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 **SPARROW**
VTOL DRONE



SPARROW VTOL Custom Build BTO (Build to order)

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

It is made of full composite material and features a Honeycomb structure, which makes it both very light and strong.

The quick- detach design also makes it easy to assemble and disassemble in the field of operations.

SPARROW has a very big inner space for the installation of big push / hover batteries combination.

Take-off weight of this big VTOL UAV is 9kg, so it can fly at a high speed with very low power consumption.

The maximum take-off weight of the SPARROW is about 15kg. With this weight it can reach 2 hours endurance covering an area more than 10sq km.

It can fly at a very high speed

The maximum speed is about 110km/h and the cruising speed is 72km/h.

The SPARROW can be launched directly from an area as small as 5x5m.

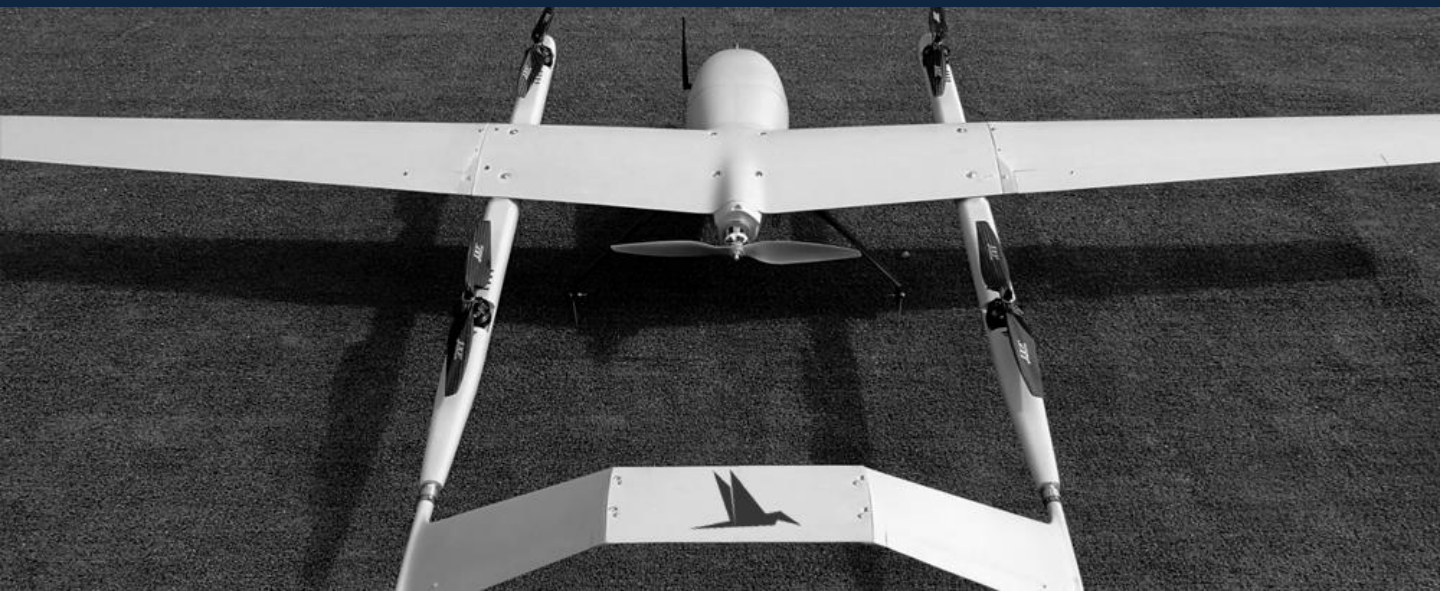
With a 1.5kg payload capacity the SPARROW can load various zoom cameras (high definition optical zoom, infrared zoom and thermal cameras).

This aircraft can be equipped with advanced control system, RTK GPS, PPK System to do mapping jobs at the level of one centimeter detail analysis; and also, can load a zoom camera to accomplish long range surveillance / inspection coupled with long range video transmission and control system.

Furthermore, there is an option and SPARROW can be equipped with an IC (Inertial Combustion) push engine so as to surpass 4Hours of endurance in high speed and cover much more bigger area (in current offer we propose the batteries powered version).

Industry standard communication format ensures interoperability with the majority of C4I platforms.





