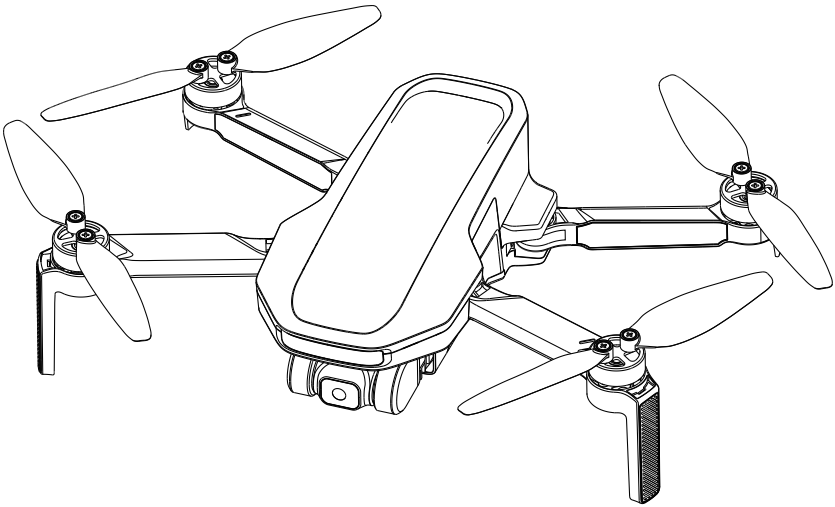
Potensic ATOM SE

DANGER
Only suitable
for ages 14+



User Manual

V01. 23. 03

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1. Disclaimer & Precautions

1.1 Disclaimer

Drones are products that are potentially dangerous and relatively complex to operate. Please be sure to read the full User Manual to ensure that you understand the basic knowledge of the drone and are familiar with the basic functions before using the product. It is recommended to use it in GPS mode in an open outdoor area for the first time to get familiar with the operation.
Please follow the Manual's operation instructions and precautions strictly, in order to use the product safely and correctly.
Users aged under 14 must be accompanied by an adult while using the product. Please keep the product out of children's reach.
For any direct or indirect loss (including but not limited to property loss and personal injury) due to user's failure in following the Manual's safety operation, the Company does not bear any liability or offer warranty services.
Do not dismantle any part except for propeller blades, or refit the product and attach other items on it; otherwise, user should undertake the consequences arising therefrom.
For any problem in use, handling and maintenance, please feel free to contact our local dealer or the Company.
Potensic reserves the final interpretation right of this document and related product documents, and is subject to change without notice. Please visit **https://www.potensic.com** for the latest information.

1.2 Safety Precautions

Keep away from obstacles and crowds

Keep the product away from crowds, high-rise buildings and high-voltage cables, and avoid using it in severe weather such as wind, rain and thunder, in order to keep the safety of the user and the crowds, for the product may have uncertain flying speed, status and potential hazards.

Keep off moisture

Keep the product off moisture to avoid an anomaly or damage due to humidity of precise electronic components and mechanical parts inside it.

Safe operation

The product may be exposed to higher risk when user feels tired or lacks of energy and experience. Please refit or repair the product with the original parts to keep safety. Please operate and use the product within the allowed range and make sure to follow the local safety rules.

Keep away from high-speed revolving parts

While the product's propellers are revolving at a high speed, keep it away from the crowds and animals to avoid scratch or disturbance. Do not touch the revolving propellers with hands.

Keep away from heat source

Keep the product away from heat and high-temperature exposure to avoid the anomaly, deformation and even damage, for it is made of metal, fiber, plastic and electronic elements.

1.3 Warning & Prompts

01. Please properly keep the package and manual which contain important information.
02. User should avoid personal and property losses when using the product.
03. Neither the Company nor our dealers bear any liability for the proper losses and personal injuries due to users.
04. Debug and install the product in strict accordance with the Manual's steps. Keep a distance over 1~2m with others while using the product, to avoid injury when the product crashes into people's head, face and body.
05. The product should be assembled by an adult. Users aged below 14 should not handle the product alone. The battery should be charged under the supervision of an adult and by avoiding inflammables.
06. Keep the product out of children's reach to avoid eating it by mistake, for it contains small parts.
07. Do not use the product on the road or in water to avoid an accident.
08. It is forbidden to dismantle or refit the product, except for the propellers; otherwise, an anomaly may occur.
09. Please recharge the intelligent battery with USB charger that conforms to FCC/CE standard.
10. The remote controller has a built-in 3.7V lithium battery which needs no replacement.
11. Do not short-circuit or squeeze the battery to avoid explosion.
12. Do not short-circuit, break down or throw battery in fire or place it in hot place (in fire or near electric heater).
13. Keep a safe distance from the propellers which are revolving at a high speed; do not use the product in the crowds to avoid scratch or injury.
14. Do not use the product in places with strong magnetic field, such as near high-voltage cable, buildings which contain metals, automobiles and trains; otherwise, the product can be disturbed.
15. Please do master local laws and regulations, to avoid violation of regulations.
16. Stop using the remote control within the radio control period and region of national departments as specified, in order to conform to the requirements for magnetic environment of aeradio.
17. Avoid low-altitude flight above water surface.
18. Keep it away from airport, airline and other no-fly zone.

2. Reading Tips

2.1 Symbols

Prohibited | Important | Operation & use prompts | Technical Terms and reference information

2.2 Suggestions of Use

1. User is highly suggested to watch the tutorial video and **Quick Operation Guide** before consulting the **Manual.**
2. Make sure to read **Disclaimer & Precautions** first when consulting the **Manual.**

2.3 Tutorial Video / PotensicPro APP

Scan the QR Code at the right side to watch **Potensic Atom SE** (Atom SE) tutorial video and download **PotensicPro APP** (APP)

Please do watch the tutorial video in order to use the product correctly and safely.

User can also watch the tutorial video of Atom SE in the menu column of APP homepage.

2.4 Registration & Help

Make sure to register personal account in APP before the first flight, in order to get better use experience.

Steps of Registration

Please fill your E-mail, password, check the protocol and click “Register”. You can login the system after registration.

(Note: Keep the mobile phone online during registration)

Help

Thanks for purchasing Atom SE drone. Please read the Manual carefully.

Please contact our support team at **support@potensic.com** if anything needs help, when requesting an after-sales service, it is required to submit order ID and details of the issues.

2.5 Technical Terms

IMU	IMU (inertial measurement unit), the most important core sensor of the drone.
TOF (Time of Flight)	TOF (time of flight), the period from transmission and receiving of detection infrared signal, in order to determine the target distance.
Lower visual system	The sensor system, which lies at the bottom of the drone and consists of camera and TOF module.
Visual orientation	High-accuracy positioning, which is realized through lower visual system.
Compass	Identify direction for geomagnetic sensor and the drone.
Barometer	Atmospheric pressure sensor, which enables the drone to determine the altitude through atmospheric pressure.
Lock/unlock	Switch the drone motor from static status to idle running.
Idling	Once unlocked, the motor will start revolving at a fixed speed, but it has insufficient lifting force to take off.
Auto return	The drone will return to HOME point automatically based on GPS positioning.
EIS	Electronic Image Stabilization; the camera will detect the data of high-frequency vibration and eliminate picture flutter through algorithm.
Drone head	Position of the drone camera.
Throttle control stick	Ascend or descend the drone.
Pitch control stick	Fly the drone to front or back.
Roll control stick	Fly the drone to left or right.
Yaw control stick	Enable self-rotation of the drone to left or right.

Contents

Overview

This chapter introduces the functional characteristics of Atom SE, as well as the component name of the drone and the remote control.

