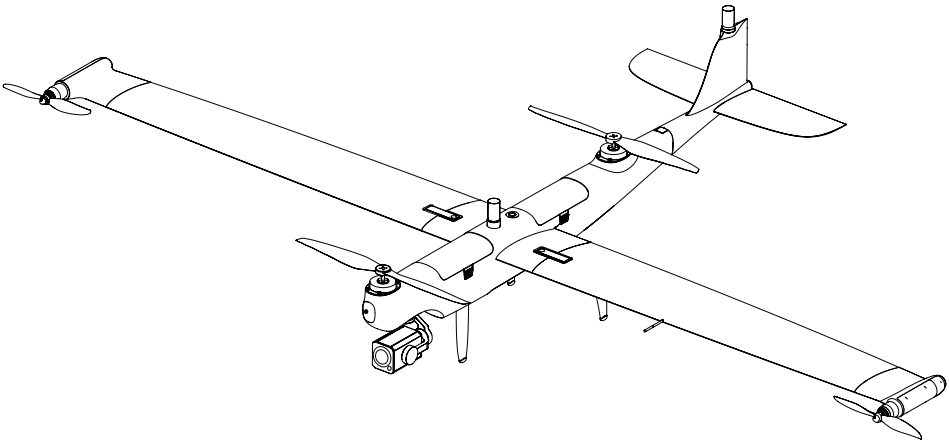
Dragonfish Standard

Quick Start Guide



AUTEL ROBOTICS

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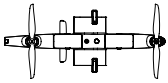
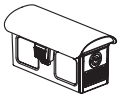
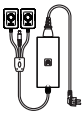
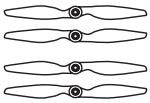
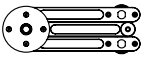
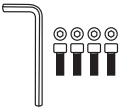
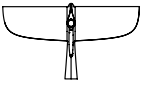
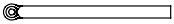
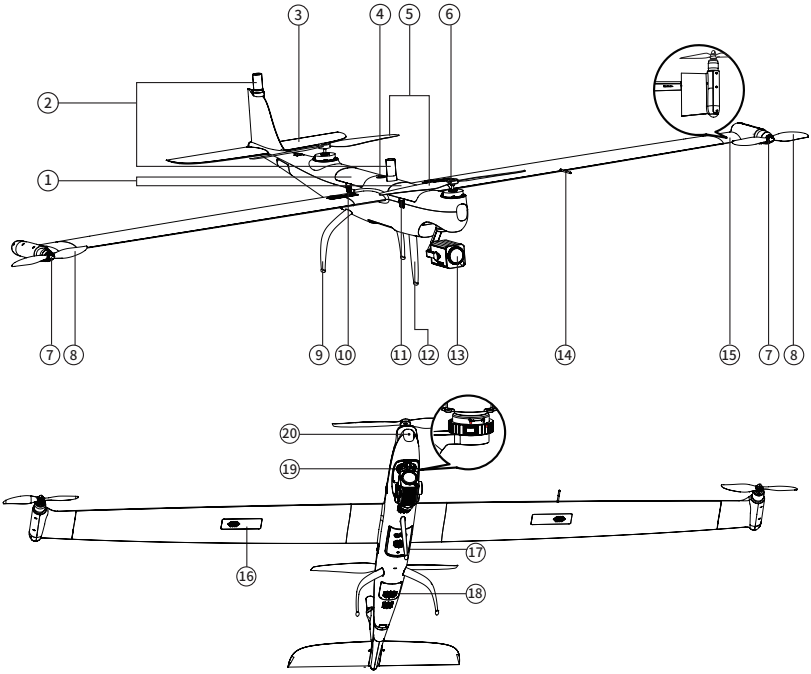
Item list

	**Aircraft body** x 1		**9.7 inch ground station** x 1
	Base station x 1		**Battery** x4 (the actual quantity is subject to the purchased set)
	**Charger + AC line** x 1		**Propeller blades** x 2
	Base station antenna x 2		**Base station feeder** x 2
	**Base station tray** x 1		**Base station tripod** x 1
	Base station charger x 1		**USB Type-C cable** x 1
	**Repair tool kit** x 1		**Gimbal Camera** x 1 (The gimbal model is subject to the actual set purchased)
	Wing set x 1		**Ground station lanyard** x 1
	**Tail** x 1		**Propeller holder** x 2
	**Airspeed indicator cover** x 1		**TF card** x 1
	Tail Rubber Cover x 1		**Documentation** x 1set (includes Drgonfish Standard, Base station, Charger, Battery quick guide, Disclaimer)

