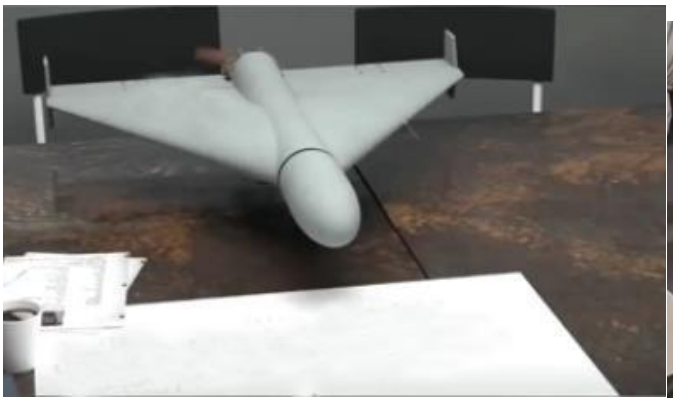
1800KM Long range
Delta wing UAV Drone

Catalogue

1. Overview

Description

Aero-Y200 long-distance intelligent UAV adopts the aerodynamic layout of the small aspect ratio tailless delta wing, and is a wandering suicide for primary swarm operations The UAV, with a length of 3.4m, is equipped with a wooden propeller and rocket-assisted (Optional) take-off. The weight of the whole machine is 100kg, and the weight of the warhead is 30kg. It is a small and medium-sized aeroengine with 17.5 horsepower. It has the ability to change the strike target in flight, has the characteristics of a cruise missile, and uses inertial navigation and GPS guidance to patrol and strike targets.




Main Features

1) Strong anti-interference, equipped with GPS & Beidou 4-antenna anti-interference module

2) Equipped with inertial navigation

3) Dual-channel thermal imaging visible light AI seeker, attack day and night

4)Autonomous guidance and manual target confirmation based on image transmission

5) Deep learning is possible, and the target information can be input into the guider in the form of pictures, and the guided attack can be carried out according to the pictures

6) Equipped with 50km military image and data transmission

Composition and Configuration

Table 1-1 Typical Configuration

No	Category	System Name
1	**UAV Platform**	Body structure
2		Flight Control and Navigation

3		Airborne data link
4		Power system
5		Electric system
6	**Task load**	Customer settings
7	**Ground control**	Ground station (Optional)
8		Rolling
9		Ejection rack (Optional)
10		Booster rocket(Optional)
11	**Comprehensive protection**	Comprehensive support equipment
12		Technical Training
13		technical documentation

Technical Specifications

The main technical specifications of Aero-Y200 are shown in Table 1-2 below.

Table 1-2 Technical Index

Parameter	Aero-Y200
Engine	550cc engine
Feature	Long Endurance, Long Range
Wingspan	2500mm
Length	3400mm
Height	800mm
Max. Taking-Off Weight	220kg

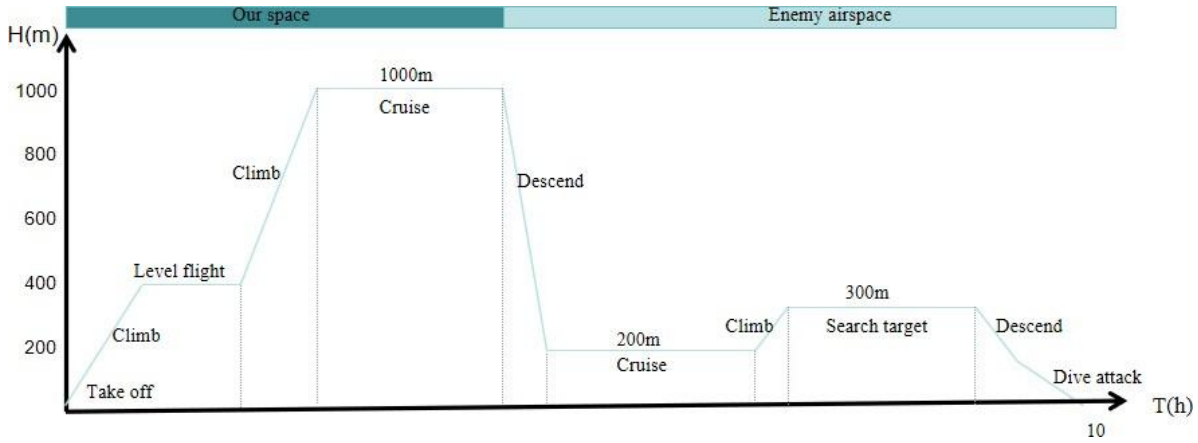
Cruising Speed	**150-180km/h**
Max. Speed	**230km/h**
Max. Cruising Range	**1800km**
Ceiling	**3500m**
Max. Cruising Time	**10-12h**
Wind Resistance Level	Strong Breeze / Force Six
Max. Take-off Altitude	500m Above Sea Level
Max. Payload	**50kg**
Attack accuracy	CEP≤3m
Guidance method	· GPS/BD2 (enhanced anti-jamming) + INS · Terminal image guidance
Launch mode	Running or Ejection rack or Rocket booster