3.1 Introduction

With foldable arms and weight below 250g, the product is portable, and can also be used without real-name registration in most countries. The product is fitted with a visual positioning system, to realize precise hovering at low altitude indoor and outdoor environment. Meanwhile, the product is fitted with a GPS sensor to realize positioning and auto return. Based on 1/3 " Sony CMOS image sensor, the product can shoot 4K/30FPS HD video and 1.2-megapixel pictures. Atom SE uses self-developed ShakeVanish electronic stabilization technology to make the picture clear and stable.

By using the brand new PixSync 2.0™ 2.4G digital image transmission technique, the Atom SE remote control can realize 4 km communication distance and 720P HD image transmission maximally at ideal conditions. Open the pull-type and the foldable remote control to contain your mobile device. Connect the remote control and mobile device with USB data cable, to operate and set the product through APP and display HD image transmission picture. The built-in lithium battery of the remote control can work for approx. 2h maximally.

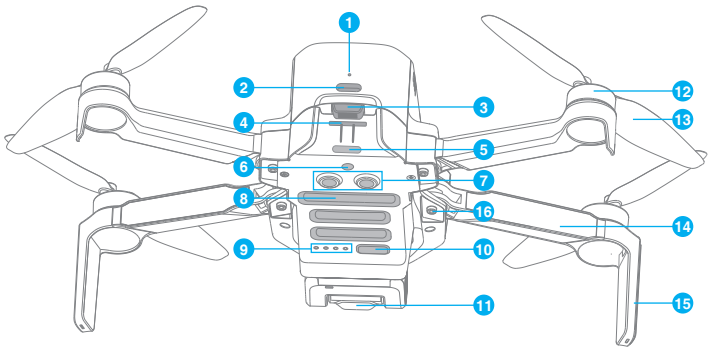
Atom SE uses proprietary SurgeFly™ flight control technology, with a maximum horizontal flight speed of 16m/s (52ft/s), a maximum flight time of about 31 minutes, and the ability to withstand winds of up to level 5.

⚠ **Test method of the max. flight period: Fly at an even speed of 5m/s at 25°C and in breezeless condition.**
Test method of the max. distance: Measured at an open and no-interference environment, with a flight height of 120m, and without considering the return of the drone.

Necessary tools for one flight:

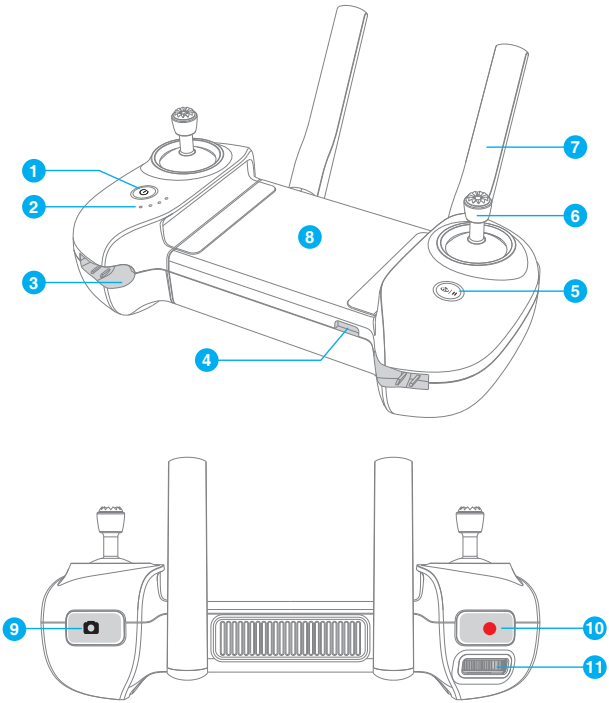
1. Drone 2. Fully-charged smart battery 3. Remote Controller
4. Smartphone 5. Adaptive USB cable of mobile phone

3.2 Drone Diagram



1. Charging indicator
2. TYPE-C charging port
3. Battery buckle
4. SD card slot
5. Tail indicator
6. Monocular visual module
7. TOF module
8. Bottom cooling hole
9. Power indicator
10. Power/frequency pairing button
11. Integrated single-axis gimbal camera
12. Brushless motor
13. Propeller
14. Arm
15. Antenna tripod
16. Arm shaft

3.3 Remote Controller Diagram



1. Power button
Long press it for 2s to power on/off.

2. Power indicator
Indicate the power level or other status of the remote controller

3. Control stick slot
One slot respectively at the left and right side, which are used to store the sticks

4. TYPE-C interface
To charge the remote controller/connect mobile device

5. RTH / Pause button
Long press for 1s to return to HOME point automatically
Short press it to pause auto flight

6. Control stick

7. Foldable double antennas

8. Installation position of mobile device
To place mobile device.

9. Shoot button
Short press it to shoot one picture

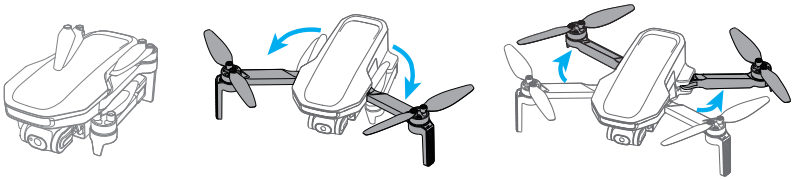
10. Record button
Short press it to start/stop recording

11. Left thumbwheel
Dial the thumbwheel horizontally to control the tilt of the gimbal.

3.4 Preparing the Drone

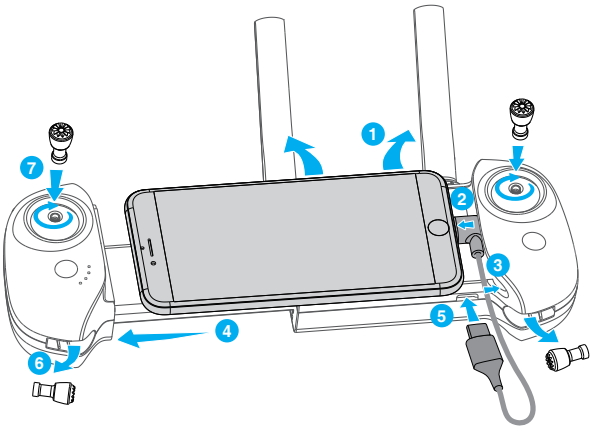
The product is delivered under folded status. Please unfold it as follows:

1. Unfold the front arm before the rear arm.
2. Unfold the propeller blades.

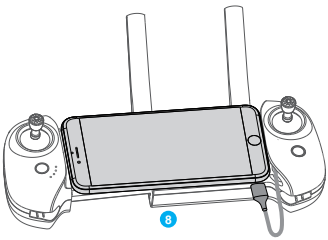


3.5 Preparing the Remote Controller

Installation of mobile phone and control stick

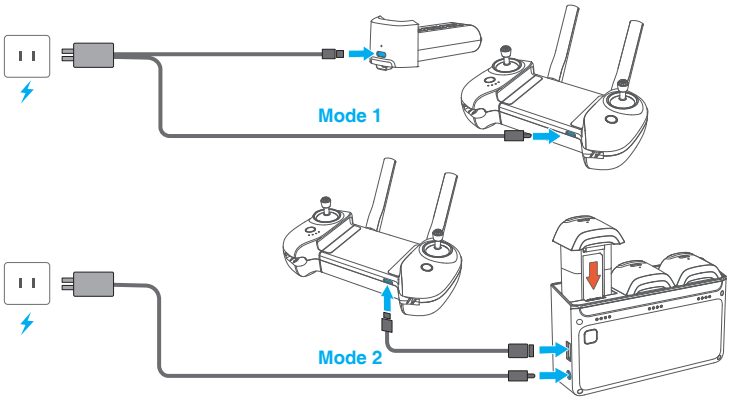


1. Unfold the antenna.
2. Connect your mobile phone to the USB cable.
3. Insert the part of your mobile phone with the USB cable into the slot of the remote controller.
4. Pull and open the remote control with both hands and fix your mobile phone stably.
5. Connect the other end of the USB cable to the remote controller.
6. Take out the sticks.
7. Screw in both control sticks clockwise.
8. Installation completed.