Description

1. Air-Frame

Specifications:

Wingspan: 3500mm

Length: 1610mm

Height: 300mm

Wing area: 70dm²

Max Take-off weight: 15kg

Take-off weight: 9kg(w/o battery, payload)

Max load: 6kg (included battery)

Endurance: 2 hours (15kg take-off weight). 4 hours with gas engine (optional)

VTOL levitation / hovering time : 12min

Cruising speed: 20m/s, 72km/h

Max speed: 30m/s, 110km/h

Stall speed: 18m/s, 64km/h

Battery: 6S 40000mAh - 60000mAh

Minimum take-off / landing area: 5 X 5 m

VTOL Features:

- 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 / disassemble in the field of operation

Further Information:

Weather Durability: Water & Rain: IP55

Wind Speed: - Fixed Wing Mode: Constant: 15m/s or 30knots & gust 20m/s.

- VTOL Mode: Constant: 10m/s or 20knots & gust 15m/s

Round Trips and Ranges: - Maximum endurance range: 144km (cruise speed 20m/s x 2h)

- Maximum distance range: 168km. (high speed 28m/s x 1.6h)



Description

2. Telemetry & Control options

The SPARROW is equipped with the state of the art telemetry and control peripherals:

- Long range RF Telemetry & Ultra Long Range Control= max 50km telemetry control & 30km direct control
- 4G Telemetry = Unlimited Range (depends on 4G coverage)

3. Payload transmission options

The SPARROW is equipped with the highest quality / distance live video transmission peripherals:

- Digital TX/RX= max 20km HD 720p video or max 10km 1080p video (both at 30fps)
- Video over 4G = Unlimited range coverage based (option includes 4G Telemetry)

4. Companion Onboard computing options

Advanced CUDA Based Companion Computer for AI (Artificial Intelligence) and machine learning applications

5. Anti-jamming and anti-drone Tolerance

Fully encrypted, hardware accelerated Telemetry and Control

Standard encryption for payload transmission (*Optional on extra cost, Anti spoofing GPS & Advanced anti-jamming capabilities interface / ITAR Components*)

Anti-jamming and Glitch clearing standard GPS (*Optional on extra cost, COFMD Mil-spec encrypted hardware accelerated payload communications interface / ITAR Components*)

Danish Aviation fully encrypted 100km range Direct Control (taking full advantage of 4G telemetry capabilities at maximum range)

6. Payload

COLIBRI 2 Micro Thermal EO-IR Day / Night / Thermal. Optical zoom 20X, Digital zoom 2X with Military Grade Controller.

The suggested camera is the state of the art / military standards / high multiple performance and durability camera. Weighing only at 180 grams, the COLIBRI 2 offers excellent image quality and sharpness to capture detailed imagery, such as license plates and faces from a distance.



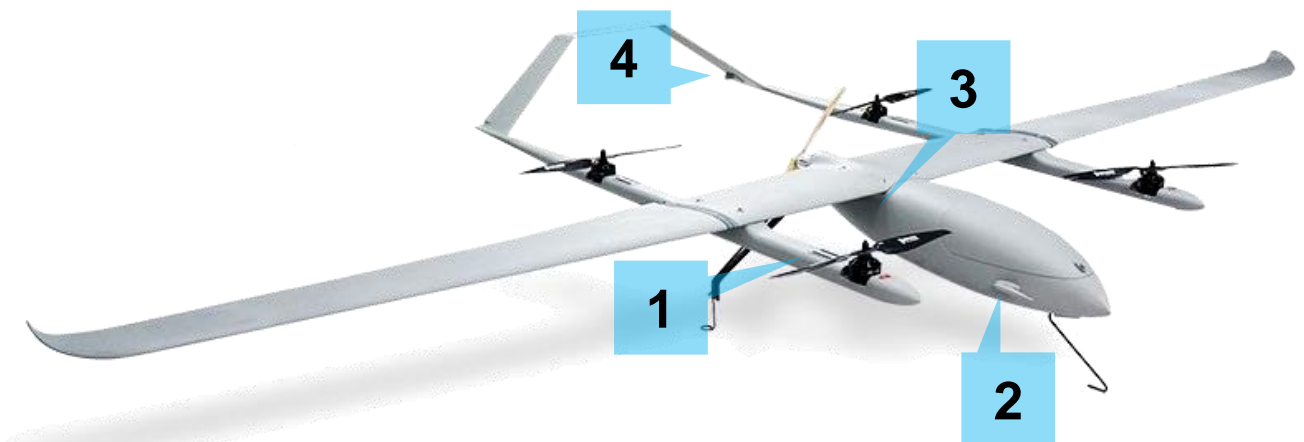
7. GCS (Ground Control Station)

Aeronav Ruggedized Military grade GCS

8. Power Supply

Supplied with 2 x 22000mA 6S LiPo Battery Packs & 2 x 21000mA Li-Ion 6S 7P supreme Battery Packs for high performance, durability, reliability and long operational life. Can use combination of LiPo-Li-Ion or LiPo-LiPo depending on mission requirements.