Getting to know the aircraft

The Drgonfish Standard aircraft integrates Autel Robotics' intelligent and superior flight control technology, gimbal technology, and imaging technology. The aircraft boasts a new tilt rotor design that combines the efficiency of fixed-wing aircraft endurance with the takeoff convenience of traditional multi-rotor drones. A 5 second self-check system ensures the aircraft is safe and ready for operation. It can be assembled quickly, enabling set up and take-off in a matter of minutes. The Drgonfish Standard offers a maximum flight time of up to 120 minutes and a video transmission range of 30 km. It comes built in with a range of intelligent features such as automatic take-off and landing, intelligent tracking, terrain follow and more.

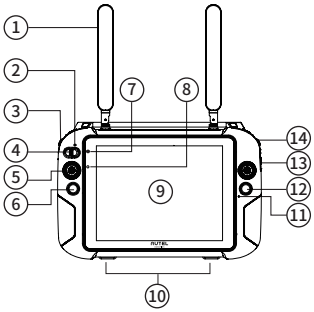
Tough and reliable, the Drgonfish Standard has an IP43 protection rating to enable operations across a variety of terrains. It also features a modular payload mount with an integrated quick release function that enables operators to mount a dual sensor, a triple sensor, or a multispectral payload effortlessly to suit mission needs. Alongside the aircraft is a GNSS Base Station and the integrated, Dual RTK modules that equip the aircraft with additional redundancy. This allows the Drgonfish Standard to fly confidently in complex environments while capturing precise, centimeter-accurate data.

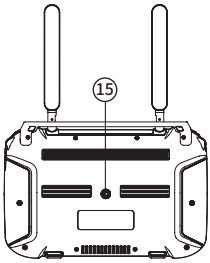


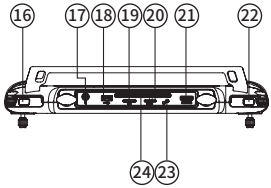
1. Smart battery
2. RTK antenna
3. Horizontal stabilizer
4. Power button/indicator
5. Propeller blades
6. Body motor
7. Wing motor
8. Wingtip propellers
9. Rear landing gear
10. Wing lock
11. Battery release button
12. Front landing gear
13. Gimbal camera
14. Airspeed sensor
15. Tilting wingtip
16. GPS module
17. Ultrasonic Positioning Sensors
18. Dust Net
19. PTZ installation interface
20. Millimeter-wave Radar

Getting to know the portable ground station

The Drgonfish Standard is equipped with a 9.7-inch TFT-LCD touch screen (2048*1536). It offers a brightness of 1000 cd/m2, making it almost twice as bright as typical mobile devices. The screen can display images clearly even in direct sunlight, and a built-in 256G memory makes it convenient for storing all your critical data. With an image transmission range of 30km[1] and a battery life of 4.5 hours, the ground station guarantees optimal performance and reliability.





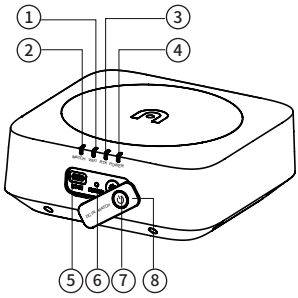


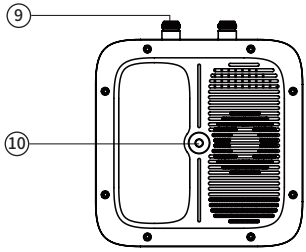
1. Antenna
2. Mode switch indicator
3. Gimbal pitch control wheel
4. Manual/Auto mode switch key
5. Joystick
6. Home button
7. Power status indicator
8. Light perception sensor
9. Touch screen
10. Hooks (for lanyard support)
11. Microphone
12. Photo/Video button
13. Zoom button
14. Gimbal level control dial
15. Tripod mounting interface
16. Power button
17. Charging port
18. USB port
19. SD card slot
20. SIM card slot
21. HDMI port
22. Custom buttons
23. Headphone jack
24. Air outlet

Getting to know the base station

The Dragonfish base station is a high-precision satellite signal receiver that supports GPS, Beidou, Galileo and GLONASS navigation systems. It can be used across a variety of applications and environments. The Dragonfish base station and the integrated Dual RTK modules equip the aircraft with additional redundancy and positioning accuracy to provide precise, centimeter accurate data. It also enables the Drgonfish Standard to withstand signal interference in strong magnetic environments such as power lines and near buildings.