2 Typical Mission Profile

After taking off, the Aero-Y200 UAV first climbs to a safe altitude and then changes to level flight. After continuing to fly to a cruising altitude of 1000m, and then fly at cruising speed at 180km/h. Approach the target area, reach the attack range and start to glide and dive, adjust the course to align with the target waypoint, and attack the target.

Figure 0-1 Aero-Y200 Typical Mission

Profile Our airspace Enemy airspace



The standard flight mission table gives the definition of each stage of flight, including the subsection of function name, selection of engine stall, flight altitude, flight speed, flight distance, flight time, etc. It is also possible to directly estimate the amount of fuel required for the entire mission profile. Take a certain speed sequence, calculate the speed sequence corresponding to the climbing gradient and climbing rate at different heights, and give the data table and curve. Among them, the maximum climbing rate at different heights determines the climbing ability of the UAV at the corresponding height; the maximum climbing rate that is infinitely close to zero corresponds to the theoretical static upper limit of the height of the UAV.

3. System Composition

The Aero-Y200 UAV system is mainly composed of airframe, engine, airborne equipment, data link, and ground launch auxiliary equipment. Airborne equipment mainly includes gyro sensors, flight controllers, altimeters, data links, GPS navigation equipment, power systems, steering gears, etc. Ground equipment consists of ground control stations, antennas and tracking systems, ignition control equipment, transport vehicles, tools, etc.

UAV Platform

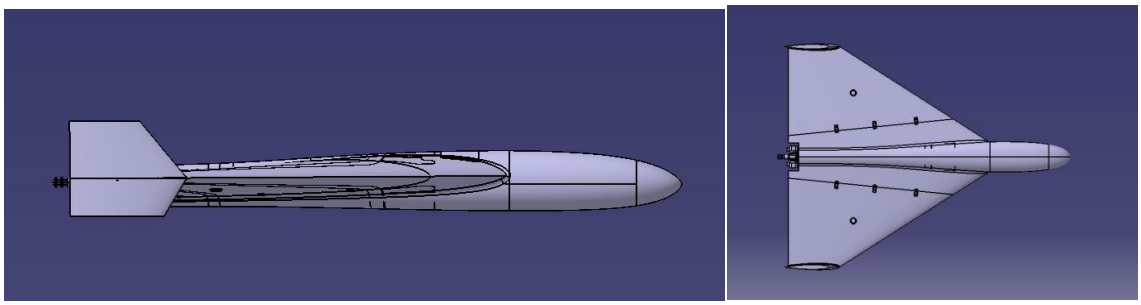
Overall design

Aerodynamic layout

The length is 3.4m, the wingspan is 2.5m, and there are four elevons behind the wings. Delta wing design, compact body and higher speed. The wing is integrated with the fuselage to reduce

drag, and the fuselage is compact and easy to carry. The wing is designed with a cruising lift coefficient of 0.55, which can achieve high lift-to-drag ratio cruising, so its wing area is 3.5sq. Structural design with cylindrical triangular wings for easy installation of seeker and ammunition bay. In this way, it is also convenient for transportation.

