CATALOGUE of UAV

CONTENT

NOTE:

Before looking at the specifications, it is recommended that you read the following CONTENTS at first. It provides you with important advice on UAV model selection.

I. Model Selection Guidance

1) Specifications listed in this file are those of UAV PLATEFORM. The UAV platform includes airframe, power subsystem, autopilot, steering engine, and landing gear. Excluding sensors (e.g. gimbals, cameras, etc.) and data-links. But only CL-480S is a exception. CL-480S is a system with “mission payload” that used in reconnaissance.
2) If you need an UAV system including sensors, data-link and ground control stations（GCS）, please contact the Global sales department of BeST (stands for: Beijing Sagetown Technology Co., Ltd.) for detailed information.
3) BeST can provide you with solution (or proposal) to drones application system, such as Transportation system, UAV surveillance system for 2000Km+ range, Forest anti-fire system, Emergency communication system (for live video and data across hundreds of kilometers)
4) If no runway available in your project, it is recommended to chose VTOL (Vertically Taking-Off and Landing) composite wing UAV: CL-3，CL-850 or CL-10;
5) Feature: If you are going to fly UAV on the plateau (more than 3000 meters above sea level), please select plateau feature for your UAV；
6) If maximum range is more than 500 kilometers, please select model CL-4 or CL-850. CL-460 OR CL-480;
7) If Electrical fixed wing required, please select model Cl-10
8) Autopilot has been equipped with all models. So, normal features of autopilot will be default, such as autonomous flight following multiple waypoints (GPS points), etc. Special features like locking and tracking moving object on the ground, “one stroke take-off” and automatic return home and landing in emergency, etc, are also available. You may contact sales of BeST for further information.
9) Models adaptive to different environment are available. Models flying on the sea, or flying in low temperature -30°, or in the rain, are available. You are advised to contact BeST.

10) Products are in Industrial category or Military cat.

11) Some models of fixed-wing are available with parachutes optionally.

12) Feature: All models can be used offshore or inshore. If the UAV is used at sea for a long time, please select “Sea” feature;.

13) Large payload tethered multi-motor UAV already released, please check this catalog.

14) If no model meets your demand, you are encouraged to contact our salesman. Our R&D team will be glad to provide you with customization service.

15) For your information, some data of typical payloads are also provided at the end of this file. In order to avoid misunderstanding, the technical indicators of each model listed in this file are specifications of unmanned aerial vehicle platforms without mission loads or payload.

II. VTOL Composite wing UAV

The Vertical take-off and landing composite wing UAV (VTOL drones for short hereinafter) have fewer requirements on landing field and airspace, could greatly improve the outfield operation efficiency of UAV.

● Hybrid power VTOL UAV

The hybrid VTOL Composite fixed wing UAV is gasoline and electric mixed powered, VTOL composite wing UAV. With multi rotor and fixed wing combined, gasoline power and electric force complementary technology, VTOL composite fixed wing UAV erase the three requirement limit, which is runway, environment and good operating skills pilot, realizes fixed wing UAV to vertically take off on battery power, however, fast fly on gasoline power, return hover, and vertically land.

Features：

- ✓ New gasoline-electric hybrid, high speed, far range, long endurance.
- ✓ No need of runway, vertically takeoff and landing
- ✓ No need of catapult rack
- ✓ Combination of fixed-wing and multi-rotor, high efficiency.
- ✓ One key take off and return home

✓ Easy operate

✓ Easy to disassemble, convenient and flexible to use.

- Pure-Electricity powered VTOL UAV

The aircraft adopts modular design, all connection structures are equipped with fast locking , tools not needed for disassemble and assemble process. Electrical and mechanical connections are completed at one time, could be disassembled quickly and easy for transport. The aircraft could achieve full autonomous flight, one button takeoff and landing; Using RTK positioning, takeoff and landing at fixed points, accurate operation.

Features：

- Simple and reliable structure
- No requirements for TOL area and airspace, high efficiency.
- Vertically landing at pre-pointed point precisely
- Fast speed、long endurance.
- Fully autonomous flight, one button takeoff and landing, simple and safe.

2.1 CL-3 480Km range VTOL UAV

Fig.1 CL-3 Hybrid power Composite wing VTOL UAV

Table 1：Specs of CL-3

Specifications of CL-3

Name	**Hybrid power Composite wing VTOL UAV**	Material	Carbon Fiber
Length	2.3m	Endurance	5h@5Kg payload
wingspan	3.6m	Navigation	GPS/BDS satellite navigation
Height	0.7m	Curising Speed	120Km/hr
Max Payload	11kg (fule included)	Max range	480Km+
Max takeoff weight	45kg	Wind loading	6 Grade(14m/s)
Ceiling	4500m	Take off /Landing	Vertical Take Off/ Landing
Fuel Tank	7.5L	Operate temperature	-20℃～50℃

2.2 CL-850 10Kg 5 hours endurance VTOL UAV

Fig.2 Hybrid power VTOL drones CL-850

Table 3：Specs of CL-850

Specifications of CL-850			
Length	2.6m	Height （ maximum main landing gear）	0.7m
Wingspan	3.8m	Wing area	2.5 m²