[1] The experimental data were measured in a non-interference environment



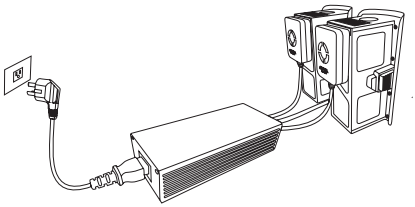


1. WiFi indicator
2. Linking indicator
3. RTK indicator
4. Power indicator
5. Charging port
6. Frequency button
7. Power button
8. Port cover
9. Antenna interface
10. Tripod interface

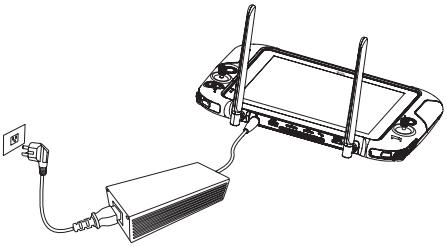
Using the Drgonfish Standard

Charging

1. Charging the Intelligent flight battery

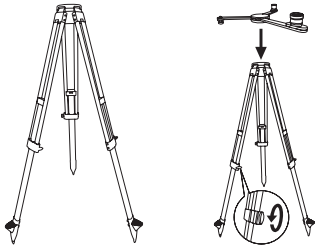


2. Charging the ground station

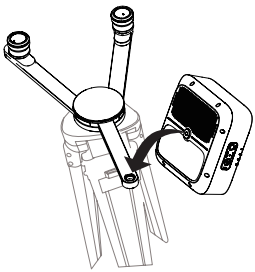


Setting up the base station

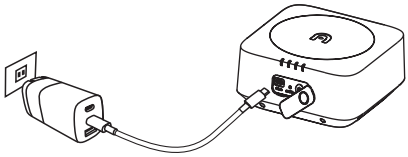
1. Unfold the tripod, install the base station tray, and lock the tray.



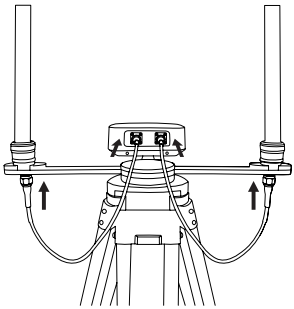
2. Install the base station body to the tray and tighten the lock on the tray nut. Ensure that the base station is level and stable.