Figure 3-1



UAV Composition

The aircraft platform is mainly composed of airframe, power subsystem, electrical subsystem, flight control & navigation subsystem, data link subsystem, fuel subsystem, warhead and recovery device, shown as Table 3-1.

Table 3-1 Aero-Y200Dimensions & Specifications

Bomb Load/Maximum	50KG
MTOW	200KG
Flying time	10-12h
Flying control system	1kg
Avionics system	10kg
Fuel weight	110 L
Range	1500 KM

Wing area	3.5m2
Dimension	3.4m(Length)x2.5m(Wing span)

Body structure

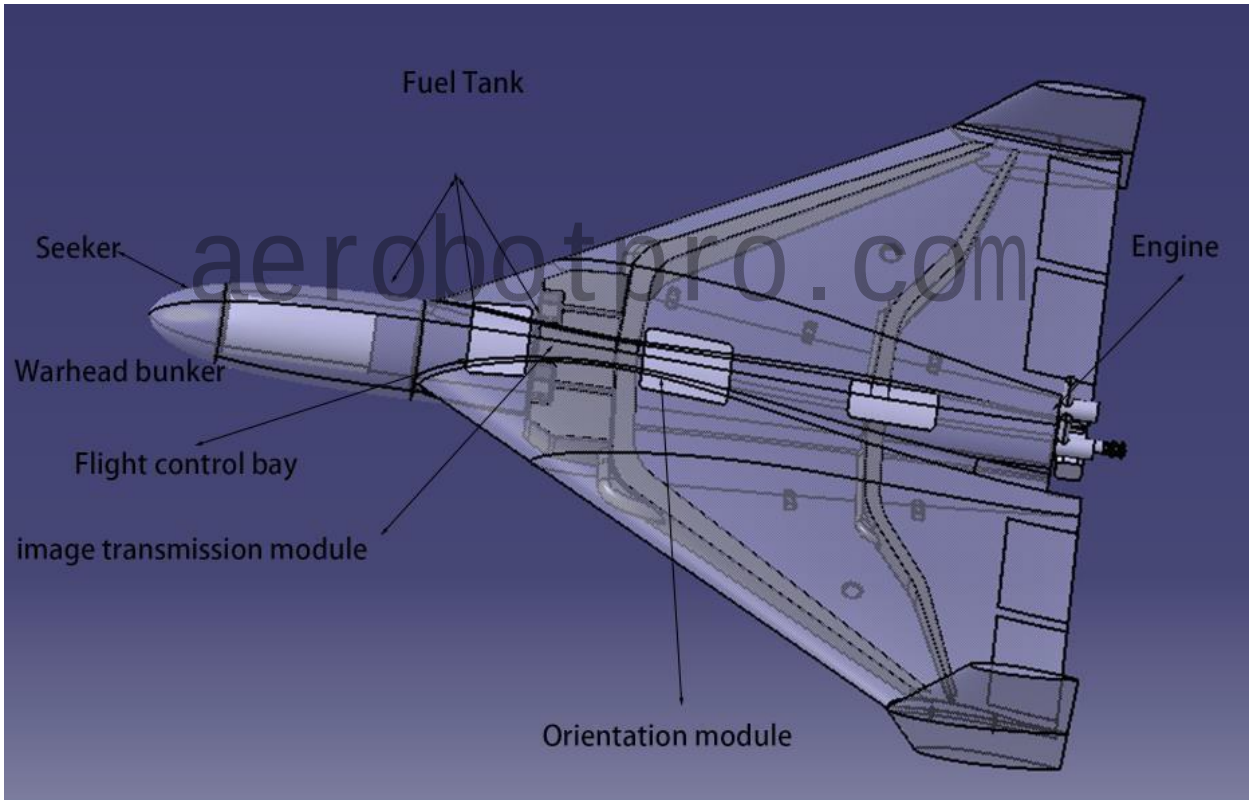


Figure 3-2 Wing deployment diagram

Seeker

The photoelectric pod adopts a two-axis stable platform and is equipped with a conductive slip ring to achieve 360° continuous rotation. It has a built-in 30x high-definition visible light camera, long-wave uncooled infrared imaging component, and laser rangefinder. It is mainly

used for ground imaging detection, identification, tracking, Ranging and positioning, etc., to meet the needs of aerial surveying, monitoring, surveying, etc. Main specification shows in Table 3-2.