3.6 Charging / Startup and Shutdown

When receiving a new drone battery, it is required to charge it to wake it up, otherwise the drone wouldn't start. Connect the TYPE-C charging port of battery and a USB charger to the AC power supply to finish one-time charging (USB charger is not included in the package. User can use the charger that conforms to FCC/CE specification to charge the battery). The red indicator will stay on during charging, and turn off automatically after charging is done. User can charge the battery with the Parallel Charging HUB if fly expansion kit is purchased. For more details, please refer to User's Manual of Parallel Charging HUB. The Parallel Charging HUB can also charge the remote controller.



The shortest charging period is approx. 1h 25min through the type-C charging port. Make sure your charger supports 5V/3A output in order to achieve this charging speed.

User is suggested to charge the battery through the Parallel Charging HUB, in order to charge 3 batteries quickly at the same time.

It is suggested to remove the battery from the drone to charge for the sake of safety; otherwise, the drone won't power on if the battery is being charged in the drone.

If the charging cable is connected while the drone is on, it will power off automatically and the charging will continue.

The battery may become too hot after use; do not charge it until it cools down; otherwise, charging can be rejected by the smart battery.

Charge the battery on a trimonthly basis to maintain the activity of the cell.

Please connect the original cable or any cable that supports over 3A current to the type-C port; otherwise, it may cause charging failure or battery damage.

Startup

Drone: Make sure the battery is inserted in battery bin, short press and then long press the power button until all indicators are on, and then release the button to start up.

Remote controller: Long press the "Power" button until all indicators are on, and then release the button to finish startup.

Shutdown

Drone: Short press and then long press the power button of the drone until all indicators are on, and then release the button to shut down.

Remote controller: Long press the power button until all indicators are off, and then release the button to shut down.

4. Drone

The product consists of a flight control system, a communication system, a positioning system, a power system and a smart flight battery. This chapter sets down the functions of all parts of the drone.

4.1 Positioning

Atom SE adopts Potensic's new SurgeFly™ flight control technology, which supports the following two positioning modes:

GPS positioning: Provide precise positioning and navigation to the drone; support precise hovering, smart flight and auto return.

Visual positioning: It can realize high-precision positioning at a low altitude based on the Downward Vision System. The visual positioning can be realized without GPS signal, so that the product can be used indoors.

How to switch: The flight control system will switch automatically according to the environment of the drone. If both GPS and lower visual system fail, the flight control will be switched to attitude mode, under which, the drone fails to realize stable hovering and user needs to correct the flight gesture manually through the control stick.

The difficulty of drone handling will be increased greatly in the attitude mode; make sure to master the behaviors and operation of the drone in this mode before using this mode; avoid flying the drone at a long distance, to avoid risks due to failed judgment of drone gesture.

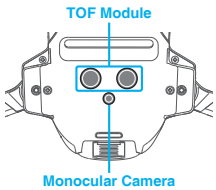
User can also switch to attitude mode in APP.

In visual positioning, smart flight is not supported and flight speed will be restricted.

The difficulty of controlling the drone will increase dramatically in ATTI Mode so make sure to master the operation of the drone in this mode. Always keep the drone within sight in order to avoid risks in case of failed judgment of the drone's attitude and direction.

4.2 Downward Vision System

The Atom SE is equipped with a downward vision system, it is located beneath the drone. The Downward Vision System consists of a monocular camera and a TOF module. The TOF module includes a transmitter tube and a receiver tub, it can precisely calculate the fly height above the ground by calculating the infrared signals transmission and receiving time. In combination with the monocular camera, the system can help achieve high-precision positioning at low altitudes.



Detection Fileds

The Downward Vision System works best when the drone is at an altitude of 0.3 to 5 m, and its operating range is 0.3 to 10 m.

When GPS is unavailable, the Downward Vision System is enabled if the surface has a discernable surface and sufficient light. The Downward Vision System works best when the drone is at an altitude of 0.3 to 5 m. If the drone's altitude is above 5 m, the Vision System may be affected, so extra caution is required.

How to use

The Downward Vision System has enabled automatically if the positioning conditions are satisfied. The drone tail indicator blinks cyan twice, which indicates the Downward Vision System is working.

Speed limit: To ensure positioning accuracy and flight safety during visual positioning flight, the drone will actively limit its flight speed.

Visual positioning is only an auxiliary flight function, please always pay attention to the changes in the flight environment and positioning mode, and do not rely too much on the automatic judgment of the aircraft. Users need to control the remote at all times and be prepared to operate the aircraft manually at any time.

The Vision System cannot work properly in any of the following situations

1. Pure-color surface

2. Surface with strong reflection, such as smooth metal surface

3. Transparent object surface, such as water surface and glass

4. The moving texture, such as running pets and moving vehicles.

5. Scenarios with drastic change of light; For example, the drone flies to outdoor space with strong light from indoor space.
6. Places with weak or strong light.
7. The surface with highly repetitive texture, such as floor tile with the same texture and small size, and highly consistent strip pattern.

For the sake of safety, please check the camera and TOF transceiver tube before the flight, and clean it with a soft cloth if there is any dirt, dust, or water on it;

Contact Potensic Support if there is any damage to the Vision System.

4.3 Drone Status Indicator

Start-up/Shut-down	Startup / Shutdown in progress: Green indicator is solid on			
Flight status	**GPS positioning**	**Visual positioning**	**Attitude mode**	**Return**
	Indicator flashes slowly in green	Indicator flashes slowly in cyan	Indicator flashes slowly in blue	Indicator flashes slowly in red
Warning & Error	**Remote control has no connection with the drone (communication lost)**	**Low battery**	**Sensor error**	**Emergency stop of propeller**
	Indicator is in solid blue	Indicator flashes quickly in red	Indicator is in solid red	Indicator has long-extinguishing and short-illuminance
Upgrade & calibration	**Compass calibration (horizontal)**	**Compass calibration (vertical)**	**Frequency pairing mode**	**Upgrade mode**
	Indicator has alternative flashing between red and green	Indicator has alternative flashing between blue and green	Indicator flashes quickly in green	Indicator flashes quickly in blue

4.4 Smart Battery

4.4.1 Function

Atom SE smart battery is mounted with high-energy cell and advanced BMS. The details are as follows:

Basic Parameters			
Model: DSBT02A			
Cell Qty.	**2 series**	**Battery Capacity**	**2500mAh**
Rated Voltage	**7.2V**	**Charge Completion Voltage**	**8.4V**
Charging Mode	**TYPE-C/Parallel Charging HUB**	**Max. Charge Current**	**TYPE-C: 5V/3A** **Parallel Charging HUB: 8V/2.2A x 3**

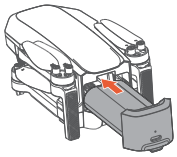
Function	Description
Balance protection	Balance cell voltage automatically to guarantee battery health.
Self-discharge protection	If the battery is fully charged and left idle, it will slowly self-discharge to 50%-70% after 5 days to protect the battery cells.
Overcharge protection	Charging will stop once battery is fully charged, for the battery can be damaged by overcharging.
Temperature protection	Please pay attention to your charging environment, for charging will be stopped automatically when battery temperature is below 0°C or above 50°C.
Intelligent current limiting of charging	When charging current is too high, the battery will restrict current automatically in order to protect the battery.
Overdischarge protection	In non-flight status, the battery will cut off power supply automatically to avoid over-discharge when battery is discharged to a certain level; at this time, the battery will enter sleep status. It is suggested to charge the battery ASAP.
Short-circuit protection	When the drone short-circuit is detected by the battery, the power supply will be cut off automatically to protect the battery and the drone.
Battery health monitoring	The BMS will monitor the battery health condition, prompt battery damage in APP in case of cell damage, cell voltage unbalance or other battery errors, to remind user to replace the battery in time.
Communication function	The battery can communicate with the the drone in real time. User can view the information in APP, such as battery circulation times and real-time electric quantity.