3. Charging the base station

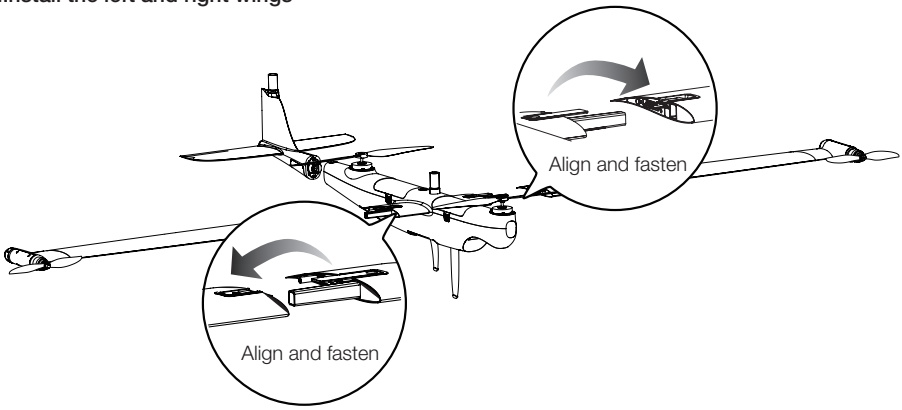


3. Install the antenna on the tripod and connect the antenna feeder to the base station antenna port.

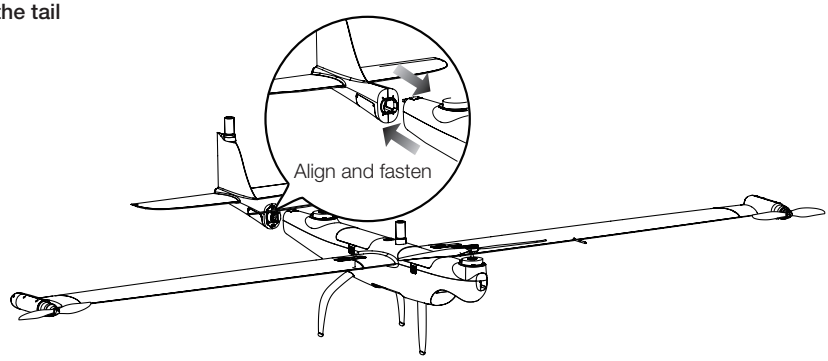


Assembling the aircraft

1.Install the left and right wings

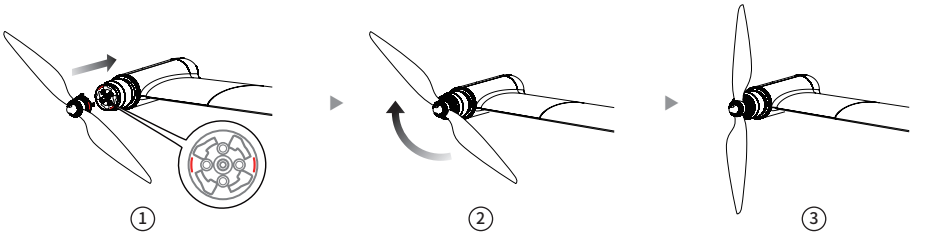


2. Install the tail



3. Install the wingtip propeller

Before installing or removing the propeller, power off the aircraft (as shown in the illustration).



① Mount on the base

② Press and rotate the paddle

③ Install to the locked position

Locking direction: Press and Rotate in the indicated direction to lock the propeller.

Unlocking direction: Press and Rotate the propeller in the opposite direction to unlock it.

The marked propeller is to be mounted on the marked motor

Unmarked propeller is to be mounted on the unmarked motor

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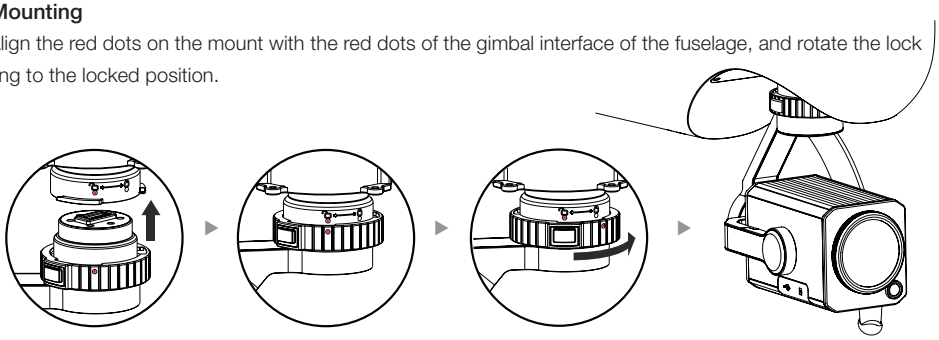
4. Mounting

Align the red dots on the mount with the red dots of the gimbal interface of the fuselage, and rotate the lock ring to the locked position.