TV Camera		
Working band		0.4um~0.9um
Sensor resolution		1920x1080
Focal length		4.3mm~129mm, Optical 30x continuous zoom;12x digital zoom
Continuous optical zoom horizontal field of view		63.7° ~2.3°
Thermal Camera		
Working bank		8um~14um
Sensor resolution		640x512
Pixel pitch		12um
NETD		50mk
Focal length		35mm/f1.0
FOV		12.5° x10°
Laser Rangefinder		
Laser wavelength		1535nm
Accuracy		±1m
Ranging frequency		5Hz
Measuring distance		50-3000m
Server System		
Rotation range	Azimuth axis	n×360° continuous rotation
	Pitch axis	-110° ~+10° (horizontal direction is 0°, upward direction is positive)
Angle measurement accuracy		≤2mrad
Stable accuracy		≤100 cad(1σ)(2°/1 Hz, 1°/2Hz swing)
Maximum angular velocity		≥50°/s
Maximum angular acceleration		≥90°/s^2

Structural Parameters	
Dimension	Φ130mmx181mm
Weight	1.26kg
Working temperature	-20~60℃

Table 3-2 Main specifications of the seeker

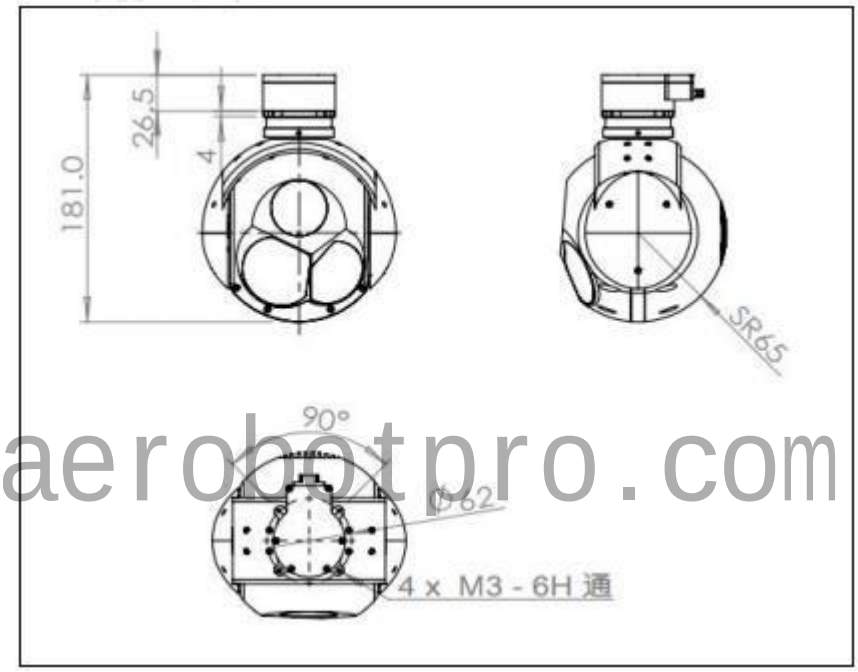
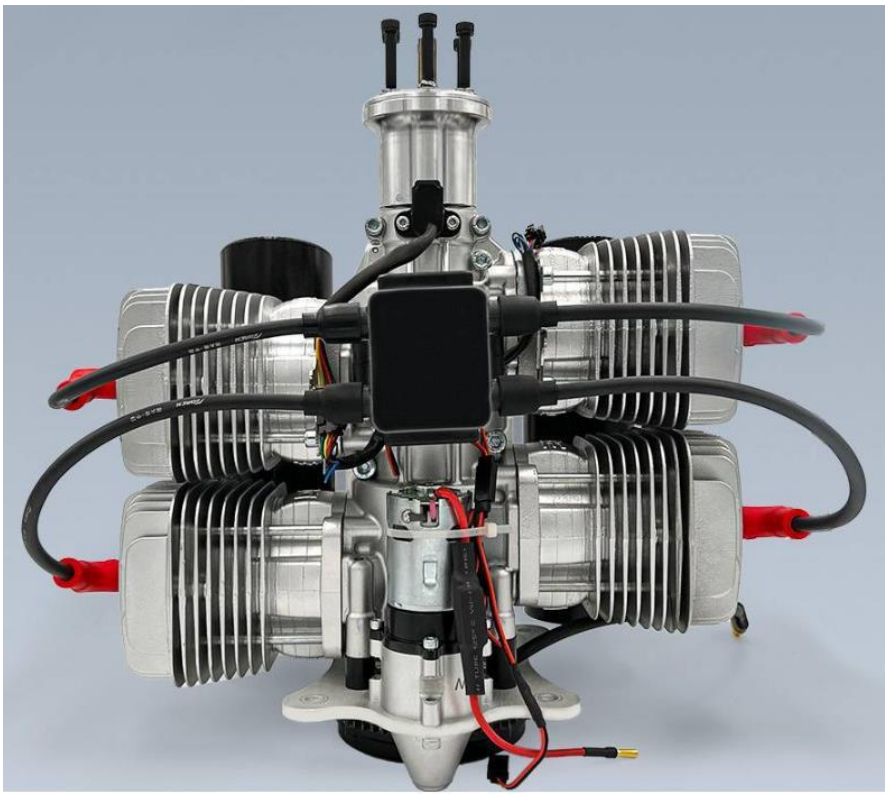