Landing gear form	Four-point parallel landing gear	Takeoff/landing mode	Vertical Takeoff Vertical landing
Maximum speed (sea level)	140km/h	Cruising speed	110km/hr
Max endurance	5 hrs	Maximum Altitude for take-off and landing	2000m
payload	10kg	Max payload	15kg（2 hours in the air）
Wind loading （Positive crosswind）	6 Grade	Operate Temperature	-20℃～50℃
Max take-off weight	50kg	Operating humidity	≤90%RH

2.3 CL-10 Electricity powered Composite wing VTOL UAV

Fig.3 CL-10 Electrical composite wing VTOL UAV

Table 4：specs of CL-10

Specifications of CL-10			
Wingspan	2.3m	Max Range	100km
Length	1.6m	Altitude in cruising	1500m(AGL)
Height	0.7m	Ceiling (ASL)	2000 m
Conventional payload	1.2kg	Wind Loading	5 grade（11m/s）
Max Take-off Weight	12kg	Horizontal Propulsion	2×electric Brushless Motors

Operate Temperature	-20-50℃	Endurance	100minutes
VTOL Propulsion	4×electric Brushless Motors	Take off/Landing	Vertical Takeoff Vertical landing
Cruising Speed	75km/h	Max Speed	100Km/hr
Remark：CL-10 can take-off and land automatically, one key return home or vertically landing.			

III. Fixed Wing UAV

3.1 CL-4 Oil Powered 85Kg UAV

Fig4. CL-4 on the Beach, is going to take off

Table 6：Specs of CL-4

Specifications of CL-4		
Dimension	Length	3.4m
	Wingspan	4.62m
	Height	1.12m
	Cabin	920*340*350mm
Power	Engine	Gasoline engine
Tank Capacity		28L
Fuel consume rate		4L/Hr@FULL PAYLOAD

Weight and Load	Max Payload	20kg（fuel not included）	
	Max takeoff weight	85kg	
Performance	Cruising Speed	120km/h	
	Max Range	800km	
	Ceiling	3000m	
	Max Endurance	7 h	
Takeoff/Landing	taxiing takeoff, taxiing landing, parachute landing		
Control Mode	Autonomous control + remote control; Airline pre-store or uploading in real time		
Navigation	GPS/ BDS satellite navigation		
Maintenance	Engine maintenance cycle time ≥ 150h		
Environment	Temperature	Operating temperature	-20℃～50℃
	Wind Load Rating	6Grade(12m/s)	

Fig 5. CL-4 landing on the beach

3.2 CL-5 9hrs Endurance 800Km range UAV

Fig 6. CL-5 Oil Powered Fixed Wing UAV

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Fig 7. Outlook and Parts of CL-5

Table 7： Specs of CL-5

Length	3.4m	Max Endurance	9hrs
Wingspan	4m	Power	Gasoline engine
Height	1m	Navigation Mode	GPS
Weight of Airframe	15Kg	Operate temperature	-20℃～50℃
Max loading	12Kg (fuel included)	Storage temperature	-30℃～60℃
Max payload	5Kg (fuel not included)	Operating humidity	95±3%
Max Taking Off Weight	33Kg	Shock resistance	can bear vibration、take-off of take-off and landing
Max Speed	130Km/hr	transportation	can be transported by car、air and ship
Capacity of Tank	10L	Parachute	Yes
Cruising speed	130Km/hr	Wind Load Rating	6 grade
Max range	900Km	Launch Mode	taxiing takeoff,
Task radius	400Km	Landing Mode	taxiing landing, parachute landing
Control mode	Autonomous flying, remote manual control, up mentioned modes can switch at any time, flight route prestored or uploading in real time		
Flight Ceiling	3000m	Engine maintenance cycle	150Hrs

