UAV HELICOPTERS

UAV helicopters are among the most innovative products currently on the military and security market. Security forces, armies, coastal guards and fire brigades in various countries are already widely using them given that these vehicles undoubtedly represent an alternative to traditional helicopters which is both financially convenient and professionally accurate.

Their main characteristic is their autonomous flight. All functions are carried out thanks to pre-programmed instructions sent by an on-board computer, not by a pilot.
A UAV helicopter can also be remotely run by a non-expert operator. The on-board computer interprets all commands thus rectifying any mistakes and guaranteeing all functions are accurately carried out.

UAV helicopters can carry out flight missions in a completely autonomous mode following a timeframe which is pre-established and pre-programmed on the on-board computer.

There are currently four different models of UAVs on the market:
TMP-R20 - Length: 1540mm; width: 355mm; height: 570mm; dry weight: 7kg - Electric engine
TMP-R30 - Length: 1540mm; width: 355mm; height: 570mm; dry weight: 7kg - Petrol engine
TMP-R100 -: Length: 1470mm; width: 510mm; height: 680mm; dry weight: 16kg
TMP-R200 -: Length: 2790mm; width: 760mm; height: 860mm; dry weight: 25kg

A limited surface (usually less than 4 square meters) is needed both for takeoff and landing and maximum speed exceeds 100 km per hour (depending on the model).
UAV helicopters are easy to transport and can be used in extreme weather conditions. In July 2008 it was successfully introduced for the first time a TMP-R20 model at Pare Aberporth (an airport fully dedicated to the research and development of UAVs in the UK). The audience was favourably impressed by the stability of the aircraft during all flight phases in spite of the presence of really strong winds with guts of up to 40 knots.
Being much smaller than traditional manned helicopters, UAV helicopters allow for a considerable reduction in purchase, maintenance and transportation costs. Maintaining and operating a manned helicopter for a whole week would cost the same as investing in a new UAV.
Unlike traditional helicopters, UAVs can reach remote and high-risk areas and therefore prevent the possible - and unnecessary - loss of human lives.

These are some of the many military and civil applications a UAV can be used for:
- Coast, border and national parks surveillance
- Automatic surveillance and patrolling of pre-defined areas
- Traffic surveillance
- Detection of chemical, radioactive or explosive substances
- Gas pipes, electric lines surveillance
- Crime surveillance
- Radio signals relay
- Hostage search
- Riots and crowd surveillance
- Delivery of goods in life-threatening situations
- Fishing surveillance
- Fire surveillance
- Rescue
- Escorting of military convoys

UAVs can take high-resolution and hyperspectral photographic images and can be equipped with various types of cameras: day camera, thermal camera, infrared or ultraviolet cameras. The resulting images (e.g. tridimensional land mapping) are highly precise.
Various sensors and electric devices can be mounted on a UAV, weight being the only limitation.

UAVs can also be the ideal solution to verify the authenticity of some rescue calls without wasting human resources and therefore simplifying operational dynamics.
The precision and reliability of the data/images obtained via a UAV is undeniable. All this proves UAVs to be highly sophisticated, safe, innovative and financially convenient.

TMP-R 30 FULL AUTONOMOUS GASOLINE UAV

The TMP-R30 is a small, economical, medium endurance UAV.
Utilising a helicopter platform, the SR30 houses one to two cameras in a pan/tilt camera mount.
The system is designed to track objects of interest even when the helicopter nose is pointed away from the object.
The TMP-R30 can carry day zoom cameras, infrared cameras, or both simultaneously. The aircraft is capable of fully autonomous flight with auto-takeoff and landing. Manual control is provided by a 2.4MHz safety controller.

Length	1638 mm, 64.5"
Width	355 mm. 14"
Height	622 mm. 24,5"
Main rotor diameter	1981 mm. 78"
Tail rotor diameter	337 mm. 13.25"
Transmission	Gears
Tail rotor	Shaft drive
Dry weight	7.0 Kg. 15.4 lbs
Engine	2.4 HP 2 stroke gasoline
Energy Capacity	1 Litre Standard /1.5 Litres Opt.
Climb rate	122 m/min (AFCS limited)
Maximum speed	18 m/sec. 35 kts (limited)
Endurance	Up to 2.5 Hours
Maximum payload	5 kg. 11.5 lbs
Telemetry	802.11 based. 800 m LOS
Safety Controller	2.4 GHz. 800 m LOS. 4KM Max
Flight control software	Fully autonomous flight Auto-takeoff and landing Unlimited waypoints with in flight retasking Failsafe "return to home"

RGCS

- Point-and-click routing
- Joystick or touch screen operation
- UAV and payload control
- Multi-UAV / Single operator
- Video and telemetry recording
- Ethernet options
- Ruggedized laptop options
- Video recording and stabilization options

TMP-R 100 FULL AUTONOMOUS UAV

Optional motion controlled camera/video platform, and generator, with several power plant configurations available.
The system is capable of fully autonomous flight with a safety operator to perform takeoff and landing and to engage and disengage the autonomous flight control system (AFCS).
Velocity command mode (VC-Mode): the helicopter position is commanded by the safety operator using proportional velocity commands. For example, the cyclic control stick becomes the velocity control stick in velocity command mode. The stick commands the helicopter to move in the commanded direction at a speed proportional to the amount of stick movement on the transmitter.
Way point route plan mode (WAY-Mode): helicopter flies a pre-programmed series of way points (coordinates, heading, altitude, speed and other way point attributes) Command mode (CMD-Mode): the helicopter is commanded in an ad-hoc fashion by sending it guidance commands from another computer. These commands can be given by a human operator or by another computer system.

Length	Fuel - 1500 mm, 59” / Electric - 1470 mm, 58”
Width	510 mm, 20”
Height	685 mm, 27”
Main Rotor (M/R) Diameter	Fuel - 2050 mm, 81” / Electric - 2010 mm, 79”
Tail Rotor (M/R) Diameter	360 mm, 14”
Transmission	Single Stage Hardened Gears
Tail Rotor	Belt driven
Gross Take-Off Weight	Fuel - 18 kg., 40 lbs. / Electric - 16 kg, 35 lbs.
Engines Available	4.5HP Fuel or 3.2kW Electric
Fuel Capacity	1 liter, 34 oz fuel / Optional 4 liters, 135 oz
Battery (Electric Engine)	40 Ah, 12s, Li-Poly
Generator (Option - Gasoline Engine only)	150W, 12V power bus with battery backup
Climb Rate	122 mpm, 400 fpm (AFCS regulated)
Maximum Speed	22 mps, 73 fps (AFCS regulated) = ~80 KPH Standard: 30 minutes Fuel/ 40 minutes Electric
Endurance:	Up to 2 hours Fuel with optional fuel tanks Up to 80 minutes Electric with additional batteries Gasoline: 21 lbs, 9½ kg with standard fuel tank

Payload	16 lbs., 7 kg with maximum fuel option Electric: 16 lbs., 7 kg with standard battery load 6 lbs., 2¾ kg with maximum battery load
Telemetry	802.11-based, 800m, 875yards, LOS range (other systems available up to 50 kilometer range)
Flight Control Software	Fully autonomous flight with auto-takeoff and landing, unlimited number of programmable waypoints, “point and click” waypoints on map overlay, joystick control (See Flight Controller Specifications Below)
Ground Control Software	Included with system and provides command and control and sensor data on screen with audible warning system
Safety Controller	2.4GHz, 730m, 800yards, LOS range

Flight Control System Specifications

Item	Condition	Specification
Number of Waypoints	Default RAM Size	Unlimited
Waypoint Parameters		Altitude, Latitude, Longitude, Hold Time, Pirouetting
Waypoint Transition Parameters		Velocity, Heading follow point
Waypoint Accuracy	Light Winds Good GPS Reception	3 m diameter
Altitude Hold Accuracy	Light Wind Good GPS Reception	+/- .5 m
Flight Modes		Manual, Manual on Specific Control, Waypoint, Velocity, Command

TMP-R 200 FULL AUTONOMOUS UAV

The Series 200 UAV is capable of fully autonomous flight with a safety operator to perform takeoff and landing and to engage and disengage the autonomous flight control system (AFCS). The AFCS utilises an advanced stable-hover (Patent Pending) control system. The helicopter has several modes of operation:

Velocity command mode (VC-Mode): the helicopter position is commanded by the safety operator using proportional velocity commands. For example, the cyclic control stick becomes the velocity control stick in velocity command mode. The stick commands the helicopter to move in the commanded direction at a speed proportional to the amount of stick movement on the transmitter.

Way point route plan mode (WAY-Mode): helicopter flies a pre-programmed series of way points (coordinates, heading, altitude, speed and other way point attributes) Command mode (CMD-Mode): the helicopter is commanded in an ad-hoc fashion by sending it guidance commands from another computer. These commands can be given by a human operator or by another computer system.

Length Length	2790 mm, 110”
Width Width	760 mm, 30”
Height Height	860 mm, 34”
Main Rotor (M/R) Diameter Main Rotor (M/R) Diameter	3000 mm, 118”
Tail Rotor (M/R) Diameter Tail Rotor (M/R) Diameter	700 mm, 28”
Dry Weight Dry Weight	25 kg, 55 lbs.
Fuel Capacity Fuel Capacity	2 liter, 67 oz., (50:1 2-strok oil, premium gasoline) up to 31 liter, 1000 oz. Tanks available up to 31 liter,
Engine Engine	121 cc, 8.7 HP, 2-stroke gasoline
Generator (optional) Generator (optional)	150W, 12V power bus with battery backup
Climb Rate Climb Rate	122 mpm, 400 fpm (AFCS regulated)
Maximum Speed Maximum Speed	80 kph, 50 mph (AFCS regulated)
Endurance: Endurance:	up to 4 hours (depending on fuel tank configuration)
Maximum Payload Maximum Payload	22.7 kg, 50 lbs. (depending on options, altitude, fuel load)
Telemetry Telemetry	802.11-based, 800m, 87yards, LOS range (other systems available)
Safety Controller	72Mhz, 730m, 800yards, LOS range

Features

- 121cc 8.7 HP Gasoline 2-stroke Engine
- up to 23 kg / 50 lbs Payload Capacity
- WAAS differential included
- Ready-to-Fly
- Safety/Manual Aircraft Controller & Transmitter
- 802.11-based Telemetry System
- Stable hover (Patent Pending)

TMP-R100 Shown with optional Camera Ball

Camera Ball Operation:
The optional camera ball (which is removable) operates in three modes:

1. Simple pan/tilt
2. Earth relative (i.e., look at 10° below horizon)
3. Coordinate mode (i.e., look at X/Y coordinate)

The ball is made of fiberglass over composite.
The ball is 33" sphere with interior dimensions of 30.5" diameter
The ball can carry up to 2.7 Kg of cameras.
There is a plate over the camera lenses which is removed to clean the actual lenses if needed. The plate can be cleaned without removal.
The ball weights 1.36 Kg.
The ball is weatherproof.

We can use optional telemetry on the TMP-R20 to go as far as 10 kilometers.
We can use 2.4gHz, 5.8gHz or 900 MHz telemetry.

SONY FCB-H11 Camera

The FCB-H11 colour camera expands Sony's commitment to the world of HD with a 1080i and 720p signal system. This stunning HD camera module incorporates a 1/3-type HD CMOS image sensor boasting approximately two-million effective pixels and a Day/Night capability.

Overview

Continuing Sony's commitment to HD picture quality for applications that require dynamic, high-resolution images, Sony introduces the FCB-H11. This stunning HD camera block expands the application possibilities by incorporating a Day/Night capability resulting ina minimum illumination of 1.0 lx. This enables the camera to capture high quality colour images by day and clear, black and white images by night making the FCB-H11 a great choice for a wide range of security applications.

The FCB-H11 HD camera module incorporates a 1/3-type HD CMOS image sensor boasting approximately two-million effective pixels, and provides a 16x9 aspect ratio making it ideal for use with wide screen displays. The FCB-H11 camera module also features multi-format video outputs from SD to full HD (1080i), offering both system flexibility and high quality images. The FCB-H11 therefore is a versatile and flexible camera block that can initially be used in an SD system but allows easy migration to HD when you are ready. In addition, the FCB-H11 inherits many outstanding features from the Sony world-renowned FCB Series. With a 10x optical zoom lens, and 12x digital zoom the reach of the two million effective pixel resolution is maximised.

In addition, the camera includes other key features such as Picture Freeze Function, SPOT AE Function, and Slow Shutter. The FCB-H11 is ideal for applications such as inspection, video conferencing, cable TV broadcasting and point-of-view (POV) applications. Furthermore with the incorporation of the Day/Night function, the FCB-H11 achieves a minimum illumination of 1.0 lx by dynamically removing the infrared cut filter thus allowing the spectral range to extend into the near infrared. This capability is essential for monitoring, making the camera a great choice for a wide range of security applications in, for example, car parks, retail stores, and many others.

Features

- **Superb Picture Quality with Two Megapixel HD CMOS Sensor**
  The FCB-H11 employs a 1/3-type HD CMOS sensor (approximately two million effective pixels) providing excellent picture quality and high-resolution images.

- **Multi-Format Video Outputs from NTSC/PAL to Full HD**
  The FCB-H11 can provide full high-definition video in 1080i format. Depending on your application and configuration, you can select the format that is right for you. With eight video formats from SD to full HD, the FCB-H11 camera module allows you to easily migrate from SD to HD.

- **Day/Night Function**
  With a Day/Night capability, the FCB-H11 offers optimal sensitivity in changing light conditions, which is a typical challenge in round-the-clock security operations. As the scene darkens, an infrared filter is automatically replaced with a clear filter, and the camera switches to black-and-white mode, allowing for operation at a minimum illumination of 1.0 lx (F1.8, 50 IRE).

- **120x Zoom Ratio (10x Optical + 12x Digital)**
  The FCB-H11 incorporates a 10x optical zoom lens allowing for a zoom capability of up to 120x when used in combination with its 12x digital zoom. Combining these lens features, users can effortlessly capture close-up or wide-angle shots.

- **Compact and Lightweight Design**
  The Picture Freeze Function outputs a still image while the FCB-H11 camera is panning, tilting, zooming, focusing, initializing the lens, or performing preset operations. This helps prevent the display of unnecessary images during these operations.

- **Other Features Include**
  SPOT AE Function

  Slow Shutter

  Low Power Consumption (4.8 W)

Technical Specifications

Generic Specifications

Please be aware that the features/specifications can differ from country to country

Image sensor	1/3-type CMOS
Signal system	HD 1080/59.94i, 1080/50i, 720/59.94p, 720/50p SD NTSC (Crop/Squeeze), PAL (Crop/Squeeze)
Lens	10x optical zoom, f=5.1 mm (wide) to 51.0 mm (tele), F1.8 to F2.1
Digital zoom	12x (120x with optical zoom)
Angle of view (H)	50° (wide) to 5.4° (tele)*
Minimum working distance	10 mm (wide) to 800 mm (tele)
Sync system	Internal
Minimum illumination	ICR off mode: 12 lx (typical) (F1.8, 50 IRE), ICR on mode: 1 lx (typical) (F1.8, 50 IRE)
S/N ratio	More than 50 dB
Electronic shutter	1/2 to 1/10,000 s, 21 steps
White balance	Auto, Indoor, Outdoor, One-push, Manual
Gain	Auto/Manual (-3 to 18 dB, 8 steps)
AE control	Auto, Manual, Shutter Priority, Iris Priority, Bright, Spot AE
EV compensation	-10.5 to 10.5 dB (15 steps, 1.5 dB increments)
Backlight compensation	On / Off
Flicker cancel	AUTO
Focusing system	Full Auto (Normal AF/Interval AF/Zoom Trigger AF), One-push Trigger, Manual, Infinity, Near Limit Setting
Picture effects	Nega Art, Black & White, Picture Freeze
Camera operation switch	Zoom tele, Zoom wide
Video output	HD Analogue component: Y/Pb/Pr SD VBS: 1.0 Vp-p (sync negative) Y/C
Camera control interface	VISCA (TTL signal level), baud rate: 9.6 Kb/s, 19.2 Kb/s, 38.4 Kb/s, stop bit: 1 bit
Storage temperature	-20 to 60 °C (-4 to 140 °F)
Operating temperature	0 °C to 45 °C (32 to 81 °F)
Power consumption	6 to 12 V DC/4.8 W
Mass	Approx. 120 g (4.2 oz)
Dimensions	47.2 (width) x 43.1 (height) x 72.2 (depth) mm (1 7/8 x 1 ¾ x 2 7/8 inches)

Supplied Accessories

24P FFC	Flat Flexible Cable

TMP-R5 PARVUS UAV

Motor: Electric
Propulsion
Payload Capacity: 2 lbs.
Top Speed: 10 knots
Range: .5 miles

Total take off weight of less
than 5 pounds (2.25kg)
with an endurance of between 10min and 20min (depending on payload). This UAS is full featured and includes a 10x optical zoom day video camera, digital video stream to the GCS and encryped data transmission. All AFCS features are available in a small, easy to deploy form.

OPTIONS
Pan Camera Platform with Virtual Pan
Additional video display and downlink options available
Pilot Training & Certification
Autonomous Takeoff and Landing
This particular TMP-R5 UAV has a Sony 10x zoom FCB-1X11AP day video camera.
It can also carry an I/R camera or a multi-spectral camera.

Specifications

Length	658 mm, 27”
Width	114mm, 4.5”
Height	254 mm, 10”
Main Rotor (M/R) Diameter	787 mm, 31”
Tail Rotor (M/R) Diameter	159 mm, 6.25”
Transmission	Direct Drive
Tail Rotor	Shaft Drive
Dry Weight	1.8 Kg, 4 Lbs
Engine	440W Electric Motor (25V)
Energy Capacity	3.3 Ah, 25V Battery
Climb Rate	122 mpm, 400 fpm (AFCS regulated)
Maximum Speed	11 mps, 36 fps [40 kph, 25 mph] (AFCS regulated)
Endurance:	~ 20 minutes
Payload	Sony FCB – 1X 11AP Day Video, multi-spectral or I/R cameras on tilt only camera platform.
Telemetry	802.11-based, 800m, 875yards, LOS range Long range options available up to4K range
Flight Control Software	Fully autonomous flight with auto-takeoff and landing, unlimitednumber of programmable waypoints, “point and click” waypoints on map overlay, joystick control (See FlightController Specifications Below)
Ground Control Software	Included with system and provides command and control and sensor data on screen with audible warning system
Safety Controller	2.4 GHz DSM2, 800yards, LOS range

Flight Control System Specifications

Item	Condition	Specification
Number of Waypoints	Default RAM Size	Unlimited
Waypoint Parameters		Altitude, Latitude, Longitude, Hold Time, Pirouetting
Waypoint Transition Parameters		Velocity, Heading follow point
Waypoint Accuracy	Light Winds Good GPS Reception	3 m diameter
Altitude Hold Accuracy	Light Wind Good GPS Reception	+/- .5 m
Flight Modes		Manual, Manual on Specific Control, Waypoint, Velocity, Command

TMPSYS-Hir UAV with Fixed Wing

The global commercial use of UAV systems is currently taking shape around applications in a handful of industries. Our vision is that within five years, the UAV use will be widely used in agriculture, law enforcement, energy, utilities, mining, construction, emergency situations and real estate.

Our UAV solutions provide customers with access to relevant, accurate and correctly localized real-time information. We offer a quick and accessible way to obtain high-quality ground images: orthophoto maps for vast surfaces, 3D digital elevation models or live video capture by means of our technological systems in the field of air vehicles and unmanned systems.

We also provide a cost-effective alternative to obtaining aerial images and tele-detection products, for a faithful reproduction of the surfaces and their details: from hidden fire pockets, to the height regime of buildings or indicators of crops affected by harmful organisms.

Moreover, as part of our ongoing commitment to make UAV technology and the geospatial data more accessible for our clients, we provide a flexible, "as a service" delivery approach: UAV as a service available for rental, maintaining the high quality of standards, at the same time.

Our UAV systems find their application in various activity fields, such as law enforcement, emergency, energy, agriculture, forestry and fisheries, earth observation and remote sensing, transportation network, urban development and beyond.

In all these industries, our integrated systems provide businesses with the ability to monitor, manage and map large territories at a relatively low cost.

The advantages we bring with our airborne technology solutions:

- We provide the most accessible technology for generating 3D ground maps and digital elevation models;
- We provide a less expensive and effective alternative to "traditional" solutions (manned airplanes or helicopters) to cover large areas in a very short time;
- We provide real-time data, images and Full Motion Videos and detailed reports;
- We cover complete processes, by providing integration with other systems, either from our portfolio or externally

Airborne Technology Applications

The UAV systems can be largely applicable in various activity fields, as follows:

Law Enforcement

- Police, Civil Security
- Border security
- Coastguard
- Crowd monitoring
- Sensitive area monitoring

Emergency

- Monitoring of forest fires
- Monitoring of other major incidents
- Search and Rescue in case of to floods, snowstorms, land sliding, mountain rescue, forest fire rescue)

Energy Sector

- Oil and gas industry distribution infrastructure
- Electricity grids /distribution Networks

Agriculture, Forestry & Fisheries

- Environmental monitoring
- Crop monitoring
- Optimizing the use of resources

Earth Observation & Remote Sensing

- Climate monitoring
- Aerial photography, mapping and surveying
- Seismic events
- Major incident and pollution Monitoring

Transportation Network

- Highway patrolling
- Monitoring of the rail network
- Monitoring of navigation channels and harbors

Urban development

- Cadaster
- 3D Land Models
- Land registration
- Landscape and urban planning

We deliver easy-to-use solutions to complex problems

Our team members in autonomous systems have a strong expertise in UAV design, research, development, equipment integration, testing & evaluation and operations. With a powerful focus on innovation, the team contributes to turning the UAV technology into easy-to-use, customized solutions for clients from a wide range of domains.

Our UAV team is multidisciplinary, bringing together experts in aeronautics, electronics, IT, composite materials and GIS, all sharing the same passion for flight and technology.

We have experts covering all phases required to deliver a complete solution, from the design to testing and operating the unmanned air vehicle systems:

- Experts in design and architecture of UAV systems, who contribute to building innovative products - the TMPSYS-Hir unmanned air vehicles, which are competitive at international scale;
- Experts in integrating various types of payload sensors (both proprietary sensors and other sensors), which ensure the highly accurate delivery of data, according to the clients' needs;
- Experts in testing the UAV systems, who contribute to the operation of the equipment according to the safety and performance parameters;
- Experts in operating the UAV systems, who ensure the piloting of the equipment within optimal, safety parameters, above the areas of interest;

- Experts in UAV – specific legislation, who ensure the approvals and authorizations necessary for the flight;
- Experts in integrating UAV with other technologies.

Applications of UAV Systems

Benefits for the Emergency Inspectorates:

• Cutting down the surveillance/ data collection costs
• Saving more human lives
• Time reduction for collecting aerial images and live video streaming from any area of interest

Emergency situations

”The single location where we can learn the most about our planet is found nowhere on Earth but high up above it.”
European Space Agency - ”Observing the Earth”

We provide the emergency agencies with an accessible instrument to collect data in real time from the scene of the incident, with minimal human and material costs. To this purpose, we provide a UAV system which is able to reach remote areas in the shortest time possible and which can stream both daytime and night time live images, even in unfavorable weather conditions. Thus, the authorities in charge of managing emergency situations will benefit from a mobile and flexible instrument, which supports decision-making and an efficient management and optimal allocation of the available resources, through the information it helps to collect.

In case of fire, with the UAV system, we provide realtime images from the accident, as well as discover and identify the fire parameters (area, outbreaks etc.). Thus, the emergency inspectorate in charge may coordinate the teams more effectively, shortening the intervention time at reduced costs as compared to the scenario where other technical devices – manned airplanes or helicopters - are used.

After the fire extinction, we provide preliminary damage assessment, by collecting information which may be subsequently used in investigations and monitoring of the areas affected by fire, in order to identify new fire pockets or other potential risks.
In case of earthquakes, the use of the UAV system enables a quick assessment of the affected surface and the type of damages.

This is also possible in the areas with limited access by terrestrial means of transportation. Shortly after an earthquake, the system provides the crisis committee with real-time images, in order to identify the consequences of the hazard, the visible victims, while helping the crisis committee manage the rescue teams more effectively.

In case of floods, the UAV system is an effective alternative to convey information from remote areas in the shortest time possible. It provides the emergency inspectorates with detailed, real time images of the flooded areas, of the areas likely to be flooded and also of the individuals who are in danger and require immediate intervention. With the help of the system, the available access routes to be used by the rescue teams can be quickly identified.
In case of search and rescue missions, including in remote areas, on water or on land, the UAV system enables the accurate localization of victims and the proper communication of directives for the intervention teams.

Furthermore, the sensors on board of the unmanned aerial vehicle are able to detect if the environment in the proximity of the accident is afflicted and holds risks for the rescuers, thus avoiding human losses.
The quick detection and the localization of the victims in any conditions (daytime, night time, bad weather etc.) are two advantages which recommend our UAV system and which could make a difference in a rescue or in a recovery mission.

Border Police & Coast Guard

Benefits law enforcement:

- Reducing the time required to monitor large surfaces
- Reducing the effort and the resources required for patrolling the areas of interest
- Optimizing human resources by correctly sizing the intervention forces

We provide the Border Police and the Coast Guards with an accessible and effective monitoring tool with wide coverage, using UAV technology.
Border Police and the Coast Guards both have one thing in common — their operations involve large territories, often in inaccessible areas. Our UAV system provides fast coverage in no time.

Furthermore, all data on the events or incidents in progress are provided in real time, so as the decision makers may quickly identify the threats and act according to the situation in the field. Our solution is accessible for detecting potential threats on land and on water, as well.

The Border Police may use the UAV systems for reconnaissance purposes, in case threats are signaled on the terrestrial border. The large surface and the time required for deployment on ground are some of the limitations of border surveillance. Through our unmanned air vehicles, we provide a tool for rapidly tracking the threats and collecting data in due time.
Thus, we contribute to reducing the intervention time and adjusting the response to the event in progress.

The Coast Guard localizes faster the unauthorized ships or the ships which are in violation of the navigation regime on the territorial sea, by using our UAV system.
We thus contribute to collecting key information for the Coast guard, by streaming high resolution images, in daytime or night time, in real time, even in unfavorable weather conditions.

We provide information on mobile targets, we facilitate their tracking, we enable the surveillance of critical infrastructure and damage assessment and we provide assistance for search and rescue operations.

We support the surveillance activity and we provide decision makers with complex information from the area of interest - the information is collected with the help of the existing sensors on the unmanned aerial vehicle. The data reaches the control centers where it is displayed on a scoreboard, thus being a real support for decision makers. We enable the integration with any command and control system, by complying with the STANAG 4609 standard. The system distances itself from others by means of the FMV (Full Motion Video) streaming, in real time, thus contributing to a quicker conveyance of the real situation in the area under surveillance.

Urban development

Benefits for urban development

- Reducing the costs to obtain or update cadaster, as compared to other traditional methods
- Reducing the time to cadaster large surfaces
- Urban development on height, not only on width (3D cadaster)

For Urban Planning, we use the images captured by our UAV systems to deliver 2D and 3D maps of the administered areas, both in e-format and in printed format. We thus contribute to increasing the accuracy of the urban plans and to improving the available data with accurate information on the evolution of the area.

Without aerial imaging, urban developers have to rely on the fragmentary information that is made available through satellite imagery or publicly available surveys.
Even when covering small sites, our UAV systems create aerial imaging that can help developers understand a property's surroundings.

The 2D and 3D maps provide an overview of the areas and useful insights for the development of the urban plan: floodable areas, green areas, historic buildings etc. We thus provide the data required for developing an urban and regional development strategy, based on complex analyses with high degree of surface accuracy; we also enable more accurate situation plans and urban planning certificates. We thus support the collection of updated information, on the elements of interest in the administered area: buildings, roads and bridges, green areas, agriculture, forests etc. We provide the town halls with orthophoto plans at a spatial resolution of 3 cm, detail images, 3D digital surface elevation models and 3D point cloud images.

With the integration of the TMPSYS-EMR System, the users have the possibility to perform high accuracy measurements of the parameters of buildings. This becomes possible by corroborating, on a multi-level electronic map, the images collected by means of the UAVs with advanced measurement and control tools. Thus, the users receive information on the height and/ or the stage of the buildings.

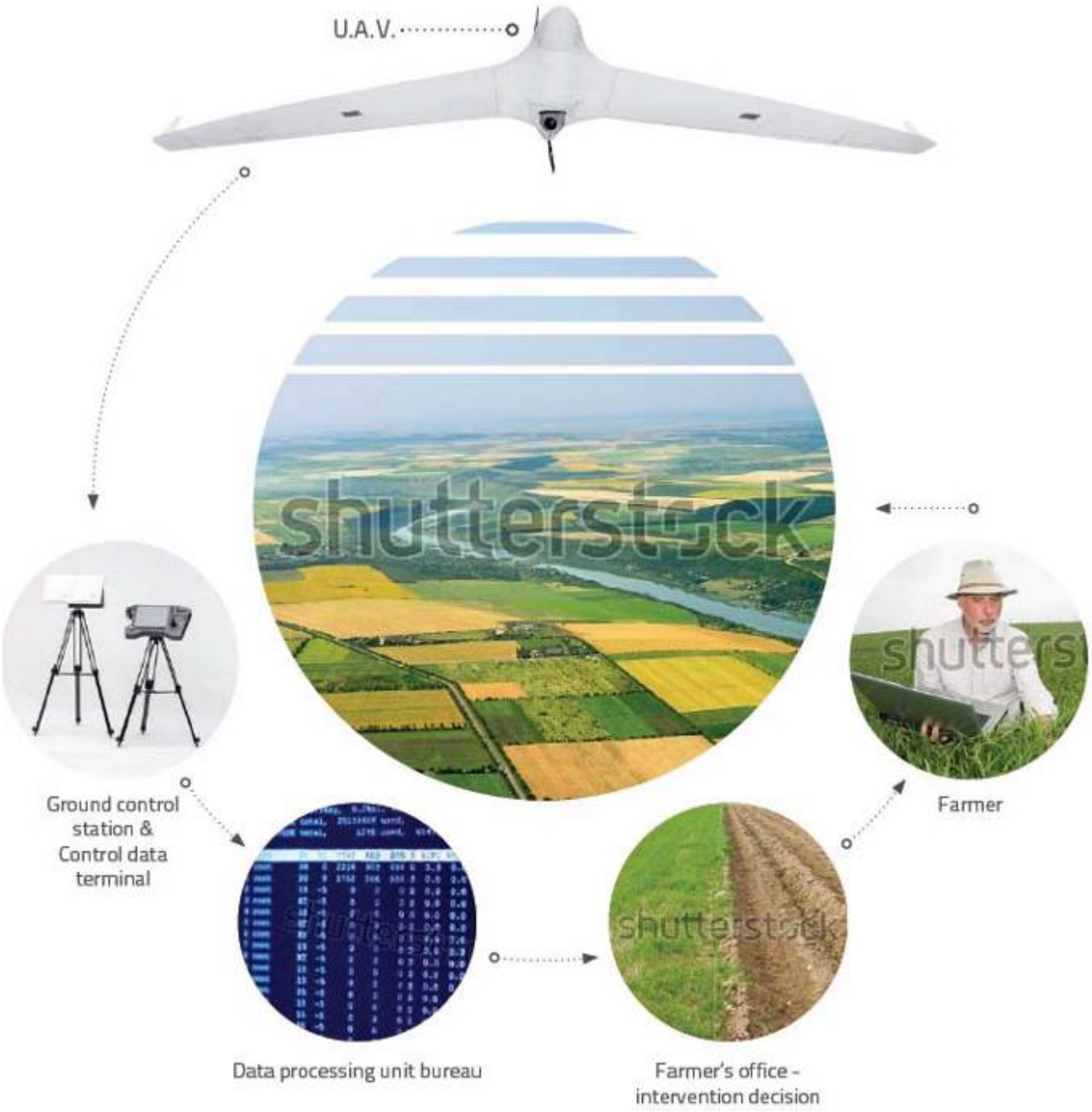
TMPSYS-EMR is our complete Emergency & Disaster management software that offers a comprehensive situation overview and integrated agencies approach.

We also provide the instruments necessary for a better management of public infrastructure. By means of GIS data, the decision makers gain access both to the overall image and to the details of the utility networks (electricity, water, gas etc), communication networks, gas and hydrocarbon pipelines etc.

We provide municipalities with waste management data for developing a sustainable green policy. With the help of detail maps, the local administration may track the areas affected by illegal waste repositories and they may identify the optimal landfill areas. The identification of the optimal routes of waste collection and transportation to the landfill and the collecting points of waste from the population, enables the drafting of an optimal collecting strategy.

In terms of monitoring forest vegetation areas, we provide highly accurate information on the covered surfaces, deforested areas, areas where trees are cut - either legally or illegally, areas affected by harmful organisms, the division on land plots and sub-land plots. Providing this information, we support taking measures for the conservation of forests.
We thus provide common support for several Directorates within the town hall, for a consistent urban and regional development.

Agriculture & Forestry



Benefits for the agriculture sector

- Increased crop productivity
- Better planning of future crops
- Diminished risk of crop & insurance bonus loss

With the help of the UAV systems, we provide farmers with relevant information regarding the situation of crops, areas affected by pests, areas lacking humidity, so that they can intervene quickly for the crop health, while maximizing production.

This UAV application refers to the management of crops to guarantee efficiency of inputs like water and fertilizer and maximize productivity, quality, and yield. It also involves the minimization of pests, unwanted flooding, and disease.
Our UAV system allows for constant aerial monitoring of crop or livestock conditions to quickly find problems that would not become apparent in ground-level spot checks.

The aerial images captured with the help of the UAV system, are an accessible method for farmers and forestry administrators who wish to analyze large surfaces and identify the affected or deforested sections. The time for retrieving information is much shorter than in case of ground monitoring, and the areas affected (by pests, humidity deficit or other factors), are quickly identified.

This information enables fast interventions to treat the affected area and prevent it from extending. The speed with which our UAV system enables data collection and processing leads to faster reaction and this makes the difference between a healthy and a compromised crop.

We are also offering information regarding the vegetation health state and a more precise estimation of the crop quantity predicted. In case of flood or fire, we are offering a fast and accessible way of assessing damages which allows initiating actions for the recovery of damages from insurers.

For the guard of protected areas (illegal hunting or fishing), we are offering an efficient aerial monitoring and surveillance tool for the administered areas. With the help of the images obtained by our autonomous system, we are providing decision-makers with information regarding the protected areas, as well as with details regarding the land surface, such as the number of animals of each species in a national park.
A major advantage consists in covering a broad surface in a short time.

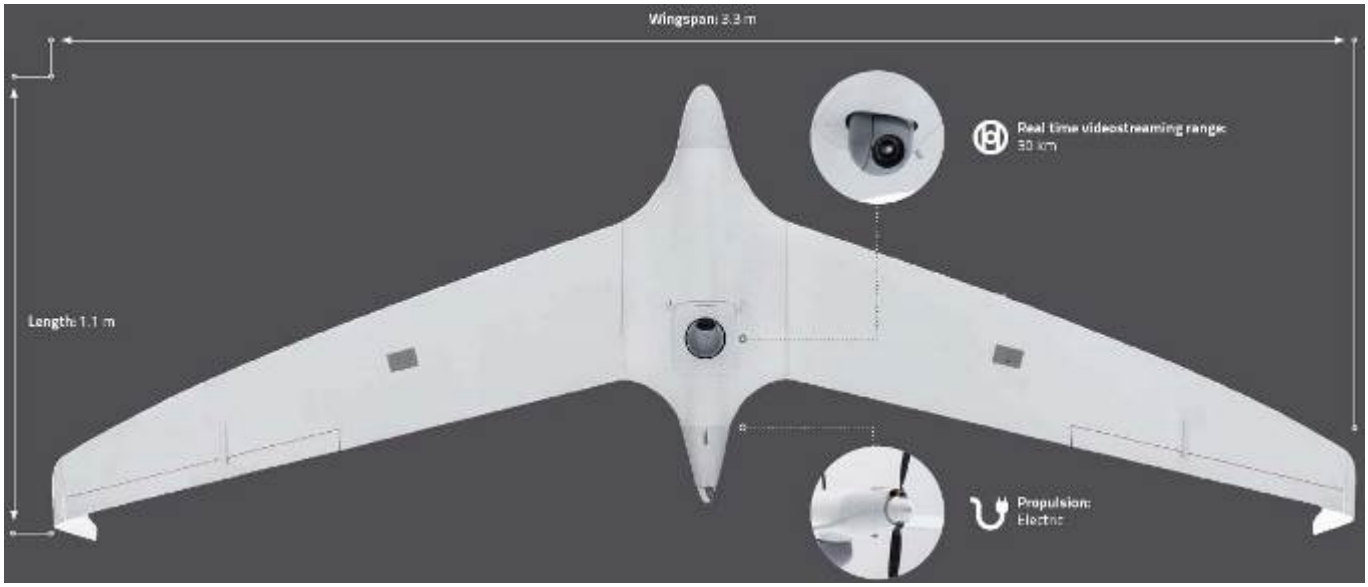
Core Products

Our UAV technology systems are based on state-of-the-art unmanned air vehicles, with competitive functionalities at international level.

About TMPSYS-Hir
The TMPSYS-Hir system includes three unmanned air vehicles, a ground control station, a ground data link terminal and a launcher. The aircraft has about 3 hours of autonomy, and depending on the charge, can reach a speed of more than 110 km/h. It captures high resolution images from the ground, generating images with the resolution of 5-10 cm/pixel.
Designed to operate in various environmental conditions, from temperate to tropical climates, in a wide range of temperatures, the TMPSYS-Hir System takes full advantage of the benefits of its structure built from composite materials. This solution provides high robustness throughout the system's entire life cycle.
The flight safety system installed on board of the aerial platform is designed to permanently monitor its status so as to automatically trigger the recovery parachute, should parameters be exceeded or a functional anomaly be detected.

In order to meet a wide range of requirements, TMPSYS-Hir has the possibility to carry CCD or IR video cameras, photo cameras or radiation detectors and many others.
The video camera capabilities allow tracking mobile objectives or surveying preset areas, providing stabilized image/video feed due to their own gyroscopic stabilization system.
Mission planning is provided by the Ground Control Station-GCS, equipped with a simple interface (point and click). This station also enables the remote viewing, processing, storing and sending of images captured by the UAV payload.

TMPSYS-HIR Technical specifications



- Maximum Take Off Weight: 9 kg
- Maximum speed: 110 km/h
- Cruise speed: 80 km/h
- Service ceiling: 3000 m
- Autonomy: 180 min
- Launching system: Automatic launcher
- Recovery system: Parachute
- Max. payload weight: 0.9 kg

Enjoy the deliverables while outsourcing the services

We increase the accessibility of UAV systems, by offering a wide range of services, through which we provide the deliverables expected and technical assistance, with a minimal effort on the client's side.
Once the area of interest and the type of data desired are defined, our team of experts in UAV system integration and project management manage all UAV-related services to ensure the deliverables are compliant with the requirements (a video recording, images, a 3D model of the surface and more). Thus, depending on the needs, we offer planned or on-call missions. We basically offer our clients the possibility to outsource all those activities that take too much time, needing specialized expertise and complex logistics: UAV piloting, system integration, obtaining authorizations, data processing and storage, making it both more accessible and easy to use.

A personalized & flexible offer:
We offer a very flexible commercial policy, answering the specific needs and requirements of our customers. Thus, depending on the needs, our client can choose between receiving only reports and images, renting the system for a certain number of hours on a monthly basis or purchasing it, case in which the customer has unlimited control over the equipment.

Own it:
Our clients can buy a customized solution with a number of UAVs, Ground Control Station, Ground Data Link terminal and launcher, including complete deployment services: installation, integration, testing, training, support,maintenance and documentation.

Rent it:
Any customer can leverage our UAV system package by using the airplanes and equipment as long as they need it by paying a monthly fee. We will train the personnel to take the most out of this system. However, the client will have to obtain permits and rights to use the imagery.

As a service:
We can operate the UAVs upon request, by the hour. We just need to receive a specific request and we will take care of the rest.
We currently have two main use cases among our customers: geospatial (high-resolution orthophotographic mapping, 3D modeling) and surveillance.

UAV demo practice

Application: Law Enforcement
We have demonstrated the operational capabilities of the mini-UAV TMPSYS-Hir system whose positioning is as a modern, compact, light and self-sustainable, adaptable system for civilian and military applications. The activity was focused on its ability to deliver data and intelligence, surveillance and reconnaissance information (ISR), in order to increase the operational efficiency of the trained forces. UV14 hosted more than 2000 people from the NATO member states and partner states such as Australia, Finland and Sweden.

The preparation for participation involved continuous efforts towards obtaining national and international qualification as well as an important number of documents for planning, coordination, certification and accreditation.

During this period of time, activities such as field recognition, network connectivity configuration, map uploading, preparation and operation of testing flights were conducted, and successfully finalized, by means of which the capacity of the system to answer the most demanding requests, especially in the field of flight security was validated.

The TMPSYS-Hir Objectives in UV 14:

Technical:
- Broadcasting video HD images in accordance with STANAG 4609 collected in infrared and visible spectrum;
- Online display and exploration of video images of the Full Motion Video (FMV) type, according to STANAG 4609.

Operational:
- Detecting and monitoring targets in motion;
- Surveillance of critical infrastructure and damage assessment;
- Support for search and rescue missions.

During the deployment of the exercise, we successfully operated flights based on the scenarios and missions received, according to the previously -established objectives, while providing and broadcasting real-time FMVs (Full Motion Video) on the internet and NATO Unclassified networks, in order for them to be used for tactical and operational purposes by different participating NATO Structures.
Several characteristics of the system were demonstrated, such as the endurance under unfavourable weather conditions, the use of both sensors in visible or thermal spectrum, as well as the use of a ground control station (GSC) as a relay transmitter. All flights performed during the participation and the deployments of UV14 were monitored by the Norwegian Liaison Officers in charge of flight safety.

The participation to the demo practice ended successfully and we received positive feedback for the quality of the system, as well as for the quality of the images captured in accordance with STANAG 4609; these images were analyzed by several organizations and companies such as NAGSMA, NCI Agency, SRI International, IBM, IABG, General Aviation etc.

The objectives set within the application were successfully met and TMPSYS-Hir was among the only systems in the same category providing (Full Motion Video) in real time, according to the STANAG 4609 standard and metadata. The NCI Agency and B-Hunter Representatives requested video footage from TMPSYS-Hir in order to use them during the appropriate training activities.

The activity consisted of a good opportunity to develop the relationships with the UAV teams in Italy, Norway and Belgium with whom we had an exchange of experience on the characteristics and performance of the owned aerial vehicles.

TMPSYS-Hir UAV used for Flood Management

Application: Emergency situation

Context
Areas around rivers usually trigger high population density, but the riverbeds are exposed to high risk of floods, therefore victims are registered each year. The flooding of the Danube River alone led to the evacuation of over 16,000 people from 154 localities in less than three days. Together with the Waters National Administration, we organized an application for intervention in flood management, as well as for post monitoring and rehabilitation.

Challenge
Traditionally, flood management combines aerial imagery, land based platforms and other ground measurements and data. These methods typically involve high costs, high altitude (resolution/cloud and canopy penetration) issues and long acquisition processes.

Solution
With TMPSYS-Hir UAV, we provided a cost-effective alternative, which enabled access to real-time images from the flooded areas. The platform offered support for decision-making, as well as for search and rescue activities.
In the flood application, the platform helped detect and assess flooded areas, victims and vehicles, buildings and other structures at risk. The platform also provided visual information regarding the status and availability of the access roads network, gas and power lines, banks and levees leakage or risk, debris at bridges and culverts and sediment aggregation.
During the intervention, the platform helped monitor water level evolution, detention basins/holding ponds/release structures, as well as the emergency personnel and the assets involved.

After the flood, the UAV data were used for monitoring flood released areas, flood evolution, damage assessment (such as: buildings, roads, crops, infrastructure and vegetation). Further planning for rebuilding the affected environment was possible with geo-referenced high resolution mosaic and DSM

(Digital Surface Model) for hydraulic modeling. Also, the UAV images provided information for other areas exposed to flooding: identifying areas vulnerable to flood and areas where sandbag walls would be needed and the optimal gateways for intervention.

Benefits obtained by using the UAV platforms in Flood Management:

Surveillance

- Decreased operational costs for surveillance
- Enabled faster decision Support
- Reduced costs for geospatial data acquisition

Search & Rescue

- Decrease operational costs for "Search" missions
- Speed up intervention time
- Increase the number of saved lives

Advantages for using TMPSYS-Hir UAV platform:

- Good capability to accurately locate victims and persons in distress. Provide real-time location data to the intervention crews to perform the "Rescue" mission;
- Represents a complementary capability to the existing manned helicopters used for SAR intervention
- Provides access information to inaccessible areas for ground intervention;
- Facilitates access to high precision, real time images and video recordings from the flooding for immediate decision making and rescue coordination;
- Covers large areas with a reduced number of flights and high autonomy;
- Provides a more cost -effective surveillance method, with no operational risks and reliable even on some types of adverse weather;
- Offers a complete picture, based on image and geospatial data (map);
- Helps spot missing persons in areas with low vision.

The TMPSYS-Hir UAV platform provides a range of added value functionalities that offer the benefits listed above:

- High resolution camera (ground resolution – up to 5 cm);
- Real time video sharing;
- Thermal camera;
- Flight below the cloud ceiling;
- Orthophoto maps.

TMPSYS-Hir UAV used for Crop Management

Application: Agriculture

Context

The cultivation of new species of plants and trees opens attractive opportunities for local farmers, but also raises multiple risks and requires close monitoring.

One of our clients, a local farmer, chose to invest in poplars and paulownia trees, an Asian species used commercially for the production of sawn hardwood. Although profitable, the crop is vulnerable to different climate condition, pests and differences in soil.

Challenge

With a surface of around 3000 acres, the crop proved difficult and time consuming to monitor in detail in the early stages of development.

Solution

We provided an integrated solution consisting of a system based on UAV and GIS instruments to provide high resolution images of the crop. The platform proved to be a faster, accurate alternative to obtain and consolidate precision details of the crop: from individual plants to crop parameters such as plant density, plant health, biomass or humidity indicators. The data collected supports an accurate planning of crop management and helps maximize production.

Operational Parameters:
Area covered/hour flight: 800-1500 ha (depending on the desired resolution ground)
Number of flight hours/day: max. 6:00h

Benefits for farmers
- Increased production
- Decreased monitoring costs
- Reduced risk of crop loss

Advantages of the UAV system
- Offers high resolution images (3 cm) of crops and individual parcels;
- Helps identify all plant types, the number of individual plants, pests and problem areas;
- Decreases data gathering cost;
- Helps collect data from less accessible areas;
- Collects data for production planning;
- Provides support for measuring crop surface;
- Measures and consolidates indexes on the map: GVI – plant density; NDVI – plant health; EVI – measure biomass; humidity indicators;
- Supports the calculation of biomass / calculation of return;
- Helps plan irrigation systems, harvesting activities and monitoring of the vegetation cycle.

Functionalities:
- UAV supports a variety of sensors: visible , thermal, multispectral, video;
- Provides various types of maps such as: cadastral maps and plans; maps according to type / temperature / humidity / PH / nutrients of the soil; maps of crops; maps of areas of erosion; yield maps; maps of the areas afflicted by natural hazards; maps of irrigation systems; maps of crop parameters (species, needs, coefficients etc.);
- Provides information about the length, width, positioning;
- Delivers ortho-photos;
- Provides information about the owner/neighbors;
- Provides facts about culture;
- Collects meteorological data;
- Provides facts about pests (such as species, periods)
- Provides estimates of costs and production;
- Provides sensor photogrammetry - gyro-stabilized on an axis (roll).

Eye in the Sky

Considering our objective of empowering society through technology, we launched the Eye in the Sky project.
The initiative addressed students with the possibility to use the deliverables of UAV technology to enhance the impact of their projects in different industries. We selected the projects with the widest impact and coordinated the flights and data collection for these applications. With a wide exposure

among students in their final year, the project gathered over 60 proposals, while the applications chosen proved to be highly appreciated and rated in the academic environment, and their success raised the interest of several private companies.

Here are the main applications:

Interactive map for flood risk management near a river

This application of TMPSYS-Hir UAV provided the image for a 3D model of the riverbed. The information was correlated with insightful data from the Waters National Administration: drainage direction, underground water storage areas, and hydrographic network with drainage and junction points. The consolidated data helped define the floating areas, as well as the houses that are vulnerable. Based on this map of the area, the local authorities now have a basis on which to implement an effective system of dams.

Landslides Management System

The project consisted in identifying and mapping the landslides in a city. The deliverables were aimed at providing the hall with support for an extensive analysis on the affected areas, at pointing out the houses at risks and the type of rehabilitation measures that were needed in order to insure the safety of residents.

Research numerical 3D model of the landfill

The data for this project were collected during a 20 minutes flight at around 200 meters above the landfill in a town, with a photogrammetric camera and resulted in a 3D model of the area. The information made it possible to measure the exact surface of the landfill (67,148.65 square meters), as well as the volume (375, 236, 56 cubic meters) in less than 48 hours.

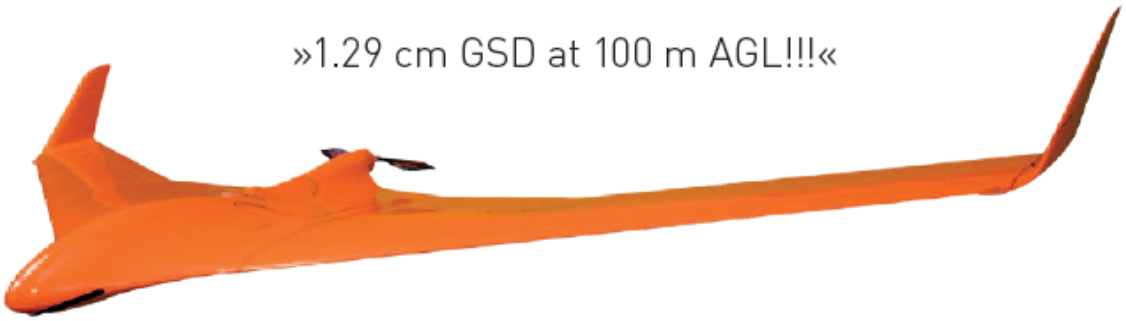
Archaeological site

Inspired by a NASA space application where data regarding the general land elevation was collected, this project was aimed at being an accurate replica of an archaeological site, based on a 3D model of the surface and on high resolution images, that would actually help identify vegetation and soil anomalies and other clues from ancient times.

TMPSYS-BRgEO MK-II Aerial Surveying System

RTK GNSS precision - Unmanned - Unrivaled!

TMPSYS-BRgEO brings unrivalled accuracy to your processing



The TMPSYS-BR UAS is based on a blended wing body modular airframe, with the emphasis on the smallest possible T/O weight, advanced aerodynamics, electric propulsion, endurance, ergonomic and user friendly ground control station, robust fail-safe systems and procedures, durability and mobility.

TMPSYS systems are fully compatible with:

- EnsoMOSAIC
- PIEneering
- Agisoft Photoscan
- Pix4D
- Menci Software or customized options

Map and georeference large areas up to 10 km²

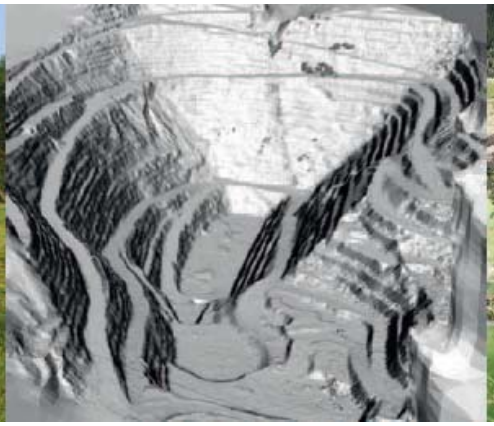
Working phases:

- Flight planning
- Imaging flight
- Image processing

Sensors:

- RGB 24.3 Mp
- CIR 24.3Mp 560-850nm
- Tetracam ADC micro 520-920nm
- Hyperspectral 24 channel 500-900nm

Choose your project geometry
Map rivers, roads, pipelines
100% autonomous from takeoff to landing
Land safely with parachute landing
Ability to reconfigure your mission and landing in flight
Robust aviation grade fail-safe systems and procedures



TMPSYS-Br-I Unmanned Aerial Vehicle

The **TMPSYS-Br-I** airframe is manufactured from an advanced composite mix of Kevlar/Carbon/ Vectran and when appropriate provides **low radar detection** probability and a high level of survivability.

An ADS-B transponder can be fitted into the airframe for airspace integration purposes.
The sensor modularity [classical EO/IR interchangeable gimbaled turret, fixed visible light and IR spectra orthophotography, hyperspectral imaging, advanced environmental monitoring sensors] is ensured by the modular construction of the airframe, which allows for **multiple payload configurations** and endurance/ range options, including an on board video and data recorder.
The TMPSYS-Br-I UAV is based on a blended wing body modular airframe, with the emphasis on the smallest possible T/O weight, advanced aerodynamics, electric propulsion, endurance, ergonomic and user friendly ground control station, durability and mobility.

The system consists of the air vehicle with the chosen sensor configuration middle section, a foldable take off low temperatures pneumatic or above 0 deg celsius temperature range elastic catapult, a communications package tripod with antennae and the optional A-TRACK tracking antenna system and the ground control station (GCS).

The whole system fits into a MILSPEC, rain resistant backpack with the GCS embedded in an industry standard rugged package and is **flight**


Ground Station


Launcher


Eye gimbal

ready in less than five minutes.
The system can be safely operated by one operator/ pilot in command, but a crew of two is desirable for situational awareness purposes.

TECHNICAL SPECIFICATIONS

WINGSPAN	230 cm
LENGHT	96 cm
AIRCRAFT TYPE & AIRFRAME	fixed wing, blended wing body configuration, Kevlar reinforced carbon composite airframe
AVIONICS	Lockheed Martin (ITAR controlled) and ORTHOelectronics
PROPULSION	brushless electric
MTOW	4,2 kg
PAYLOAD	0,6 - 1,0 kg
CRUISE SPEED	58 km/h
Vne	105 km/h
TAKE OFF SYSTEM	ELASTIC CATAPULT / PNEUMATIC CATAPULT
LANDING AREA	10 m x 10 m
LANDING	PARACHUTE or BELLY LANDING
SERVICE CEILING	up to 4300 m AMSL
OPERATIONAL TEMPERATURES	-40°C - 80°C
VIDEO & DATALINK RANGE	Up to 30 km LOS with A-TRACK tracking antenna
ENDURANCE	180 min with rechargeable batteries, enhaceable with one-time power sources
T/O READINESS	System T/O ready in less than 5 minutes
OPTIONS	many possibilities (based on user's needs)
TRANSPORT	1 MILSPEC backpack and/or rugged case
OPERATION REQ	one or two operators
FLYING	100% autonomous from takeoff to landing
GIMBAL CONTROL	flight stick control
ORTOPHOTO CONTROL	100% autonomous, multiple ortophoto mission geometries possible in 1 flight, reprogrammable on the fly while vehicle in the air
MANUAL FLIGHT CONTROL	optional light stick
GCS ENDURANCE	up to 10 h
EMERGENCY FAILSAFES	yes, user configured
RUGGEDIZZATION	IP66 compliant

TMPSYS-180-3ELI MINI UAV FOR SURVEILLANCE

A FIELD PROVEN SOLUTION FOR A HIGH SURVEILLANCE CAPABILITY

- FIELD PROVEN
- HEAVY PAYLOADS
- LONG ENDURANCE & RANGE
- LOW ALTITUDE FLIGHT
- VIDEO TRACKING
- DAY & NIGHT MISSIONS
- RESILIENCE
- QUICK DEPLOYMENT
- EASE OF USE

SYSTEM DESCRIPTION

TMPSYS-3ELI configuration is a complete solution law enforcement applications and site surveillance.
Combined with a gyro stabilized dual sensors (EO/IR camera), the solution provides an endurance of 50 min, a long range (10 km) and high performances in surveillance.
The UAV also integrates video tracking capabilities allowing to focus on specific targets or areas of interest.
Easy to use, it can be deployed for both night and day missions and in all weather conditions.
TMPSYS-3ELI is a field proven solution.

TYPICAL MISSIONS

- Critical infrastructure protection
- Crowd control
- Law enforcement
- Major events surveillance
- Search & Rescue
- Damage assessment

RECOMMENDED CONFIGURATION

- 2 TMPSYS-3ELI
- 1 Ground Control Station (GCS)
- 1 gyrostabilized EO/IR

OPERATIONAL PERFORMANCES

Endurance	50 min
Perching mode	0h with 10 min flying time
Range	Up to 10 km
Deployment	< 6 min
Detection (human body)	1 km (EO) 800 m (IR
Reconnaissance (human body)	600 m (EO) with optical zoom 150 m (IR) with zoom
Identification	300 m (EO) with optical zoom 70 m (IR) with zoom

"RIBHS tracking"

"Monitoring screen of the ground control station during a city surveillance mission"

"Harbor surveillance, traffic monitoring"

"Flight plan"

"Airport surveillance with IR sensor"

TMPSYS-180-3ELS MINI UAV FOR CIVIL PROTECTION

THE BEST RESILIENCE IN NON-SECURE ENVIRONMENT

- POST INCIDENT SITUATION ASSESMENT
- GAMMA RAY PROBE SENSOR
- CHEMICAL SENSING
- VIDEO CAMERA
- MODULAR PAYLOADS
- RESILIENCE
- LONG ENDURANCE & RANGE
- DUAL PAYLOAD SLOT (ONE FLIGHT, MULTIPLE DATA CAPTURE)
- DAY OR NIGHT MISSIONS
- QUICK DEPLOYMENT
- EASE OF USE

SYSTEM DESCRIPTION

TMPSYS-180-3ELS mini UAV for Civil Protection is a key system for gathering information in non-secure environment (nuclear, chemical, fire, etc.) or for regular monitoring. It can be operated in a complete autonomous mode with no operator interaction on site The UAV can follow predefined patterns specified by the operator and thus make autonomously the complete survey of the area to explore. Data collected during the flight are geo-located, transmitted in real time to the Ground Control Station (GCS) and optionally recorded on board. After mission, they can be positioned on a map to get a global situation (level of contamination, fire propagation, etc.).The ground station can be integrated in a vehicle to prevent the operator from all unnecessary exposure to hazmat material. TMPSYS-180-3ELS is already in use in many countries by civil security organizations is qualified to operate in harsh environment.

TYPICAL MISSIONS

- Hazmat incidents situation assessment
- Fire Fighing
- Regular monitoring
- Pollution control
- Environmental monitoring
- Scientific Research
- Post crisis intervention

Mini UAV during a campaign of radiological measurement

RECOMMENDED CONFIGURATION

- TMPSYS-180-3ELS
- 1 ground station
- 1 smart gamma probe or 1 chemical sensor
- Video Camera
- Software for data post processing

OPERATIONAL PERFORMANCES

Endurance	120 min
Range	Up to 10 km
Max payload	5 kg
Deployment	< 6 min
Wind resistance	60 km/h

Damage assessment after industrial accident

TMPSYS-180-5THU1 MINI UAV FOR SURVEY

A MODULAR SOLUTION TO CAPTURE DATA

- MODULAR PAYLOADS
- VIDEO & PHOTO WITH GEOLOCATION FUNCTIONS
- LONG ENDURANCE & RANGE
- DUAL PAYLOAD SLOT (BOTTOM AND TOP)
- ALL WEATHER FLYING CAPABLITIES
- QUICK DEPLOYMENT
- EASE OF USE
- DATA POST PROCESSING

SYSTEM DESCRIPTION

TMPSYS-180-5THU1 provides a complete solution for survey applications (mining, environmental, pipelines, power lines, etc.). The dual slot capability allows to embed up to two survey sensors simultaneously.

As IT180 is a fully autonomous UAV, the whole mission from take off to survey and landing is performed without any operator intervention enabling him to focus on other tasks. In particular the IT180 can be equipped with dual magnetic sensors to locate underground metal for mineral exploration purpose of clearance of explosive remnants of war. Thanks to its unique patented design the TMPSYS-180 family is able to integrate up to 5 kg payloads on the top or/and on the bottom of the aircraft. Thus various kind of data can be recorded with only one flight.

TYPICAL MISSIONS

• Photos & videos
• Precision agriculture
• Pollution control
• Environmental monitoring
• Underground metal detection & aeromagnetic survey
• Scientific Research
• Mining survey
• Mine action against explosive remnants of war

RECOMMENDED CONFIGURATION

- **1 TMPSYS-180-5THU1**
- 1 ground control station
- Survey sensors :
    - Magnetic sensor
    - Camera
    - Video camera
    - Thermal camera

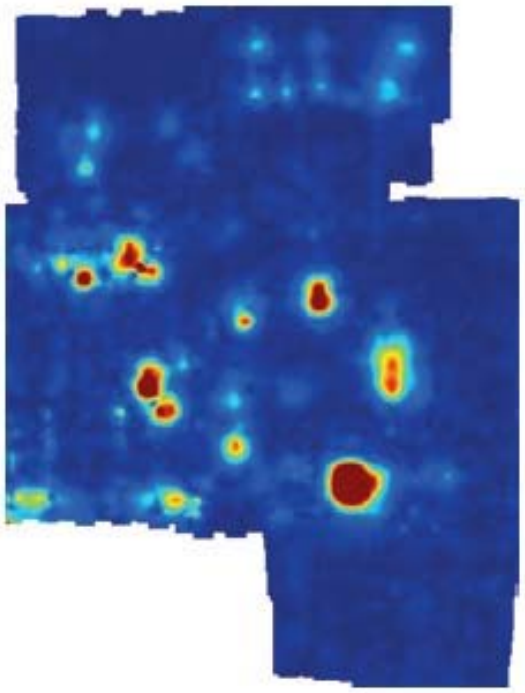
OPERATIONAL PERFORMANCES

Endurance	120 min
Perching mode	0h with 10 min flying time
Range	Up to 10 km
Max payload	5 Kg
Deployment	< 6 min
Pilot modes	Manual, Autopilot, Ground-tracking

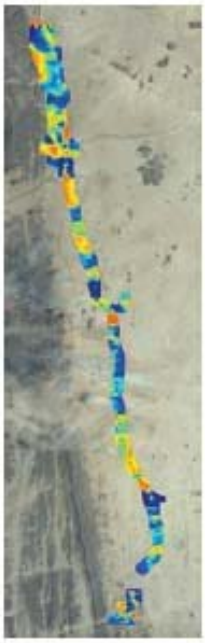
"The IT180-TH-U during a mission for surveying a water pipeline"

"Survey of Power Lines"

"Magnetic images after a mission to locate buried explosives"



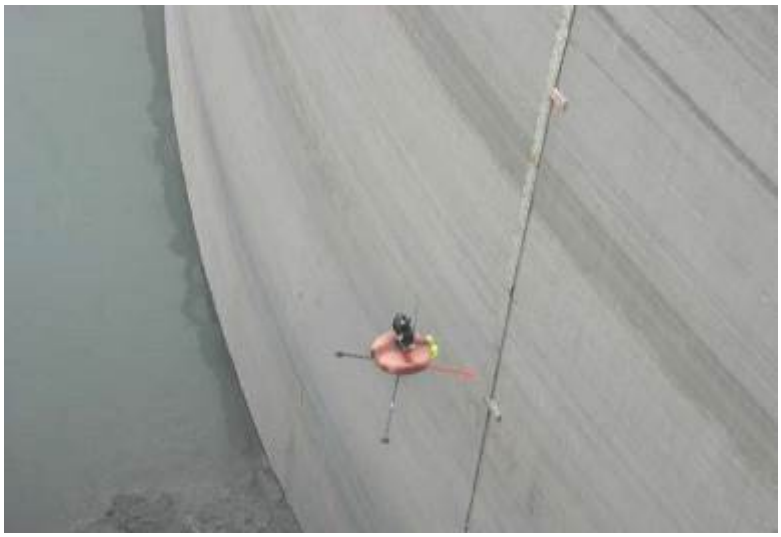
"Survey of Power Lines"



TMPSYS-180-5THU MINI UAV FOR INSPECTION

THE MOST EFFICIENT WAY FOR INSPECTION OF HARDLY ACCESSIBLE INFRASTRUCTURES.

- AUTONOMOUS OR MANUAL FLIGHT
- LOW ALTITUDE AND PROXIMITY FLYING CAPABILITIES
- HEAVY PAYLOADS
- LONG ENDURANCE & RANGE
- STABLE HOVERING
- DUAL PAYLOAD SLOT (BOTTOM AND TOP)
- QUICK DEPLOYMENT
- EASE OF USE



SYSTEM DESCRIPTION

TMPSYS-180-5THU is a complete solution for industrial needs such as monitoring and inspection of infrastructures (pipelines, power lines, dams, bridges, etc.).

Based on the TMPSYS-180-5TH combined with various inspection sensors such as video camera, camera or LIDAR, the solution provides long endurance (120 min), long range (10 km) and a high data quality for industrial applications.

The mini UAV can perform inspection missions in fully autonomous mode, enabling the operator to focus on issues detection. Its hovering capability allows the operator to have a close inspection of existing defects.

Thanks to its unique patented design, it is able to integrate up to 5 kg payload on the top or/ and on the bottom of the aircraft. Thus different data can be recorded with only one flight.

TYPICAL MISSIONS

- Infrastructure inspections (dam, engineering works, pipeline …)
- Environmental monitoring

RECOMMENDED CONFIGURATION

- TMPSYS-180-5THU
- 1 ground station
- Inspection sensors :
  - Video camera
  - Camera
  - LIDAR
- Software for data post processing

OPERATIONAL PERFORMANCES

Endurance	120 min
Range	Up to 10 km
Max payload	5 kg
Deployment	< 6 min
Wind resistance	Manual, Autopilot, Ground-tracking

“Inspection of a relay antenna”Coastal

“Power line inspection”

“ Bridge Inspection”

“Dam Inspection”

TMPSYS-180-ELI MINI UAV FOR ISTAR

A FIELD PROVEN SOLUTION ALLOWING HIGH ISTAR PERFORMANCES

- FIELD PROVEN (FRENCH ARMY)
- DETECTION HUMAN BODY UP TO 1 KM
- VIDEO TRACKING & GEOLOCATION FUNCTIONS
- LONG ENDURANCE & RANGE FOR MINI UAS
- DAY OR NIGHT MISSIONS
- RESILIENCE
- STEALTHINESS
- QUICK DEPLOYMENT
- EASE OF USE

SYSTEM DESCRIPTION

TMPSYS-180-ELI is a mini ISTAR VTOL UAS dedicated to military and homeland security operations.
Integrating the cutting edge technology with its gyro stabilized dual sensors (EO/IR camera) combined with a unique on-board image stabilization module, the system offers high performances in detection, recognition and identification.
Able to provide geolocation capability for target acquisition, the TMPSYS-180-ELI is also very quick to deploy (<6 minutes) and easy to operate with only one operator thanks to the GCS that displays mission planning & control, UAV status information and live video from the aircraft.
Its resilience and stealthiness give key advantages for full spectrum of ISTAR operations. Providing enhanced situational awareness, It is used by French Army since 2012.

TYPICAL MISSIONS

- ISR
- RSTA
- Force protection (FOB, convoy, counter-IED, etc.)
- Battlefield management & covert operations
- Search & Rescue
- Damage assessment

OPERATIONAL PERFORMANCES

The French Army has qualified all DRI performances.

RECOMMENDED CONFIGURATION

- 2 TMPSYS-180-ELI
- 1 Ground Control Station (GCS)
- 1 gyrostabilized EO/IR

OPERATIONAL PERFORMANCES

Endurance	50 min
Perching mode	0h with 10 min flying time
Range	Up to 10 km
Deployment	< 6 min
Detection (human body)	1 km (EO) 800 m (IR
Reconnaissance (human body)	600 m (EO) with optical zoom 150 m (IR) with zoom
Identification	300 m (EO) with optical zoom 70 m (IR) with zoom

French Army TMPSYS-180-ELI is a stealthy solution used by French Army since 2012

Thermal Camera DRI missions are drastically facilitated with EO/IR high quality images

Mini UAV deployment TMPSYS-180-ELI can be deployed from a military vehicle

Ground control Station "TMPSYS-180-ELI can be operated on the field"

UAV preparation Compact and mobile, TMPSYS-180-ELI can be deployed in only 6 minutes.

TMPSYS-180 MINI UAV COUNTER CBRN

THE BEST RESILIENCE IN NON-SECURE ENVIRONMENT

- GAMMA RAY PROBE SENSOR
- CHEMICAL SENSING
- MODULAR PAYLOADS
- RESILIENCE
- LONG ENDURANCE & RANGE
- DUAL PAYLOAD SLOT (ONE FLIGHT, MULTIPLE DATA CAPTURE)
- DAY OR NIGHT MISSIONS
- QUICK DEPLOYMENT
- EASE OF USE

SYSTEM DESCRIPTION

TMPSYS-180 mini UAV Counter-CBRN is a key system for gathering information for CBRN reconnaissance (radiation, chemical, etc.). It can be operated in a complete autonomous mode with no operator interaction on site.

The UAV can follow predefined patterns specified by the operator and thus make autonomously the complete survey of the area to explore. Data collected during the flight are geo-located, transmitted in real time to the Ground Control Station (GCS) and optionally recorded on board. After mission, they can be positioned on a map to get a global situation of hazmat material. The ground station can be integrated in a vehicle to prevent the operator from all unnecessary exposure to hazmat material. TMPSYS-180 that is already in use and is qualified to operate in ionizing radiation environment.

TYPICAL MISSIONS

- CBRN reconnaissance and situation assessment
- Hazmat data collection
- Post crisis assessment

RECOMMENDED CONFIGURATION

- TMPSYS-180-3EL_C
- 1 ground station
- 1 smart gamma probe or 1 chemical sensor
- Software for data post processing

OPERATIONAL PERFORMANCES

Endurance	120 min
Range	Up to 10 km
Max payload	5 kg
Deployment	< 6 min
Wind resistance	60 km/h

TMPSYS-180 for counter CBRN can be operated from a safe area (inside vehicle).

TMPSYS-FE Unmanned Aerial Vehicle System is developed in 2005. After constant improvement cycles the system has reached its 3. version. TMPSYS-FE provides longer endurance and observation times than its competitors. This system is very user friendly with very short assembly and disassembly time.

TMPSYS-FE autopilot have been developed as part of the autopilot family and incorporates many features of larger systems.
All sub-components can be replaced without the need for any adjustment.

Propulsion

Engine	700 Watt Brushless Electric Motor
Propeller	2 Blade,Carbon
Dimensions	
Wing Span	2,6 m
Length	1,6 m
Propeller	0,3 m diameter
Weights	
MTOW (Maximum Take Off Weight)	4,1 kg
Payload	0,6 kg
Performance	
Cruise Speed	27 knot
Endurance	1,5 hours
Operation Altitude	12.000 ft
Data Link	
Class	LOS
Radius	15 km
Power	
Power	-
Navigation	
Navigation	Fully Autonomous or Manual
Payload	
Payload	Coloured Day CameraIR Night Camera
Take Off	
Runway	Autonomous or Manual Hand Launch
Launcher	-
Landing	
Runway	Autonomous or Manual Hand Launch on Belly
Parachute	Autonomous or Manual Hand Launch with Parachute
Structure	
Material	Composite
Other	
De-Ice / Heating	-
Lighting	-
Ground Control Station	-

TMPSYS-ORA Unmanned Aerial Vehicle System is developed and tested in 2010 as a training aircraft. TMPSYS-ORA System has a better performance then its competitors in his class by providing high-altitude, long endurance and redundant avionics and it has flexible avionics and payload configuration. This features makes TMPSYS-ORA a perfect candidate for flight testing of developed products in the field of aviation.

TMPSYS-ORA can be easily assembled and disassembled on the field, it gives the feature of easy handling and use.

TMPSYS-ORA autopilot have been developed as part of the autopilot family and it can use all communication channels and has the ability to communicate with avionics software libraries to be tested.

All sub-components can be replaced without the need for any adjustment.

Propulsion	
Engine	19 HP
Propeller	
Dimensions	
Wing Span	4,6 m
Length	3 m
Propeller	0.72 m
Weights	
MTOW (Maximum Take Off Weight)	85 kg
Payload	3 kg with Parachute – 10 kg without Parachute
Performance	
Cruise Speed	95 km/hour
Endurance	5 hours
Operation Altitude	18.000 ft
Data Link	
Class	C-Band & UHF (LOS)
Radius	100 km
Power	
Power	1 kW
Navigation	
Navigation	Yedekli INS-GPS-Pitot Tube
Payload	
Payload	3 kg with Parachute10 kg without Parachute
Take Off	
Runway	Fully Autonomous or Manual
Launcher	Fully Autonomous or Manual
Landing	
Runway	Fully Autonomous
Parachute	Fully Autonomous and Controllable
Structure	
Material	Composite
Other	
De-Ice / Heating	-
Lighting	Anti-Collision and Navigation
Ground Control Station	Mobile Shelter

TMPSYS-AYEL UAV System is an unmanned air vehicle system designed and manufactured for the purpose of aerial observation. TMPSYS-AYEL has the ability to perform the task entirely on its own without an assistance on an onboard pilot.

TMPSYS-AYEL Unmanned Aerial Vehicle System, a reconnaissance and surveillance system, was developed in 2007 and began test flights in 2009. Remote sensing systems on board are able to detect a target and mark for laser-guided munitions. All phases of the flight, take-off, landing and flight profile are performed autonomously. TMPSYS-AYEL System has been developed as a reliable system in terms of flight safety and aviation regulations will be released in the coming years are compatible. Payload bay is configurable for the military and civilian applications.

TMPSYS-AYEL System is on development with extended features for the Land Forces Command. In 2013, 6 aircrafts will be delivered.

Propulsion	
Engine	1×70 Hp Mutual (Opposed Cylinders)
Propeller	
Dimensions	
Wing Span	10,5 m
Length	6,5 m
Propeller	1,45 m diameter
Weights	
MTOW (Maximum Take Off Weight)	500 kg
Payload	70 kg
Performance	
Cruise Speed	60-80 knot
Endurance	> 20 hours
Operation Altitude	22.500 ft
Data Link	
Class	LOS
Radius	> 150 km
Power	
Power	2,5 kW
Navigation	
Navigation	Fully Autonomous or Manual
Payload	
Payload	Coloured Day CameraIR Night CameraLaser Range FinderLaser Pointer
Take Off	
Runway	Fully Autonomous or Manual
Launcher	Fully Autonomous or Manual
Landing	
Runway	Fully Autonomous
Parachute	Fully Autonomous and Controllable
Structure	
Material	Composite
Other	
De-Ice / Heating	De-Ice / Heating
Lighting	Anti-Collision and Navigation
Ground Control Station	Mobile Shelter

TMPSYS-X8 UAV

General system description

The TMPSYS-X8 UAV is a small autonomous fixed wing for aerial mapping. The autopilot system is based on open-source technology and committed to civilian and scientific use. Its specific design allows for flexible operation and can be deployed safely in different environments and weather conditions. Main applications include - Photogrammetry - Precision Agriculture - Research - Environmental Survey – Search and Rescue – News reporting – etc…

UAV-based image acquisition commonly results in hundreds of very high resolution small footprint images. These require image processing with dedicated software for 3D reconstruction and subsequent orthomosaicking and can be visualised in Google Earth or another Geographic Information System (GIS) for further analysis.

Figure 1. Orthomosaic (left) and Digital Elevation Model (right) based on imagery acquired from the TMPSYS-X8 UAV

The TMPSYS-X8 UAV system consists of (i) Airframe, (ii) Radio Control system, (iii) Autopilot, (iv) Telemetry, (v) Camera and (vi) Groundstation.

Technical specifications

Airframe

Material	EPO foam, Strengthened with carbon tubes and laminating cover
Weight	3kg (incl. battery and camera)
Max Weight	4kg
Dimensions	215 x 90 x 25cm (Width x Length x Height)
Wing area	80dm2
Cruising Speed	12m/s
Max Speed	35m/s
Endurance	30-45min (depending on altitude/wind)
Flight altitude	100-200m (Above Ground Level)

RC-system

Manual Range	1000m
Frequency	2.4 GHZ
Options	Failsafe, Basic Telemetry

Autopilot

Type	Ardupilot APM2.5
Modes	Manual, Stabilize, Return-to-launch, Auto
Waypoints	Unlimited
Included sensors	GPS, IMU, Magnetometer, Airspeed sensor, Voltage sensor, Barometer
Logging frequency	10Hz
Autopilot Range	Unlimited
Options	Manual PID tuning, Fail-safe, Camera triggering

Telemetry

Telemetry Range	1500m (can be extended to 10km)
Frequency	433 or 915 Mhz
Transmit power	Tuneable, up to 20dBm (100mW)
Air data rate	250kbps

Camera

Megapixels	12MP
Swath (at 150m)	200m
Options	Geotagging, Automatic or Interval triggering

Ground station

Operating System	Windows
Software	ArduPilotMega Planner Vx.x
Options	Mission Planning, PID tuning, Flight analysis and Live flight data monitoring

Safety control

The TMPSYS-X8 UAV system has been thoroughly tested in various environments and windy conditions (up to 7m/s). During the operation the autopilot system ensures a straight flight pattern at constant speed over the targeted area. At all times manual control can be regained in case of emergency. Two additionally safety modules are integrated: Geofencing, which prevents the UAV system to fly outside the predefined target area and the fail-safe mode which in case the telemetry link is lost, returns the plane back to the home position.

To power up the UAV system, two 5000mAH battery packs and a multicharger are included. Specific safety measures are taken to assure safe storage and charging of the batteries.

TMPSYS-LIK – Tracking Drone Systems

Being an indigenous Design and Development program, TMPSYS-LIK Tracking Drone Systems program was initiated in 1995 to meet the increasing training needs of the Turkish Armed Forces (TAF).

Indigenously designed and produced TMPSYS-LIKs, which entered the inventory of TAF in 2001, are being actively used in training of air defense units' trainings.TMPSYS-LIK Tracking Drone System is used for tracking exercises of radar, optically, thermally or manually controlled barreled anti-aircraft guns and also training platform for TURNA Target Drone.
In inventory of Turkish Air Forces and Turkish Land Forces.

Indigenous TUSAŞ design and production

- 30 minutes endurance
- Max. Speed 41 m/sec
- 10 kg MTOW
- Tracking target drone with radar or manually controlled barreled anti-aircraft guns
- Take-off with launcher, recovery by parachute on land
- Radar reflector wing cover
- Easy observable shiny colors
- Ready to Re-flight in 15 minutes
- COTS equipments
- Compatible with MIL-STD-810F military standards
- Coded by NSN standards
- Tough, simple structure
- Portable, modular
- Easy to operate

TMPSYS-R300 VTOL ISR UAV System

TMPSYS-R300 has fully-autonomous flight including automatic take-off and landing capability.

Characteristics

- Length (m) : 6,10
- Rotor Diameter (m) : 5,95
- Payload Weight (kg) : 80
- MTOW (kg) : 325

Performance

- Endurance (hr) : 4+
- Service Ceiling (ft) : 10.000 (MSL)
- Datalink Range (km) : 200
- Max. Cruise Speed (kts) : 70

System Features

- Full HD EO/IR payloads
- Fixed or moving target tracking capability
- Fully autonomous operation
- Automatic take-off and landing
- High data rate digital datalink
- Remote Video Terminal option
- Easy-to-Maintain

Control Station Features

- STANAG 4586 compliant GCS
- Mission planning, management, simulation and playback capabilities
- Data recording capability
- User-frendly MMI
- External C4I Interfaces

TMPSYS-RNA – Target Drone System

Being an indigenous Design and Development program, TMPSYS-RNA Target Drone Systems program was initiated in 1995 to meet the increasing training needs of the Turkish Armed Forces (TAF).

Indigenously designed and produced TMPSYS-RNAs, which entered the inventory of TAF in 2001, are being actively used in training of air defense units' trainings.
TMPSYS-RNA Target Drone System can be used as a training platform for conservation and improvement of defense capabilities against air threats. The highly cost-effective system, which has an open architecture design that can be shaped in accordance with the needs of the customer, has proven its affectivity during real firing missions at operational areas with its distinctive simulation of air threats and missiles capability, high maneuverability, high speed, ease of operation, low mission risk and modularity. TMPSYS-RNA is used for tracking and firing exercises of radar, optically, thermally or manually controlled barreled anti-aircraft guns and guided missiles.

In inventory of Turkish Air Forces and Turkish Land Forces.

Indigenous design and production

- 90 minutes endurance
- Max. Speed 93 m/sec (180kts)
- 12.000 ft (MSL)
- 70 kg MTOW
- 50 km data link
- Take-off with launcher, recovery by parachute on land or sea
- Ability to take-off and control from Navy vessels
- Structure manufactured with advanced composite technology
- Compatible with MIL-STD-810F and MIL-STD-461 military standards
- Coded by NSN standards
- Fully autonomous flight and navigation with Ground Control Station including take-off and landing
- Preprogrammed flight ability to assign up to 255 waypoints and change during / before flight
- Return Home & Fail Safe Modes for automatic recovery to a predefined return home point
- Mission planning and control with EMI/EMC filtered, air conditioned, portable/mobile/stationary Ground Control Station,
- Record and playback of real-time coded digital flight data telemetry
- Ability to recognize and load digital maps

Payloads:

- TOW; MDI, Sleeve and IR Heat Source.
- On Drone; Passive RCS Augmenter (Luneberg Lens), IR Heat Source and Smoke.

TMPSYS-SEK – High Speed Target Drone System

Being an indigenous Design and Development program, TMPSYS-SEK High Speed Target Drone System program was initiated in 2009 to meet the increasing training needs of the Turkish Armed Forces (TAF).

System will meet the requirements of high speed target drone simulating enemy aircraft and missiles for air to air, ground to air, anti-aircraft gunnery and missile systems' tracking and firing trainings. Open architecture design of TMPSYS-SEK High Speed Target Drone System can be modified with respect to customer requirements.

Indigenous design and production

- 60 minutes Endurance
- Max. Speed 205 m/sec (400 kts)
- Mission altitude between 30ft (10m) to 15000 feet (4500 m) (ASL)
- 100 km LOS Data Link Range with GCS
- Take-off with launcher recovery by parachute on land or sea
- Ability to take-off and control from Navy vessels
- Structure manufactured with advanced composite technology
- Compatible with military standards
- Full autonomous flight mode with Waypoint / Heading / Speed / Altitude hold modes including take-off and landing with Indigenous "GCS Flight Control System" and "Autopilot System"
- Preprogrammed flight ability to assign waypoints and change during / before flight
- Return Home & Fail Safe Modes for automatic recovery to a predefined return home point
- Mission planning and control with EMI/EMC filtered, air conditioned, portable/mobile/stationary Ground Control Station
- Record and playback of real-time coded digital flight data telemetry
- Ability to recognize and load digital maps

Payloads:

- Passive Radar Cross Section Augmenter - Luneberg Lens
- Passive IR Signature
- Miss Distance Indicator
- Counter Measure Dispensing System
- Tracking Smoke Generator
- Radar Altimetre

TMPSYS-COPTER S-100 – Unmanned Air Systems

Form and Function

UNPARALLELED PERFORMANCE

The Unmanned Air System – the dynamic TMPSYS-COPTER S-100 – provides a unique balance of advanced capabilities, operational flexibility and outstanding performance. The S-100 is able to fly a programmed mission without operator intervention. It is a Vertical Takeoff and Landing (VTOL) system and, whether for use at sea or on land, it has been designed to manned aviation standards ensuring reliability on all mission types.

STRENGTH IN FORM AND FUNCTION

In-depth research and development has led to an Unmanned Air Vehicle (UAV) that is designed to perform in all terrains and environments. Its sleek design belies a tough framework, combining advanced composite materials. These provide high-end performance coupled with robust, structural strength and a high level of environmental resistance.

The S-100´s airworthiness has been certified by the Austrian AustroControl GmbH (ACG) and the European Aviation Safety Agency (EASA).

INTELLIGENT OPERATIONS FROM TAKEOFF TO LANDING

For total performance flexibility, the S-100 has the ability to complete an entire mission automatically and with zero operator intervention, or it can be reprogrammed at any time when airborne to perform alternative missions or react to task changes.

Programming for an autonomous mission is controlled via a simple point-and-click graphical user interface, with payload imagery transmitted to the Control Station (CS) in real-time. Redundant Inertial Navigation Systems (INS) and Global Positioning Systems (GPS) ensure highly accurate navigation and stability. And in the case of loss of control link, an automatic home point recovery function is activated.

COMMAND & CONTROL

The powerful multi-capable system software of the TMPSYS-COPTER S-100 is intuitively controlled through an operator interface. The control workstation displays the position of the UAV as well as status information in real time on a user-friendly, aviation-style instrument panel.
The payload control workstation allows the operator to control the payload while also having access to mission planning information, video-viewing, recording and frame capture. Depending on the user's needs, the S-100 can be commanded from two laptop computers or may be seamlessly integrated into a larger system.

ANTENNA OPTIONS

Its primary C-band encrypted data link provides exceptional line-of-site range with antenna options available from 45 km to 200 km.

THE CUBE

The CUBE acts as a hub between the UAV, all ground components and higher-level networks. It is entirely versatile, having been designed either for portable use or permanent installation on a vehicle or ship. Its networkability allows it to be easily expanded to cover control of multiple air vehicles from either a single shelter, a moving vehicle or from a ship's command and control center.

ISTAR CAPABILITY

The S-100 has been designed as an efficient tool for extended situational awareness, either on its own or as part of a modern ISTAR network, integrating all forces in joint operations. The S-100's modular design means that the integration of different payloads is straightforward and the CS can easily be integrated into other systems, in various configurations. Communication between the UAV and the CS is set up via highly secure (encrypted) direct links that carry sensor, command and control data.

NETWORK-ENABLED
The CS system is network-enabled and with its Windows™-based architecture and Ethernet single cabling, it can be easily integrated, seamlessly passing information around the user community.

Multiple and Configurable

TMPSYS-COPTER S-100 VERSATILITY
The TMPSYS-COPTER S-100 is a system beyond comparison. It not only provides the highest level of durability needed for both sea or land operations, but as a modular system it offers the ultimate in flexibility in order to meet the needs of a wide variety of missions – and at a far more affordable cost than alternative systems. Each one of our customers is unique, and to meet diverse and individual requirements, the TMPSYS-COPTER S-100 has been designed to be fitted with a variety of payloads.

The S-100 features platform and payload growth capabilities - with two payload bays, an auxiliary electronics bay, as well as two side payload hardpoints and the ability to carry under-slung loads. Its typical capacity is 50 kg.

As standard, the S-100 flies with state-of-the-art Electro Optical / Infra Red (EO/IR) sensors, but alternatively, integrated spotlights, loudspeakers or even Synthetic Aperture Radar (SAR) are available.

OPTIONAL PAYLOADS
- Stabilized Day and Night Electro Optical / Infra Red (EO/IR) Gimbals
- Synthetic Aperture Radar (SAR)
- Ground Penetrating Radar (GPSAR)
- Signal Intelligence (SIGINT) & Communication Intelligence (COMINT)
- Communications Relay
- Loudspeaker
- Transponder
- Dropping Containers
- Under-slung Loads

Robust and Effective

PREPARED FOR SEA

Its robust design means the TMPSYS-COPTER S-100 is ideally suited to be used for maritime missions and has been proven on single spot ships worldwide, coping very well in wet and strong wind conditions.
Its compact size and light weight means the S-100 can be easily maneuvered, stowed and maintained in vessel hangars. A frigate-sized hangar can store up to five S-100s alongside a large manned helicopter, and successfully complements operations traditionally completed by manned helicopters.

It is fully marinized against corrosion through the extensive use of carbon fiber composites, stainless steel, titanium, anodization and special coatings. Because of its VTOL capability, it can perform takoffs and landings on helicopter deck-equipped ships. It is also equipped with a harpoon deck capture system for use with standard NATO grids as well as for the optional installation of emergency floats.

PREPARED FOR LAND

The S-100 is the master of complex terrain where no airfields or runways exist. Furthermore as a VTOL system it needs no prepared area or supporting launch or recovery equipment.
It has been designed and proven to operate effectively in extreme environments:

- Deserts up to +55°C
- High relative humidity zones up to 95%
- Snow covered areas down to -40°C

It has a ceiling of up to 18,000 feet in ISA conditions, when lower payload weights are acceptable and an endurance exceeding six hours with a full fuel load and a 34 kg payload as well as all mission-certified equipment. An optional tank extends the endurance exceeding 10 hours.

Civil and Military

MARITIME – EXPANDING YOUR HORIZON
Nowhere does the S-100 excel more than at sea. The advantages of VTOL make it the ultimate asset for both civil and military operations.

Security
- Border & Territorial Water Control
- Recce of Vessels & Areas
- Anti-smuggling
- Inspections
- Oil Spills & Contamination
- Monitoring Shipping equipped with AIS (Automatic Identification System)

command & control
- Task Forces
- Landing Operations
- Damage Assessment
- Search & Rescue

MILITARY – DELIVERING A TACTICAL ADVANTAGE
The multi-capable TMPSYS-COPTER S-100 enhances your military capability and delivers an intelligent solution for a wide range of missions.

Security
- Route Surveillance
- Signal Intelligence (SIGINT) & Communication Intelligence (COMINT)
- Border Control
- Counter Measures - Improvised Explosive Device (IED)
- Minefield Mapping
- Convoy Protection
- PSYOPs

command & control
- Early Warning
- Damage Assessment

CIVIL - YOUR PERFECT PARTNER
Whether enhancing creativity for a film maker or monitoring the security of vast pipelines, the S-100's intuitive and accessible technology makes it the perfect choice for civil users.
- Harbor & Border Control
- Area & Event Security
- Search & Rescue

- Out-reach Surveillance
- Mapping & Surveys
- Aerial Photography
- Support Relief in Environmental & Natural Disasters
- Airborne Communications Relay
- Agriculture

Back-up and Support

TRAINING MATTERS

We take training seriously and delivers comprehensive courses for both operators and maintainers.
Those adhere to the principles followed by the manned aviation world and offer both classroom and hands-on practical training.

The operator course consists of modules for general aviation, TMPSYS-COPTER S-100 operation as well as mission planning, simulation and live flying, while the maintenance course trains individuals to be fully proficient in supporting the system in all environments and conditions. The length of training may vary, depending on the pre-qualification of each individual. Training takes place either at our facility in or at the customer's location.

STEADFAST SUPPORT

Customers feel totally confident in the reliable support service, with experienced and certified aviation engineers always on hand, as well as a roundthe- clock help desk. The team endeavors to consistently meet and surpass customer requirements.

We aim to support as much as possible in the field or at sea, as well as providing depot level maintenance and overhaul support for power plants, line replaceable units, controlled items and other components that are not field-repairable. It also provides a spares management and maintenance program for servicing, repairs and preventive maintenance, as well as the inspections necessary to support the varied requirements of all customers.
Maintenance activities include:

- Preventative and corrective maintenance on all system levels
- Documentation support, including user and technical documentation
- Configuration control support, including configuration follow-up after modifications and changes/software upgrades or service bulletins
- Support for R&D projects, spiral development and the purchase of spare parts
- On-site technical support, worldwide

CERTIFICATION

We have closely followed regulations levied by both military and civilian authorities in the design, manufacture and operation, bringing this product in line with the established best practices of the aviation industry.

This approach has brought recognition and acceptance from various military organizations and a permit to fly from EASA. In April 2007, the S-100 satisfied approved EASA flight conditions and every aircraft is issued with a Permit to Fly. This certification is on a European level and states that the S-100 system is able to perform safe flights and shall be recognized by all other national European safety agencies.

As a further sign of the authorities' confidence in the S-100, it was approved by DGAC (Direction Générale de l'Aviation Civile) to fly during the 2009, the 100th year anniversary of the Paris Air Show at Le Bourget, the first UAS ever to be permitted to fly during this historical and prestigious event.
A year later the TMPSYS-COPTER S-100 was the first UAS flying at the Berlin Airshow (ILA), fully integrated into all operational flight display and airport procedures.

Technical data

Autonomy:	fully autonomous takeoff, waypoint navigation and landing
Navigation:	redundant INS and GPS
power plant:	50 HP rotary engine
Data/video link:	fully digital, compressed video (up to four simultaneous feeds)
Typical D/L range:	80 or 180 km (43 or 97 nm)
Dash speed:	120 kts
cruise speed:	55 kts (for best endurance)
Endurance:	> 6 hours with 34 kg (75 lbs) payload plus optional external fuel tank extending endurance > 10 hours
Typical payload:	50 kg (110 lbs)
MTO weight:	200 kg (440 lbs)
Empty weight:	110 kg (243 lbs)
Max. dimensions:	3110 mm (122“) length 1120 mm (44“) height 1240 mm (49“) width
Main rotor diameter:	3400 mm (133.9”)

TMPSYS-Ryon Scout UAV

Aerial, Real-Time Awareness in Seconds

The TMPSYS-Ryon Scout is a compact, easy-to-use aerial system that records and transmits high-quality images, video and data.

Anyone Can Fly

Autonomous capabilities and simple point-and-dick navigation and camera controls make it possible for anyone to fly Scout with only a few minutes of training.

Advanced fly-safe features and automated flight planning software, allow the operator to focus on the task at hand.

Fly Anywhere, Anytime

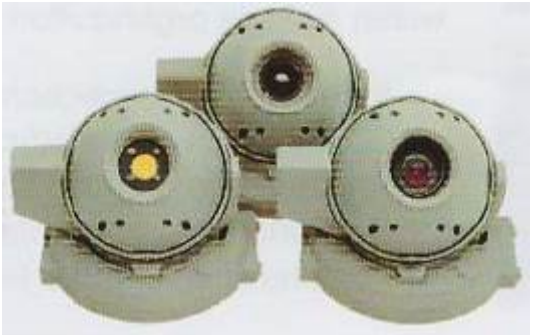
The Scout operates reliably in the most demanding weather and wind conditions when other systems, simply cannot fly.

- Sustained winds up to 50 km/h (gusts up to 80km/h)
- Ruggedized and weather sealed, operating temperatures from -30°C to +50°C
- Beyond line-of-sight 3km range, up to 25 minute flight time with payload

Airborne in seconds-weighing less than 3lbs, the complete Scout system fits easily into a compact case or backpack and snaps together without tools.

Hot-swappable Payloads

Integrated stabilized imaging payloads which switch in seconds, and are designed for all-weather environments.



- Photo3S (color/near-IR) - 3-Axis Stabilized High Resolution Images
- VideoZoom10X - 10x Optical Zoom Video
- Thermal FLIR - Thermal Infrared Video

Custom payloads are also available for specialized imaging and other sensing applications.

Additional Features

Smart Imagery

Embedded geotags and metadata enables sharing live target location, or image post-processing into stitched images, 3D models and more.

All-Digital Network

Simultaneously stream video to multiple devices.

Encryption protects against hacking, snooping and interception.

AutoGrid Flight Plan
Create automated flight plans on-the-fly to generate extremely detailed cm/px image mosaics and maps or monitor an area or perimeter.

Automatic Follow Me
Escort or follow a person or vehicle to maintain continuous visual observation of the subject and surrounding terrain or infrastructure.

Applications

MILITARY
Man-packable and immediately deployable for over-the-hill aerial intelligence in any environment, the all digital Scout system brings secure and simultaneous tactical situational awareness to ground forces and remote command. Advanced autonomous capabilities and simple touch screen controls require minimal training for soldier, squad, or platoon level deployment. Unlike fixed-wing unmanned aerial systems, Vertical Take-Off and Landing (VTOL) flight requires no launch equipment, enables fixed hover for precise observation, and facilitates low-risk retrieval on land or ship. Scout's compact size and quiet operations are ideal for covert operations.
Sample applications include:

- Tactical Awareness & Targeting
- Perimeter & Convoy Security
- Covert Reconnaissance & Surveillance
- Anti-Piracy
- De-Mining
- Disaster Response

PUBLIC SAFETY
The SCOUT system provides an immediate eye-in-the-sky for law, fire and emergency management personnel. First responders can have Scout airborne in seconds-no waiting for aircraft support or trained remote-control specialists. Automated features and fly-safe controls reduce reliance on operator skill and minimize risk.
Sample applications include:

Law Enforcement

- Intelligence & Evidence Gathering
- Traffic & Crowd Control
- Suspect or Missing Person Search

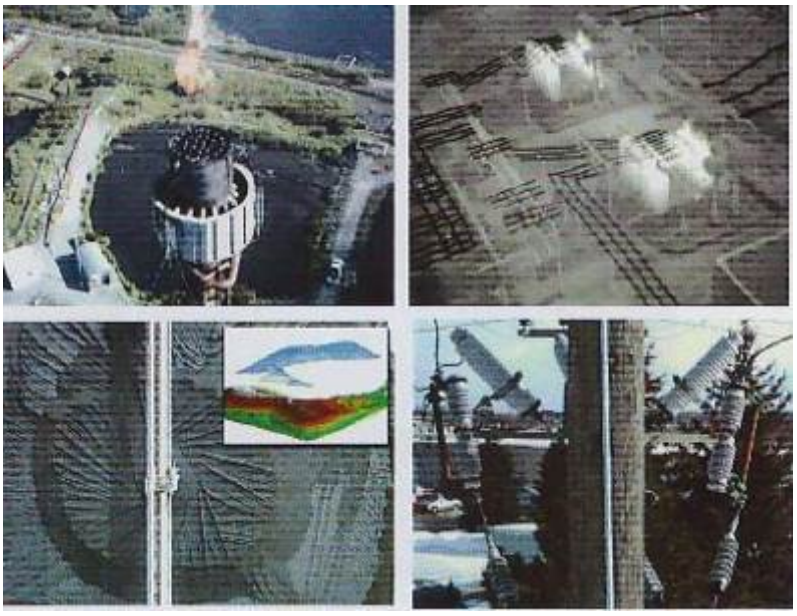
- Events & VIP Security
- Crime or Accident Investigation Tactical Operations

Emergency Management

- Search & Rescue
- Fire Control & Damage Assessment
- HAZMAT/CBRNE Management
- Emergency & Disaster Response

INDUSTRIAL & COMMERCIAL

For commercial and industrial users, SCOUT is faster. safer, more accurate and more cost-effective-for Collecting aerial imagery-than conventional alternatives, including satellites planes. Helicopter sand is the most reliable and easy-to-use UAVs available. The SCOUT can be used in a wide range of industries. by multiple departments within a single organization. Sample applications include:



- Infrastructure Inspection
- 3D Models & Volumetric Analysis
- Photography & Broadcast Media
- Environmental & Wildlife Monitoring
- Orthorectified Maps & Image Mosaics
- Gas Leak Detection
- Precision Agriculture
- Forestry Management
- Site & Infrastructure Security
- Construction Site Planning & Monitoring

TMP-Cloud3 - Micro UAV

Specification:

TMP-Cloud3 Micro UAV is a kind of air robot with fixed wings. It's less than 5kg. It refers to most key technology about micro systems, so it belongs to micro UAV. Including a lot of subsystems, such as electric aerocraft, GPS navigation autonomous flight autopilot, video microwave transmission, link- control and so on.

The airframe of TMP-Cloud3 is made up of the compound of PVC and EPS, which is light weight, strong intensity, not reflecting Hertzian waves, good performance of resistance to impact. The main wings of aircraft are in concavo-convex type. The dynamic load of UAV is big, which makes good volplane capability. The airframe combined with cabin and haulm. The controller of "flight level" and "turn up and down" are set at the bottom of the haul, which makes control rather sensitive and convenient to regulate. Cabin is at the barycenter of the airframe, with large cubage to place different facilities. Single wing structure is designed on the high platform, which ensures security and stability well.

In the power group, there is high-efficiency electromotor /engine without brush and two airscrews which are both in fixed space. And it goes ahead by the drive of going backwards, which can protect engine and airscrews effectively. The airplane takes off by throwing, and slide down to the ground by abdomen. The UAV has no special request for the field, those places such as the flat and dry land, plat prairie and flood land in the country and the playgroud, road and top of the floor in the city can be ok.

Wingspan:1120mm
Body length: 970mm
Load: 200g
Take-off gross weight: 1500g
Maximum thrust: 900g
Cruising speed: 25-45 km/h
Flying height: 20-1500m
Endurance: 20-50min
Maximum wind: 4
Landing: hand rolls

FPV accessories:

1. Airframe 3 pcs
2. Motor 2pcs
3. Propeller 2pcs
4. Servo 3pcs
5. Electronic Speed Controller (ESC) 1pc
6. Battery (3S, 11.1V, 3700mA Lithium battery 2 pcs; 3S, 11.1V, 800mA Lithium battery 2 pcs)
7. Balancer 1 pc
8. Image Radio (Transmit and receive) 1 set
9. CCD Camera 1 pc
10. Servo Rod 3 pcs
11. Remote Control (optional) 1 pc

UAV accessories:

1. FPV accessories (except the Balancer)
3. Autopilot
4. Ground Control Station (contains Screen Display

2. GPS Telemetry system).

TMP Libellula 21 – UAV Helicopter

Accessories:

1. Fuselage
2. Special gas engine
3. 2.4G figure transmission system
4. Receiver
5. 8-channel control system
6. PTZ control systems
7. High-performance speed exhaust pipe
8. Micro-computer control system
9. Server

Specification:

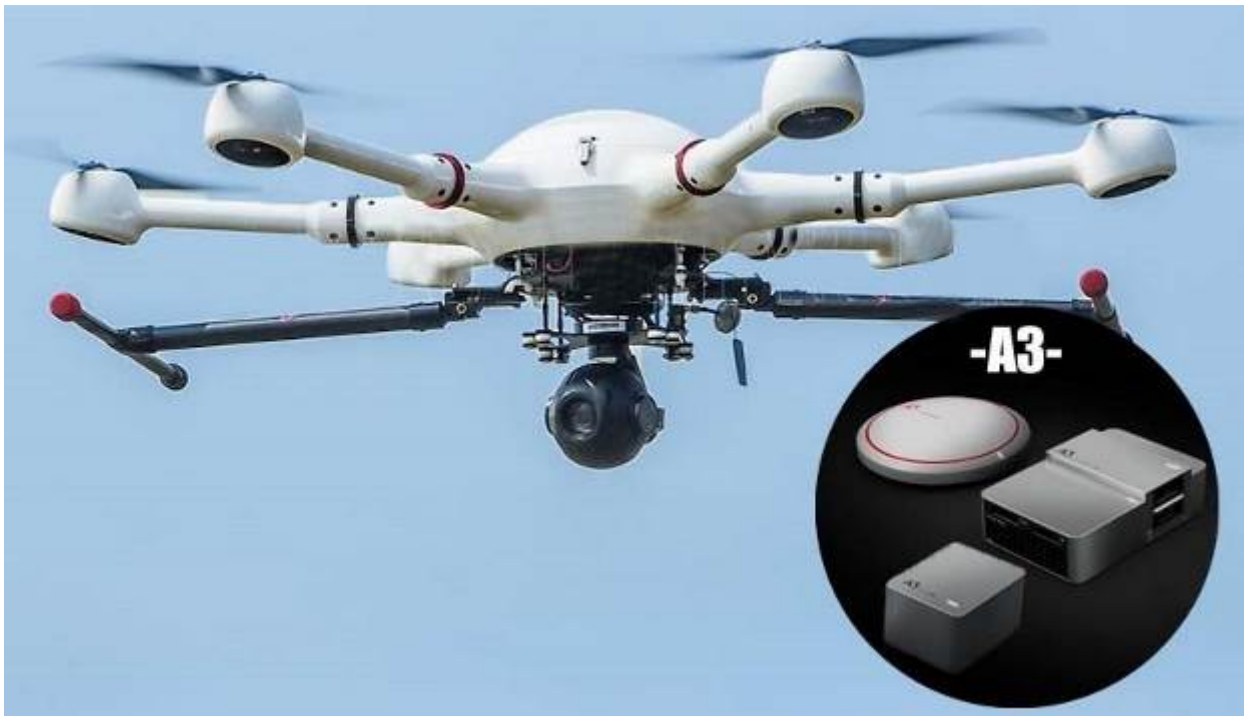
Libellula 21 is a helicopter, the rotor can produce force upward in the air and relative air.
Rotor is controlled by the automatic tilt which can make the helicopter producing the force of forward, backward, left or right, so the helicopter can do:

- Vertical upward or downward, air hovering, in situ turning around and it can fly forward, fly after and fly side;
- It can make a long time hovering and fly closely to the ground. It can also use the terrain and surface features for hidden flight;
- It does not need a special runway for vertical taking off and landing in the field.
- If the engine failure in the air, a helicopter can use the rotor rotation to land safely.

In addition, Libellula 21 unmanned helicopter has characteristics of low-speed flight and flexibility. It has a unique advantage that it can be widely used for artillery firing exercises, the army intelligence reconnaissance and battlefield surveillance and naval short-range maritime surveillance (including monitoring the water and underwater's target) and so on.

Wingspan radius:1760mm
Body length: 1570mm
load: 3000g
Take-off gross weight: 8000g
Cruising speed: 30 ~ 50km/h
Flying height: 10-1000m
Endurance: 15 ~ 45 min (electric engine) / 120 min (gas engine)
Maximum wind: 4
Landing: vertical take-off and landing

DIS-G100 Carbon Fiber UAV Helicopter



DIS-G100 is a carbon fiber monocoque hexacopter with high flight performance and better loading capacity for aerial filming and photography. DIS-G100 is sturdy and has very good stability. DIS-G100 also has the advantages of small volume, simple structure and low cost. The pluggable design of arms makes this camera drone easy to transport and quick to set up, also the cover could be locked with the quick locking hooks. DIS-G100 camera drone is made of carbon fiber material which features light weight and high strength. The weight of DIS-G100 frame is only 1.4kg. And only the cover is made of glass fiber to avoid blocking GPS signals.

DIS-G100 CF monocoque hexacopter is equipped with high efficiency power system including 5008 long flight time motor, Xrotor Pro 50A ESC and Supreme 17inch propeller to ensure long flight time. The flight time with one 6s 16000mah battery is about 50min without payload. So with long flight time and good stability, DIS-G100 is a high-quality flying platform for aerial photography. DIS-G100 can load with all the DJI cameras and gimbals, and all DIS series zoom cameras, like Seeker-18, Seeker-10, FH318Z zoom cameras, DJI Zenmuse series cameras and gimbals etc.

Specifications:

- Wheelbase: 1000mm
- Frame weight: 1.4kg
- No payload weight: 3.6kg
- Standard payload: ≤3kg
- Flight time: 50min

Features:

- Carbon fiber and glass fiber(only cover) material
- Light-weight,durable,rainrproof

- Long flight time,more stable flight
- Detachable arm,portable

Contents:

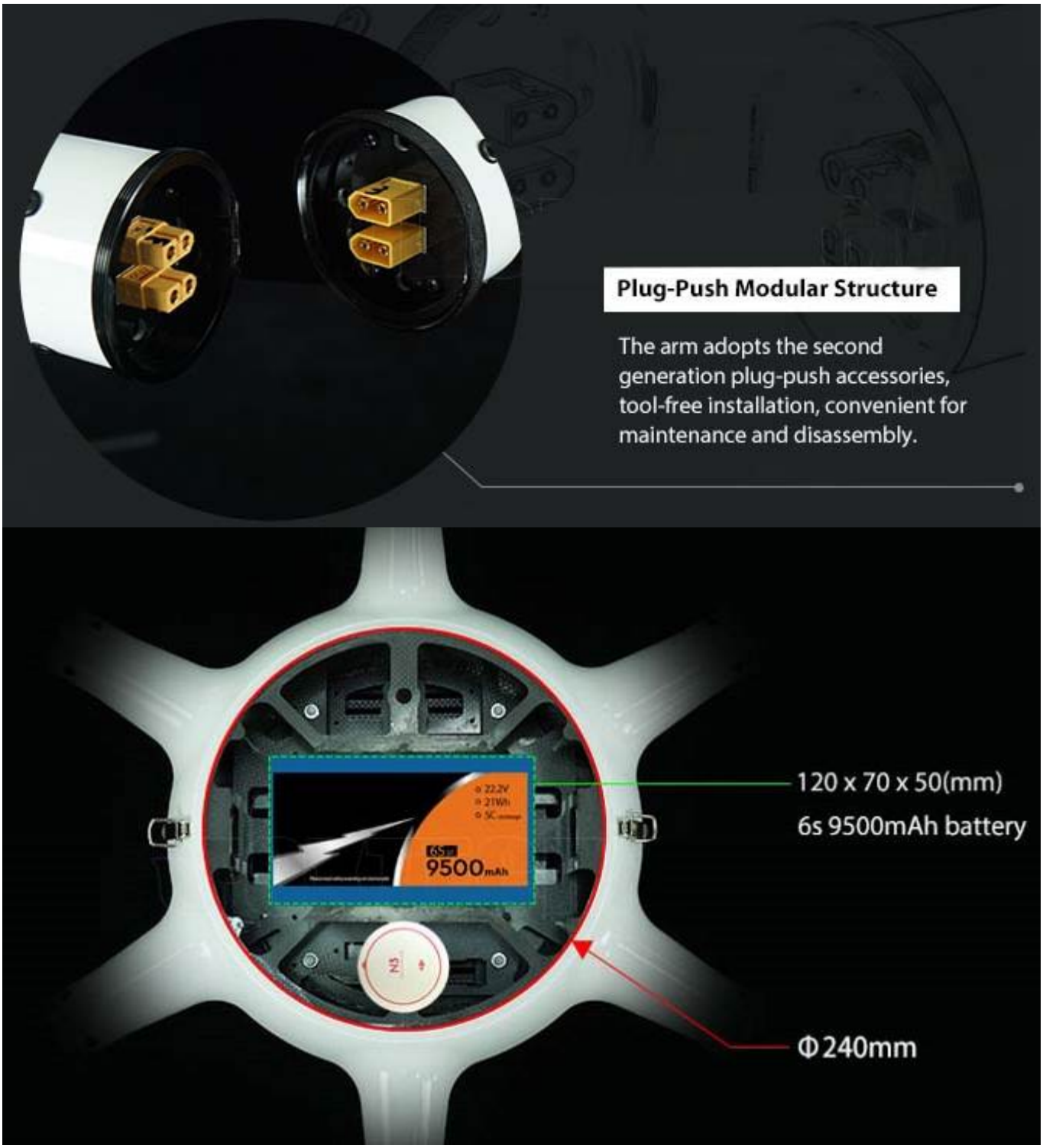
NO FC Combo:
-1x DIS-G100 Frame
-6x X5008 Motor KV330
-3x Supreme C/F Propeller(17x5.8) V2
-6x Hobbywing Xrotor Pro 50A ESC
-1x Auto Landing Gear(2pcs)
-1x Plug/Cable/Wires/Shrink Tubing etc

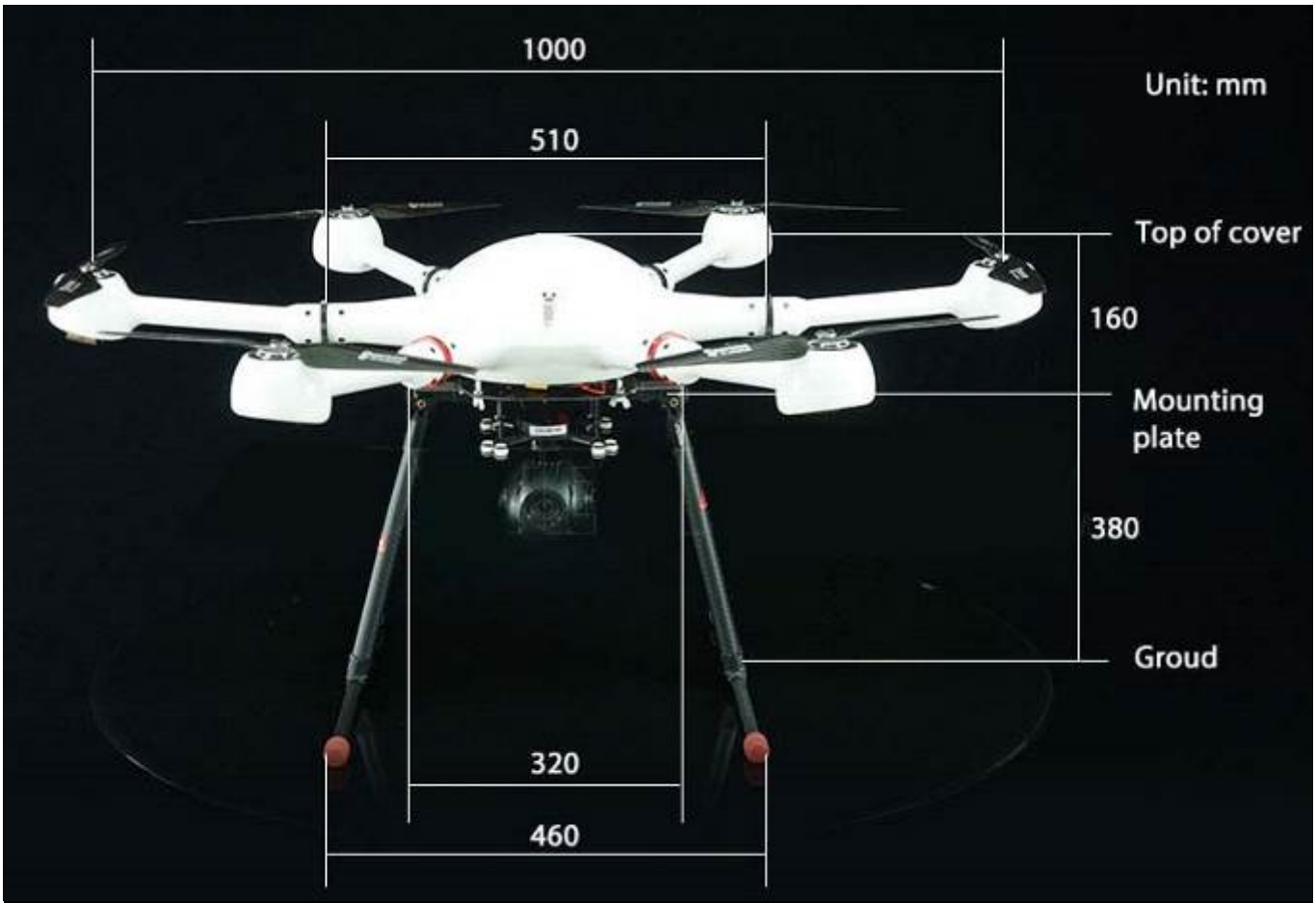
N3 Combo:
-1x DIS-G100 Frame
-6x X5008 Motor KV330
-3x Supreme C/F Propeller(17x5.8) V2

-6x Hobbywing Xrotor Pro 50A ESC
-1x DJI N3 Flight Controller
-1x Auto Landing Gear(2pcs)
-1x Plug/Cable/Wires/Shrink Tubing etc

A3 Combo:
-1x DIS-G100 Frame
-6x X5008 Motor KV330
-3x Supreme C/F Propeller(17x5.8) V2
-6x Hobbywing Xrotor Pro 50A ESC
-1x DJI A3 Flight Controller
-1x Auto Landing Gear(2pcs)
-1x Plug/Cable/Wires/Shrink Tubing etc

Options:
-1x 6S 16000mah Battery
-1x DJI A3/DJI N3 Flight Controller/Pixhawk 2.1
-1x Futaba 14SG Radio Controller
-1x SEEKER-18 HD 18X Optical Zoom Camera with 3-axis Gimbal/FH318Z/FH318/FH310Z/FH310W/DJI Zenmuse X5/Zenmuse X3
-1x X3/X5 Adapter Plate
-1x Assembly Service


Plug-Push Modular Structure
The arm adopts the second generation plug-push accessories, tool-free installation, convenient for maintenance and disassembly.
120 x 70 x 50(mm)
6s 9500mAh battery
Φ240mm


1000
510
Unit: mm
Top of cover
160
Mounting plate
380
Groud
320
460


30
25
19
62
310

SEEKER-30 TR 30X ZOOM

- 36X Optical Zoom
- Object Tracking Function
- Powerful Night Vision Capability

SEEKER-30 TR 30X ZOOM

- OSD Module
- Low Illumination
- Auto Object Tracking

FH318Z 18X ZOOM

- 18X Optical Zoom
- 1080P HDMI Output
- HDMI and AV Output

SEEKER-10 V2 18X ZOOM

- 4 Mega Effective Pixels
- Small Size, Light Weight
- 1080p/60fps HDMI Output

DIS-NBS VTOL for Long Range Video Inspection

This DIS-NBS VTOL new version is designed for **long range video inspection,** equipped with **S1+ 10km video and data transmission system**, seeker **10X zoom camera and gimbal**. In this version we **update the front and tail landing gear** to ensure the good view of 10X zoom camera.

The DA16S included in this combo **can realize standard 8km control range and datalink range.** You can use the radio controller to control tilt, zoom, pan of 10X zoom camera.
The video system in this version is **S1+ long range HD video system**, it provides **8-15km video range in the air**, it also can be used as datalink transmission. With this S1+ you can fly far **within 8km range and still has HD video transmit back.**

In this combo the DIS-NBS is equipped with one **battery swapping board-PG20**. It **increased at least 30% flight time** of DIS-NBS VTOL. By using this PG20 system, we use one **smaller but high discharge rate battery for DIS-NBS take off and landing,** use **one big capacity but low discharge rate battery for cruising** in fixed wing mode. And the flight time is **about 90min at a speed of 18m/s.** It can **complete 6 square kilometer survey and mapping job with a single take off**, which greatly **increase the working efficiency.**

DIS-NBS VTOL is the **world best Tri-copter VTOL**, equipped with 10X zoom camera and S1+ 8km Video and Data transmission system, it can be applied in many fields like emergency monitoring, rescue and security patrol.

Specifications:
Wingspan: 1800mm
Length: 1300mm
Total Weight: 2.85kg(no battery)
Suggested Take-off Weight: 4.8kg
Suggested Payload: 800g
Max Flying Speed: 35m/s
Average Speed: 15m/s to 16m/s
Stall Speed: 10m/s to 11m/s
Max Wind Resistance: 10.7m/s
Max Flying Height: 3500m
Mapping Accuracy: Centimeter
Suggested Battery: 6S 12000mah Lipo Battery; 6S 16000mAh Li-ion Battery and 6S 2200mAh Lipo Battery

Features:

-Take off and land vertically like a multicopter.
-Great Wind Resistant Feature
-Go waypoints & click-go automatically in either fixed wing or multicopter mode.
-No launching rail or parachute needed, launching directly from an area as small as 4x4m
-In case there is any failure on ailerons, elevators, DIS-NBS VTOL can switch to multicotper mode to save the plane.

Contents:

PNP:
1x DIS-NBS VTOL Inspection Version
2x 28kg Servo
2x 3520 KV520
1x X5008 KV330
1x Hobbywing XRotor 40A ESC(no BEC)
2x Hobbywing XRotor Pro 50A
1x Pair 1380 Wooden Propeller
1x 1755 MARKII Matte Propeller
1x Px4 Air Speedometer
1x ASSAN 8A UBEC
1x Pixhawk 2.1 Standard Set with Here GNSS
1x PG20 Dual Battery Swapping Board
1x DA16S+ 16-Channel Radio Controller
1x S1+ Long Range HD Video&Data Transmission System(1.4G 15km)
1x SEEKER-10 V2 HD 10X Optical Zoom Camera with 3-axis Gimbal
1x Assembling, tuned and Flying Test Service

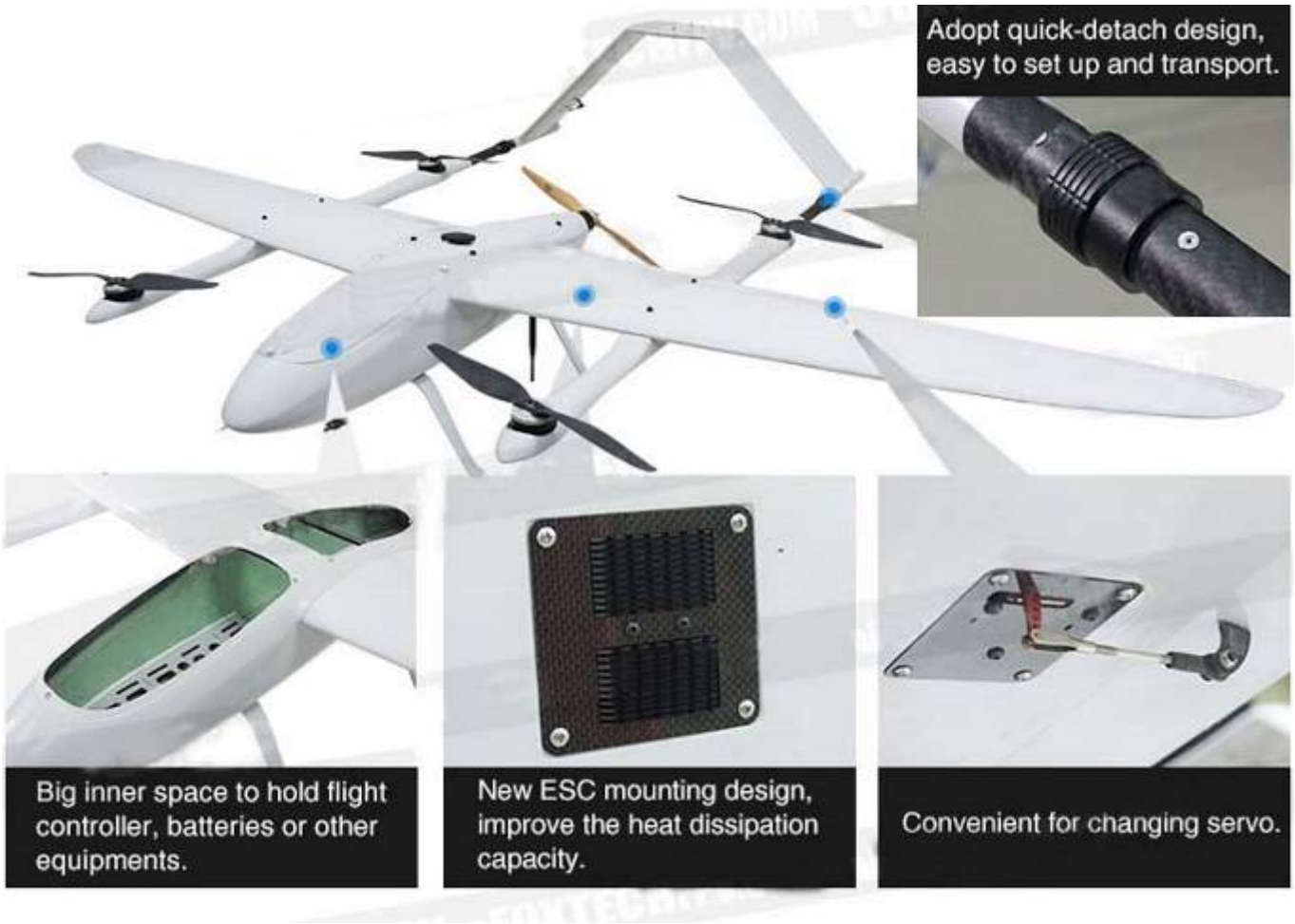
Optional:
RB20 Signal Relay
6S 16000mAh Li-ion Battery
6S 2200mAh Lipo Battery

DIS-BS260 VTOL

DIS-BS260 VTOL features a highly **advanced aerodynamic design.** It is made of **high density composite material,** which features **high strength** and very **light weight**. DIS-BS260 VTOL adopts **quick-detach design** which makes the plane easy to set up and transport. The fuselage also has **big inner space** to hold flight controller, batteries or other equipments.

DIS-BS260 can **take off and land vertically in a small area**. The frame of DIS-BS260 is **only 2.68kg**, and max **take-off weight is 12kg**, the stall speed of the DIS-BS260 is **15m/s-16m/s,** the highest speed is about **100km/h.** In this DIS-BS260 VTOL plane we suggest to use two 6S 5000mah lipo batteries for lifting motors, and 30000-40000mah Li-ion battery for cruising motor and propeller, so except the battery, motors, ESCs, propellers and other necessary equipments **still has 1.5kg payload left for zoom or mapping cameras**. DIS-BS260 can perform most tasks like long range inspection, survey and mapping etc. This plane is painted in grey color, and if you need other colors, we also can customize the color for you.

Specifications:
Wingspan: 2.5m
Fuselage: Composites
Frame Weight: 2.68kg
Total Weight: 5.5kg(without battery)
Max Take-off Weight: 12kg
Payload: 1.5-3kg
Max Flight Time: 2.5 hours
Max Speed: 100km/h
Stall Speed: 15m/s-16m/s
Altitude: 3000m



Contents:

RTF Combo:
1x DIS-BS260 VTOL Frame
4x T-motor MN505 KV260
4x T-motor FLAME 60A ESC
2x 1655 MARKII Matte CF Propeller CW&CCW
1x 4120 KV500
1x Hobbywing 120A ESC
1x 15x8 Wooden Propeller CW
4x X10 Mini Servo
1x Px4 Air Speedometer
1x ASSAN UBEC-8A
1x Power Monitor Module
1x Pixhawk 2.1 Standard Set with Here 2 GNSS
1x DA16S+ Radio Controller
1x Assembling, tuned and Flying Test Service

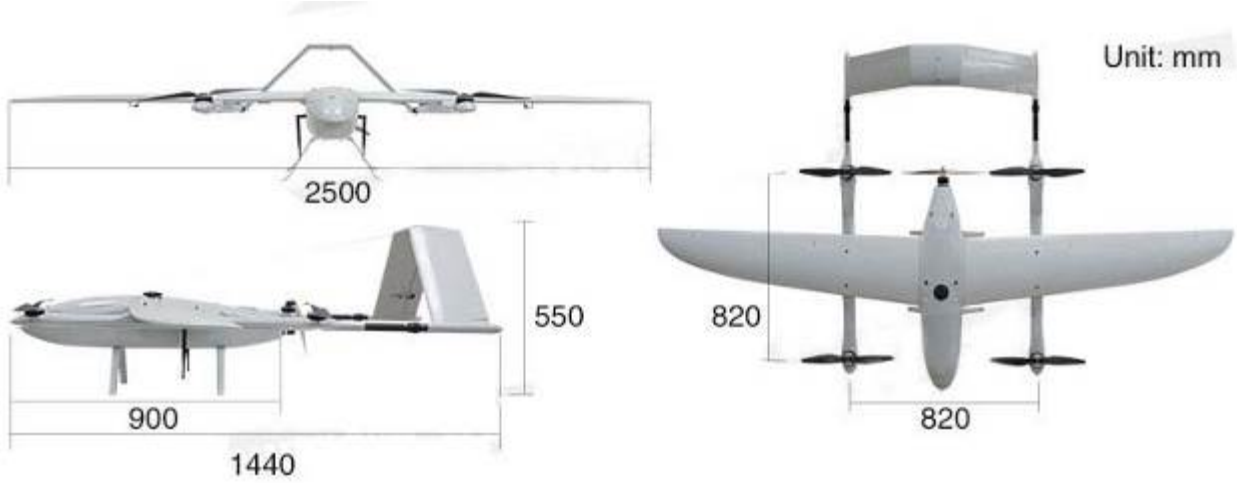
RTF Combo (T12 Combo):

1x DIS-BS260 VTOL Frame
4x T-motor MN505 KV260
4x T-motor FLAME 60A ESC
2x 1655 MARKII Matte CF Propeller CW&CCW
1x 4120 KV500
1x Hobbywing 120A ESC
1x 15x8 Wooden Propeller CW
4x X10 Mini Servo
1x Px4 Air Speedometer
1x ASSAN UBEC-8A
1x Power Monitor Module
1x Pixhawk 2.1 Standard Set with Here 2 GNSS
1x T12 12-Channel Radio Controller
1x Assembling, tuned and Flying Test Service

Option:
6S 12500mAh Li-ion Battery(x3)
6S 5000mAh Lipo Battery(x2)

DIS-BS260 Accessories
6S 30000mAh Li-ion Battery

DIS-BS260 load various zoom and mapping cameras to do long range inspection, mapping and survey jobs.



Dimensions

DIS-BS260 with FH230 TIR camera

FH230 TIR 30X Optical Zoom and Thermal Camera with 2-axis Gimbal

FH230 TIR is a **2-axis high precision gimbal** with a **30X starlight zoom camera and an thermal camera**. This gimbal can be mounted on VTOL airplanes or other UAVs for applications like inspection, surveillance, search and rescue.
FH230 TIR features high quality video sensor. FH230 TIR using SONY EV7520 camera featuring 1080P 60FPS full HD video streaming (with a HDMI encoder, which can **transfer the SDI to HDMI output**) and **30X zoom capability**, which will enable you to see objects in detail over distance. With **onboard object tracking module,** FH230 TIR is able to track static or moving target easily.

FH230 TIR 2-axis gimbal can not only be **controlled via PWM signal**, but **also serial command**. Also gimbal status like Yaw, Pitch, zoom can be obtained by sending serial command to the gimbal via its serial port.

FH230 TIR 2-axis gimbal **comes with one wiring hub** for RC receiver and video output port, which makes wiring very easy and clean. Also the gimbal has **2 smart speed modes**: FAST speed and LOW speed. Fast speed mode is used for small zooming range, which makes the gimbal control sensitive and quick; LOW speed mode is used for large zoom range, will enable you to target the object more accurately.

FH230 TIR supports **Pic-in-Pic function**, the two pictures could be switched mutually, and also could **geo-tag the video streaming and photos**.

Specification:
Imager Sensor: 1/2.8-type Exmor CMOS
Video Output:1080P/60fps HDMI(SDI to HDMI)
Focal Length: 30X optical focal zoom,4.3-129mm
Wide Dynamic: Up to 105dB
Auto focus: Less than 1s
Low illumination: Color: 0.01 Ix(F1.6, AGC on, 1/30s)
Aperture: Φ16.0
SD card: support Max 128G, class 10, FAT32 or exFAT format

Thermal Camera:
Pixels: 640x480
Pixel Size: 17μm
Emissivity Correction: Emissivity 0.01~1 adjustable
Image Enhancement: Automatically adjusts image brightness and contrast
Color Palette: Black hot, white hot, pseudo color
Warning Temperature -20℃～120℃

Gimbal system:
Input voltage: 3S-4S
Static current: 400mA(@16v)
Dynamic current: 500mA(@16V)
Working Temperature: -20℃ ~ +80 ℃
Range of control angle:
Pitch:±90° Yaw:±170°

Control Precision:
Pitch: ±0.01°Yaw: ±0.01°
Size:195x127x122mm
Weight: 1180g
Control interface: PWM and serial command

Tracking:
Data Refresh Rate: 25Hz
Output lag: ＜3ms
Tracking Velocity: ±32 pix/frame
Target Size: 16x16 pixels - 128x128 pixels

Features:
-2-aixs high stabilized gimbal system
-1/2.8-type Exmor CMOS
-30X optical zoom, 1080P/60 HDMI output for video downlink
-1080P/30 H.264 video recorded for on-board TF card
-Auto object tracking
-Geo tagging
-PWM control and serial command control
-Convenient wiring hub for RC receiver and video output

Contents:
1x FH230 TIR 30X Optical Zoom and Thermal Camera
1x FH230 TIR 2-Axis Gimbal

FH310 TIR Mini 10X Optical Zoom and Thermal Camera with 3-axis Gimbal

FH310-TIR MINI is a high precision 3-axis gimbal with **10X optical zoom camera** and **thermal camera.** It is so light **only 490g**. FH310-TIR MINI 10X zoom camera supports **1080P 60FPS full HD video output,** and the pixels of **the thermal camera is 640x480.**
FH310-TIR MINI also has the **target tracking function,** with which you will never lose the object. Just zoom in and put the object you want to track in the screen, move the cursor to the object and lock it via controller, and then the camera will track it automatically.
FH310-TIR MINI **high-precision 3-axis gimbal** is developed based on **FOC technology**, features **high stability,small volume and low power consumption.** The gimbal offers 2 smart speed modes: FAST speed and LOW speed. Fast speed mode is used for small zooming range, low speed mode is used for large zooming range. Also the gimbal supports one-key back to center.The gimbal supports **PWM,S.BUS control and serial command control.**
FH310-TIR MINI can be applied in many fields like power line inspection, searching, emergency monitoring and rescue.

Specifications:
Weight:490g
Working Voltage: 3S-4S
Size:118x109x116.5mm
Working Temperature: -10℃ ~ +60 ℃
Static Current: 450mA@12V
Dynamic Current: 550mA@12V
Range of control angle: Pitch:±90° Roll:±85° Yaw:±170°
Control Precision:
Pitch & Roll: ±0.01°Yaw: ±0.01°
SD card: max 128G ,class10, FAT32 or exFAT format

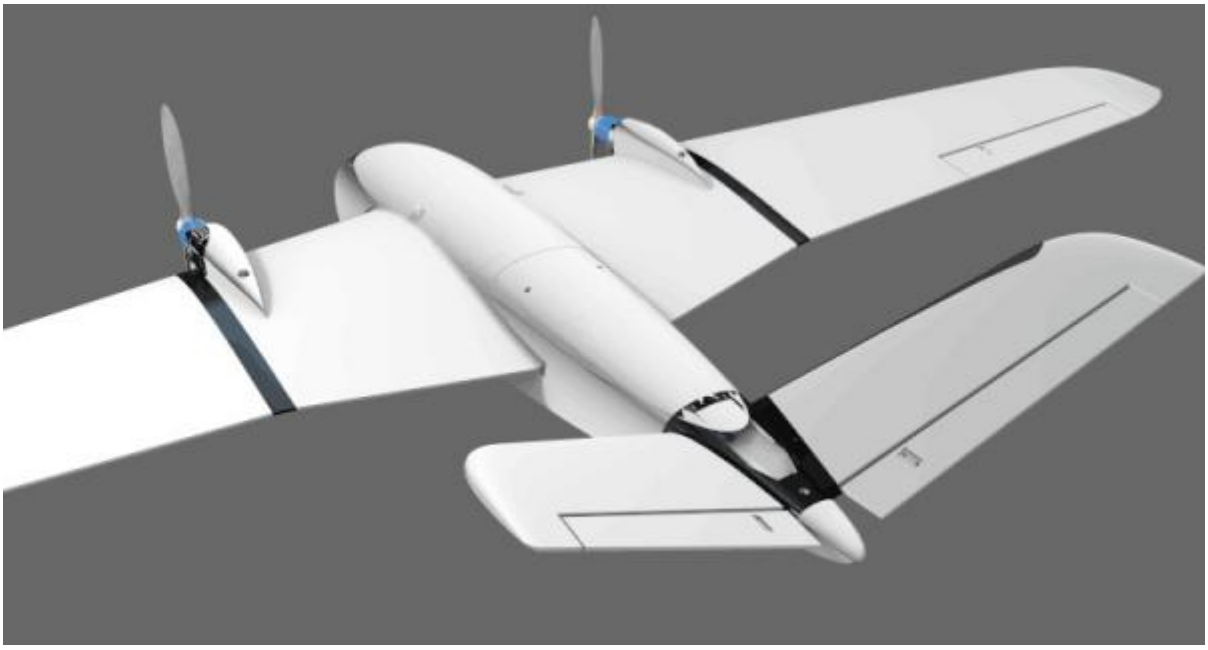
White Light Camera:
Sensor: 1/3" Progressive CMOS sensor
Lens: 10X optical zoom, f=3.2~33.6mm, F1.8-F3.4
Video Output Resolution: 1920*1080P@60fps
Zoom Mode: Standard / Variable / Direct
LUX: 0.5 lx(1/30sec, F1.8, 50%)
IlIumination Range: 100 lx～100,000 lx
Gain: Auto/Manual
Shutter Speed: 1/1～1/10,000 sec
Exposure Compensation: -12dB ～+ 12dB
Backlight Compensation: ON / OFF

Thermal Camera:
Pixels: 640x480
Pixel Size: 17μm
Emissivity Correction: Emissivity 0.01~1 adjustable
NETD: ≤50mK(@25°C)
MRTD: ≤650mK
Image Enhancement: Automatically adjusts image brightness and contrast
Color Palette: Black hot, white hot, pseudo color
Warning Temperature -20°C～120°C
Tracking:
Data Refresh Rate: 25Hz
Output lag: ＜3ms
Tracking Velocity: ±32 pix/frame
Target memory time:4s
Target Size: 16x16 pixels - 128x128 pixels

Your Purchase Includes:

1x FH310-TIR MINI 10X Optical Zoom and Thermal Camera
1x FH310-TIR MINI 3-axis Gimbal

DIS-D2550 Detachable Twin Motor Fixed-Wing Drone



DIS-D2500 Fixed Wing UAV

Packages:
1) Airframe with Wingspan of 2500 mm; 1 pcs
2) Motor + ESC + Propellers + Airspeed Indicator + GPS + Servos Parachute; 1 pcs
3) Radio Controller: 1 pcs
4) 80 km Telemetry Radio Set; 1 pcs
5) 6S (22.2V) 16000 mAh battery; 1 pcs
6) Pixhawk Flight Controller; 1 pcs
7) Ground Control Station (GCS) Software
8) Carrying Case

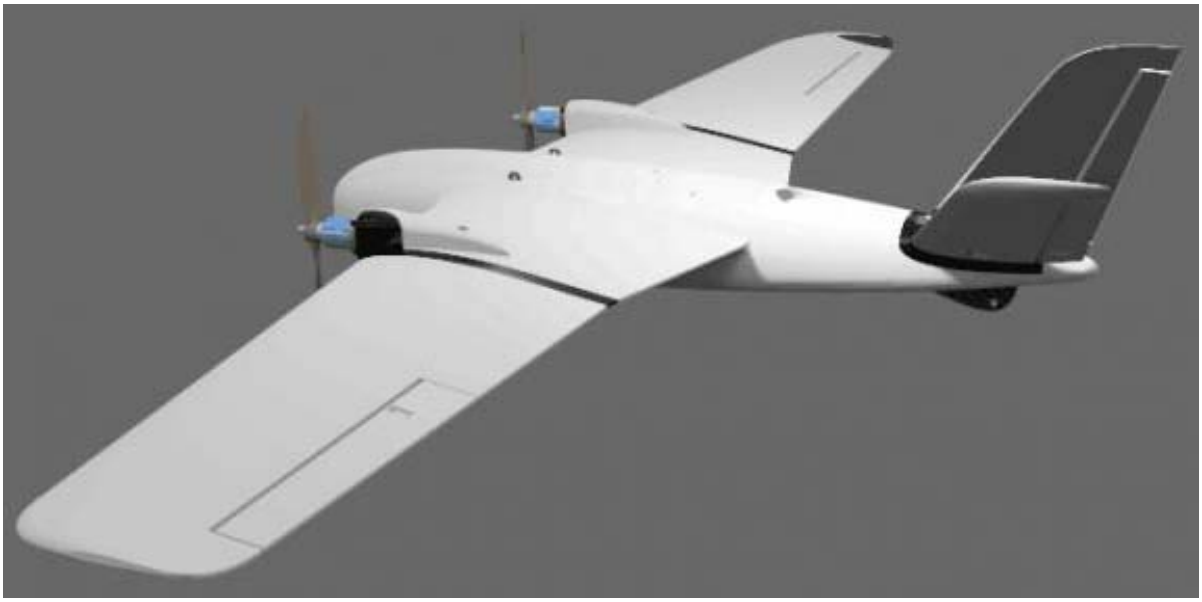
RTK PPK: Optional

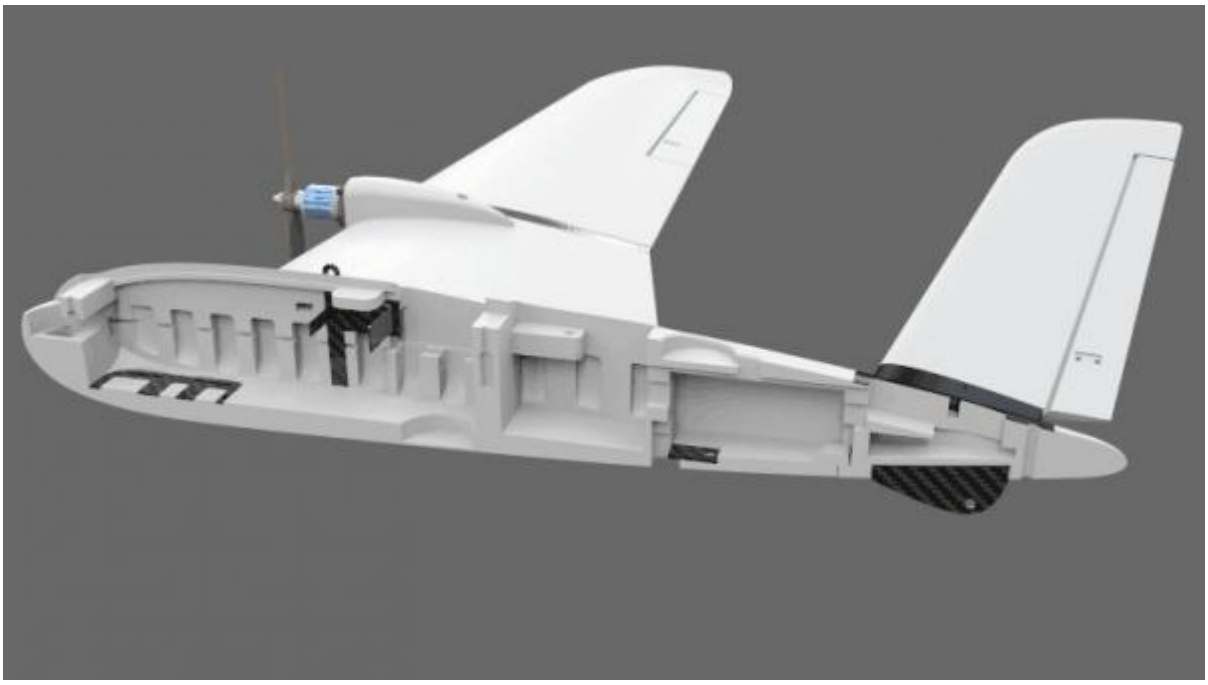
50KM-100KM 1080P Image and Video Transmission System:Optional

Lead Time: 7 days

Certification :	CE
MOQ :	1
Payment Terms :	T/T
Supply Ability :	500SETS

Delivery Time :	7 Days
Packaging Details :	Carton or Aluminum Hard Case
Wingspan :	1880mm or 2500mm
Fuselge Length :	960mm
Height :	260mm
Detachable :	Yes
Flight Duration :	150mins-240mins
Flight Distance :	80Km
Material :	SLF
Take Off :	Hand Throw;Catapult
Flight Altitude :	6000m
Motors :	2814kv 840*2
ESC :	40A*2
Servos :	90g
Landing :	Taxing ;Parachute
RTK/PPK :	Optional
Catapult :	Optional





Notes for SLF Materials:

SLF is Super light fiber woven material,a new technology material applied in military, agriculture, reconnaissance. It has been totally improved in configuration and function compared with EPO, EPP. Its density is between EPO and EPP, its rigid is 2-3 times than EPO, roughness is 10 times than EPO. Extremely anti-crash, even damaged with regular cut and quick traceless repair with higher strength. Much lighter than other material,more convenient and portable for users and easy maintenance!

Comparison Test on SLF , EPO and EPP

SLF VS EPO: new material rigid is 2-3 times than EPO, roughness is 10 times than EPO

SLF VS EPP: new material rigid is 2-3 times than EPP, roughness is 8 times than EPP

SLF VS wooden material: new material rigid is a little bit less than wooden box material, but it is appropriately with wooden box material, but the roughness is much better than wooden box material.

SLF VS glass steel: new material rigid is less than glass steel, but the roughness is much better than glass steel.

Vtol35 - Hybrid Version Fixed Wing Drone

Airframe	
Wingspan	3600mm
Length	1970mm
Height	500mm

Flight	
Flight endurance	3~4 hours
Cruising speed	70~130 km/h
Flight height	＜4000m
Payload	6kg
Max take-off weight	＜27 kg
Wind resistance	5~6 level
Take-off and landing	vertical
Autonomous flight with route planning or operated remotely from the ground control	

Imaging and	
Pod camera	Visible light / infrared thermal imaging
Data transmission	Real-time 120km
Video transmission	Real-time 120km

Dual lights IR/EO pod camera YPO-05

CAM06

Visible light parameter	
Video Recording	1920*1080
Optical Zoom	40x
Pixel	2 million
Storage	SD/SDHC storage card
Lens	focal distance F=2.9~116.0mm
Power Consumption	2.9W~3.7W
Thermal imaging parameter	
Frame Frequency	50Hz
Pixel	640*480
Wavelength Coverage	8~14pm
Image Denosing	digital filtering
Image Output	< 5s
Focal Length	F=19mm
magnification times	2/4/8/16x
FOV	19.5°x14.7°
Infrared Power Consumption	3.5W
Humidity	<95%RH
Physical electrical performance parameters	
Stabilization System	Horizontal Pitch 2-Axis structure
Wight	<17000
Size	140*140*210mm
Diameter	140mm
Power Consumption	< 1fiW
Power Source	12V DC Input
Stabilization Precision	0.1°
Rotation Angular Velocity	<120°/s
Steady Angular Velocity	>r/s
Rotation Angular	Pitch +30°~-90° Yaw: ±170°
Video Interface	HDMI
Control interface	PWM, SBUS, serial
Temperature Range	-10°C~+45°C

Groud Station

Model	Ground control station
Computer monitor	Size: 10.2 inch
	Resolution: 1366*768
Computer host	Internal storage: 4G
	Hard disk: 60G
Video display	Size: 18.5 inch
	Resolution: 1920*1080
Video	120km real-time transmission
	antenna length: 1.8m
Ground station	Endurace: 2h
	size: 570*416*210mm
	weight: 14kg
Function	Bluetooth / USB / HDMI output
Working temperature	-30°C~+60°C

Cam-05 – 3 Axis Optical-Thermal Camera

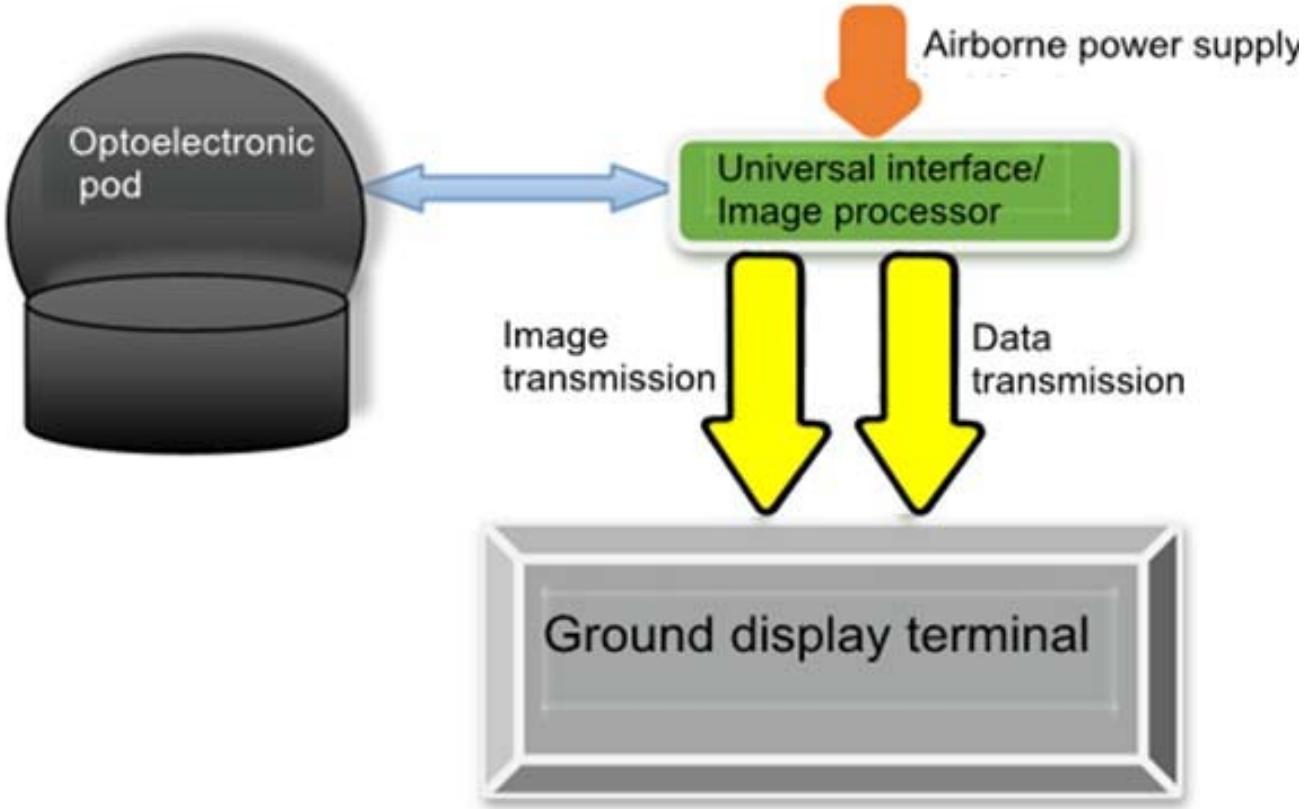
1. Product information

The Cam-05 photoelectric pod system is suitable for the situation which requires high protection level, with waterproof, dustproof, anti-salt spray function. Pod integrated high-definition visible light camera; the pod supporting common image processing system, can achieve the target tracking, target lock, automatic temperature warning, and other additional functions, greatly facilitate the utilization of the system in various industries, such as detection and monitoring, forest fire prevention, electricity line inspection and so on.

The pod can be mounted on UAV helicopters, fixed-wing UAV, multi-rotor UAV.

2. System Composition

Main components of the photoelectric pod system include: Pod platform (visible light camera), General interface / Image processing board, Ground station.



The functions of each part as follows:

(1) Photoelectric pods: Adopt horizontal pitch roll three-axis structure, Internal installation of optical detector and gyro stable servo system and related measurement equipment; External connection high-frequency shock absorber to isolate the high-frequency vibration of the body.

(2) Universal interface: General interface board provide connection to the airborne pod for power supply, digital radio, image transmission station interface

(3) Ground station: Contains an image display, remote controller

3. Product Features

(1) High integration, light and handy appearance, support pod orientation, pitch and roll, zoom action control, point to follow, point to lock mode supported.

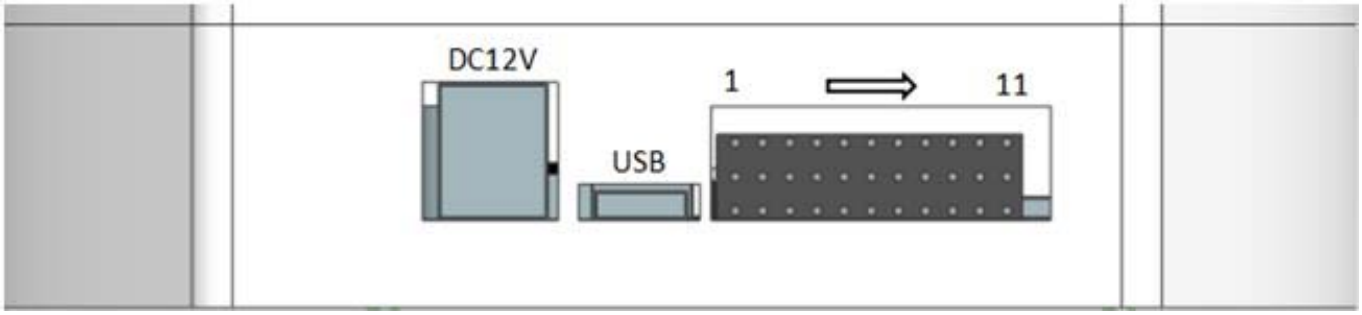
(2) Supports clear imaging in low illuminance environments.

(3)Support video output, support the airborne side of high-definition video storage.

(4) Support the ground remote control to perform camera tasks.

4. Connection of wire

(1) Pin connector

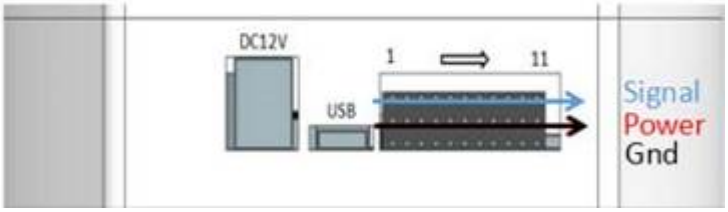


WFT09SII receiver channel from 1 to 9 plug pin (10-11 reserved) in turn, Futaba receiver sbus plug pin channel 1 all functions can be realized, pin channel corresponding features shown in the table below:

		1	2	3	4	5	6
	Up	PWM1	PWM2	PWM3	PWM4	PWM5	PWM6
Front View	Middle	+5V	+5V	+5V	+5V	+5V	+5V

	Down	GND	GND	GND	GND	GND	GND
	Definition	Roll (sbus)	Pitch	Zoom	Direction	Photograph	Reserve
	Up	PWM7	PWM8	PWM9	PWM10	PWM11	
Front View	Middle	+5V	+5V	+5V	+5V	+5v	
	Down	GND	GND	GND	GND	GND	
	Definition	Focusing	Vedio	Return	Reserve	Reserve	

(2) Receiver connection



5. Remote controller operation

Functions of each channel can be set up according to each component.

Component	Channel	Functions
J1	Channel 1	Roll
J2	Channel 2	Pitch
J3	Channel 3	Zoom

J4	Channel 4	Direction
SE	Channel 5	Photograph
SA	Channel 6	Reserve
SG	Channel 7	Focusing
SF	Channel 8	Vedio record
SD	Channel 9	On key return

Note: Remote control switch corresponding Channel 7 must be three gear switch

6. Specification Data

6.1 Physical Electrical Performance Parameters

Stabilization System	Horizontal Pitch Roll three-axis structure
Stabilization precision	>0.1 degree
Speed Range	Maximum rotation angular velocity 20 degrees/s, Minimum stable angular velocity < = 1 degree/s
Power source	12V DC Input, power consumption <30w
Weight	<2000g
Dimension	135mm*195*225mm
Diameter	135mm

6.2 Visible Light Camera

Optical Zoom	40 times lens
Pixel	1920*1080
Storage Medium	SD/SDHC Storage card
Anti-shake feature	AIS Advanced Image Stabilizer
Video Record	1920*1080
Temperature range	-10’050°C
Ultra low illumination	Under dim light environment, clearly display image features.

6.3 Polycrystalline Silicon Non Refrigeration Focal Plane Infrared Detection

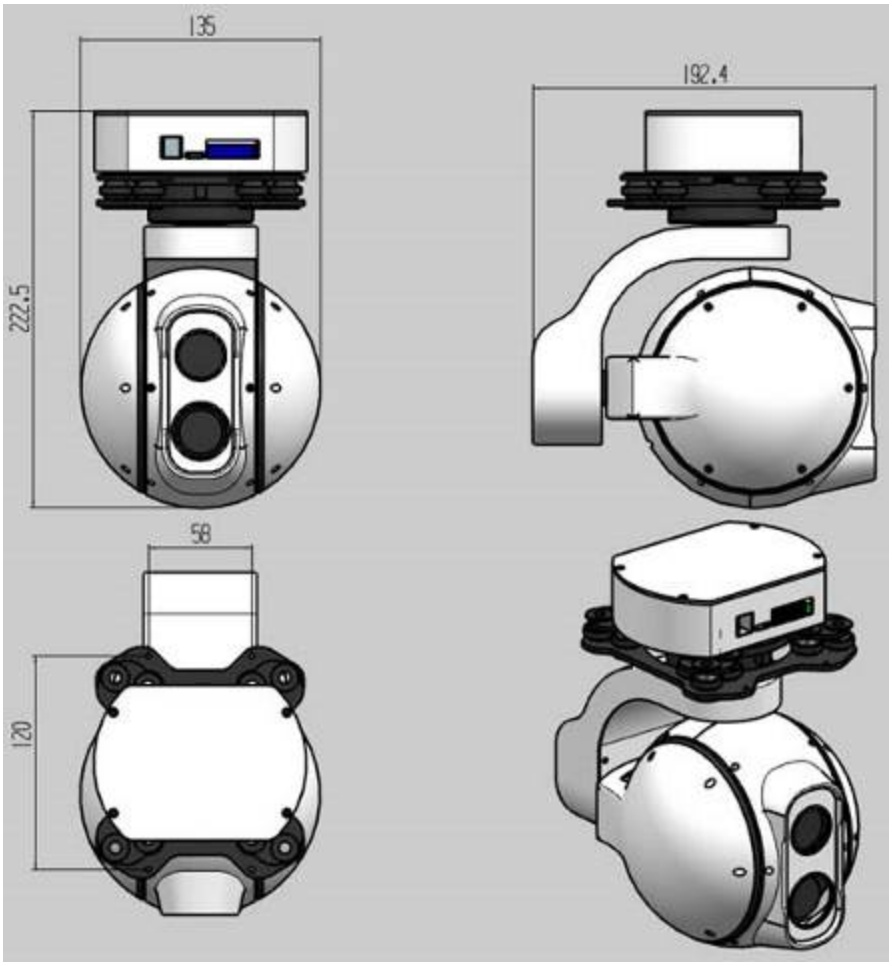
Pixel	384*288	640*480
Power consumption	2.3W	2.5W
Image output time	<3S	<5S
Image denoising	Digital Filtering	
Wavelength range	8~14pm	
NETD	<60mk@30°C	
FPS	50Hz	

Video output	CVBS50HZ (PAL) /60Hz (NTSC)
Image enhancement	TIE digital image details enhancement techniques, edge sharpening
Temperature range	-40°C'+60°C
Thermal sensitivity	<95%(Non refrigeration)

7. Packing List

- Camera * 1
- Shock absorber * 4
- Package * 1
- Operation Manual * 1

8. Dimensions and Installation



- PGB UAV platform ready for payload and autopilot integration
- 20+ hour endurance
- Fuel injected engine option
- Up to 10 kg payload capacity
- 80 W power from onboard generator system
- Catapult, car-top or runway takeoff
- Wide range of standard subsystems and options
- Extensive documentation set
- Short lead time for standard configurations

Overview

PGB UAV is a high-performance semi-integrated small UAV platform available for final assembly and customization by UAV system integrators. PGB UAV is capable of up to 26.5 hour endurance with the 4 kg payload. With a small footprint of 3.3 meter wingspan, PGB UAV can handle up to 11.5 kg of combined fuel and payload weight. Modular composite structure, fast assembly, large access hatches, removable payload bay, are the key features of the PGB UAV innovative design. PGB UAV allows customers to kick-start small fixed wing UAV production with the use of an industry-proven airframe and superior subsystems and components.

Specifications:

Parameter	**Value**
MTOW	21.5 kg
Empty Weight (excl fuel and payload)[1]	10 kg
Wing Span	3.3 m
Length	2.27 m
Wing Area	0.79 m^2
Powerplant	2.5 hp
Max Payload	10 kg
Takeoff method	Catapult, Runway or car top launch
Environmental protection	Sealed against rain, snow

1 PGB UAV with engine and servo package.

Performance

Parameter	**Value**
Endurance[2]	20+ hours
Cruise Speed	22 m/s
Stall Speed (with high lift system)[3]	13 m/s
Max Level Speed	36 m/s
Takeoff run[4]	30 m
CL max (45° flap deflection)	1.7
CL max (clean wing)	1.3

2 PGB UAV with fuel injected engine and 7500cc fuel tank.
3 Sea level altitude, 15 kg aircraft weight, 15 C°.
4 Sea level altitude, 15 kg aircraft weight, 15 C°, concrete runway.

Sleek and efficient design gives best in class performance. Optimized for endurance, Penguin has enough internal volume to lift 7.5 liters of fuel which will provide 20+ hours endurance with the fuel injected engine. The optimized high lift flap system provides stall speeds of <13 m/s, while giving excellent flight handling qualities due to a well designed Vtail geometry.

Meeting your mission requirements:

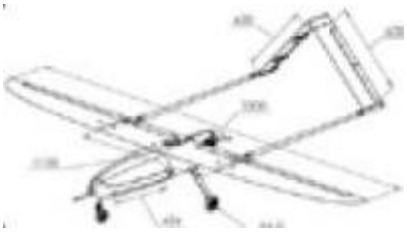
Step 1 - Configure PGB UAV

- Select your engine type and onboard generator
- Select takeoff method
- Select landing gear type
- Select fuel tank volume and fuel level sensors
- Select Pitot type
- Select transportation packaging type
- Add additional accessories, spare parts and options

Step 2 - Getting autonomous

- Integrate the autopilot and data-link system of your choice
- Install payload of your choice

Step 2 – Start performing your mission

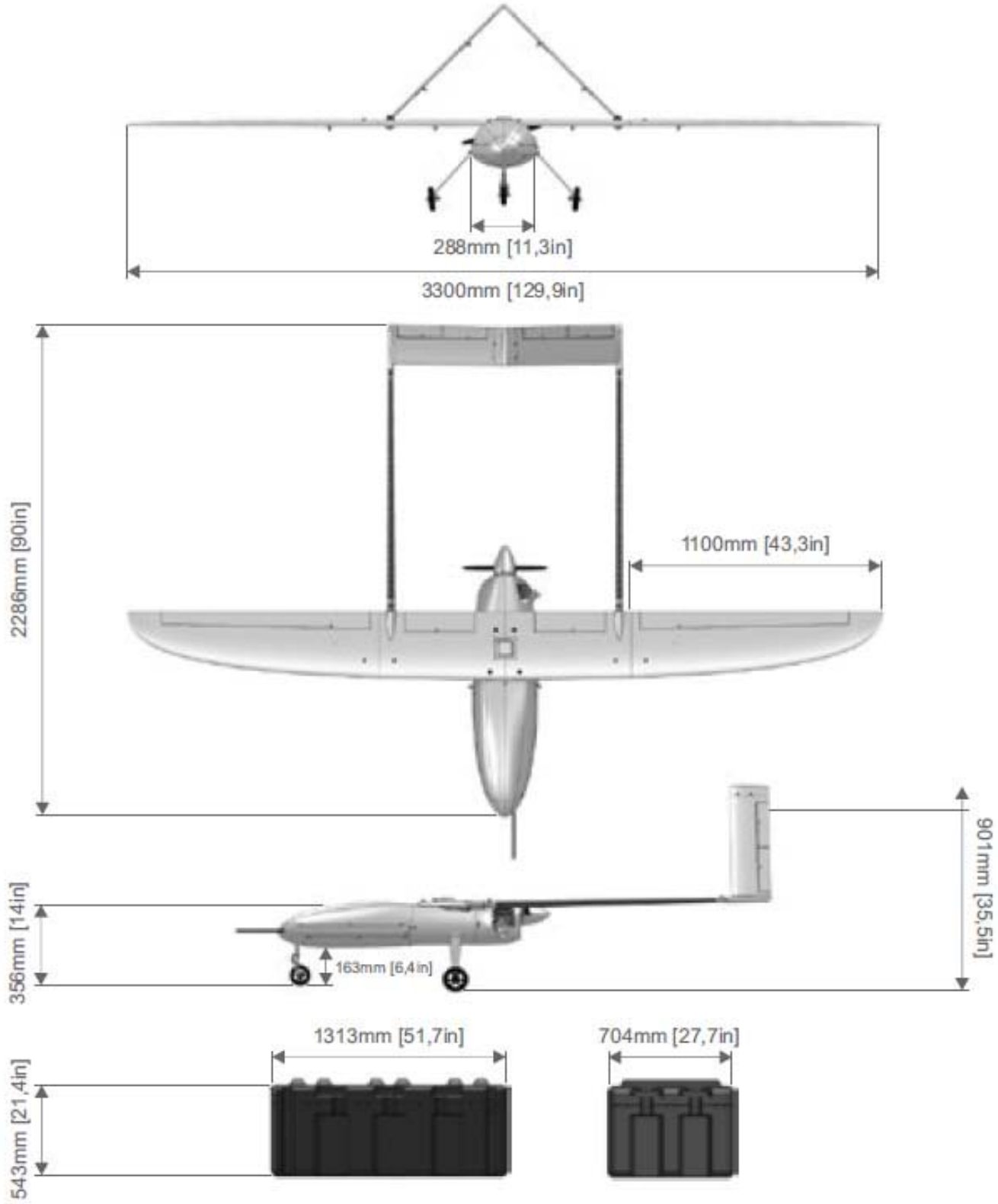


CAD model of PGB UAV available to simplify the payload and autopilot integration for the clients

Extensive Documentation for PGB UAV aircraft and subsystems

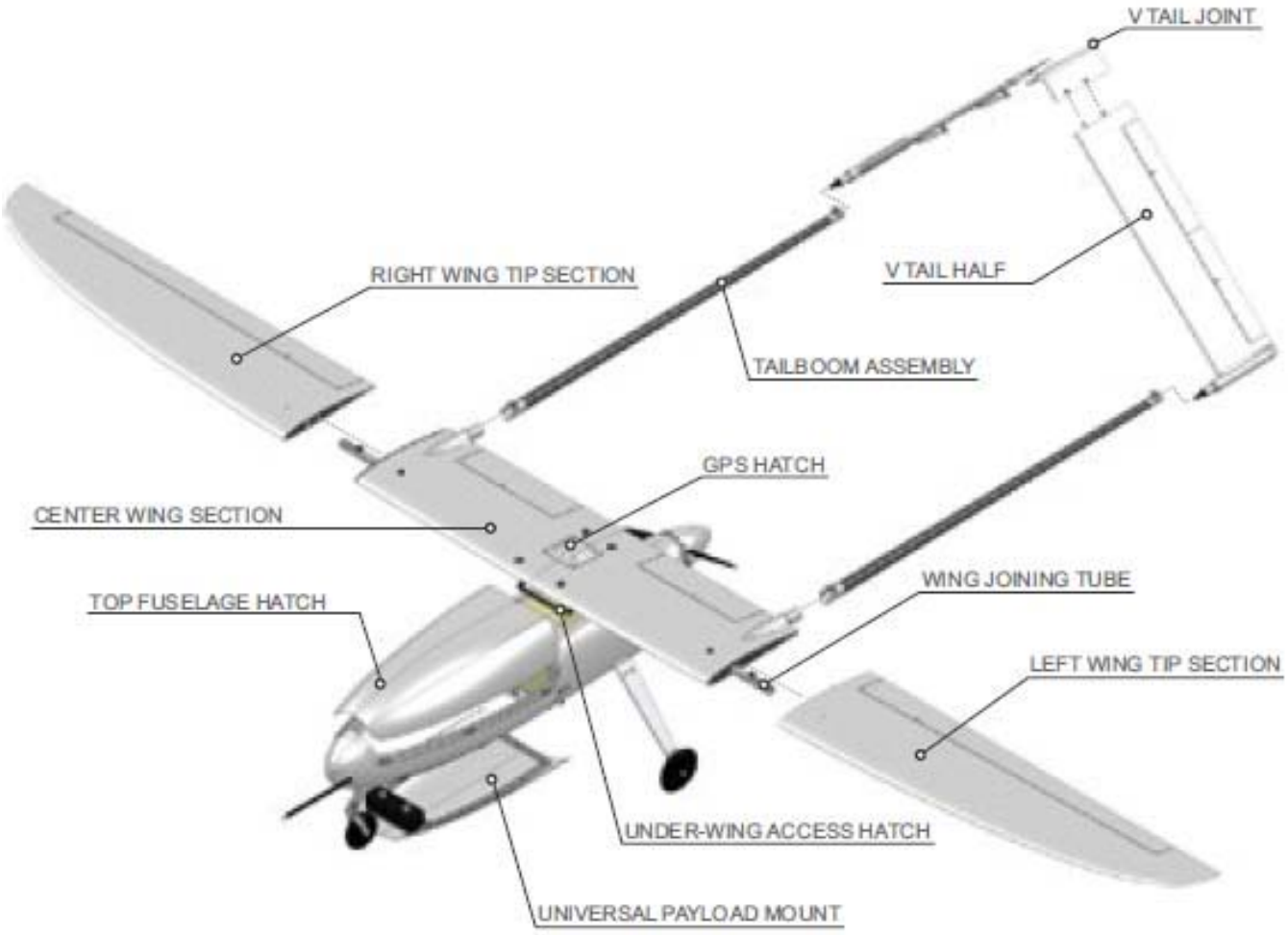
UAV28-EFI Turnkey Fuel Injected Engine

Dimensions:


288mm [11,3in]
3300mm [129,9in]
2286mm [90in]
1100mm [43,3in]
901mm [35,5in]
356mm [14in]
163mm [6,4in]
1313mm [51,7in]
704mm [27,7in]
543mm [21,4in]

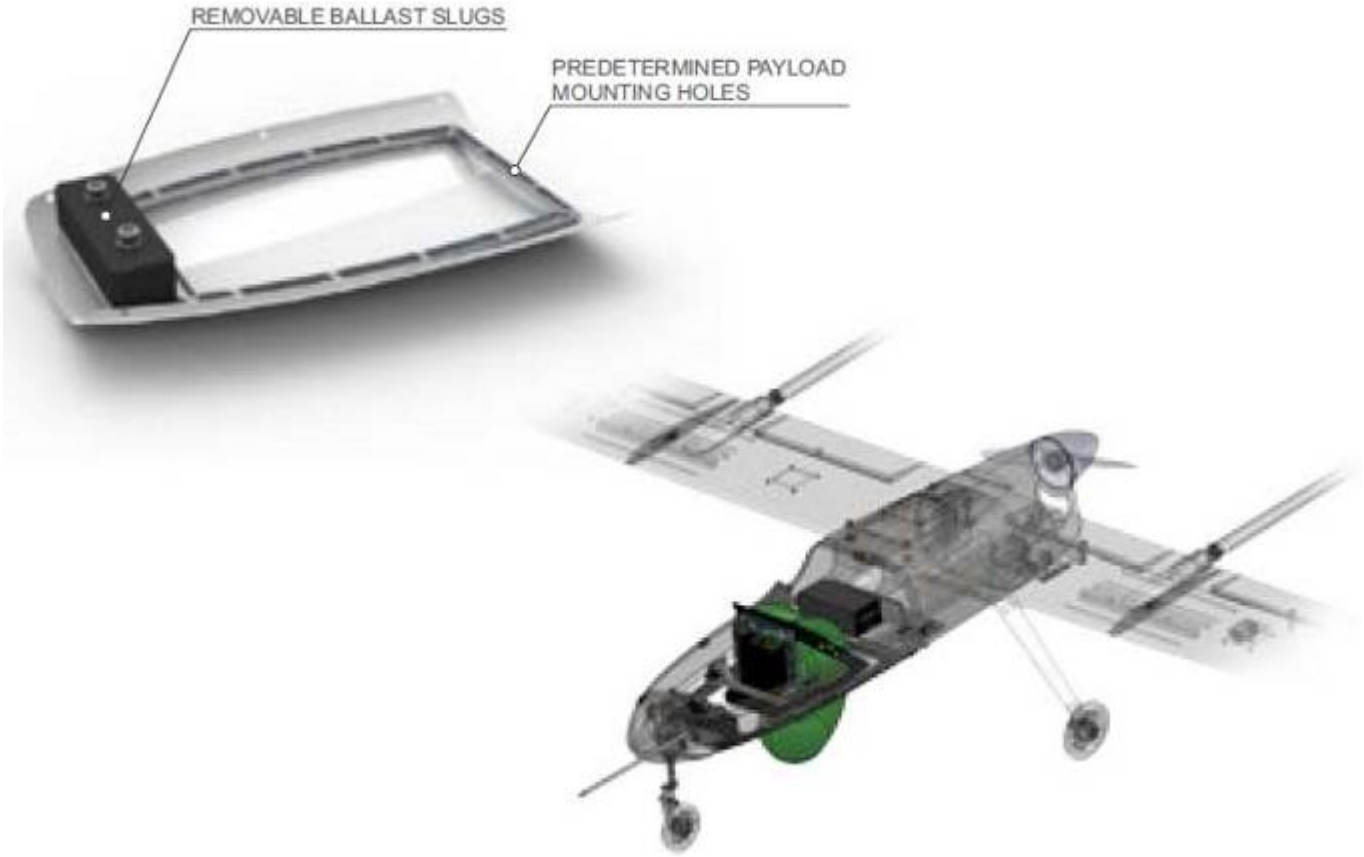
Modular design

All components of the **PGB UAV** are easily removable and completely interchangeable.
Wing splits in three 1.1 meter sections and the V-tail splits in two parts. High-end industrial grade push-pull connectors are installed in tail-boom joints as standard. The quick release fastening is used extensively in the **PGB UAV** airframe. Oversize access covers are equipped with DZUS type 1/4 turn quick fasteners, tail-booms are equipped with a purpose developed quick release aluminum joints.



Universal Payload Mount

PGB UAV has a swappable universal payload mount that can be removed in seconds and used for various payloads. The most sophisticated payloads such as retractable gimbals can be installed by integrators into the fuselage and utilize the available space efficiently.
The universal payload mount has predetermined mounting points that are precisely machined in aluminum frame as well as removable ballast slugs that will simplify the payload integration process considerably.



Payload specifications

Parameter	**Value**
Fuselage volume available for payload	20 liters
Maximum payload weight	10 kg

List of Options

PGB UAV Preconfigured Package

	PGB UAV with servos, and engine package. - PGB UAV composite airframe - Swappable universal payload mount - Preinstalled main landing gear - Steerable suspension nose leg with servo - Spinner - Wing GPS compartment - Installed push-pull connector between the wing and the tail-boom - Preinstalled 28 cjc pusher gas 2 stroke engine - Cable choke assembly - Vibration damping engine mount - Digital servos - Aluminum servo mounts for wing and tail plane - Propeller - 3000 ccfuel tank with fuel tubing - Refueling dots - Servo wiring. Maximum endurance of the system is 6+ hours. Does not include: autopilot, antennas, payload, batteries, onboard generator.

Launch Systems

	**Portable Pneumatic Catapult.** