## MARS GRH-1 Unmanned Helicopter

**Specifications**

| | |
|---|---|
| Dimensions | L1770mm x W330mm x H600mm |
| Main Rotor | 900mm x 3 |
| Tail Rotor | 130mm x 3 |
| Empty Weight | 13Kg |
| Main Tank Capacity | 1.8L |
| Accessory Tank Capacity | 1.8L x 2 |
| Max Payload | 10Kg |
| Max Takeoff Weight | 24.5kg(design limit 28kg) |
| Max Flight Time | 70min / with main tank<br>200min / with main + acc tanks |
| Engine | 100 c.c. water-cooled heavy-oil engine |

**Optical Sensors (Optional to Customer Request)**

| | |
|---|---|
| RGB Camera | |
| Zoom | 30 x Optical / 2 x Digital |
| Video Recording | 4K |
| Streaming Quality | 1080p HD |

**IR Camera**

| | |
|---|---|
| | By customer request |

## Sky Arrow UAV System

| | |
|---|---|
| Dimensions | L2400mm x W3000mm x H770mm |
| Maximum Takeoff Weight | 30kg |
| Cruise Speed | 105km/hr |
| Maximum Speed | 145km/hr |
| Maximum Service Ceiling (ASL) | 4000m |
| Endurance | 3hours(max.) |
| Max Payload | 6kg |
| Maximum Range | 300km |
| Engine | 54.9 c.c. DLE-60 two stroke<br>air-cooled gasoline engine |
| Take Off/Landing Run (with braking) | 30m / 80m |
| Landing Gear Design | Forward tricycle |
| Engine Installation | Single engine-pusher |
| Structure Design | CFRP sandwich structure |

## Sky Hawk II Security Multi-rotor UAV

**Specifications (Customizable)**

| | |
|---|---|
| Diagonal Dimension | 1000mm |
| Max Flight Time | 25min |
| Max Climbing Speed | 4m/s |
| Max Level Speed | 10m/s |
| Max Wind Resistance | 5.5m/s(Beaufort 4) |
| Navigation | GPS / GLONASS / BDS |
| Empty Weight | 2.5kg(without payload) |
| Payload | Customizable |

## ALPAS II Unmanned Helicopter

**Basic Specifications**

| | |
|---|---|
| Dimensions | L1710mm x W560mm x H645mm |
| Main Rotor Diameter | L900mm x W80mm |
| Payload | Tank、Sprayer |
| Power System | 300KV brushless motor |
| Auto Height-holding System | Under 10m by mmW radar<br>Over 10m by barometer |

**Flight Performance**

| | |
|---|---|
| Maximum Takeoff Weight (MTOW) | 24.15kg<br>(payload over 10kg is prohibited) |
| Maximum Flight Speed | 20km/h(by regulation) |
| Empty Weight (w/o payload) | 14.15kg<br>(incl. battery and empty tank) |
| Operating Temperature | -20°C ~ +60°C |
| Maximum Wind Resistance | 10m/s(Beaufort 5) |
| Motor Input Voltage | 45V~52V(12S Li-Po) |
| Avionics Voltage | 8V-12V |

**Sprayer System**

| | |
|---|---|
| Volume | 16L(do not exceed the 10L limit line) |
| Water Pump Power | 45W |
| Voltage | 12V |
| Boom | 2 rods |
| Nozzle | 4 nozzles |

## Light Weight UAV "Pterosaur"

| | |
|---|---|
| Power | Li-Po battery |
| Dimensions | L800mm x W1400mm x H85mm |
| Max Takeoff Weight | 2.2kg |
| Endurance | 60~70min |
| Cruise Speed | 45~55km/hr(beaufort wind scale 4~5) |
| Take Off | Hand-throwing or bungee launcher |
| Landing | Parachute / Skid |
| Communication Distance | 3km |
| Payload Camera | 24 million-pixel camera<br>Infrared thermal camera<br>Multispectral sensor |

Official Website

GEOSAT FB

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【Edition 2019 - Revised 2023/6】150P

# Light Weight Fixed-Wing UAV "Pterosaur"

Pterosaur is GEOSAT's compact UAV product. Weighing only 2.2 kg, it is a portable all-wing vehicle that can take off by hand-throwing or catapult, depending on terrain, wind and operation conditions. Equipped with auto-pilot flight control computer, it can carry 24 million-pixel camera, infrared camera, multi-spectral sensor. Pterosaur can be used in aerial photographing, precision agriculture, 3D modeling for buildings, environmental monitoring. The UAV can fly for 60~70 minutes, covering 500 acres at 400 meter height above ground each flight.