3.3 CL-9 Plateau UAV

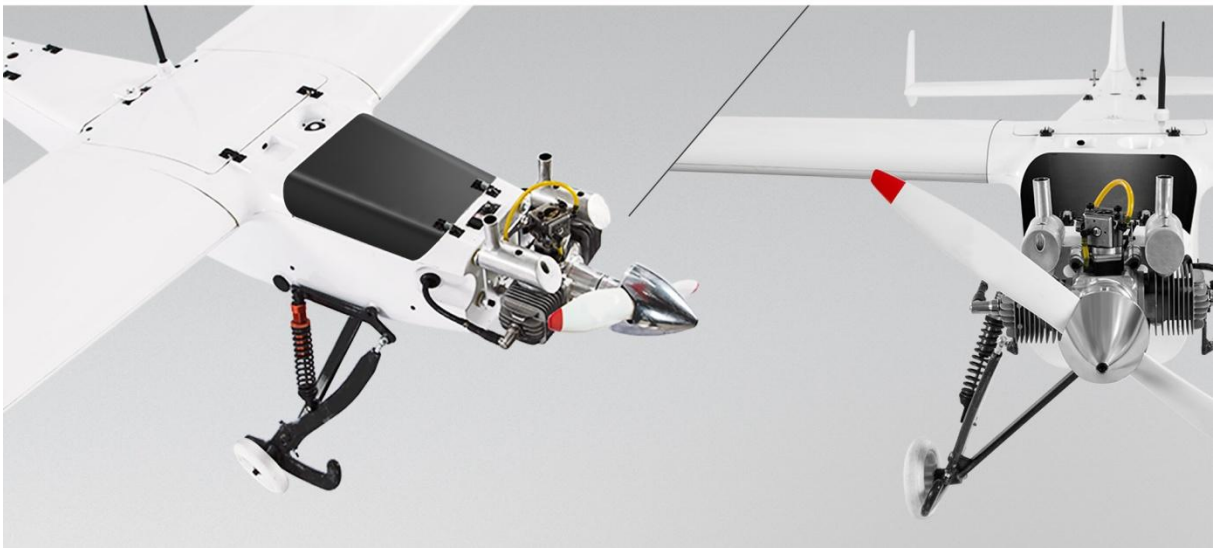


Fig.10 Plateau uav

Features

- ✓ Takingoff from Plateau high up to 5000m-5500m
- ✓ Max Takingoff Weight: 20kg，Max Payload 3kg；
- ✓ Endurance≥3hrs

Table 9: SPECS OF CL-9

Length	2m	Cruising speed	100-110km/h
Wingspan	2.7m	Max Speed	150Km/hr
Height	0.6m	MAX CLIBING RATE	12m/s
Weight of Airframe	15Kg	Flight Ceiling	ASL5000m
Max payload	3-5Kg (fuel not included)	Max endurance	4h@payload 3kg
Max Taking Off Weight	17Kg（if runway is good enough, can be 20kg）	engine capacity	56cc
Taxing distance for takingoff and landing	40-60m	Fule type	93# above unleaded gasoline + two stroke lubricating oil
Speed when takingoff	65km/h	Operate temperature	-35℃～50℃
Speed when landing	70km/h	Operating humidity	5%-95%

3.4 CL-460 40kg payload oil powered UAV

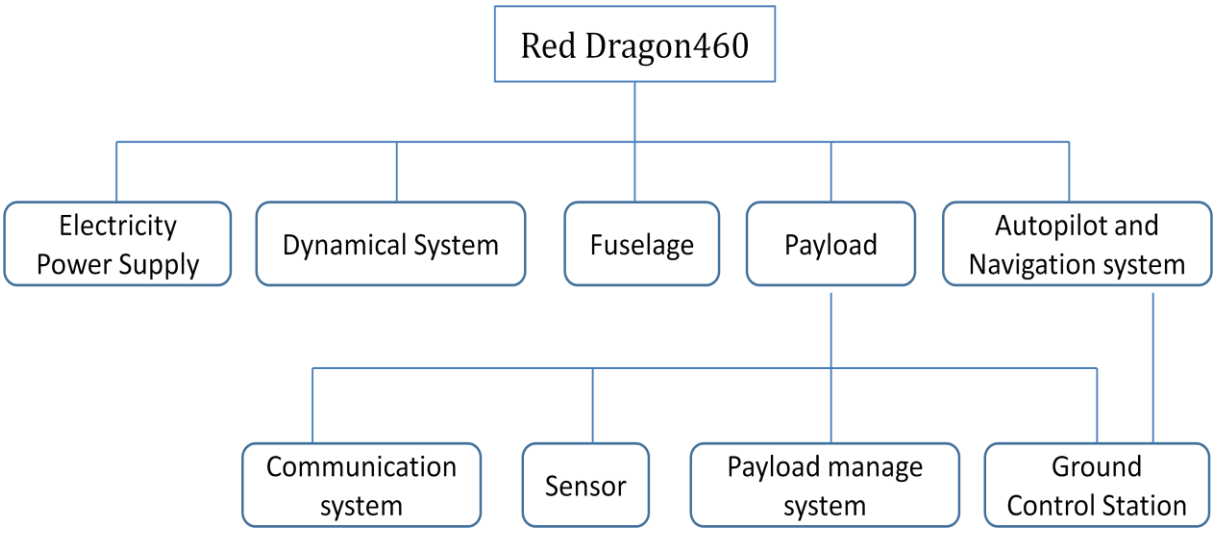
Features:

- Work normally in severe weather*: Cold, hot, snow, and raining*
- Work normally in Harsh electromagnetic environment
- 40Kg payload @ 4 hours endurance
- Taking-off on a short runway
- Various usages: can be widely used in field of geophysical prospecting, power grid patrol, oil pipeline surveillance, emergency supply

transportation, border patrol, anti-terrorism, reconnaissance and attack

- Within the control range, the ground control system can view live video and control the UAV through data link (Micro Wave or Satellite).

UAV platform includes UAV airframe, navigation system, autopilot, communication equipment, power system and Ground Control Station system.