Figure 3-3 Mechanical interface of the seeker

Power system

The drone uses a 4 cylinder piston engine with 550 cc displacement. Compared with turbojet engines, piston engines have a longer battery life, which can meet the needs of long-term endurance.

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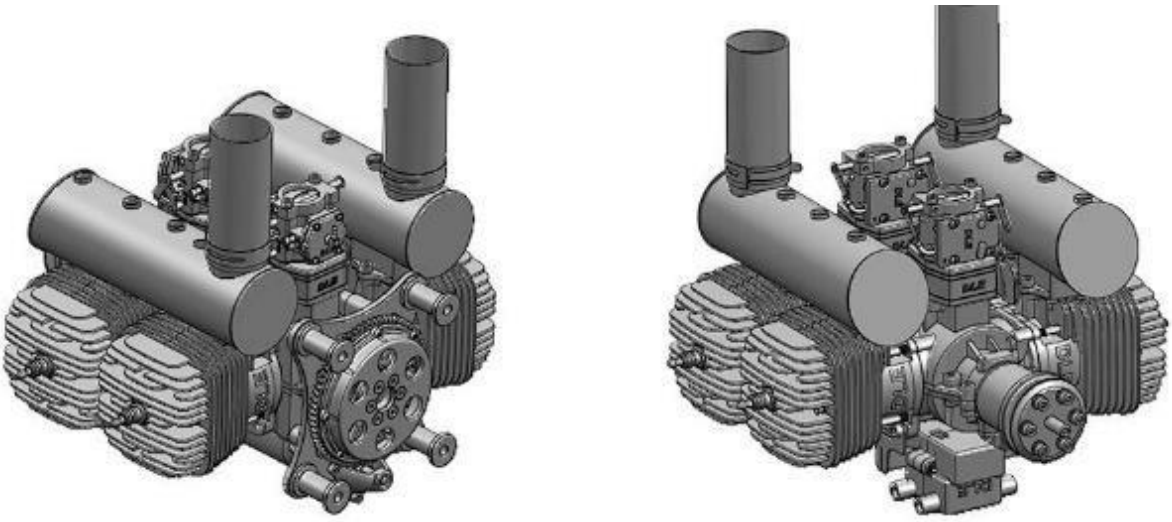