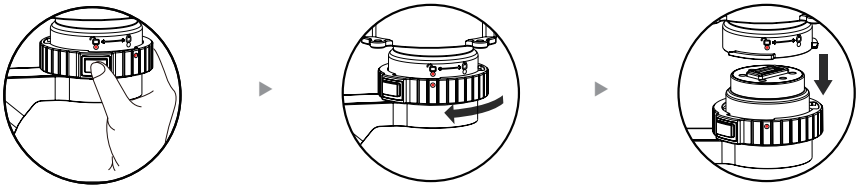


① Align the top and bottom red dots

② Insert the gimbal up vertically into the slot

③ Rotate the lock ring to the locked position

5.Unlock mount



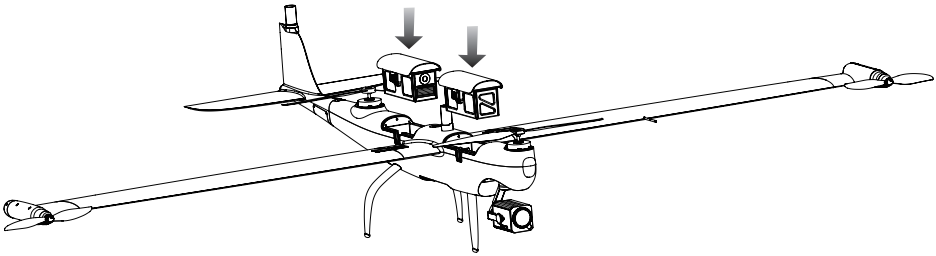
① Press the unlock button

② Rotate the lock ring to the unlocked position

③ Remove mount by lowering vertically down

6. Installing the Intelligent Flight Battery

When installing or removing the aircraft battery, be sure to power off the aircraft.

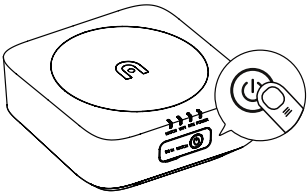


• Align the battery to the battery interface on the fuselage and install it.

Powering on / Activating the aircraft

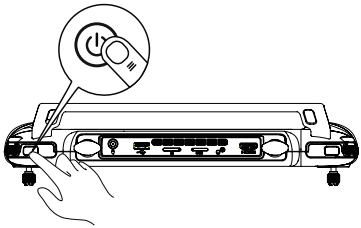
1. Powering on the base station

Short press the power button for 1 second to turn on the base station.



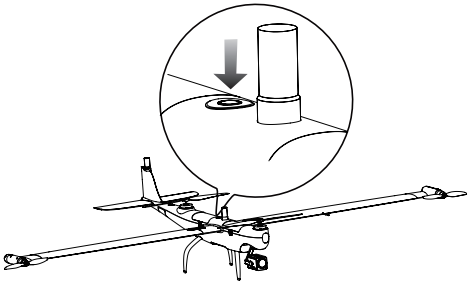
2. Powering on the ground station

Short press the power button for 1 second to turn on the ground station.



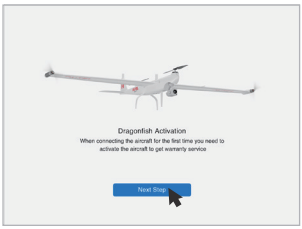
3. Powering on the aircraft

Press the power button on the aircraft body for 3 seconds to power on the aircraft.



4. Activating the aircraft

Open Autel Voyager and click the activation button to activate the aircraft.

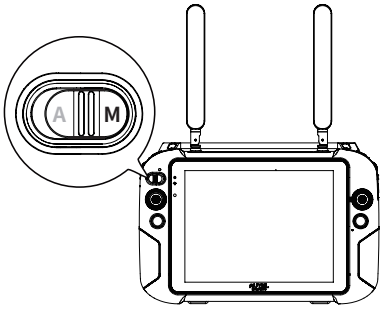


Flight

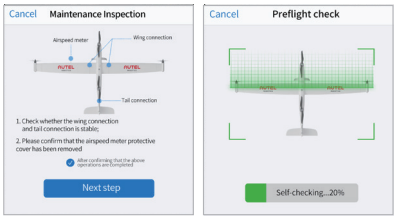
Enter the Autel Voyager safe flight interface. Before taking off, please place the aircraft on a flat surface with the tail facing towards you.

Manual takeoff

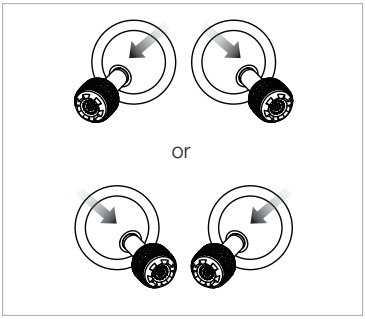
① Switch the ground station gear to M gear.



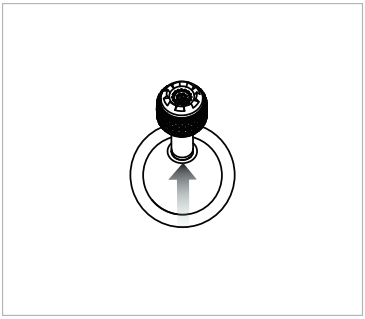
② Check the aircraft system status.