- High Durability
- Long endurance
- Very long range control and communication
- Vertical launch and landing, no space limitation
- 100% remotely controlled
- Non hackable (anti-jamming, anti-spoofing, high encryption etc.)
- Best camera (colibri2) in the market



Heatsing



Air Speedometer



Heatsing



Servo Protective Cover



3500mm

Wing Span

70dm²

Wing Area

16Kg

Max. Take-off weight

2Hrs

Endurance
(16Kg take-off
weight)

7.8Kg

Max Payload
(with battery)

110Km/h

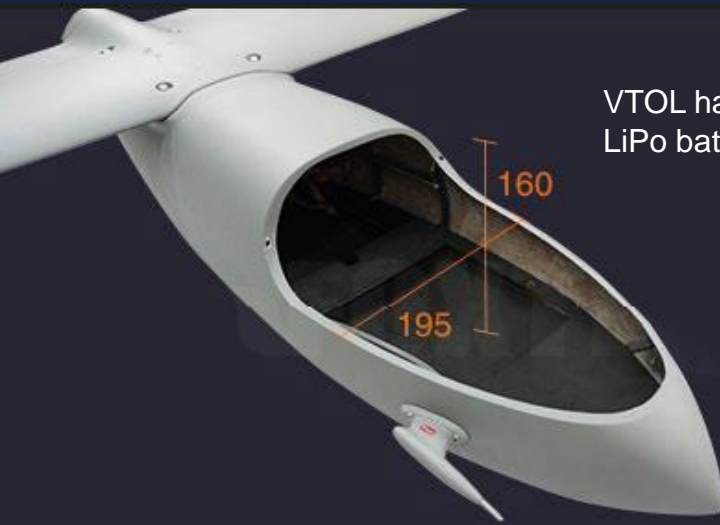
Top speed

86Km/h

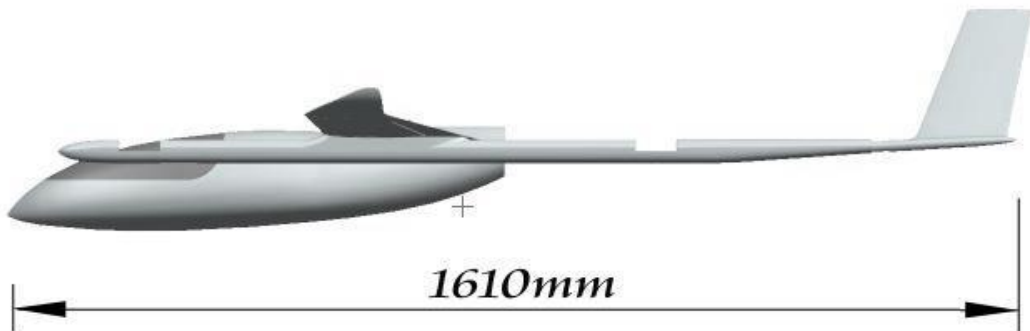
Cruising Speed

5x5

Launch Area



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





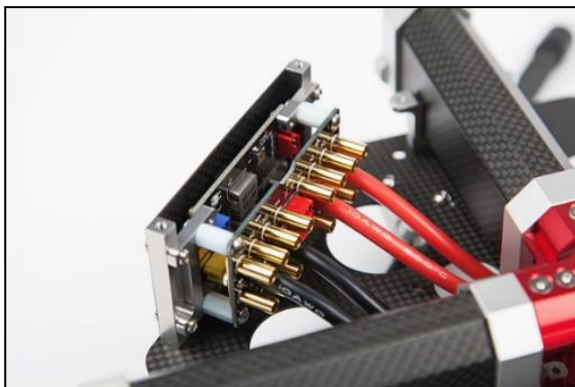
MN505 S

What does the Navigator motor best for, and why?

"Navigator" motors are for general uses such as aerial photography.

