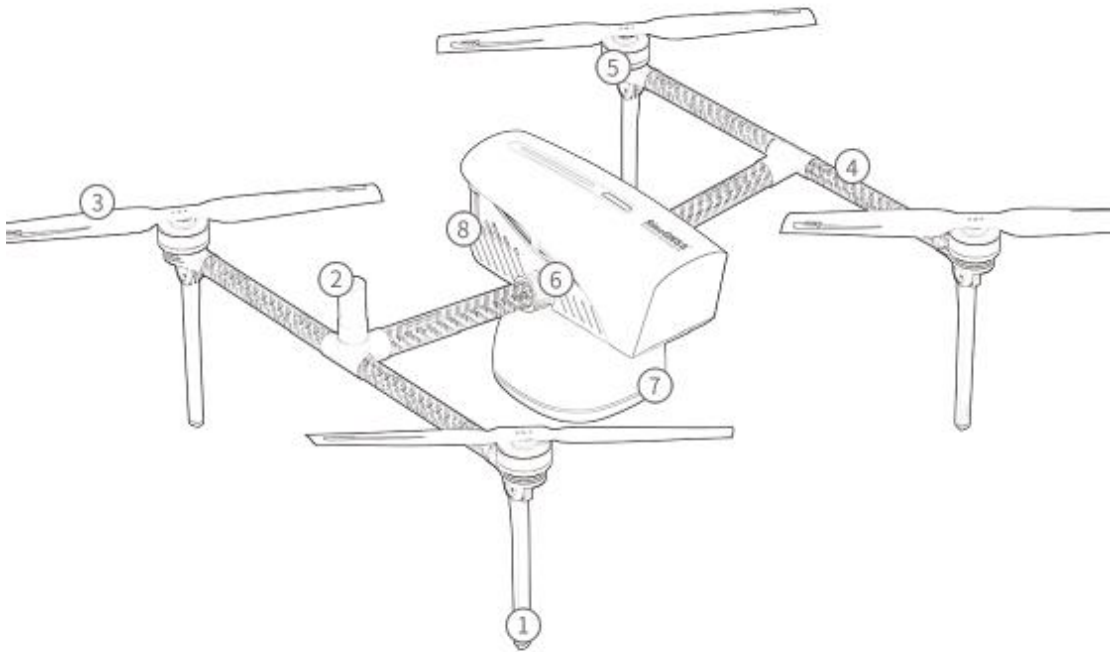
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1 Introduction

Thanks for choosing the E300 RTK Drone.

The SinoGNSS E300 is a safe and reliable professional intelligent aerial survey drone with long endurance and high precision. Equipped with a new high-precision PPK/RTK module, it has more substantial anti-magnetic interference and precise positioning capabilities, providing centimeter-level high-precision positioning. Capable of drawing without control points to achieve more efficient surveying and mapping operations. The powerful UAV platform supporting a wide variety of camera mountings ensures the high quality of the images and high precision of the result.



- ①: Aircraft stand
- ②: helix antenna
- ③: Quickly detachable propeller with high precision dynamic balance
- ④: Carbon-fibre fuselage
- ⑤: Enclosed dust-proof motor
- ⑥: Quickly detachable folding structure
- ⑦: Loadable payload
- ⑧: Intelligent battery

2 Preparing the E300 RTK Drone

2.1 Unfolding the Aircraft

Remove the bandage and put down aircraft stand, then unfold the frame arm on both sides.

缺图片

Lock the frame arm.

