Long-Endurance UAV

Inspection Scheme

http://aircrafts.pf.vin/

Design requirement

Model: Oil-powered cruise VTOL compound wing UAV

Operating radius: ≥ 100 km;

Takeoff height: ≥ 3000m;

Practical ceiling: ≥ 5000m altitude

Cruise duration: ≥ 6hours （with stand load）

Pod carrying: general dual-optical pod

Necessary function requirements: it can be used normally at -30℃ in winter.

According to the requirements, it is recommended to select CL-866E or CL-850 VTOL fixed-wing UAV, with ZT-8102H HD dual-optical pod and SageNET1400-40-150A 150km broadband networking radio. (Please refer to the attached page for specific product parameters)

The overall plan for task execution is as follows: patrol inspection in rotation, each sortie flies for 6 hours, each patrol inspection day can fly 2 to 3 sorties in rotation, the average cruise altitude is 1000m (ground altitude), and each sortie covers 5 to 6 patrol areas (the designed patrol area is 50 square kilometers, for example).

UAV targeted product features:

- Endurance: more than 6 hours (including recommended load);

- Engine: EFI engine, inspired integration, air flameout can be restarted, so more secure;

- Additional defrosting function, suitable for low temperature working environment;

- Carry dual-light pod (visible light camera + infrared camera);

● The design flight altitude is 800m ~ 1000m, and the data link coverage is more than 100km;

● It also supports navigation based on Beidou and GPS.

Configuration recommendation

1. CL-866E Vertical take-off and landing fixed-wing UAV

CL-866E VTOL fixed-wing UAV

CL-866E Technical Specifications:

Name:	Specification	Name:	Specification
Fuselage length	2.1m	Maximum takeoff weight	29kg
Wingspan	4.7m	Height of fuselage	0.83m
Maximum payload	6kg	Maximum endurance	6hr (including recommended load)
Maximum endurance distance	600km	Mission Radius	≥100km
Takeoff mode	Vertical take off	Landing Mode	Vertical Landing
Take-off and landing	Battery	Cruising Power	Fuel oil

power			
Mode of flight	Autonomous mode and remote control mode	Wind Resistance Ability	Takeoff and landing level 6 (13m/s) Cruise Level 7 (14m/s)
Fuselage material	Carbon fiber composites	Navigation	Beidou/GPS
Cruising speed	90km/hrs	Pre-set route flight	Support
Maximum speed	118km/hrs	Stalling speed	19m/s
Maximum take-off altitude	Elevation 3,000m	Maximum ceiling	Altitude 5,000m;
Fuel tank capacity	8L	Flight Engine	EFI engine

2. HD Dual Light Pod (ZT8102H)

HD Dual Light Pod (ZT8102H)

Product introduction:

The ZT8102H optoelectronic pod adopts a high-precision two-axis stabilized platform and integrates a 30x visible light camera and an infrared thermal imager. The optoelectronic pod is the core payload of the UAV and is mainly used for the search, observation, tracking, positioning and other functions of the UAV on land and water targets to meet the needs of aerial photography, flight navigation, reconnaissance and other applications.

ZT8102H optoelectronic pod is designed with compact structure, high cost performance, fast installation and high stability and precision, and can be equipped with various types of helicopters, fixed-wing, multi-rotor, unmanned airship and other dynamic platforms.

Technical specifications of HD dual-optical pod (ZT8102H):

HD Dual Light Pod (ZT8102H) Technical Specifications		
Visible light camera	Camera Lens	4.3mm～129mm
	Optical zoom	Optical zoom: 30x
	Video resolution	HD-HDMI 1080P（1920X1080）
Infrared Thermal Imager	Detectors and lenses	Uncooled long-wave infrared thermal imager: 640 × 512/8-14um Focal length: 25mm
Gyro-stabilized platform	Stability and accuracy	≤1mrad （1 ）
	Search range (azimuth Angle)	Nx360°
	Search Range (Spacing)	-90°～+20°
	Maximum pitch rate	≥60°/s
	Azimuth maximum angular velocity	≥60°/s
HD video tracker	Input channel	1-channel SDI

	Output channel	1-channel SDI
	Integration mode	Integrated into gadget
	Video Resolution	1920X1080
Visible light target recognition	Person (0.5 × 1.8)	Detection range 1 (Km) Identification distance 0.3 (Km)
	Vehicle (2.3 × 2.3)	Detection range 1.5 (Km) Identification distance 0.5 (Km)
Work Environment	Operating temperature	-20℃～+65℃
	Storage temperature	-40℃～+85℃
Dimension Weight	Size	150mmx228mm
	Weight (plus damper)	1.8kg+0.7Kg=2.5kg

3. Airborne terminal of 100km broadband networking radio station (SageNET1400-40-100A)

Airborne terminal of 100km broadband networking radio station

(SageNET1400-40-100A)

Function introduction:

SageNET1400-40-100A is designed for UAV long-distance communication applications, with a transmission distance of up to 100km; TDD time division networking technology and H.265 image coding technology are adopted to realize one-way transmission of 1-channel (or multi-channel) HDMI/SDI high-definition (standard-definition) video, two-way transmission of 1-channel (or multi-channel) serial data and 1-channel transparent network interface. The equipment weighs 800g. The image system delay is less than 200ms (lower delay can be customized).The data delay is less than 40ms.

Technical specifications of broadband networking radio station:

Broadband networking radio station Technical Specifications		
System parameters	Transmission distance	$\geq$ 100km@8Mbps
	System maximum delay	Video $\leq$ 200ms，data $\leq$ 40ms
	Weight	$\leq$ 800g
	Size	180mm×110mm×54mm
	Service voltage	DC19-36V
	power consumption	＜20W
Data parameters	Image code rate	4Mbps
	Serial port baud rate	9600bps～230.4Kbps
Interface	Power/Data	J30J-21
	Antenna	SMA-K×2
	Network	J30J-21
	Video	HDMI/SDI/AV