INTERNATIONAL ARMOUR IQ™

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STANDARD

FIREFLY

VTOL DRONE

FF VTOL Custom Build BTO (Build to order)

FIREFLY is a big VTOL (Vertical Take-Off and Landing) UAV that has a 3500 mm wingspan.

FIREFLY UAV designed to be the most efficient of its kind.

That means low stall speeds, high max efficiency, a large cruise window and payload capacity, self cooling fuselage, built in component bays and an entirely electric propulsion system.

This equates to less energy expended and more time in the air.

The forward swept wing means its leading edge and trailing edge are swept forward, that is, the sweep angle is an acute angle.

The tip string is in front of the root string, and the left and right wings are projected in a plan view to form a V shape.

Since the airflow on the forward swept wing points to the wing root, the airflow is first split from the wing root at high angle of attack, which fundamentally overcomes the wing tip stall problem, so the low speed performance is excellent, the lift being increased and at the same time improving the aerodynamic efficiency of the wing panel.

- High Durability
- Long endurance
- Full composite material, Honeycomb structure
- Industry Standard Tough Structure
- Dual battery power, more safe
- Compatible with full-featured PC ground station, and open source autopilot system
- Easy for assemble in the field

STANDARD

FF VTOL DRONE

Compared to the swept wing, the forward swept wing has four main advantages:

Structural advantages.

The forward swept wing structure ensures a better connection between the wing and the fuselage and reasonably distributes the pressure by the wing and the nose landing gear.

These advantages are difficult or impossible to achieve by other methods, which greatly improve the aerodynamic performance of the maneuvering, especially at low speeds.

Maneuverability advantage.

The forward swept wing technology allows the aircraft to have very good aerodynamic performance at subsonic flight, greatly improving its maneuverability while high pitch flight.

Takeoff and landing advantage.

Compared with the normal swept-wing aircraft of the same wing area, the forward-swept aircraft has a higher lift and a 30% increase in payload capacity, thus reducing the wing area and size, reducing the drag and aircraft structural weight; reducing the weight for balancing, improves the low-speed maneuverability, shortens the take-off landing distance.

According to USA aviation specialist calculation, if the F-16 fighter uses the forward swept wing structure, it can increase the turning velocity by 14%, increase the combat radius by 34%, and shorten the takeoff and landing distance by 35%.

Controllable advantages.

The use of the forward swept wing structure can improve the controllability of the aircraft at low speeds, improve the aerodynamic performance in all flight conditions, reduce the stall speed, and ensure that the aircraft is not easy to enter the tail spin, thus greatly improving the safety and reliability of the aircraft.

FUSELAGE

The trapezoidal shape of the fuselage minimizes the fuselage to wing interaction, drag and interference.

It was designed with a high pressure region in the nose and a low pressure region behind the wing, on top and below the motor mounting area.

This acts to create a pressure differential, essentially "pulling" air through the fuselage.

The layout allows for smarter cooling, by cooling off lower temperature components towards the front, and higher temperature components in the rear (motor).

The cooling exhaust placement was purposely in an area with turbulent airflow, so as to not disturb the otherwise laminar airflow over the rest of the fuselage. .

THE TAIL

Inverted /--\ design improves efficiency while decreasing drag

VTOL features

Implement the mature quad motor concept achieve vertical takeoff and landing eliminating the restriction of the runway requirement in the field.

VERSATILITY

The transformative design allows for dynamic use, making each FIREFLY truly unique.

You can use the FIREFL for search and rescue missions, inspections of pipelines, photography, filmmaking, thermal imaging, 3D terrain mapping, precision agriculture, surveillance, reconnaissance, FPV, live video links, humanitarian aid, fun and much, much more.

CAPABILITY

We are committed to integrating efficient design with modern technology in a robust, entirely composite platform.