Figure 3-4 Piston Engine

The technical indicators of the piston engine are shown in Table 3-3 below。

Displacement	400cc	Engine weight	15.2kg
Performance	40HP/5500rpm	Lgniter weight	17.0kg
Pull	65KG/altitude 500m	Exhaust pipe weight	470g
Compression ratio	10：1	Fuel consumption	8-15L/H
Cylinder Bore*Stroke	55mm*42mm	Spark plug	Iridium spark plug*4
Propeller	36’’	Supply voltage	8.4~14V lithium battery
Applicable propeller model	36*16		
Lubrication ratio	40:1		
fuel/lubricant	92#, 95# gasoline 2T fully synthetic Total motor oil (recommended)		
Applicable models	Fixed wing, hanging fixed wing (pull forward/push back)		
Carburetor	Stable performance; Easy to use; Long service life; Strong power, cheap price;		

advantage	Rapid acceleration can be stable; Simple and compact structure, small size, easy maintenance. Applicable altitude
NOTES	Ground test needs to install air filter; Pay attention to dust and magazines are sucked into the carburetor; Do not move the mixing ratio screw, if you need to adjust, please contact the manufacturer

Table 3-3 Piston engine technical specifications

Fuel System

Fuel: 92#, 95# gasoline.

Flight control and navigation system

Flight control is the core component of the aircraft control system, and the digital integration design can meet the needs of flight control hardware interface, data processing and control calculation. The uav USES a double GPS receiver as a redundant, the master GPS receiver and the deputy GPS receiver, both of which are in the working state and are equipped with the BDS system.The main performance parameters are as follows:

1) Power input: 28VDC±4V
2) Built-in FLASH chip can record real-time flight data, flight data can be recorded for more than 12 hours.
3) Built-in GPS receiver redundancy system.
4) Built-in height and pressure sensors.
5) Built-in three-axis angular velocity measurement function.

Electrical system

The drone uses lithium batteries and generators to power all the electrical equipment on board. It doesn't need a special run before it ejects itself. Its thrust-to-weight ratio is 0.12, which is between 0.1 and 1.5 for standard propeller drones. The maximum power of motor is not less than 31.6kw. 35kw motor with high altitude performance and acceleration performance.

Ground control subsystem

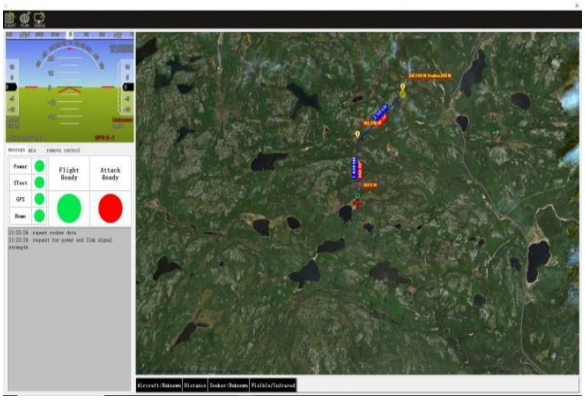
The ground control subsystem mainly completes the functions of the entire UAV system from technical preparation to mission execution. It mainly includes: UAV transportation and deployment, provision of launch environment, flight status monitoring changes, etc.