The newly released MN501-S, MN505-S, MN601-S, MN605-S, MN701-S, MN705-S, MN801-S and MN805-S have extended the application to VTOL (Vertical take-off and landing)

Aviation Grade Power Systems



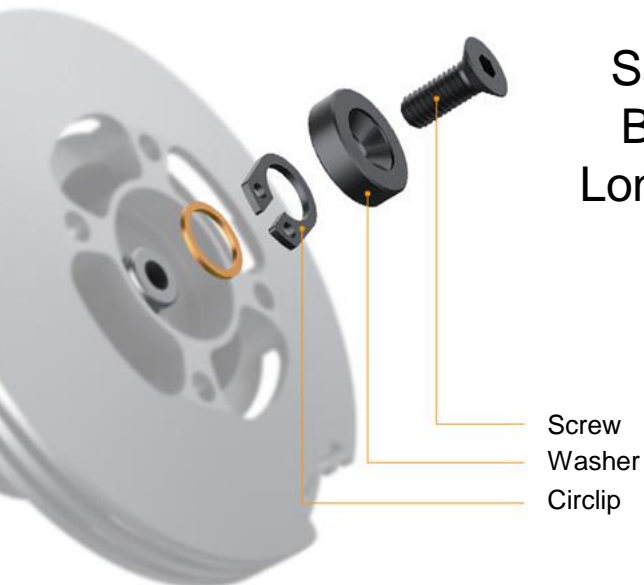
PIXHAWK 2

- The most advanced Open source Autopilot
- Powerful & Open-Source Software/Hardware

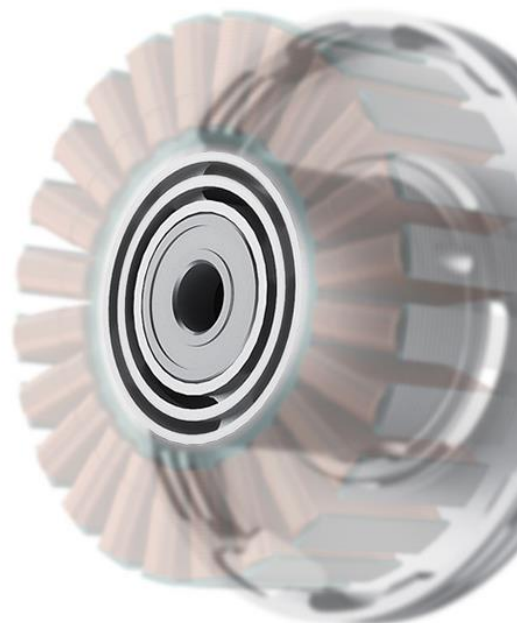


MN505 S

- 6.6+ Thrust
- Stable & Reliable
- Safe
- Impact resistant
- IP45 (waterproof)
- Excellent Cooling Performance
- Anti-High Temperature
- Anti-Overload



Safe Flying
Big Thrust
Long Lifespan



E/O PAYLOAD

COLIBRI 2 CAMERA



The Colibri2 is a dual EO-IR stabilized camera built for professionals needing a quality camera for day and night use. Weighing in at 180 grams [6.3 oz], the Colibri2 offers excellent image quality and sharpness to capture detailed imagery, such as license plates and faces.

Zoom : x20 + x2 digital (total x40)

FOV : 60° WFOV – 3° WFOV – 1.5° DFOV

Thermal Resolution : 640x480

Pitch FOR: -45° to +90°

Roll FOR: -180° to +180°

Weight : 180 grams [6.3 oz.]

Dimensions : 53mm [2.099"] x Height=81mm [3.2"]



Why SPARROW with COLIBRI 2?

The COLIBRI 2 Micro Thermal is a High Resolution Day / Night, Electro optical (EO) - Infrared (IR) and Thermal camera.

Very high Optical zoom 20X (analog through lenses integration) and Digital zoom 2X, hence a total zoom X40 with and high quality image.

All these integrated with a Military Grade Controller.

The camera offers excellent image quality and sharpness to capture detailed imagery, such as car license plates and faces from a very long distance.

Additionally, the COLIBRI 2 camera's weight is only 180 grams, while its shape and aerodynamics perfectly fit the operational use mounted on a lightweight UAV VTOL as our "SPARROW".

Due to the above, the camera does not affect the aerodynamics and overall weight of the UAV and allow it to sustain a maximum range at real cruising speed for the maximum of 2 hours' time flight (everything heavier or non-aerodynamic would affect the speed and endurance).

The suggested camera is the state of the art / military standards / high multiple performance and durability camera, the best that can be found in the market today.