⚠ **If the battery is not used for a long time, it needs to be charged every three months to ensure its health.**
Please store the battery in a cool, dry place where children cannot touch it.

4.4.2 Battery Installation & Removal

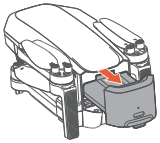
Installation:

Push the battery into the product's battery bin horizontally as shown in picture below, the battery buckle is bounced and locked when hearing "click" sound.

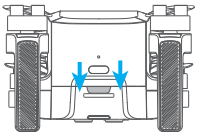


Removal:

Firstly, press the buckle of smart battery, hold the upper cover of battery to pull out the battery.



⚠ **Once the battery is inserted, make sure the battery buckle is bounced properly. This step is highly important and related to flight safety.**



Make sure to power off the product before removing the battery.

Buckle is in position, safe

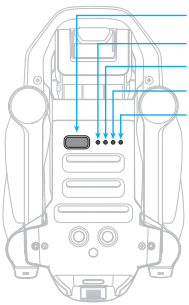
Buckle is not in position, which may result in the battery falling during flight.

4.4.3 Charging

See 3.6 for charging method

4.4.4 View Power Level

Once the battery is inserted in the drone, short press the power button to view the power level of smart battery, as shown in the picture below:



LED 1	LED 2	LED 3	LED 4	Current power level
☼	●	●	●	0%~25%
☼	●	●	●	25%~30%
☼	☼	●	●	30%~50%
☼	☼	●	●	50%~55%
☼	☼	☼	●	55%~75%
☼	☼	☼	●	75%~80%
☼	☼	☼	☼	80%~97%
☼	☼	☼	☼	97%~100%

☼ Indicator is on ☼ Indicator is flashing ● Indicator is off

4.4.5 Operation Instructions of Smart Battery at High/low Temperature

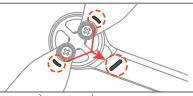
When the battery temperature is ＜5°C, the APP will prompt a low temperature warning of the battery, and the battery needs to be preheated before flying.

When the battery temperature is ＞60°C, the APP will prompt a high temperature warning of the battery, and the drone will not be able to fly.

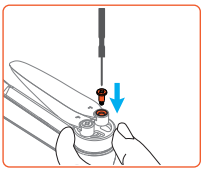
⚠ **The discharge capacity will be weakened greatly and flight duration will reduce at a low temperature, which is normal. Avoid long-term running at a low temperature, otherwise, the battery life can be shortened.**

4.5 Propellers

There are two types of ATOM SE propellers, which are designed to spin in different directions. Marks are used to indicate which propellers should be attached to which motors, the two blades attached to one motor are the same.

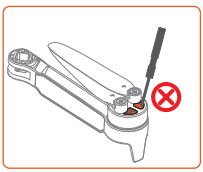
	Propeller	Installation Instructions	Schematic Diagram of Installation
Marked propeller		Install the marked propeller blades on marked arm	
Unmarked propeller		Install the unmarked propeller blades on unmarked arm	

Use the the screwdriver from the package to mount the propellers.
Hold the motor to remove the propeller blades easier.



Make sure you attach the marked propellers to the motors of the arm with marks and the unmarked propellers to the motors of the arm without marks. Or the drone will be unable to fly.
If a propeller is broken, remove the two propellers and screws on the corresponding motor and discard them. Use two propellers from the same package. DO NOT mix with propellers in other packages.
Propeller blades are sharp. Handle with care. DO NOT squeeze or bend the propellers during transportation or storage. Purchase the propellers separately if necessary.
Stay away from the rotating propellers and motors to avoid injuries.
Please check the propeller blades immediately if there are any jitters or speedless in flight, and timely replace the propellers if it's damaged or deformed.
Make sure the motors are mounted securely and rotating smoothly. Land the drone immediately if a motor is stuck and unable to rotate freely. Stop flying the drone and contact support if there is any abnormal sound with the motor.
Make sure that the propellers are installed securely before each flight. Check to make sure the screws on the propellers are tightened.

When mount or remove the propellers, do not put the screwdriver or other foreign materials inside the motors, or the motor may be damaged.



4.6 Flight Data

Atom SE supports recording of flight data. User can view the data in APP.

“Flight record” can display the basic data for each flight of user.

“Flight log” can record the detailed flight data of user. For any abnormal circumstance in flight, user can report it in APP and, if necessary, upload the flight log to seek for assistance.

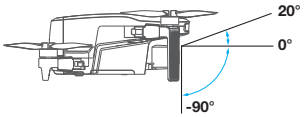
All flight data are stored in user’s mobile device. No flight data will be acquired by the Company, except for the data uploaded by user to the cloud platform.

4.7 Single Axis Gimbal Camera

4.7.1 Single Axis Gimbal

The Atom SE camera is mounted with a single-axis gimbal, to adjust pitch angle freely from +20° to -90° (horizontal direction is 0°).

The angle of the gimbal can be adjusted by scrolling the left thumbwheel of the remote controller.



The gimbal will be recovered to -9° automatically after each startup.

Avoid collision and moving the lens by force, for the gimbal contains precise parts.
Make sure the gimbal has no foreign matters and lens is free from dirt before takeoff.
The gimbal is connected to the drone through elastic and shock absorption support, to eliminate camera vibration.
Do not pull the gimbal by force. For any damage of shock absorption support, please timely contact the after-sales department for repairing.

Do not bind or paste any object on the gimbal. Otherwise, it may damage the drone.

4.7.2 Camera

Basic Parameters	
Sensor brand: SONY	Sensor size: 1/3"
Effective pixel: 1200W	Aperture: F2.2
FOV: 118°	Focus range: 3m ~ ∞
ISO range: 100~6400	Shutter range: 1/30~1/25,000s
Memory: Micro SD card	Shooting distortion: < 1% (after calibration)
Picture size: 12M (4,608*2,592)	Picture format: JPG/JPG+RAW(DNG)
Video format: MP4	Code: H.264
Video specification: 4K30 2.7K30 1080P60 1080P30	

Do not touch the lens after recording for a long period of time to avoid scald.
Do not record video when the drone is not flying; otherwise the drone will trigger overheat protection.
The sensor will crop out the edges at 1080P/60fps, it's simply capturing a central section of what the full-frame sensor would capture, and FOV is about 66°.

4.7.3 Image Storage

The videos and pictures recorded by Atom SE will be stored in SD card, instead of APP or user's album. Make sure to insert SD card prior to flight. Otherwise, it is unable to record and shoot. (SD card is not included in the product's pack list!)

User can preview and download the videos and pictures (the drone and the remote control should be connected) in APP.

SD Card Requirements

File format: FAT32, exFAT

Capacity: 4G-256G

Speed requirements: It is suggested to use SD card above U1 (UHS Speed Class 1) or C10 (Class 10)

The video downloaded from APP is just 720P image used in image transmission. Please read SD card with computer or other device in order to acquire videos of higher definition.

The recording can be terminated due to slow write-in when using the U1/C10 SD cards of certain brands.
If important data are stored in your SD card, please backup them properly.
Do not insert or unplug the SD card when the product is powered on. It may lead to data damage or loss, or even SD card damage when inserting or unplugging SD card during video recording.
Potensic does not bear responsibility for any loss due to user's misoperation of SD card.