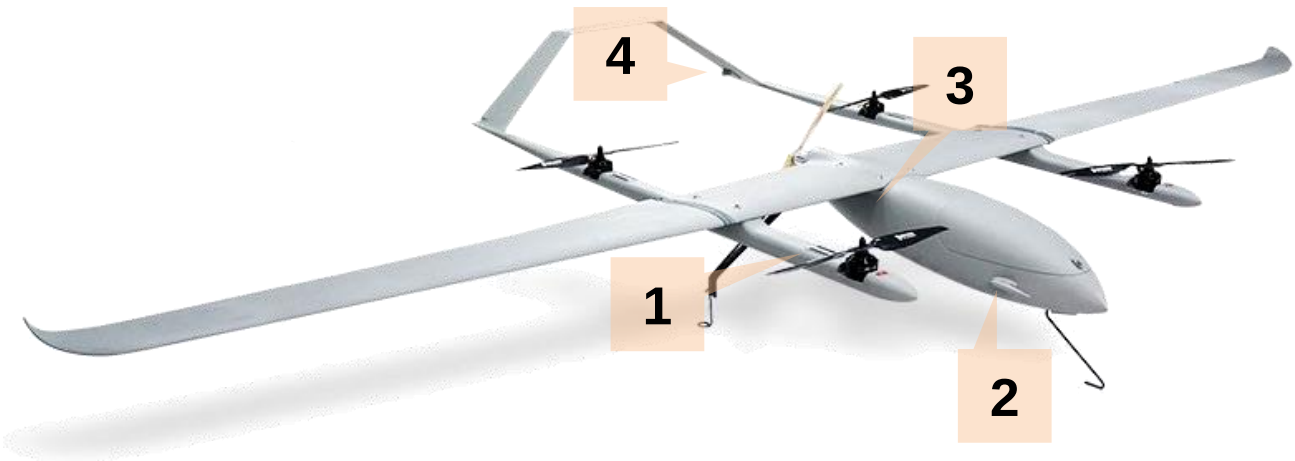
The FIREFLY is nearly silent, can fly for over 2 hrs, reach speeds of up to 120 km/h and travel for over 180km.

The FIREFLY allow you to fly autonomously, capture stunning HD photos and video, complete aerial surveys, monitor crop health, and wirelessly transmit live video.

This is all achieved with incredible accuracy of an on board autopilot system.

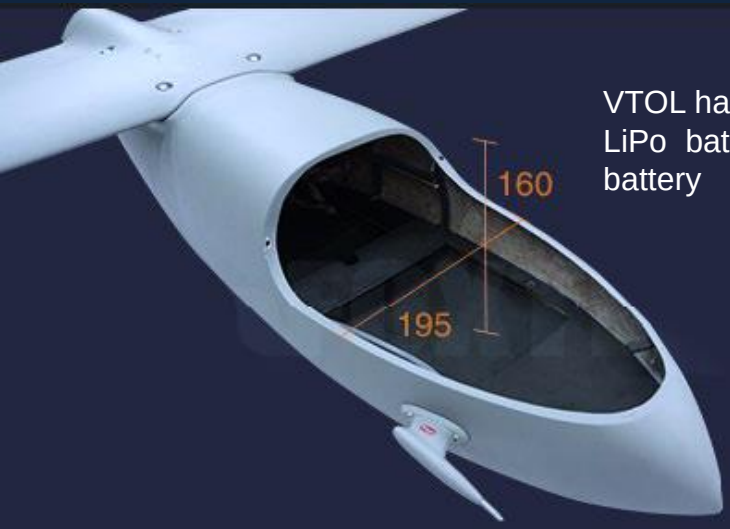
CONTRUCTION

- Full composite, Carbon fiber, Kevlar / Honeycomb core structure
- Electric motor power
- Tough structure achieve industrial standard
- Dual battery power maximize the safety goal
- Compatible with full-featured PC-base, open source autopilot system
- Easy for assemble in the field, no need for expert skill
- VTOL suit for any mission