③ Simultaneously move the joystick in inwards or outwards and hold for 2 seconds to arm the motors.



④ Push up the left stick (mode 2) to take off.



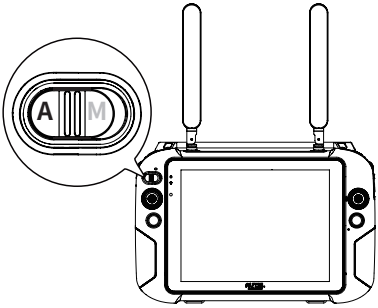
*Non-professionals are not recommended to use manual mode

Flight

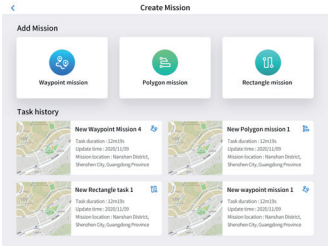
Enter the Autel Voyager safe flight interface. Before taking off, please place the aircraft on a flat surface with the tail facing towards you.

Automatic takeoff

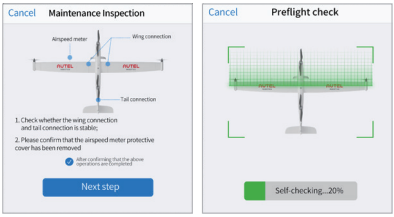
① Switch the ground station gear to A gear



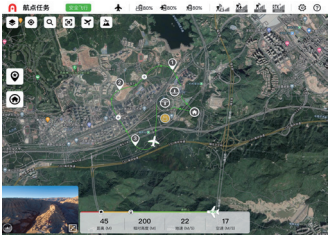
② Click the Create Mission button to plan the mission



③ Aircraft system status check



④ Flight interface display



Specifications

Aircraft

Size	2.3*1.29*0.46 m
Weight (including two batteries, without gimbal)	7 kg
Single battery weight	1.3 kg
Maximum load	1.5 kg
Maximum take-off weight	8.5 kg
Working frequency	902-928 MHz,2.4000-2.4835 GHz,5.725-5.755GHz
EIRP (Equivalent radiated power)	900 MHz FCC: <30 dBm 2.4 GHz FCC: <30 dBm SRRC/CE/MIC: <20 dBm; 5.8 GHz SRRC/FCC: <22 dBm CE: < 14 dBm hovering accuracy (P-GPS)
Hovering accuracy (P-GPS)	Vertical: ±0.1 m (when the visual positioning is working normally) ±0.5 m (when GPS is working normally) ±0.1 m (when RTK positioning is working normally) Horizontal: ±0.3 m (when visual positioning is working normally) ±1.5 m (when GPS is working normally) ±0.1 m (when RTK positioning is working normally)
RTK positioning accuracy	During RTK FIX Mode: 1 cm + 1 ppm (horizontal) 1.5 cm + 1 ppm (vertical)
Maximum rotational angular velocity	Pitch axis: 180° /s Yaw axis: 60° /s
Maximum pitch angle	20°
Maximum roll angle	35°
Maximum ascent speed	Vertical flight mode: 4 m/s Fixed-wing flight mode: 5 m/s
Maximum descent speed (vertical)	Vertical flight mode: 3 m/s Fixed-wing flight mode: 5 m/s
Maximum horizontal flight speed	30 m/s
Maximum service altitude	6000 m
Maximum wind resistance	During fixed-wing flight: 15 m/s (level 7 wind)

	Vertical take-off and landing: 12 m/s (level 6 wind)
Maximum flight time	120 min
Supported Payloads	DG-Z2, DG-T3, DG-T3H, DG-L20T
Supported Gimbal Configurations	Fast Disassembly
Ingress Protection Rating	IP43
GNSS	GPS+GLONASS+BeiDou+Galileo
Working temperature	-20° C to 50° C