Just for comparison reasons, the standard fixed device that has the same characteristics for military use purposes weighs more than 60 kilos and is an extremely expensive device with multiple camera sensors.

However, apart from the camera, our huge "**SPARROW**" has a bunch of benefits and outstanding performance standards comparing with what can be found in the market.

There is no UAV that can present all the below mentioned characteristics:

- Made of full composite material and features a Honeycomb structure, which makes it both very light and strong.
- VTOL (Vertical Take-Off and Landing) capabilities, requiring only a 5m X 5m take-off / landing area
- Maximum endurance range: 144km (cruise speed 20m/s (72 km/h) x 2h)
- Maximum distance range: 162km (high speed 28m/s (101 km/h) x 1.6h)
- Weather Durability: Water & Rain resistant: IP55

Wind Speed:

- Fixed Wing Mode: Constant: 15m/s or 30knots (7 bft) & gust 20m/s or 39knots (8 bft)
- VTOL Mode: Constant: 10m/s or 20knots (5 bft) & gust 15m/s or 30knots (7 bft)
- Long range direct RF Telemetry (max 50 km) and Ultra Long Range direct Control (30 nm).
- Direct link transmission of high quality, day / night / thermal imaging real-time video utilizing COLIBRI 2 Micro Thermal EO-IR Day / Night / Thermal ultralight camera (unlimited range with GSM 4G capabilities and up to the maximum range of flight)
- Advanced image processing capabilities including tracker, moving target indicator
- Additional capabilities of geo-registration and mosaicking (optional, accompanied with the required software).
- Advanced CUDA Based Companion Computer for AI (Artificial Intelligence) and machine learning applications
- Remote takes off / land mode without communication link with the GCS
- High non detection & anti-jamming capabilities.
- Danish Aviation fully encrypted 100km range Direct Control (taking full advantage of 4G telemetry capabilities at maximum range)
- Air Data Relay to other friendly devices and "hot-swapping"
- Ability to integrate with user's C4I (Command, Control, Communication, Counter Ops and Intelligence)

CONTROLS

TARANIS TX System (standard)

Powerful and expendable Best in class Radio Transmitter for unlimited Future Models with multiple capabilities, featuring Real Time telemetry and Haptic feedback.



Features

- Built-in iXJT+ module(the enhanced RF performance and the less latency)
- Wireless trainer system
- Support FrSky Free Link App
- FrSky FrOS (Support OpenTX System)
- 2 internal antennas and detachable external antenna
- Antenna detection and SWR warning
- Industrial LCD: 480*272 readable outdoor color screen
- Built-in Li-ion battery
- MC12P CNC digital ball bearing hall sensor gimbals and extendable stick ends

Specification

- Full Weight: 1000g
- Operating Voltage: DC 7.2V
- Operating Temperature: -10 ~ 60 °C
- Operating Current: 350mA@7.2V
- Number of channels: 16 channels (up to 32 channels)
- Model Memories: 60 (unlimitedly extendable by TF card)
- Transmitter Panel: Amber

Includes

- 1 x Horus X10S
- 2 x Gimbal Protectors
- 1 x Charger
- 1 x FCX10 Interface Converter
- 1 x Logo Sticker
- 1 x Back Strap
- 1 x Manual
- 1 x EVA Bag

Aeronav (Optional)



The core of the Aeronav is a reliable Panasonic Toughpad , a professional tablet that helps drive efficiency and productivity in ways that were never previously possible; Aeronav is capable of operating outdoors in a variety of extreme and remote environments.

The Aeronav is especially suitable for field application in markets such as aviation, defense, or construction due to its capability to perform under exposure to extreme and constantly changing environments.

Since its release in 2015, we have continuously improved Aeronav's performance in close cooperation with our more than 100 customers worldwide. The Aeronav is a well-proven, secure, and reliable solution, which is easily extendable with your hardware and software requirements. Its production version can be delivered fully customized according to **your specifications, including custom software, firmware, engraving, joystick configuration, and radio/control modules.**

The Aeronav is combined with the Panasonic Toughpad, incorporating an 800cd/m² IPS α display. The capacitive 10-finger multi-touch display and digitizer pen makes it extremely user-friendly.

The Aeronav runs on Windows 10 Pro, Windows 8, or Ubuntu and is equipped with the Intel® Core™ i5 Processor. It also benefits from connectivity options to ensure data is available to the user whenever needed.

Compatible with;