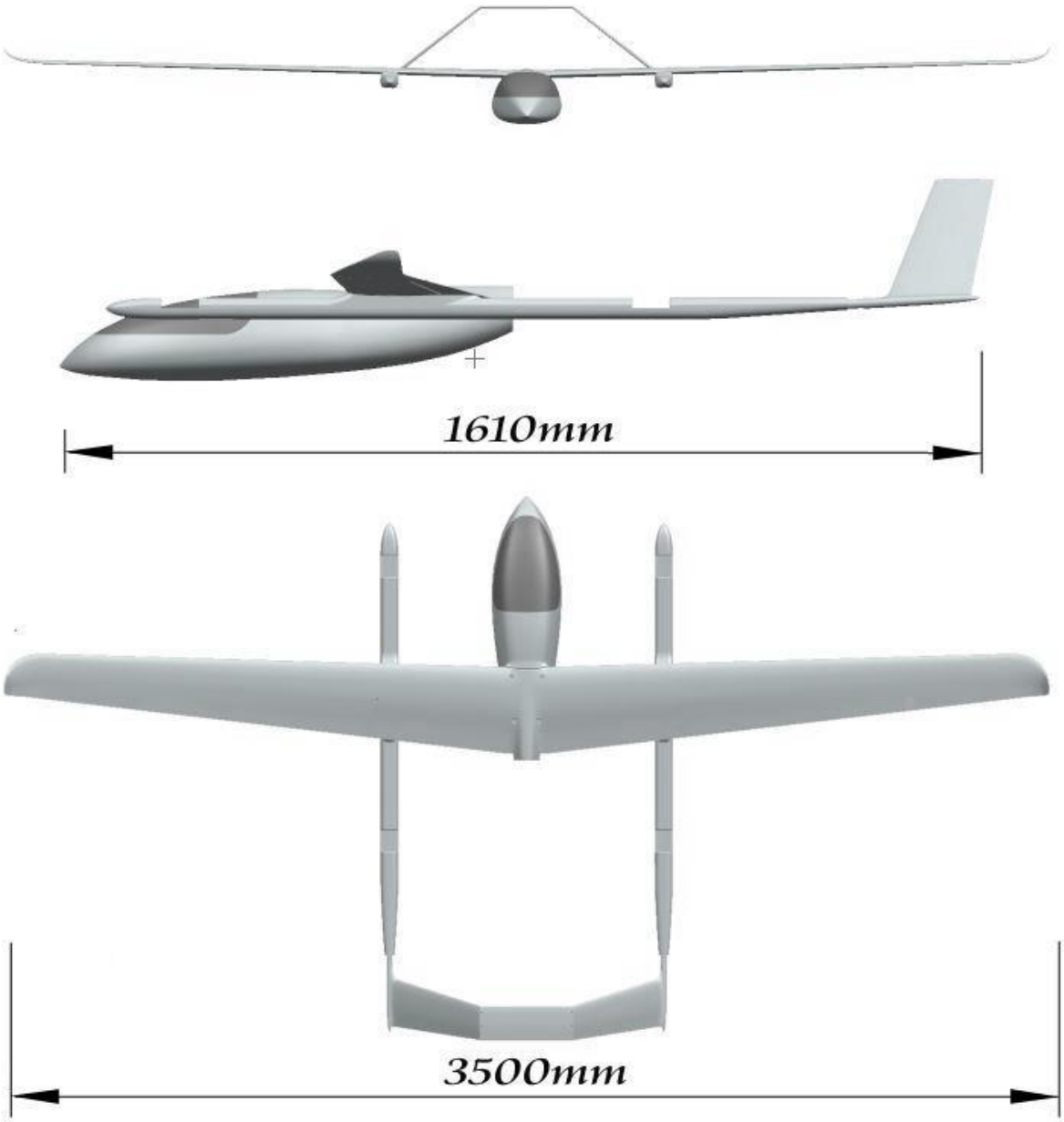


FF
VTOL DRONE

16Kg MTOW	8.2Kg Airframe
3500mm Wing Span	1610mm Length
300mm Height	70dm^2 Wing Area
7.8Kg Max Payload (With Battery)	500Kv MOTOR
6.3Kg Battery	2Hrs Endurance (MTOW 16Kg)
86Km/h Cruising Speed	120Km/h Maximum Speed
72Km/h Stall speed	5x5 Runway