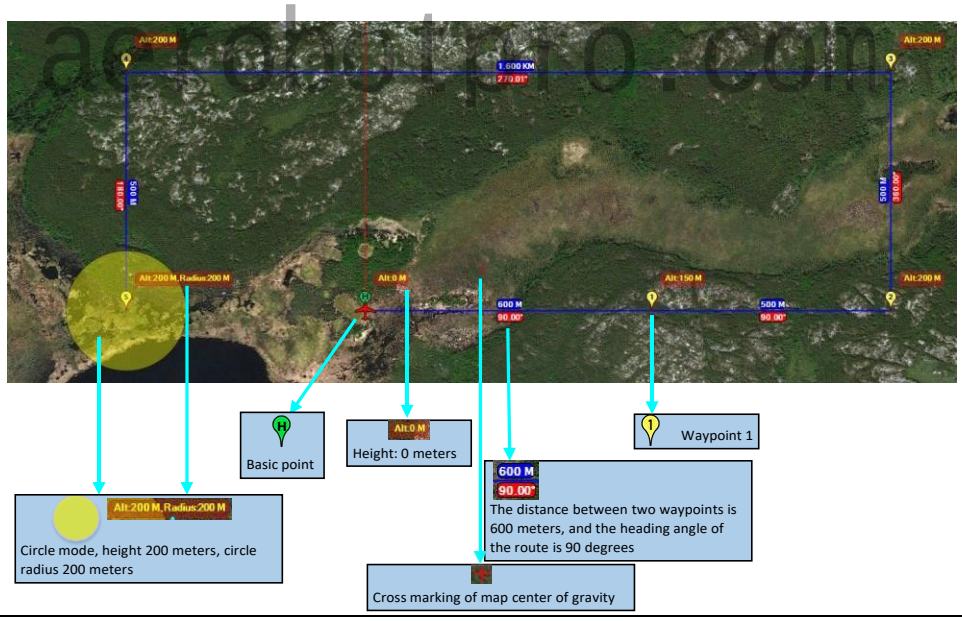
The ground control subsystem mainly includes the following parts: launch control vehicle and

launch equipment, ground station host.

Ground station host

The main engine of the ground station is installed inside the launch control vehicle, which consists of command computer, launch control computer and ground station software， Ground control terminal mainly fulfills the following tasks: ground inspection of UAV status; Real-time monitoring of UAV flight status; Map loading; Route plan and track display; Storage of telemetry information; Fault alarm and early-warning prompt; Playback of UAV flight records and telemetry information; Multi UAVs display and control.





Dimension	
Overall weight	2400g
Dimension	364mm(L)*190mm(W)*40mm(H)
Screen size	10.1inch 1920*1200 800CCD
Computer Peripherals	
CPU	Intel i5 6200U/ 2.3GHz

Touch pad	Capacitive 10-finger multi-touch display
Operating system	Windows10
RAM	16GB
Network	WIFI
Interfaces	Hi-fi, USB2.0, LAN, USB3.0, VGA, HDMI
Remote Control	
Physical channel	23Main joysticks*2(industrial grade joysticks) 3-position switch*4 Knob *2 Key button*11 Pull wheel*2
Human interface	USB HID
Remote control function	Dual SBUS independent output, able to control the vehicle and the payload simultaneously
SBUS port	SBUS IN*1 SBUS OUT*2
Remote control latency	40ms
Battery Peripherals	
Battery capacity	12.6V/10200mAh(external battery also supported)
Working time	3.5hs with full battery capacity
Charging port	DC12.6V
Communication link	
V21	30km grade data link

Table 3-4 Operation Interface

Optional launch system

The system adopts the form of "zero-length launch + box-type intensive launch"; the storage, transportation and launch adopt a modular design, which realizes the integration of storage and transportation boxes and launch boxes, and can be adapted to standard containers of different sizes. Taking the standard 6m containers an example, one container can hold 6 drones.

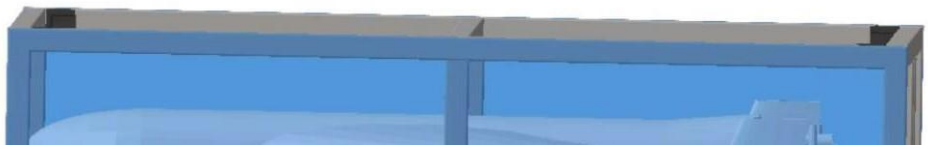


Figure 3-5 Schematic diagram of the transmitting unit

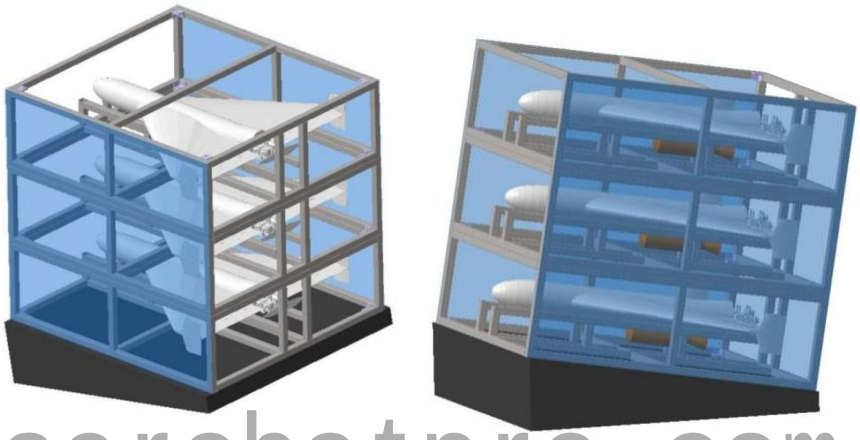


Figure 3-6 Schematic diagram of UAV and launch box

Rocket-assisted launch

During the rocket-assisted take-off process of the UAV, the UAV quickly accelerates to the flight speed and a safe height under the thrust of the booster rocket. At this time, the booster rocket stops working and separates from the UAV. The cruising flight phase is carried out under the action.

Comprehensive Guarantee

The ground support equipment (GSE) includes attached equipment and tools for UAV platform, attached equipment and tools for ground system and consumables.

Technical Training

The technical training is divided into theoretical training and practical operation. The theoretical training and practical training are provided in China, and on-site practical training is provided in

user countries, with the purpose of making customers fully understand the composition, function, performance, operation and maintenance of each subsystem of Aero-Y200 UAV, so as to achieve the purpose of independent use and maintenance by customers.

Technical Publications

According to the mission requirements and mechanical equipment configuration of UAS, necessary technical manuals are provided for customers' users and maintenance personnel, so as to ensure that the operation and maintenance personnel of UAS can skillfully operate and use UAV and its supporting payload system, and reasonably and reliably perform various missions such as flight, maintenance and training. Prepare a comprehensive maintenance manual for UAV and its related systems, and describe the troubleshooting, detection, spare parts replacement and maintenance of each system in detail.

4. Warranty

Warranty period for each UAV is 1 calendar years since the date of final acceptance.

Note：The system should under the normal operation and maintenance according to the manual requirement.

5. Aero-Y200 pneumatic ejection system

Size parameters：

Launch preparation time :<15min

Power source :compressed gas

Repeat transmission interval: 5min

Equipment mass: 1500kg

Launch angle: 8-15°

Acceleration depends on drone type

Transportation method: trailer

Transmitter dimensions:

Length 15000mm heavy duty

Width :1600mm

Height :2000mm

Advantage:

Rapid take-off: The large drone catapult can quickly accelerate the drone from a stationary state to take-off speed.degree to achieve rapid takeoff. Compared with the traditional rolling take-off method, the catapult can reduce take-off time,improve combat efficiency.

Short runway requirements: The catapult can take off the drone in a limited space, so it does not need to be long and flat runway. This feature allows large UAVs to take off and land on ships or land-based platforms.increased drone flexibility and deployment range.

Suitable for heavy-duty drones: For large drones that need to carry more payload or fuel,

Using a catapult can help it quickly reach take-off speed, reducing the burden on the drone itself to take off.

Suitable for complex environments: In harsh environmental conditions, such as harsh weather, maritime operations, etc., The launcher can provide a stable and reliable take-off method, reducing the technical requirements for pilots and increasing the ability to combat adaptability of man and machine.

Reduce the risk of accidents: Using a catapult to take off can reduce the risk of accidents during

the take-off process of the drone. Problems such as landing gear failure and engine failure have improved flight safety.

6. Delivery

The Delivery time will depends on order QTY.