9.7 inch ground control station

Image transmission parameters:	Maximum transmitting distance (unobstructed, free of interference)	902-928 MHz; 2.4-2.4835 GHz FCC:10 km CE / MIC:5 km SRRC:5 km
Digital transmission	Working frequency	5.725 - 5.755 GHz
Wi-Fi parameters:	Protocol	Wi-Fi Direct, Wi-Fi Display, 802.11a/g/n/ac Supports 2 x 2 MIMO Wi-Fi
	Working efficiency	2.400 - 2.4835 GHz 5.150 - 5.250 GHz 5.650 - 5.755 GHz 5.725 - 5.850 GHz
Other parameters:	Battery	Name: Lithium polymer Battery Capacity: 8200mAh Voltage: 11.4 V Battery type: Li-Po Energy: 93 Wh Charging time: 120 minutes
	Battery life	Approximately 3 hours (maximum brightness) Approximately 4.5 hours (50% brightness)
	Storage	ROM 256GB + expandable (support TF card)
	Video output interface	HDMI interface

USB-A interface supply voltage/current	5V / 500 mA
Working temperature	-20°C to 40°C
Storage temperature	-20°C to 60°C (within one month) -20°C to 45°C (within three months) -20°C to 30°C (within one year)
Charging environment temperature	0°C to 45°C
Satellite positioning module	GPS+GLONASS+Galileo
Size	319×233×74 mm (antenna folded) 319×398×74 mm (antenna expanded)
Weight	1987 g

Base station

GNSS receiver	Satellite receiving frequency	Simultaneously receive: GPS: L1, L2, L5 BeiDou: B1, B2, B3 GLONASS: F1, F2 Galileo: E1, E5A, E5B
	Positioning accuracy	Single Point Horizontal: 1.5 m (RMS) Vertical: 3.0 m (RMS) RTK Horizontal: 1 cm+1 ppm (RMS) Vertical: 1.5 cm + 1 ppm (RMS) 1 ppm: For every 1 km increase in distance, the accuracy will be 1 mm less. For example, the horizontal accuracy is 1.1 cm when the receiving end is 1 km away from the base station.
	Positioning update rate	1 Hz, 2 Hz, 5 Hz, 10 Hz and 20Hz
	Cold start	< 40 s
	Hot Start	< 10 s
	Recapture Initialization reliability	< 1 s
	Initialization reliability	> 99.9%
	Differential data transmission format	RTCM 2.X/3.X

Communication	Data link	Image transmission, Wi-Fi
Image transmission parameters:		
	Working efficiency	2.4000-2.4835 GHz; 902-928 MHz
	EIRP (Equivalent radiated power)	902-928 MHz FCC: < 30 dBm 2.400-2.4835 GHz FCC: < 30 dBm SRRC/CE/MIC: < 20 dBm
WIFI parameters:	Working efficiency	2.400-2.4835 GHz 5.125-5.25 GHz 5.650-5.755 GHz 5.725-5.850 GHz
	EIRP (Equivalent radiated power)	2.400-2.4835 GHz FCC: < 26 dBm SRRC/CE/MIC: < 20 dBm 5.125-5.25 GHz FCC/SRRC: < 26 dBm 5.650-5.755 GHz MIC: < 20 dBm 5.725-5.850 GHz SRRC/FCC: < 26 dBm; CE: < 14 dBm SRRC/CE/MIC: < 20 dBm
	Communication distance	Base station and aircraft: 30km (FCC) Base station and ground station: 200m (FCC) (Unobstructed and free of interference, when the mobile station is used as a base station and the distance from the mobile station antenna to the bottom of the tripod is 2 m; and when the difference in height between the remote controller and mobile station is less than 10 m, and when the remote controller is 1.2 m from ground level)
Electrical characteristics	Power consumption	7.5 W
	Power supply	5 to 20V DC
	Battery	Type: Lithium polymer battery Capacity: 4950 mAh Energy: 57.1 WH
	Runtime	>7.5 h
Physical properties	Dimensions (base station body + extension pole)	193 mm×177 mm×73 mm
	Weight	1275 g
	Ingress protection	IP64

Working temperature	-20°C to 50°C

Millimeter-wave Radar

Transmit Frequency	79-81GHz
Output Power (EIRP)	27dBm
Modulation Type	FMCW
Cycle Time	50ms
Communication Interface	UART
Distance Range	0.75-275m
Distance Accuracy	±0.1m
Beam Width (-6dB)	30° (azimuth) , 30° (elevation)

NOTE:

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