TAIWAN EXCELLENCE 2018



● 2019 CSTP Innovative Product Awards

* Patent :
TW-I688519B / I688520B,
US D847183 / D847184 / D847185 / D847186 / D847843

**Light** Removable wing, easy packing, small size for portable.

**Smart** Intuitive area targeting, automatic route planning, automatic landing.

**Safety** Fail-safe auto-homing, automatic landing, parachute in emergency.

**Efficacy** Flying 1 hour or more.

**Professional** Accurate recording of spatial coordinates and vehicle attitude for high quality orthophoto image and precision 3D terrain modeling.

● Pterosaur UAV can take off by hand-throwing

● Pterosaur UAV can be transported by carrying box

● Pterosaur UAV can land in designated area by parachute

Build-to-Order

# Sky Hawk II
# Security Patrol/Monitoring UAV

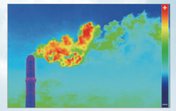
Sky Hawk II is a multi-task quadcopter to fulfill public security and patrol role. It can be scheduled to conduct automatic patrol in-rota along a pre-set perimeter from ground command center. Sensor payload can be customized with RGB zooming camera, IR camera .. etc. with images transmitted real-time to ground control station. Operator can control them via payload software on tablet computer. Optional 4G LTE module for audio/video streaming allows remote commander viewing and communicating with on-site pilot/controller.

**Good Endurance** Up to 25 minutes airborne to keep continuous surveillance.

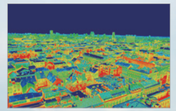
**Good Wind Resistance** Appropriate size for loading/transport; Beaufort 4 wind resistance with better serviceability.

**Easy Operation** Operation via intuitive graphic UI Apps; quick start with simple training.

**Good Vision** Equipped with light-weight zooming RGB camera and thermal IR camera for fast target identification.



● Detecting air pollution and water pollution from factory at night



● The monitoring for building safety

● Aerial photo of solar panel in visible spectrum

● Infrared image of solar panel (the red-spot on the left shows defects)


**CHOOSING GEOSAT DEFENSE.**
**ENSURING HOMELAND SECURITY.**

GEOSAT
AEROSPACE & TECHNOLOGY

## Company Profile and Products/Services

Founded in 2004, GEOSAT Aerospace & Technology Inc. specializes in the technology development and innovative application of Unmanned Aerial System (UAS). We are a total solution provider with unique in-house system integration capability to vertically integrate the upstream (research & development and production), mid-stream (operational services) and downstream (data analysis) value-added service in East Asia and Southeast Asia.

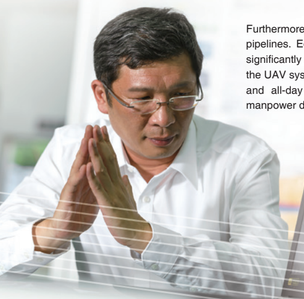
GEOSAT has 200 experts in all kinds of fields, integrating aerospace engineering, ICT & telematics, composites manufacturing, remote sensing, artificial intelligence, spatial informatics and other technological expertise. We offer unmanned aerial system (fixed-wing aircraft and VTOL) and key subsystems (flight control system, ground control station, data transmission system and payload equipment). Our in-house engineering labs can integrate the vehicle customization and payload system according to the special needs of customers, providing complete solution with warranty and product support services. The flight operation team with our own fleet provides customer training and customized flight services in aerial photogrammetry for spatial information analytics, disaster assessment and relief management, environment monitoring, urban planning, land surveying, facility security, inspection of large infrastructures, resource exploration, and other solutions.

● President Tsai Ing-wen visited Geosat UAV agricultural spray achievements

## Intelligent Disaster Prevention and Security Surveillance

Taiwan, a cramped island with a dense population, is located at the junction of two tectonic plates and between subtropical and temperate climate belts. Situated in the western Pacific Ocean, the island faces frequent threat of typhoons and earthquakes. Living in such a high-risk area of natural disaster, GEOSAT Aerospace develops intelligent solution by integrating unmanned aerial vehicle (UAV as robotics) and artificial intelligence for disaster prevention. Utilizing the high maneuverability and flexibility of unmanned aerial vehicle (UAV) sent preemptively to high-risk area, the 3D digital terrain mapping from aerial photogrammetry provides frontline commander with better decision-making intelligence for disaster relief.

● 2015 Taiwan National Industry Innovation Award to GEOSAT



Furthermore, wheeled robots are used to inspect important sub-terrain pipelines. Equipped with various sensors, the autonomous robots can significantly reduce the risk of explosion. With regard to facility security, the UAV system can satisfy the demand for omni-directional surveillance and all-day monitoring, providing tighter protection and making up manpower deficiency.