5. Remote Controller

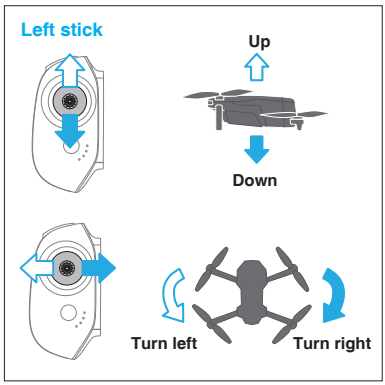
5.1 Overview

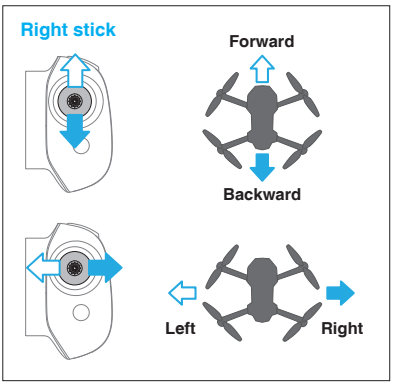
Potensic ATOM SE is equipped with the DSRC02A Remote controller, which boasts Potensic long-range Pixsync 2.0™ image transmission technology, offering a maximum transmission range of 4km/13,123ft and 720p when displaying video from the drone to Potensic Pro on your mobile device. Easily control the drone and camera using the onboard buttons. The detachable control sticks make the remote controller easier to store. Thanks to the 2.4Ghz dual band antenna, in a wide-open area with no electromagnetic interference, Pixsync 2.0™ smoothly transmits video links at up to 720p at a max altitude of 120m.

The built-in battery has a capacity of 2200mAh and a maximum run time of 2 hours. There is a USB C port for device connection. The remote controller charges the mobile device with a charging ability of 500mA@5V.

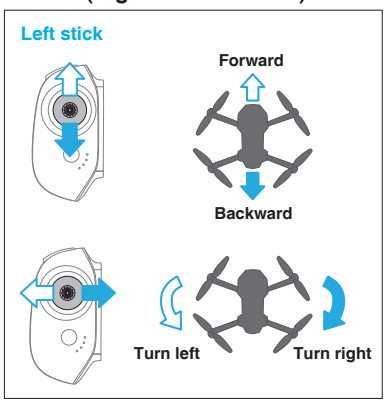
5.2 Control Stick Mode

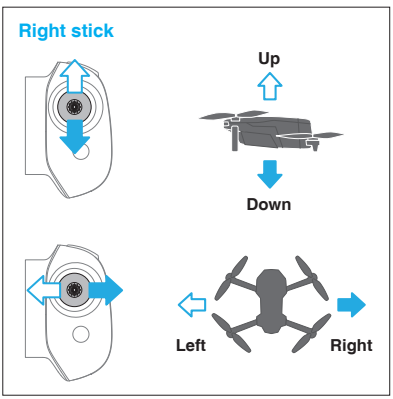
Mode 1 (Left Hand Throttle)





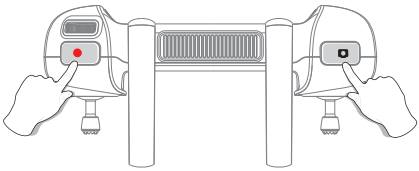
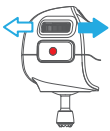
Mode 2 (Right Hand Throttle)





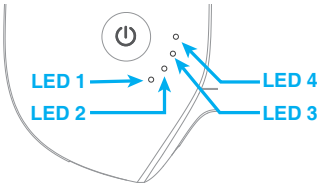
5.3 Function

5.3.1 Function List

Charge	1. Connect the USB Charger to the USB C charging port. 2. The battery is being charged when power indicator starts flashing. 3. Charging is completed when 4 LED indicators are solid on and data cable can be removed.
Recharge mobile phone	When a mobile device is connected, the remote controller automatically charges devices with a charging ability of 500mA@5V.
Indicator function	See 5.3.2
Flight control	See 5.2
Low battery prompt	When power level of the remote controller is lower than 10%, the remote controller will have a “beep” sound every second.
Auto shutdown	The product will shut down automatically if the remote controller has no connection and operation for 20mins.
One-key return	See 7.9
Pause	If the drone is performing a Smart Flight like Circle Flight or auto landing, press once to make the drone brake and hover in place. Press again to cancel it and regain the control of the drone.
Emergency stop	For any emergency situtaions during the flight, press “Shoot” and “Record” button for 2s at the same time till the remote controller beeps, the drone will stop running and fall down. 
Shoot	Short press it to shoot one picture When camera is in video recording mode, short press it to switch to shoot mode 
Record video	Short press it to start/stop video recording When camera is in shooting mode, shot press it to switch to video recording mode 
Gimbal Dial	Dial it to the right to increase the pitch angle (head up) Dial it to the left to decrease the pitch angle (head down) 
Remote controller frequency pairing	See 5.3.3

5.3.2 Indicator

As shown in the picture below, the remote control is fitted with 4 white LED indicators to indicate the power level and other status.



Indicator is on

Indicator is flashing

Indicator is off

Charging indication

LED 1	LED 2	LED 3	LED 4	Current power level of battery
☼	●	●	●	0%~25%
☼	☼	●	●	25%~50%
☼	☼	☼	●	50%~75%
☼	☼	☼	☼	75%~99%
☼	☼	☼	☼	99%~100%

Power indication (in use)

LED 1	LED 2	LED 3	LED 4	Current power level of battery
☼	●	●	●	0%~10%
☼	●	●	●	10%~25%
☼	☼	●	●	25%~50%
☼	☼	☼	●	50%~75%
☼	☼	☼	☼	75%~100%

Status indication

	LED 1	LED 2	LED 3	LED 4
Frequency pairing	☼	☼	☼	☼
	Flashing slowly at the same time			
Upgrade mode	☼ ● ● ●...	☼ ☼ ● ●...	☼ ☼ ☼ ●...	
	Waterflow light			
Start calibration	☼	☼	☼	☼
	Flashing slowly at the same time			

5.3.3 Remote Controller Function

The Atom SE drone and the remote controller can be used immediately after startup since they have passed frequency pairing before delivery. If a new remote controller or drone is used for the first time, user must conduct frequency pairing for them as follows prior to use:

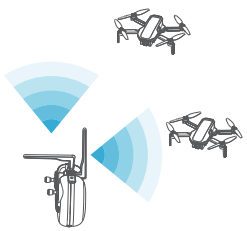
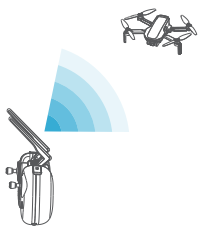
1. Power on the remote controller and connect it with the mobile phone, launch PotensicPro APP, tap setting and select “Rematch the drone” to enter the frequency pairing interface.
2. After powering on the drone, long press the“Power”button until the drone indicator flashes quickly in green; at this time, the drone is ready for frequency pairing.
3. Wait for about 7s, the remote controller beeps once to indicate frequency pairing is successful and the flight interface of the APP will show realtime image transmission.

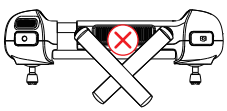
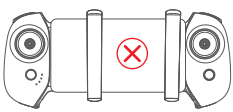
Make sure the remote controller is within 1m of the drone during frequency pairing.

If frequency pairing fails, check if there are interferences nearby, or other drones are also in frequency pairing mode, or the remote control is too far away or blocked. Eliminate the problems above and try again.
Do not relocate or handle the remote control and the drone during frequency pairing.

5.4 Antenna Angle

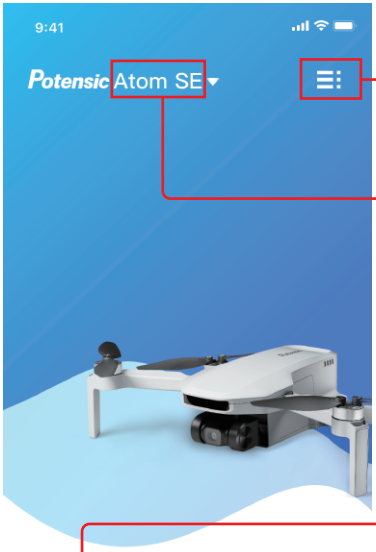
Adjust the antenna angle along with the changes of drone height and distance, to ensure the best communication status of the remote controller.