Specifications of CL-460

Main Technical Parameters of Taxiing Edition (Adjustable according to customer's Requirements)

Length	3300mm	Endurance	4 hrs
Wingspan	5940mm	Takeoff/landing mode	Taxiing
Ceiling	6000m	Take-off taxiing distance	<300m
Cruising Speed	120-180 km/hr	Landing taxiing distance	<250m（with Brake system）
Propeller size	32X14	Engine	Limbach L-275
payload	40kg	Power	22HP
Meteorological adaptability		Light Rain, Wind load rating <Grade 5	

3.5 CL-480S 70kg payload Reconnaissance Drones

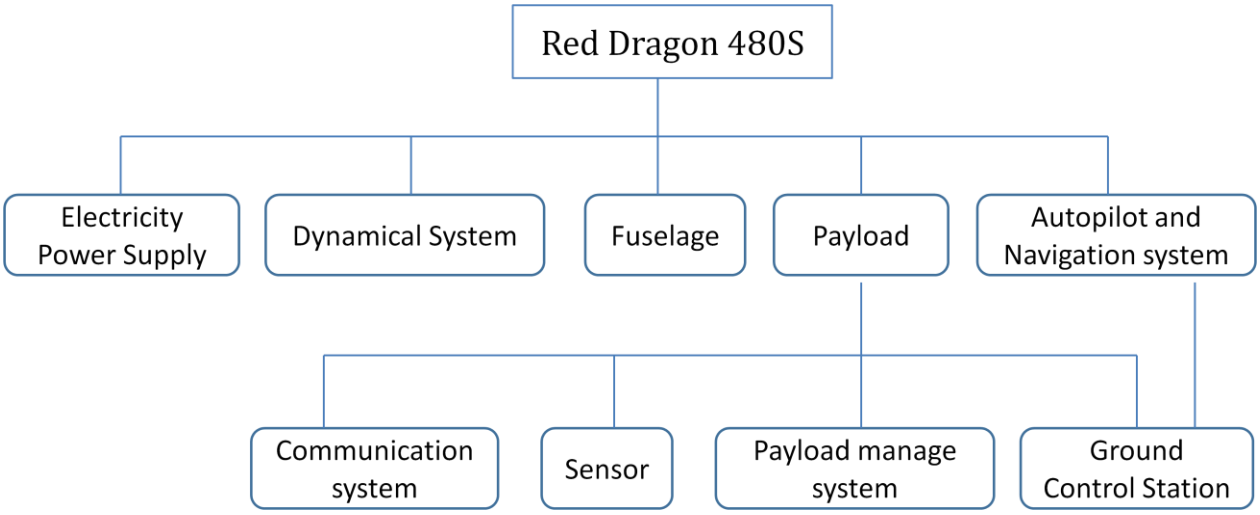
Red Dragon-480S Reconnaissance UAV

Features:

- Work normally in severe weather: *Cold, hot, snow, and raining*
- Work normally in Harsh electromagnetic environment
- 70Kg payload @ 10 hours endurance
- Taking-off on a short runway
- Landing by parachute in emergency
- Various usages: can be widely used in field of geophysical prospecting, power grid patrol, oil pipeline surveillance, emergency supply transportation, border patrol, anti-terrorism, reconnaissance and attack

- Within the control range, the ground control system can view live video and control the UAV through data link (Micro Wave or Satellite).

The UAV platform includes UAV airframe, navigation system, autopilot, communication equipment, power system and Ground Control Station system.



1. Specifications of UAV

Main Technical Parameters of Taxiing Edition (Adjustable according to customer's Requirements)

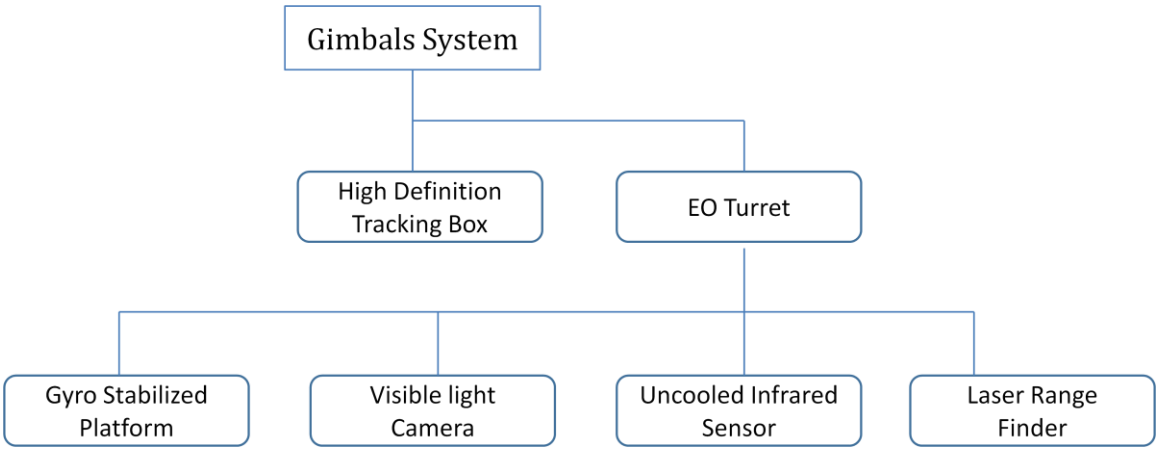
parameter	value	parameter	value
Length	4300mm	Endurance	10 hrs
Wingspan	8600mm	Takeoff/landing mode	Taxiing, parachute landing in emergency
Height	1600mm	Pneumatic layout	Double vertical tail
Ceiling	7000m	Max Take-off Weight	390kg
Cruising Speed	140-180 km/hr	Dead Weight	About 180Kg
Max Speed	200 km/hr	Engine	Zanzottera 630
Type of engine	Piston engine	Wind load rating when takingoff and landing	≤10.8m/s

Payload weight	70kg	Fuel weight	120Kg
Meteorological adaptability		Light Rain, Wind load rating <Grade 5	

2. Flight Navigation and autopilot System

RedDragon-480 equipped with tactical-level accuracy of the MEMS sensor and differential GPS module, with independent navigation solution function. Using active redundancy structure design, each flight control unit works in standby state. After large data exchange, the authenticity of data and the correctness of calculation are further determined by system self-check and data cross-comparison.

3. Gimbals



(1) Gyro Stabilized Platform

Search Range (Azimuth)	Nx360 °
Search Range (Pitch)	-120 °～+90 ℃(+90 ℃Collection location)；
Azimuth maximum angular velocity	≥90°/s
Maximum pitch angular velocity	≥90°/s
Azimuth maximum angular acceleration	≥90°/s²
Maximum angular acceleration of pitch	≥90°/s²
Azimuth Stable precision	≤0.5mrad（1σ）

Pitch Stable precision	≤0.5mrad（1σ）
Azimuth	≤50urad（1σ）（1∕2Hz、2∕1Hz）；
Pitch	≤50urad（1σ）（1∕2Hz、2∕1Hz）；

(2) Visible light video camera

Focal length	4.3mm～129mm
ZOOM	Optical zoom 30X
Horizontal field of view angle range	63.7°～2.3°
Working band of light	0.4～0.9μm
type	1/2.8"colored CCD
Image resolution	1920×1080

Taget recognition specs of visible light video sensor

target	Target size(m)	Detection range(Km)	Recognition distance(Km)
people	0.5×1.8	6.8	2
vehicle	3×6	15	6

(3) Long Wave Uncooled Infrared Sensor

Detector type	vanadium oxide
Pixel number	640×512
focal length	85mm/25mm Optical Dual Field of View
Viewing angle	7.3°（H）×5.9°（V）/24.6°（H）×19.8°（V）

Taget recognition specs of Infrared Sensor

target	Target size(m)	Detection range(Km)	Recognition distance(Km)
people	0.5×1.8	2.4	0.7
vehicle	3×6	10.6	3.5

(4) Laser Range Finder

Working Wavelength	1.55μm
Measuring range	4Km, test condition: target is 2.3m x 4.6m Green Target Plate; in Visibility 8km

Ranging accuracy	±5m
Repetition frequency	≤1Hz
Accurate measurement rate	≥95%

(5) Video Tracker

RS422 serial port	Baud rate 38400, 8-bit data bit, 1-bit stop bit, no check
Tracking algorithm	Built-in target tracking algorithm, combined with intelligent target short-term loss recapture algorithm, achieves stable target tracking
OSD	Rich OSD functions to support users to display custom characters, adaptive portal Cross and Tracking Information Display
Updating rate of target-to-target center deviation	30Hz
Target-to-target center deviation delay	＜15ms
Tracking speed	12 pixels/frame
Minimum target contrast	5%

(6) Power Supply

Voltage	DC+24V（20V～25.2V）
Ripple	≤100mV
power	Conventional values: <30W, peak value: <100W

(7) Environmental adaptability

working temperature	-40℃～+60℃
Storage temperature	-55℃～+70℃

IV. Tethered UAV

The tethered UAV is mainly used for long-term uninterrupted air monitoring and emergency communication. It could be equipped with visible light camera and infrared thermal imager, as well as emergency communication relay radio. At present, tethered UAV have been widely used in military, fire control, petroleum, ocean,

surveying and mapping, transportation, scientific research and other professional fields.

As a communication platform, the tethered UAV taking off with the minimal communication base station, form high altitude emergency communication base station rapidly, it featured with rapid deployment, light and flexible, low landing space requirements, could achieve a fast, reliable, inexpensive broadband communication within the scope of a few tens kilometers, under conditions as sudden natural disasters, communication infrastructure is damaged, bad communication environments, its emergency communication ability has obvious advantage.

As a security platform, the tethered UAV could mounted with dual-light gimbals, high power cameras, high-light lighting systems, monitoring system and other loads to realize high-altitude lighting, aerial fixed-point monitoring and long-distance communication, so as to assure the safety of the venue and person. Among them, the monitoring and reconnaissance system will transmit real-time video and audio data to the ground support command center to eliminate potential risks or conduct in-depth analysis and judgment of data information. In case of accident and hidden danger, the center will predict in advance or acquire the situation in the first time, so to make response strategy and take emergency measures quickly.

Features：

- Long Endurance：24Hrs Continuous Hovering in the Air
- Heavy Payload: Under hundred meters height,normal payload could reach to 5KG, max.7kg.
- High reliability：Power is supplied by 6 modules, any single block fault will not affect other modules, equipped with spare battery, could assure UAV continue to fly 6 min. and landing on the safety area on the condition of ground power off .
- High position accuracy：Using differential GPS, could realize accurate positioning 0.5meters or less
- Easy operation: one button automatic take off and landing or manual take off

4.1 100m Tethered Multi-copter UAV-J6051

Fig.11 Tethered Multi-Rotor UAV-J6051

Table 9: specs of J6051

Specifications of J6051			
Rotor No.	6	Endurance	8～24h
Wheelbase	1.3m	Hover Height	0-100m
Net UAV Weight	9.5kg（Include Power Module）	Take Off/Landing	VOTL
100m Tether Cable Weight	2kg	Wind load rating	5Grade
Spare Li. Battery Weight	2.1kg	Operation temperature	-20℃～50℃
Normal Take Off Weight	19kg（Include Cable，100m Height Mission payload 5KG）	Flight Time after Power Off	About 6min

4.2 200m Tethered Multi-Rotor UAV-J6052

Fig.12 Tethered Multi-Rotor UAV-J6052

Table 10：specs of J6052

Specifications of J6052			
Rotor No.	6	Endurance	8～24h
Wheelbase	1.3m	Hover Height	0-200m
Net UAV Weight	9.5kg(Include Power Module）	Take Off/Landing	VTOL
200m Tether Cable Weight	4kg	Wind load rating	5Grade
Spare Li.Battery Weight	2.1kg	Operation temperature	-20℃～50℃
Normal Take Off Weight	21kg（Include Cable，100m Height Mission payload 5KG）	Power Off Flight Time	About 6min

4.3 400m Tethered Multi-Rotor UAV-J6154

Table 11：specs of J6054

Specifications of J6154			
Rotor No.	6	Endurance	8～24h
Wheelbase	2m	Hover Height	0-400m
Net UAV Weight	25.5kg （ Include Power Module）	Take Off/Landing	VTOL

400m Tether Cable Weight	8kg	Wind loading rating	5Grade
Spare Li.Battery Weight	4.2kg	Operation temperature	-20℃～50℃
Normal Take Off Weight	45kg（Include Cable，400m Height Mission payload 15KG）	Power Off Flight Time	About 6min

V. Multi copter UAV

5.1 Z4-S: Surveillance Quadcopter

Fig.13 Z4-S

Table12: Specifications of Quadcopter Z4-S

Wheel base	1200mm	height	600mm
Dead weight	7 Kg	Num of motors	4
motor	Brushless motor	power	lithium polymer battery
Material of frame	Carbon fiber	Range of remote control with handheld controller	Not less than 600m
Max Taking Off Weight	12 kg	Max payload	3kg

Endurance without payload	25 min	endurance with 2Kg payload	18~20 min
cruising speed	3~5m/s	ceiling	1000m
Max speed	10m/s	CEP precision of Landing	3m
Precision of the flight path	3m	Wind Load rating	＜4 dgree
Operating temperature	-10℃~40℃	camera	HD and/or IR
Payload	PAN/TILT camera	Data radio	Transferring bidirectional data, range 5Km
Video radio	Transferring one way of live video, range 5Km~10Km		

5.2 Z6-S Six Rotor Patrolling Drone

System Features:

- Carbon fiber material, lighter weight and higher strength.
- Disconnectable, Easy to transport and manipulate.
- high performance auto-pilot system to ensure safe flight
- Could carry different task equipments depend on the mission.
- Low voltage alarm function. Could return to base automatically if command signal lost
- check and adjust fly parameters during flight
- Brushless electric motor has advantage of high performance, lower noise and easy to maintain

Fig.14 Photo of Six-rotor Copter: Z6-S

Table 13: Specifications of 6 rotor copter Z6-S

Wheel base	1600mm	height	900mm
Dead weight	11Kg	Num of motors	6
motor	Brushless motor	power	lithium polymer battery
Material of frame	Carbon fiber	Range of remote control with handheld controller	Not less than 600m
Max Taking Off Weight	18kg	Max payload	3kg
Endurance without payload	45 min	endurance with 2Kg payload	35 min
endurance with 3Kg payload	20 min	cruising speed	3~5m/s
Max speed	10m/s	ceiling	1000m
Precision of the flight path	3m	CEP precision of Landing	3m
Operating temperature	-10℃~40℃	Wind Load rating	＜4dgree
Payload	PAN/TILT camera	camera	HD and/or IR
Video radio	Transferring one way of live video,	Data radio	Transferring bidirectional data,

	range 5Km~10Km		range 5Km

Fig. 15 Z6-S in flying

5.3 Z8-S Eight Rotor Patrol Drone

Fig. 16 Z8-S with PAN/TITLT camera

System Features:

- Carbon fiber material, lighter weight and higher strength.
- Foldable arm, easy to carry and manipulate.
- high performance auto-pilot system to ensure safe flight

- Could carry different task equipments depend on the mission.
- Low voltage alarm function. Could return to base automatically if command signal lost
- check and adjust fly parameters during flight
- Brushless electric motor has advantage of high performance, lower noise and easy to maintain. It can ensure the drone operating normally in 5 grade wind.

Table 14: Specifications of 8 rotor copter Z8-S

Specifications of Z8 platform			
Max wheel base	1360mm	**Propeller model**	1861 oar
Rack one arm length	560mm	**Propeller weight**	13g
rack folding dimension	diameter 1380x high 490mm	**Max take off weight**	16Kg（including battery）
Rack unfold dimension	Diameter 1700x high 480mm	**Max pay load**	10Kg
Max power consumption	4000W	**Power battery**	22000MAH*2 lithium battery
Motor max power	660W	**Endurance**	25min（@3kg payload）
Storage temperature	-20 °C ~ ~65 °C	**max rising velocity**	6m / s
Maximum Power Current	30A	**automatic cruise speed**	6—10m / s
Work temperature	-5 °C ~ +40 °C	**wind resistance**	5 grade
Material of Propeller and Rack	Carbon fiber	**Work limit temperature**	-20 °C ~ +55 °C

Specs of Payload		
Item	Technical Index	
Specs of Bidirectio data Transmission	Transmitted power	200mW（optional）
	Power consumption	Not more than 2W
	Transmission distance	≥10km（LOS condition，bigger Range available on demand）
	Working voltage	12V
	Operation ambient temperature	-20℃～+60℃

	Weight	Not more than 200g
Ground Control Statie ZT1800GS 	Operation system	Windows XP/Win7
	Data receive distance	＞20km
	Power supply	Built-in battery （can external connection）
	Battery endurance	4Hr
	Internal storage	4G
	Rigid disk	500G
	Weight	About 9kg

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Industrial Grade Surveying and Mapping

Aerial Survey UAV System

Fig. 17　Z8 is foldable

VI. MAPPING drones

6.1　CL-12M Mapping Drones

Fig.18　CL-12M Mapping Drones

Specifications of CL-12M			
Wingspan	2.16m	VTOL Propulsion	4×electric Brushless Motors
Length	1.2m	Horizontal Propulsion	2×electric Brushless Motors
Material of fuselage	EPO+Carbon Fiber	Takingoff and landing	Vertically takingoff and Landing
Conventional payload	0.9kg	Camera for mapping	A7R2（Brand: SONY）
Max Take-off Weight	8kg	Range covered by wireless communication	20km
Cruising Speed	15-22m/s	Electricity power	6s22000mahLi-polimer battery
endurance	80min		
Range	72~96Km	Service Ceilling	≤2000m
Remark：6s16000-22000ma, depend on takeoff weight.			

VII.Ground Control Station for UAV

Fig.19 Ground Control Station

Fig.20 Ground Control Station

Fig. 21 Ground Control Station

7.1 Overview

SageSight1800GS (herein after called as ZT1800GS for short) is matched with any kind of UAV and wireless transmission systems, and it is designed and developed by Beijing Sagetown Technologies Co., Ltd. It features portable and ruggedized design. And it is easy to carry and use. ZT1800GS integrates many functions together, such as flight control, video receiving, telemetry and telecontrol, gimbals telecontrol, flight route programming, one-key-return-home, display and save of video and data, etc.

It has two screens, one for video display featuring short delay, and the other is a touch screen for flight monitoring and programming flight. WINDOWS operation system is pre-installed.

7.2 Features

- Portable suitcase design, easy to transport and operate
- Ruggedized, adaptive to harsh environment, especially rural environment
- High Definition video and Standard Definition video
- Embedded computer
- Live video display and playback
- Multi-functions integrated, such as UAV flight control, live video receiving and display, remote control, tele-control and telemetry, gimbals remote control, flight route planning, “one-button” return hme, display and save of videos, pictures and data.
- Dual-screen design for video display and flight monitoring separately
- Frequency hopping Spread Spectrum technology enhance the anti-jamming ability and wireless transmission stability
- Short latency of video transmission is critical for target locking and tracking by UAV and robot remote control
- Unique control range extending technology, compatible with FUTABA handheld controller, range up to 20km, longer range customizable
- Li-battery pack equipped, endurance more than 2 hours (longer endurance customizable), AC power supply is available
- Received video can be forwarded via WIFI and 4G mobile communication network. Users can watch the video via internet, 4G and WIFI. People around the GCS can watch the videos via cellphone or computer at the same time.

7.3 Block Diagram

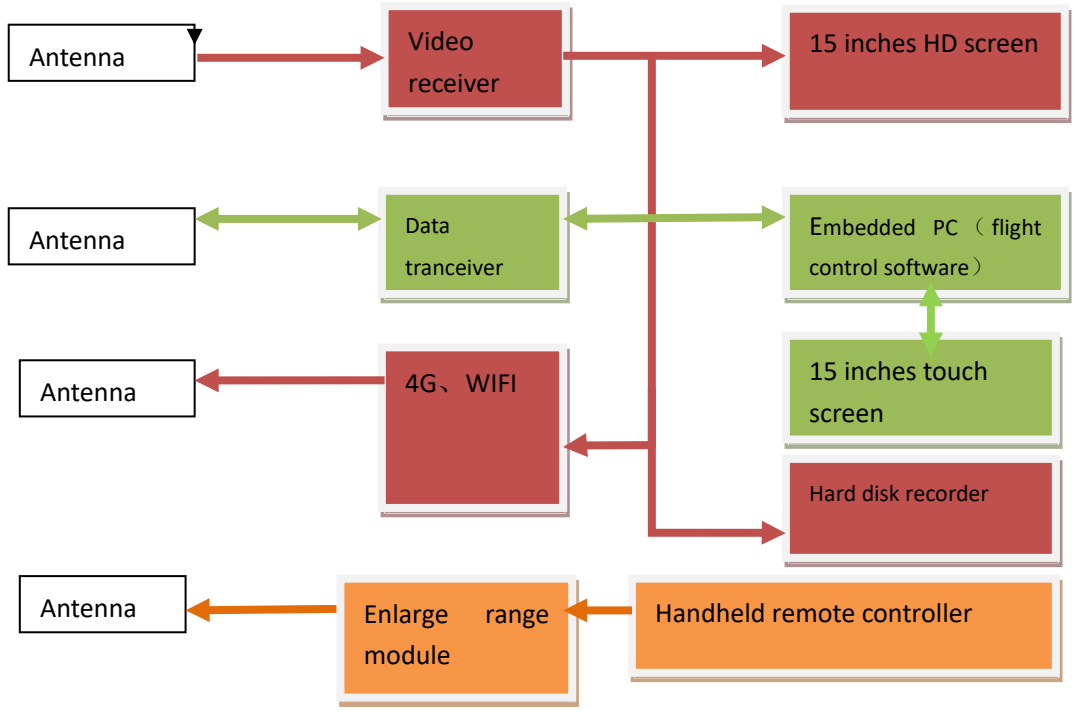

Fig.22. Block diagram of ZT1800GS Ground Station

7.4 Specifications

Embedded Computer	CPU	Intel® 1037U dual-core 1.8GHz processor
	CS	Intel® HM76
	Internal Storage	2G DDRIII, 8GB at max
	Display	Intel® HD2500 video card
	Operation System	WINDOW7
Display	Screen Number	2, one is touching screen
	Screen Size	15inch
Physical Parameter	Dimension	390mm × 310mm × 100mm
	Weight	about 9kg
Electrical Performance	Power Supply	Built-in Li-battery pack 220V alternating current interface
	Total Power Consumption	≤300W
Environment	Working Temperature	-20℃ to 60℃

	Storage Temperature	-40℃ to 80℃
	Humidity	≤95% (no condensing)

Video transmission specs	Operating frequency band	UHF, L, S, C band
	Quality of video	HD1080p/i，compatible with SD video
	sensitivity	-105dBm
	Latency of end-to-end	Short latency of SD(120ms) and HD(200ms) video transmission
	encryption	AES，128bit
Data transmission specs	Operating frequency band	902MHz ~ 928MHz, 400MHz, 600MHz, 800MHz
	encryption	double，static key；configurable
	sensitivity	-108dBm
	Air link rate	19200bps~230400bps
4G	Operating frequency band	Dependent on local 4G service provider
	standard	Both FDD-LTE and TD-LTE supported
WIFI	protocol	IEEE802.11 b/g/n

VIII. Payload of UAV

8.1 Sensor

Fig.23 Sensors of UAV

1. Gimbals

Single light Gimbals

Dual light Gimbals

mini Dual light Gimbals

trilight Gimbals

2. SAR

SAR

Function and features：

- Miniaturization and low power consumption
- High resolution, live video
- Reliable with actual verification

- Used in fixed wing, multi- copter and Delta wing UAV and manned airplane.
- MiniSAR-5：Channel polarization interference/SAR
- MiniSAR-10E：function, active phased array radar, has the high resolution video, have various mode such as GMTI, MMTI, ISAR and so on.

  GMTI mode：Wide-area scanning and target tracking

  MMTI mode：Wide-area scanning and single target tracking

  ISAR mode：Strip, cluster

3. Mapping camera

Orthogonal Aerial Camera

oblique photograph camera

8.2 Datalink

Video wireless Transmitter

Frequency hopping radio station

Network bridge

Self Organized Network Radio

Features of Datalink

- Transmission of live video at high definition (1080p)
- Bidirectional data, support telemetry and remote control of UAV
- Cover range up to 20Km, 50Km, 100Km, 150Km, 200Km, etc
- Extremely Short time delay of video and data transmission, minimum 40ms, world leading level, this feature is necessary for target locking and tracking
- Operating normally in NLOS (Non Line Of Sight) circumstance
- Strong resistance to Multipath interference by the sea
- Support Self Organized Network, without center
- Adaptive to low temperature -40° optionaly