● The Founder and Chairman of GEOSAT Aerospace Inc. , Dr. Cheng-Fang (Max) Lo graduated from the Dept. of Aeronautics and Space Engineering at University of Texas (Austin) in the United States. He has been the CEO of Satellite Informatics Research Center at National Cheng-Kung University; and CEO of the state-owned aerospace company AIDC, with professional experiences in industry, government and academia.

# MARS GRH-1
# Tactical Unmanned Helicopter

TAIWAN EXCELLENCE 2020

MARS (Maritime Aerial Reconnaissance System) is a tactical unmanned helicopter designed for long-endurance surveillance and reconnaissance. Equipped with three-blade CFRP rotor and one 100 c.c. water-cooled heavy-oil engine, its cruise speed can reach 108 km/hour. More than 70-minute endurance is achieved with standard capacity tank. Extended endurance up to 200 minutes is available with two accessory fuel tanks. Standard mission sensors is a dual RGB/IR camera with high resolution zoom (optical RGB and digital) and 4K video recording / 1080p HD streaming quality. IR camera by customer request are available for better real-time surveillance and tracking on maritime and land targets. MARS can also be equipped with other industrial sensors for emergency services and resource exploration.

| | |
|---|---|
| Long Endurance | Nominal flight time 70 minutes; 200 minutes with accessory fuel tanks. |
| High Airspeed | Cruise speed up to 108 km per hour, allowing fast deployment into combat zone. |
| Competent Sensors | Advanced EO sensors with 60x zoom capability and IR designator. |
| High Performance | Light but robust CFRP fuselage structure; high safety 100 c.c. water-cooled heavy-oil engine. |

# ALPAS II
## Smart Agriculture Unmanned Helicopter

ALPAS II (Shen-Nong, or Divine Farmer named after mythical ruler of pre-historic China), a helicopter built on GEOSAT years of experiences and integrated into a lightweight and high-performance UAV specifically for smart agriculture. Equipped with central tank and electrical pump allowing ALPAS II produces excellent atomization effect through four nozzles. The pesticide and liquid fertilizers can be stably loaded and evenly distributed, and the spray effect can be effectively enhanced while reducing the usage of chemicals.

ALPAS II UAV is equipped with state-of-the-art flight control computer and dual “laser/mmW radar” sensors, allowing precise spraying automatically. The helicopter can operate 15 minutes while taking off at 24 kg, covering 2.3 acre/hour with its 4 meter spraying span. The labor costs can be greatly reduced as a new generation UAV for precision agriculture.

COMPUTEX d&i awards 2019

TAIWAN EXCELLENCE 2019

Certified by the Council of Agriculture as TS108-complied machinery

| | |
|---|---|
| Long Endurance | 25 minutes flight time with high efficient battery management system. |
| High Payload | High-power brushless DC motor, up to 10 kg payload (rated and certified by CoA). |
| Good Performance | VTOL type, no runway is needed, high mobility. |
| Low Pollution | Low noise, no exhaust to pollute the air. |
| Easy Handling | Auto Takeoff and Landing, and cruise operation. Increase its safety and flexibility. |

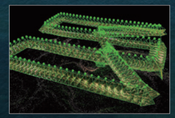
# Sky Arrow UAV System
## The Aerial Photogrammetric UAV for Disaster Relief

TAIWAN EXCELLENCE 2018

The Sky Arrow series UAS is a professional fixed-wing multi-role UAS equipped with high accuracy flight control computer (FCC) and tactical AHRS, enabling fully auto-piloted operation beyond the visual line of sight (BVLOS). The Sky Arrow is made of lightweight CFRP material airframe with efficient gasoline engines, offering high performance in maneuverability, long endurance, high payload and short take-off and landing. In addition, the Sky Arrow series adopts modular design to serve diverse applications, including disaster response, environmental monitoring, land management, homeland security, resource exploration, etc. as a crucial intelligence-gathering platform for decision-making.

| | |
|---|---|
| Long Endurance | Up to 3 hours to effectively extend operation range. |
| Long Range | Maximum range can reach up to 300 km for remote deployment. |
| Autonomous | Equipped with auto-pilot FCC for beyond the visual line of sight (BVLOS) operation. |
| All Composites Airframe | The aircraft is made of CFRP with integral structure for large instruments. |
| Diverse Payload | Digital camera, multi-spectral camera, magnetometer and other sensing devices. |
| High Altitude | Its flight height can reach up to 4000 meters and meet the mission requirement for high altitude. |

● The orthophoto mapping of pipeline explosion in Kaohsiung in July 2014



● The 3D terrain modeling for the oil palm plantation in Malaysia