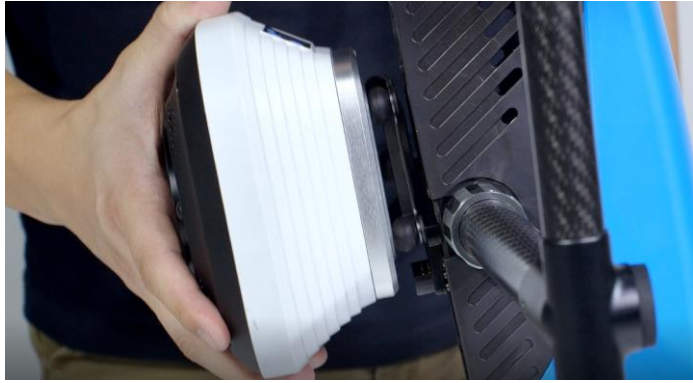
缺图片

2.2 Mounting the payload and battery

The E300 uses C20 as basic camera which has 24.3MP pixel count and C50 as optional camera which has more than 120 MP pixel count, The LiAir VH2 high-performance lidar integrates the laser module, high-precision inertial navigation module, and cooperates with SinoGNSS E300 RTK Drone and the point cloud data post-processing LiGeoreference software, providing users with a complete lidar surveying solution. Detachable design and multiple payload options for your various purposes.

Align comnav payload contact point and the aircraft metal contact point, then push forward the payload. It will lock the payload automatically. After installation, make sure that the payload is locked.





Slide battery into the battery compartment according to the arrow's direction as shown below. Make sure that you hear a click sound indicates the battery is firmly installed. Failure to do so may affect the flight safety of you aircraft.

缺图片

2.3 Mounting the propellers

Mount the propellers with orange propeller ring to the motors with orange dots. Mount the propellers with green propeller rings to the motors without orange dots. Press the propeller down onto the mounting plate and rotate in the lock direction until it is secured.



2.4 Install the remote controller

The remote controller and the drone will communicate automatically, which can transmit differential data and control the drone. You should connect the remote controller to the computer via Type C cable, Bluetooth is used for special condition.

Tilt the mobile device holder or the display device on the remote controller to the desired position, then adjust the antennas so they are facing outward.

3 Getting started

E300 adopt multi-path redundancy design with key modules, make sure the safety when fly. Please check the flight environment before the mission.

- Fly in open area away from densely-populated areas, buildings and electromagnetic interference
- Fly during good weather (no rain, fog, snow, thunder, wind or other extreme weather)
- Please drive in a legal area

3.1 Turn on the aircraft and remote controller

Short press, then long press to power on, the bar light will flash in cycles until it is fully powered on. Long press to turn off the aircraft.

For remote controller, just long press the power bottom to turn on it. The remote controller will connect to E300 automatically, it will make beeps alerts if not connect to E300.

3.2 Configure E300 by CNPoilt

CNPoint is a professional flight control software, equipped with clear interface, easy workflow, powerful fight control capability, which can completely satisfy the the requirements of high-efficiency, high-quality and high-precision aerial survey operations.

Working as a data transfer center, the CNPilot can access correction data via Com, TCP or NTRIP, offering various of baud rates to choose, and fix the RTK of the drone by sending the correction data via datalink, which is stable and less affected by the environment compared to GSM. It allows you to manually control the drone in emergency to reduce the risk. Combined the efficient intelligent recognition algorithms and long-range lasers, it's easy to achieve precise flight following the terrain.

The CNPilot supports edit route independently and provides a variety of special route planning modes. It can implement full control of the drone system, such as accelerometer, compass, motor, battery, joystick and datalink. You can set the camera before flight, adjust parameters such as the camera shutter and check the status such as the number of pictures taken, temperature in real time.

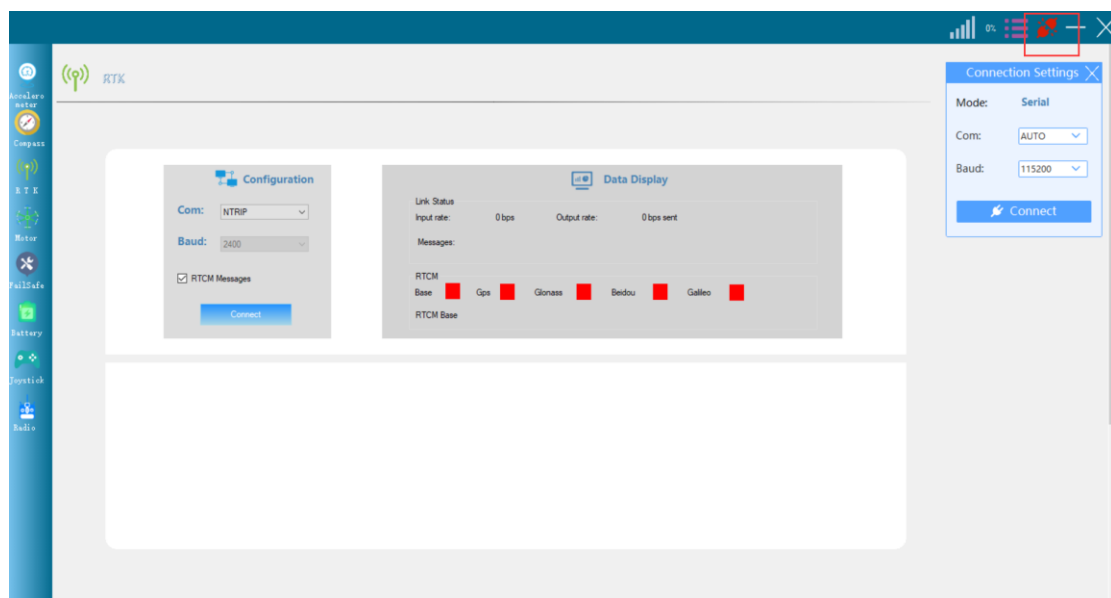
The CNPilot displays the drone status and gimbal status in real time: voltage, e-current, flight status, distance to home, gimbal temperature, total photos and other parameters. It integrates the global satellite map, which can automatically display the map of your location as the background of the flight no matter where you

are. Combined with the flight data display of the drone location, home location, drone orientation, progress of the route, it allows you to see the real-time status of the mission at a glance.

The software interface is clearly divided, and the workflow is simple and easy to understand. The operation area can be intelligently planned by clicking on the map or importing KML files, which is convenient and quick. It can continue the trip at the break-point under a variety of conditions. With the area expansion feature, it supports automatically plan the external expansion according to the survey area.

3.2.1 Connect to Remote Controller

Click connection icon, then you will get connection settings. Choose the right com port or choose auto. The default baud is 115200, last click connect.



3.2.2 Check aircraft status

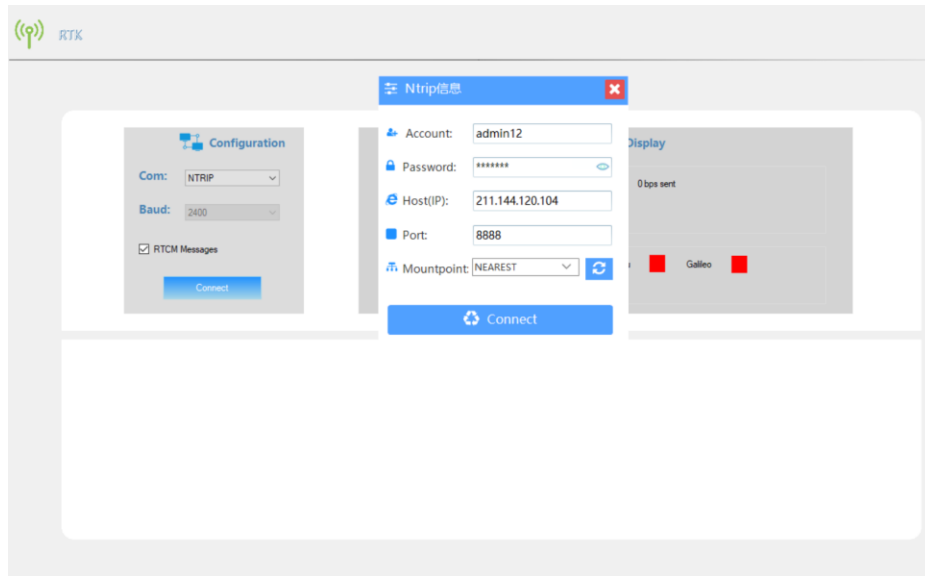
When you take a aircraft to a new place or not flying for a long time, you should check the aircraft status.

1. Assemble the aircraft, make sure joints are secure. You can not install the propellers first.
2. Rotating propeller manually, make sure the motor running normally
3. Turn on the aircraft, check the accelerometer and compass
4. Place the aircraft in different direction, check the direction in CNPoilt software, the aircraft icon should move synchronized
5. Check the satellites number and battery voltage.

3.3 Set up RTK

Go settings in CNPoilt, then click RTK. It support COM, TCP and Ntrip to get the correction. Here show you use ntrip client.

1. Click connect
2. Input your CORS information(Caster address, port, username, password)



3. Click icon on the right of mountpoint
4. Choose the right mountpoint and click Connect
5. You will get satellites information if it is success.

4 Workflow

This section will show you the workflow for a mission.

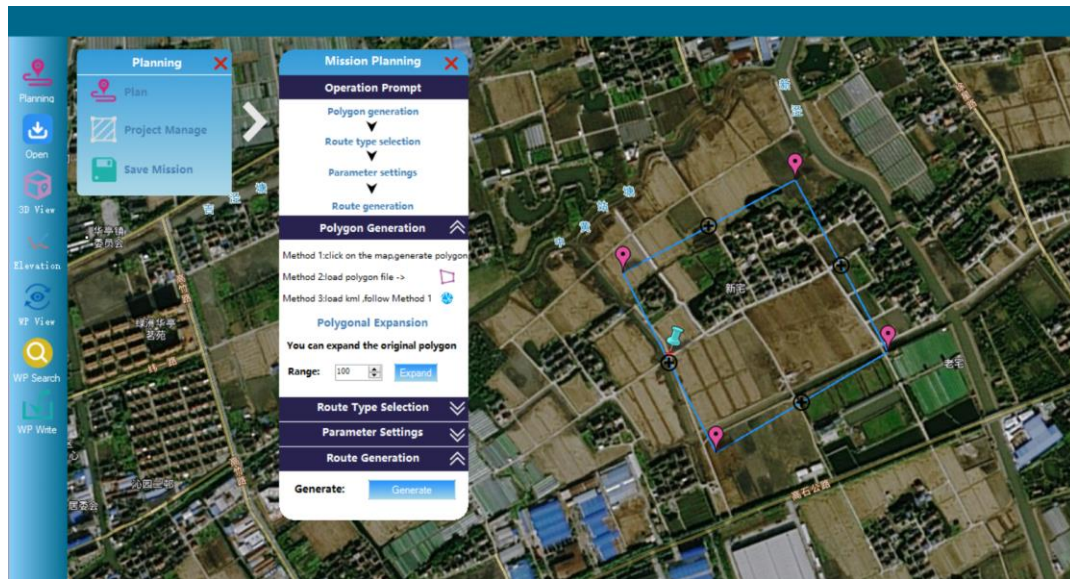
4.1 Plan

Go Plan in CNPoilt, Click Planning

4.1.1 Generate polygon

There are three method to generate polygon.

Method 1: click on the map, generate polygon
You can click on the map to get the polygon



Method 2: load polygon file

Method 3: load kml, follow Method 1

4.1.2 Select router type

There are 2 type: regular and corridor. What's more, you can choose crossgrid and follow terrain

4.1.3 Set parameters

Set the camera type, resolution, overlap, sidelap, speed, Angle, Route Space, start position corridor width, alt difference

Auto Expand means auto expand the area

4.1.4 Generate route.

After the above settings are completed, you can generate the route. Then click save mission.

4.2 Flight

Go Plan in CNPolt, Click Flight. You will see route

Check the message box, make sure the aircraft status, Then check the GNSS, battery status. Before flying, please choose the right payload and click photo bottom to take some picture.

When you execute the flight, you can check the real time information in Flightdata, such as the position, speed, heading, electric, gimbal. You can pause the flight at any time, and switch to manual operation.

4.3 Data Download

The PPK data and logs are saved in the internal memory of the aircraft, the pictures is saved in the camera automatically, you can download them via USB to Type C cable.

There are two type C port on the aircraft, the left one is for downloading logs, the right one is for downloading PPK data.

Connect aircraft to computer by Type C cable, then click Log in CNPoilt—Choose the right port and Baud, the default band rate is 115200 – Click connection icon- Then load the logs and download them. The CNPoilt software will create MRK file automatically which includes number, offset of picture, position and RTK status.