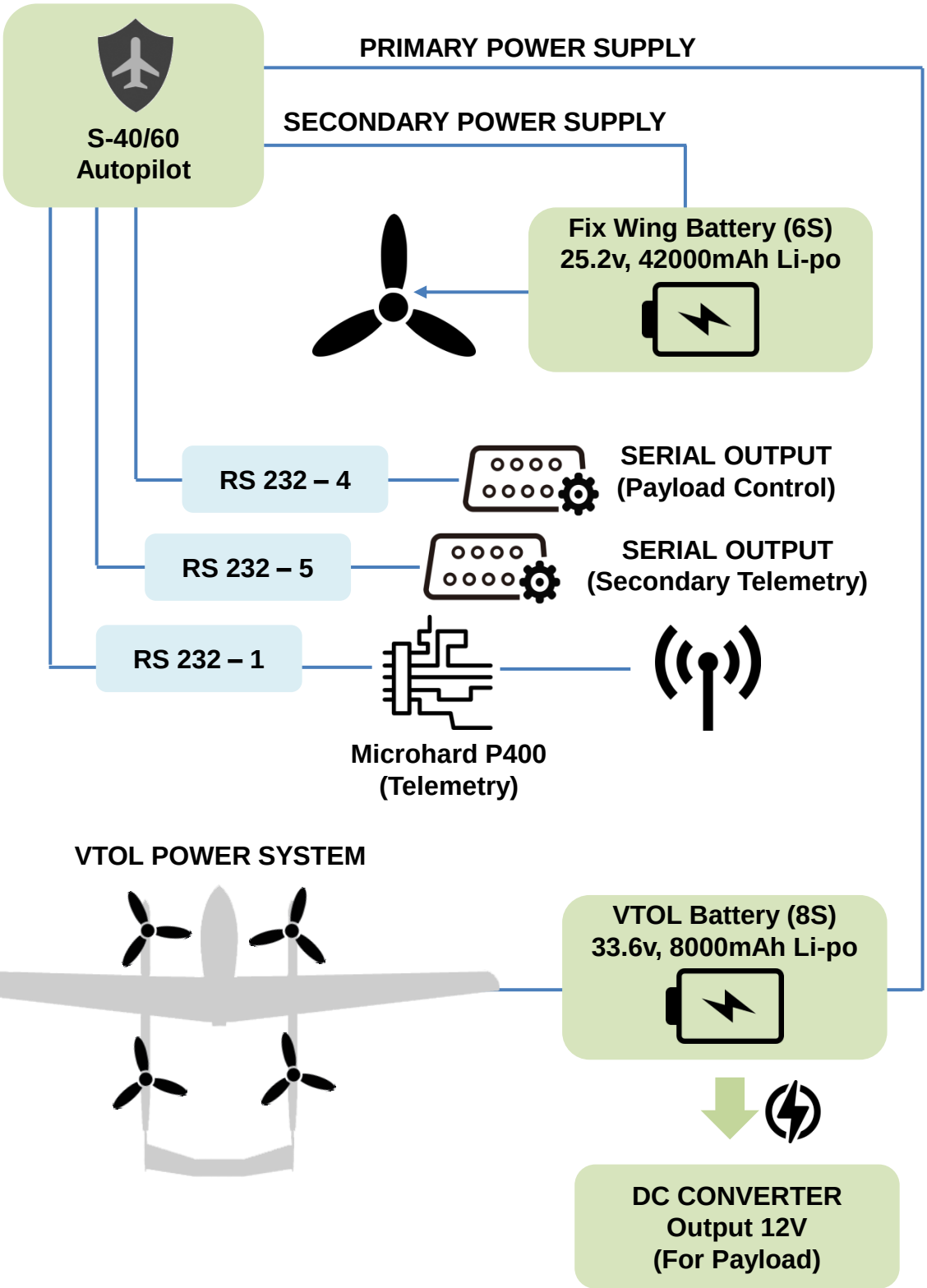


VTOL has a very big inner space for one 8S 8000 mAh LiPo battery and optional one 6S 56000mAh Li-ion battery



ASSEMBLY

POWER SYSTEM
(DIAGRAM)



FS 18-Channel 2.4GHz Computer Radio System

Features:
• AFHDS 3 Protocol
• FTr10 and FTr16s receivers
• Metal Hall Gimbals
• 18 channels
• Six different model (Airplane, Helicopter, Glider, Delta Wing, Multi Copter)
• 4300mAh battery (built-in), over 8 hours between charges
• Wireless charging, USB charging
• Voice/vibration prompts
• USB simulator (For use with flight simulation software)
• Copy and paste model data
• Customizable switches
• Trainer function
• Stable signal even with over 40 transmitters being used at the same time

Specs Paladin PL18:
Channels: 18
Model Type: fixed-wing, helicopter, crossing machine, multi-axis, engineering vehicle
RF: 2.4GHz
RF Power: < 20 dBm
2.4GHz Protocol: AFHDS3
Distance: >3km
Channel Resolution: 4096
Battery: 1S (3.7V) 4300mAh (built-in)
Charging Interface: Micro USB / wireless charging
Charging Time: 6h@5V/7h@2A (wireless charging)
Lifetime: > 8h
Low Voltage Warning: <3.7V
Antenna Type: Dual antenna
Display: HVGA 3.5" TFT, 320x480
Language: Chinese and English
Simulator: USB Simulator
Data Interface: USB, Non-standard interface (USART), PHJACK (PPM)
Temperature Range: -10 ° C - + 60 ° C
Humidity Range: 20%-95%
Online Update: support
Dimensions: 214x86.5x192 mm
Weight: 946g
Certification: CE, FCC ID: N4ZFT1800, RCM

Specs FTR10:
PWM channels: 10
RF: 2.4GHz
Protocol: AFHDS 3
Distance: >3500m
Antenna type: 103mm x 2
Power input: 3.5v-18V
RSSI: Yes
Data port: i-BUS/S-BUS/PPM/PWM/UART
Temperature: -15℃—+60℃
Humidity: 20%-95%
Update online: Yes
Size: 52x28x22mm
Weight: 22g
Certificate: CE, FCC ID: N4ZFTR1000

Specs FTr16S:
Channels: 16
Model type: Racing Drone
Data port: i-BUS/S-BUS/PPM
PWM channels: NO
RF: 2.4GHz
Protocol: AFHDS 3
Distance: 3500m
Antenna type: Dual antenna
Power input: 3.5v-8.4V
RSSI: Yes
Temperature: -15℃—+60℃
Humidity: 20%-95%
Update online: Yes
Size: 20x12x3.1mm
Weight: 2g
Certificate: CE, FCC ID：N4ZFTR16S00

ZX-P-IV-D-GL80 Dual-light Gimbal

Integrating 10X RGB camera and un-cooled thermal camera inside, the dual-light gimbal outputs HD image with outstanding auto-zooming and target tracking capabilities.

With two-axis two-frame structure and electronic stabilization, the gimbal achieves high stabilization performance and 360°rolling that are suitable for wide range of applications including monitoring, anti-terrorism pipeline examination etc. carried under fixed-wing, single-rotor and multi-rotor UAVs.

Features

- Dual-mode: 10X RGB camera + thermal camera
- Low-illumination imaging
- Small in size, light in weight
- Auto target tracking
- Temperature measurement (optional)
- Video recording
- Qualified for fixed-wing, single-rotor, multi-rotor and other aircraft

Application

- Powerline inspection
- Forest fire prevention
- Investigation monitoring
- Border defense
- Pipeline examination
- Intelligent transportation
- Disaster rescue

- 2-axis gimbal
- 10x optical zoom
- Visible camera 1920x1080, 30 fps
- Thermal camera 640x480
- Auto Target lock
- Weight 820g

ZX-P-IV-D-GL80 Dual-light Gimbal

Controlling	Azimuth	360°*N
	Pitch	-110°～30°
	Interface	RS 232, S.BUS (RS 232 suggested)
RGB camera	Pixels	1920*1080
	FOV	D:WIDE 70.9º±5% TELE 7.1º±5% H:WIDE 58.7º±5% TELE 3.2º±5% V:WIDE 45º±5% TELE 2.4º±5%
	Diaphragm	F1.6
	Focal range	4.7~47mm±5%
	Optical zoom	10X lossless zoom; 12X digital zoom
Thermal camera	Working system	Un-cooled long wave (8μm～14μm)
	Detector pixels	640*480
	Pixel size	17μm
	Focusing	Athermalizing
	Emissivity correction	Emissivity 0.01~1 adjustable
	NETD	≤50Mk (@25℃)
	MRTD	≤650Mk (@Characteristic frequency)
	Lens	25mm
	Image enhancement	Automatically adjusts image brightness and contrast
	Color palette	Black hot, white hot, pseudo color
	Automatic non-uniformity correction function	Yes
	Digital zoom	2X 4X
	Time synchronization function	Yes
	Temperature measurement mode	Temperature bar (pseudo display) HT LT field center temperature
	Range of TM	0℃～120℃
Tracking index	Data frequency	50Hz
	Minimum target contrast	5%
	Minimum target size	16*16 pixels
	Maximum target size	128*128 pixels
	Tracking velocity	32 pixels/frame

Electric features	Video output interface	NET: UDP/RTSP/ONVIF SDI, RS422
	Working voltage	10-16V
	Working current	Quiescent current: 600mA Dynamic current: 800mA
	Power consumption	average≤12W, Max≤20W
	Video storage	Picture in picture
Environmental adaptability	Working temperature	-30℃～60℃
	Storage temperature	-40℃～70℃
Others	Size of device	118.8mmxW98mmxH166.3mm
	Weight	≤850g

Portable professional ground control system

GCS-dual		
Computer parameters	Model	G21
	CPU	Intel I5 7200U
	RAM	8G
	HDD	128G SSD
	Graphic	Intel HD Graphics 620
	Net	1 Gigabit Ethernet
	OS	Windows7/10/Linux
	Screen Size	UP:15.6inch(touch) DOWN：12.1inch(touch)
	Resolution	UP：1920*1080 DOWN：1280*800
	Brightness	1000 ccd/ m²
	Touch Panel	10 points capacitance
	Battery Cap	16.8V 12AH
	Battery indicator	By computer /led
	Charger time	3-4H
	Endurance time	3-4H
	Meas	462*256*75mm
	N.W.	7.9KG
	Storage Temp	-20-70℃
	Operating Temp	-10-60℃
	Ports	2*USB3.0/1*LAN/1*HDMI
Other parameters	Gimbals sticks	4* Hall sticks
	button	8 Third gear switch
	Video input	HDMI
	Module Tank size	140*70*27mm
	Power supply	12V(max 3A)
	Rocker output	SBUS/USB-HID

STANDARD

ITEM No	QTY	DESCRIPTION
IA-S1040-V2	1	FF VTOL airframe with RTF - Grey color - Wingspan 3.5m, 3 section - Full composite - 1.5~2 hours endurance 150 x 45
IA-040-V1	1	Flight controller
IA-ANT-900	1	1.8m fiberglass antenna, 2 section 10db, 902 - 928 MHz
IA-H16-PRO		Sky droid professional GCS - > 30km telemetry & video link - Android system, 2.4 ~ 2.483 Ghz - 7" ISP high-brightness display - 10 ~ 15 hours operation
IA-SRV-AP	1	Service Autopilot
IA-8S10000	4	8S 10000mAh Li-po for FF (2 Set as spare part)
IA-6S42000	2	42000mAh (18650, Li-ion) battery (6s, 25.2v) Weight 3.6kg For FF fix wing (2 Set as spare part)
IA-1200W-12S	1	Dual output charger 6-12S x 2 1200w
IA-SP50	1	Long Range telemetry & video system Range 50km radius Max power output 2w Band width from 1.4mHz ~ 20mHz Frequency 816mHz or 1437mHz RS232 port x 2 Network port x 2
NOSE CAMERA	1	Nose piloting Camera
GCS-dual	1	Portable professional ground control system GCS screen x 1, 15.6" Gimbal screen x 1, 12.1" Intel i5 7300U 120G SSD, Ram 4G 3 ~ 4 H endurance
IA-CAM GL80 (Version 2)	1	ZX-P-IV-D-GL80 Dual-light Gimbal - 10X lossless zoom; 12X digital zoom, - 360°*N- 1920x1080 HD visible - 640x480 thermal sensor- Target lock - SDI / IP output - Weight 820g
Software	1	Piloting Software

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