Wider communication angle is ensured at a close distance in this mode.	Keep both antennas pointing directly towards the drone to acquire a longer transmission distance.	If the drone is right above user, this angle can ensure best communication effect.
		

Do not cross the antenna in any case.	Do not press the antenna on your mobile device in any case.
	

6. PotensicPro APP

6.1 APP Homepage



Tap the icon to view the tutorials, flight tips, flight records, flight logs and manual documents

Tap to choose the corresponding model. The drone model will be matched automatically if user has connected the remote control to the mobile phone

Display connection status

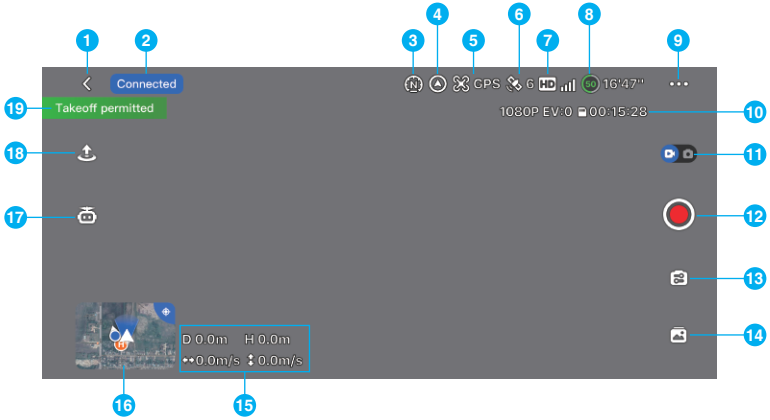
Tap to enter the flight interface

Me: Report a problem, modify account info, browse User Agreement, find the missing drone, close account and other settings

Photo album in APP (Connect the drone to see the contents in the drone SD card)

Homepage of APP

6.2 Flight Interface



1. Return button:

Tap to return to the homepage

2. Navigation prompt bar:

Display drone status and flight mode

3. Flight mode:

Video

Normal

Sport

4. Head / Headless mode:

Head mode

Headless mode

5. Positioning mode:

GPS GPS positioning

OPTI Visual positioning

Atti Attitude mode, no positioning

6. GPS status:

Display GPS signal status and quantity of satellites searched

7. Signal quality of HD image transmission:

HD Display the strength of image transmission connection signal between the drone and the remote control

8. Power level of the smart battery: 100

16'47" Estimated Remaining Flight Time

9. System Settings

Tap to view information about control, calibration, smart battery and other general settings.

Control settings

The beginner mode can be turned on or off, and the return height, flight fence, speed gear, and surround settings can be set.

Calibration

User can calibrate the compass and the remote controller manually.

Remote controller settings

Control stick mode: Mode 1 (Left Hand Throttle), Mode 2 (Right Hand Throttle)

Rematch the drone: Rematch is required after the drone or the remote controller is replaced

Smart battery

User can view the status and health condition of smart battery

General settings

User can set measurement unit, decoding mode, view device serial number, firmware version and upgrades.

10. Display Shooting Information

In shooting mode, it will display picture size, exposure compensation and remaining shooting number

In video recording mode, it will display resolution, exposure compensation and remaining video recording time

11. Shoot/record switch button:

to switch from shooting to video recording to switch from video recording to shooting.

12. Shoot/record button:

Video recording mode, click it to start video recording

Video recording in progress, click it to cancel

Shooting mode, press it to shoot picture

13. Shooting setting menu

Shooting mode: Set grid switch, exposure compensation, picture format and SD card formatting.

Video recording mode: Set grid switch, flight data watermark, exposure compensation, video segmentation, video format and SD card formatting.

14. Album:

Preview or download shot videos or pictures in SD card.

15. Display flight speed and distance

D Horizontal distance from the drone to takeoff point

H Relative height from the drone to takeoff point

Horizontal speed from the drone to takeoff point

Vertical speed from the drone to takeoff point

16. Attitude sphere/thumbnail map

Click attitude sphere to switch to thumbnail map

Click thumbnail map to switch to full-screen map

Wind Speed Scale

Remote controller

Drone

HOME point

Drone tilt angle

17. Smart flight

Smart Mode:

Head/headless mode, One-key lock/unlock, Attitude mode

Smart Flight:

Circle flight, waypoint flight and follow flight

18. One-key takeoff, landing/return

The APP will display different buttons based on drone status. Tap to initiate one-key takeoff, landing or return.

Tap to unlock, take off and hover at a height of 1.2m

Tap to land or auto return.

19. Display important information or status of drone

Make sure to fully charge the mobile device prior to flight, because the power of the mobile device will be consumed even if it is charged by the remote control.

Mobile cellular data is required when using the PotensicPro APP. Please contact your wireless carrier for data charges.

While using the APP, make sure to read and master the pop-up prompts and warning information of APP to know the current status of the drone.

It is recommended to replace any outdated mobile device which may have a negative impact on user experience of APP and lead to potential dangers. For any poor user experience and safety problems due to the use of an outdated mobile device, Potensic does not bear any liability.

7. Flight

This chapter introduces safe flight practices and requirements.

7.1 Requirements of Flight Environment

1. Do not use the product in severe weather, such as gale, rain, snow and fog.
2. Only fly in open areas. Tall structures and large metal structures may affect the accuracy of the onboard compass and GPS system and result in positioning failure. It is recommended to keep the drone at least 5m away from structures.
3. Control the product within your sight and keep away from the obstacles and crowds.
4. Do not use the product in places with high-voltage power lines, telecommunication base station or launching tower, to avoid interference of the remote control.
5. Please use the product with caution when altitude is over 3,000m for the flight performance can be affected when the performance of drone battery and power system is weakened due to environment factor.

7.2 Precautions of Flight

1. Check if the remote control, intelligent flight battery and mobile device are fully recharged.
2. Check if the drone is intact and propellers are installed correctly.
3. Check if the camera is working normally after power-on.
4. Check if APP is running normally.
5. Check if SD card is inserted and make sure camera is clean.
6. Make sure the drone takes off on flat and hard surface, instead of sandstone or bush; the drone may fail to be unlocked if it has major vibration.
7. Please be careful when the done takes off on surface of moving objects, such as running vehicle and ship.
8. GPS positioning and waypoint flight will be disabled in the south and north polar.
9. Do not use the product in extreme cold or hot place to avoid hazards.

7.3 Connection

Please follow the steps below:

1. Please finish the steps in “3.5 Preparing the Remote Controller” and turn on the remote control.
2. Please finish the steps in “3.4 Preparing the drone” and turn on the remote control.
3. Launch APP to view the connection status. Connection is finished when it shows .
4. Tap Enter Device > to enter the flight interface.

It is advised to tap and read for first-time users. **Follow the animated guide and operate**

7.4 Flight Mode

ATOM SE has three flight modes-Video/Normal/Sport, which can be switched via the APP.

Video Mode

Ascending: 2m/s, descending: 1.5m/s, horizontal movement: 6m/s

The system will enter beginner mode by default when using the drone for the first time, and the flight mode will be limited at beginner mode.

Normal Mode

Ascending: 4m/s, descending: 3m/s, horizontal movement: 10m/s

The beginner mode can be quit after the flight operation is mastered, and the normal mode will be entered by default. This is the common mode.

Sport Mode

Ascending: 5m/s, descending: 4m/s, horizontal movement: 16m/s

Video mode is recommended in aerial photography. Sport mode is recommended if you would like to get a. Please pay more attention in Sport Mode flights as the the responsiveness of the drone significantly increases in Sport mode.

Be vigilant and maintain adequate maneuvering space during flight, as the responsiveness of the drone significantly increases in Sport mode.

7.5 Compass Calibration

7.5.1 Scenarios Requiring Compass Calibration

1. Compass calibration is required for first time using.
2. Flying at a location further than 31 miles (50 km) away from the location the drone was last flown.

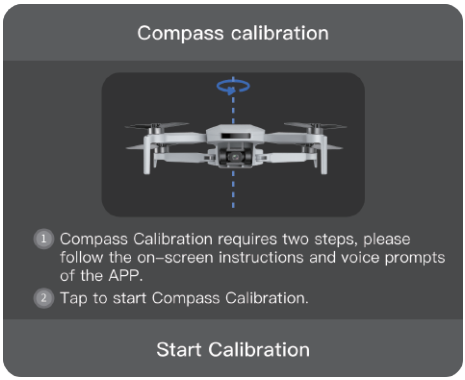
DO NOT calibrate the compass in locations where magnetic interference may occur such as close to magnetite deposits or large metallic structures such as parking structures, steel reinforced basements, bridges, cars, or scaffolding.
DO NOT carry objects that contain ferromagnetic materials such as mobile phones near the drone during calibration.
Make sure the drone is at least 1m above the ground during the calibration.
It is not necessary to calibrate the compass when flying indoors.

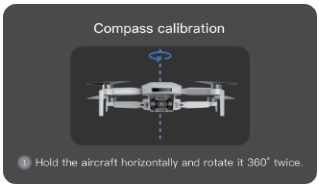
7.5.2 Calibration Procedure

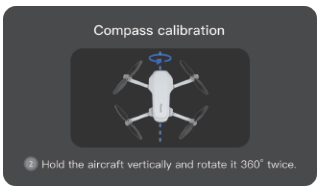
Choose an open area to carry out the following procedure.

1. When calibration is required, the APP will pop up the calibration interface automatically, just tap “Start calibration”, and the tail indicator will alternatively flash in red and green.
2. Hold the drone horizontally and rotate it 360° till the app shows vertical calibration, and the tail indicator will alternatively flash blue and green.
3. Hold the drone vertically and rotate it 360° around a vertical axis till the APP prompts the calibration completed.

Users can also trigger compass calibration manually in the APP setting.







If the calibration has failed, change your location and try the calibration procedure again.
Please pay attention to the instructions of magnetic field environment in calibration interface.

Do not calibrate compass while arms are folded.

7.6 Beginner Mode

The drone is automatically set to Beginner Mode for first-time use. In beginner mode:

1. The flight distance and height will be restricted at 0~30m
2. The speed level will be restricted at Video mode
3. The beginners are suggested to learn and master the drone in beginner mode

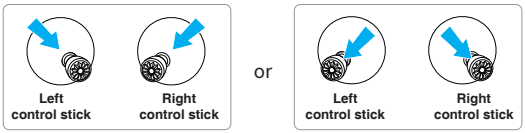
7.7 Takeoff/Landing/Hovering

7.7.1 Manual Takeoff/Landing

Takeoff

Step 1: Start the motors

Use a combination stick command to start the motors. Push both sticks to the bottom inner or outer corner depending on your control stick mode to start the motors. Release both sticks simultaneously once the motors are spinning.



Step 2: Push throttle control stick to take off

Push the throttle control stick upwards gently as shown in the picture, release the control stick when the drone leaves ground and it will keep hovering.

Landing

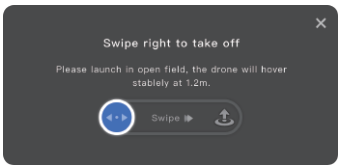
Pull the throttle control stick until the drone lands on ground. Release the throttle control stick when the motors are no longer spinning.

It is not suggested to take off at low battery, for it may affect the battery service life. Please handle it with caution and undertake the corresponding consequences if compulsory takeoff is required.
Keep the distance over 0.5m between the drone and ground, for it may fail to enter good hovering status due to air flow when it is close to the ground.
If the drone fails to be locked after landing due to anomaly, pull down the throttle control stick to the limit position for 3s and the drone will be locked by force.

7.7.2 One-key Takeoff / Landing

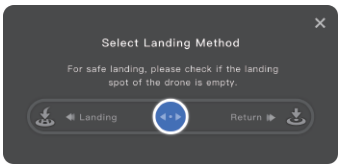
One-key takeoff

Tap one-key takeoff button in App, then swipe right in the pop-up window to start the drone automatically then ascend to the height of 1.2m and maintain hovering.



One-key landing

Tap one-key landing button in App, then swipe left in the pop-up window to land the drone, or swipe right to start returning.



7.8 Smart Flight

7.8.1 Headless Mode

Description	Drone's head direction will not be considered in headless mode, pull the pitch control stick to make the drone leave or approach the HOME point; pull the roll control stick to make the drone fly clockwise or anticlockwise in circle along with HOME point; the functions of throttle control stick and yaw control stick remain unchanged.
Switch mode	When GPS signals are strong and horizontal flight distance is over 3m, Tap in App. **Head mode** **Headless mode**

7.8.2 Circle Flight

Description	Start circle flight, the drone will fly forwards by taking the current position as circle center until it reaches the starting point of circle flight; When user tap GO in APP, the drone will fly around the circle at a set speed and direction.
Adjustable parameter	User can set the flight radius, speed and direction of circle flight in setting menu.
How to start	When GPS signal is normal and flight height is ≥5m, tap and select in APP.
How to exit	1. Quit flight automatically after finish circle flight. 2. In process of circle flight, tap on the left in PotensicPro APP to exit circle flight.

When circle flight is enabled, the drone will ascend to 5m automatically if its height is less than 5m.

Make sure there's no obstacle in the radius of circle flight and use the product with caution, for the drone does not support obstacle avoidance function.

7.8.3 Follow Me Flight

Description	Once follow me flight is enabled, the drone will follow User's mobile device at the current distance; The flight height and yaw can be adjusted during follow me flight.
How to start	When GPS signal is strong and horizontal flight distance is 5-50m, tap and select in APP.
How to exit	Tap on the left in PotensicPro APP to exit follow me flight.

When follow me flight is enabled, the drone will ascend to 5m automatically if its height is less than 5m.
The follow accuracy depends on the quality of the drone GPS signal and positioning accuracy of user's mobile device.

The follow me flight depends on the positioning of user's mobile device. The positioning authority of APP is required, or this function is disabled.

7.8.4 Waypoint Flight

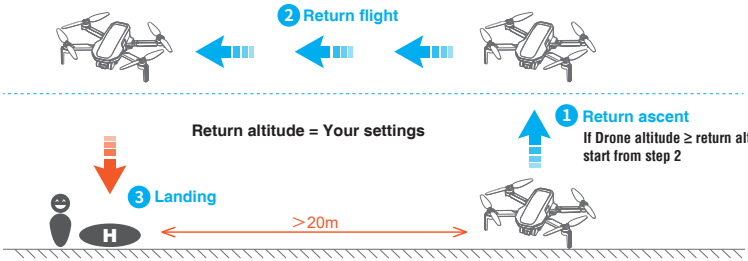
Description	When waypoint flight function is enabled, User can freely set 1 or multiple waypoint coordinates in APP map, and the drone will fly over the corresponding coordinates according to the sequence of set waypoint coordinates.
How to start	When GPS signal is strong, tap and choose in App, then add a location mark in map and set it as waypoint, then tap GO to start waypoint flight. User can set 1-30 waypoints; The figure in waypoint icon indicates the flight sequence. Meanwhile, User can delete certain waypoints, save the data of the current waypoint flight, or choose from the saved waypoint flights. 
How to exit	Tap on the left in PotensicPro APP to exit waypoint flight.

7.9 Return(RTH)

The return consists of three steps, as follows:

1. Ascent: The drone ascends to the set return altitude (this step is skipped if the drone's altitude is already higher than the return altitude).
2. Level flight: The drone maintains a straight flight at the set altitude towards the home point.
3. Landing: Once it reaches the home point, the drone will automatically land and stop its propellers.

Return to Home (RTH) The drone must be in GPS mode



How to RTH

One key RTH: Press and hold the RTH button on the remote controller for 1s or tap in APP to pop up the menu, then swipe right to start the return (see 7.7.2).

Auto RTH: When either the drone battery level is low, the signal between the drone and the remote controller is lost or the drone is experiencing other abnormalities, Auto RTH will be triggered.

How to exit the RTH

Method 1: Tap on the left of APP to exit RTH.

Method 2: Briefly press the return button on the remote controller to exit RTH.

RTH Requirements

The drone must take off in GPS mode and successfully record the HOME point.

If the drone takes off in OPTI mode and switches to GPS mode mid-flight, it will not be able to return to the takeoff point.

Please pay attention to the location of the HOME point on the map and the prompts in PotensicPro APP.

The default return altitude is 30m, which can be modified in PotensicPro APP.

During the return course, users can still adjust the flight altitude by adjusting the throttle.

The drone will return when it is within 20m of the HOME point, and the return height will be 5m. Please pay attention to safety.

Tall buildings or obstacles can block the transmission signal and cause signal loss. Do not fly behind buildings beyond the return height, otherwise the drone will collide with obstacles and crash during the return. If the drone enters ATTI mode due to GPS failure or GPS signal interference, it will not be able to return. During the return process, strong headwinds may be encountered. Lowering the flight altitude appropriately can help reduce power consumption. If the power is insufficient, the drone will perform a forced landing in place. Please pay attention to the prompts in PotensicPro APP. Do not initiate the return when there are obstacles overhead, such as tall trees, otherwise the drone may crash during the climb.

Please pay attention to return safety, because the drone does not support obstacle avoidance and may crash when colliding with obstacles during the return course.

For any GPS signal anomaly in communication loss return, the drone will maintain hovering at ATTI mode, until GPS signal is strong enough and the return will resume.

7.10 Emergency Stop

See 5.3.1 Emergency stop for the detailed operation method.

Emerency stop function is designed for preventing injuring pedestrians or damaging the valuables by propeller blades in case of drone failure. Please use it with caution, because stopping the motors mid-flight will cause the drone to crash.

8. Appendix

8.1 Specification & Parameters

Drone

Takeoff weight: < 249 g (the takeoff weight includes battery and propeller blades)

Fold size: 88x143x58 mm

Unfold size (propeller blades included): 300x242x58 mm

Unfold size (propeller blades excluded): 210x152x58 mm

Diagonal Distance: 219 mm

Max flight speed(Sport Mode): Ascending: 5m/s; Descending: 4 m/s; Horizontal flight: 16 m/s

Max flight time: 31 min (measured at breezeless condition and even speed of 5m/s)

Max wind speed resistance: Level 5

Maximum flight altitude: 120m/393.7ft

Operating temperature: 0 °C ~ 40 °C

GNSS: GPS + GLONASS

Operating frequency: 2.400 ~ 2.4835 GHz

Transmission power: 2.4 GHz: < 24 dBm

Hovering Accuracy Range: Vertical: ±0.1m (with Vision Positioning), ±0.5 m (with GPS Positioning)
Horizontal flight: ±0.3 m (with Vision Positioning), ±1.5 m (with GPS Positioning)

Extra payload: Not supported

Downward Vision System

Hovering range: 0.3-5m(ideal environment); Available at 0.3-10m.

Unavailable scenarios of visual positioning:

1. Pure-color surface
2. Surface with strong reflection, such as smooth metal surface
3. Transparent object surface, such as water surface and glass
4. Moving texture, such as running pets
5. Scenarios with drastic change of light; for example, the drone flies to outdoor space with strong light from indoor space
6. The places with weak or strong light
7. The surface with repeating identical patterns or textures, such as floor tile with the same texture and size
8. The surface with highly consistent strip pattern

Camera

Lens tilt range: +20 ° ~ 90 °

CMOS: 1/3"

Effective pixel: 1200 W

ISO range: 100 ~ 6400

Electronic shutter speed: 1/30 s ~ 1/25000 s

FOV: 118 °

Aperture: F2.2

Photo resolution: 4,608*2,592

Image format: JPG/JPG+RAW(DNG)

Video resolution: 4K @ 30fps; 2.7K @30fps; 1,080P @60fps; 1,080P @30fps;

Video format: MP4 (H.264)

Max Video Bitrate: 40 Mbps

Supported file system: FAT 32, exFAT

Type of supported storage card: Micro SD card; 4 ~ 256GB SD card transmission speed ≥ class10 or U1 standard

Remote controller

Operation frequency: 2.402 ~ 2.483 GHz

Max Transmission Distance(unobstructed, free of interference): 4km

Operating temperature: 0 °C ~ 40 °C

Battery: 2,200 mAh, lithium battery, 1 S

Transmitter Power (EIRP): 2.4 GHz: ≤20 dBm

Charging interface: TYPE-C

Charging specification: 5 V/1 A

Video Transmission System: PixSync 2.0™

Image transmission quality: 720 P

Latency (depending on environment and mobile device): 200 ms

Supported Mobile Device Size: Length: 160mm, Width: 100mm, Thickness: 6.5mm-8.5mm

Smart flight battery

Model: DSBT02A

Capacity: 2,500 mAh

Voltage: 7.2 V

Battery type: Li-ion 2S

Energy: 18 Wh

Battery weight: 103 g

Working temperature: 0 °C ~ 40 °C

⚠ WARNING

DANGER
Only suitable for ages 14+

Warning: The product should only be used by adults and children over 14 years. Adult supervision is required for children under 14 years.

Hinweis: Dieses Produkt ist für die Erwachsene und die Kinder ab 14 Jahren. Die Kinder unter 14 Jahren müssen von Erwachsenen beaufsichtigt werden.

Avertissement: Ce produit est destiné aux adultes et aux enfants de plus de 14 ans. Les enfants de moins de 14 ans doivent être surveillés par des adultes.

Avvertimento: Questo prodotto è destinato all'uso per i adulti e bambini di età superiore ai 14 anni. I bambini di età inferiore ai 14 anni devono essere sorvegliati da un adulto.

Advertencia: Este producto es para adultos y niños mayores de 14 años. Los niños menores de 14 años deben ser supervisados por adultos.

警告： この製品は、大人と14歳以上の子供には使用対象です。14歳未満の子供は大人の監視が必要です。

صنعت وفقا للمواصفات والمعايير العالمية
Tested according to international standards

WARNING:
NOT SUITABLE FOR CHILDREN UNDER 3 YEARS DUE TO SMALL PARTS
هشدار! برای کودکان زیر ۳ سال
مناسب نیست ، دارای قطعات کوچک است
تحذير : غير ملائم للأطفال تحت ثلاثة (٣) سنوات بسبب
القطعة الصغيرة
COUNTRY OF ORIGIN: CHINA
بلد المنشأ: الصين

⚠ WARNING:
CHOKING HAZARD-Small parts.
Not for children under 3 years.

Drone FCC ID: 2AYUO-DSDR04B
Remote controller FCC ID: 2AYUO-DSRC02A

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

(1) This device may not cause harmful interference, and

(2) This device must accept any interference received, including interference that may cause undesired operation.

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy, and if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

– Reorient or relocate the receiving antenna.
– Increase the separation between the equipment and receiver.
– Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
– Consult the dealer or an experienced radio/TV technician for help.

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with a minimum distance of 20cm between the radiator & your body. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

Manufacturer: Shenzhen Deepsea Excellence Technology Co., Ltd.
Address: 5th Floor, Building 7, Hongfa High-tech Park, Keji 4th Road, Shiyan Street, Baoan District, Shenzhen
EC REP: E-CrossStu GmbH. Mainzer Landstr.69,60329 Frankfurt am Main
UK REP: DST Co.,Ltd. Fifth Floor 3 Gower Street, London, WC1E 6HA, UK

R 214-113197

MADE IN CHINA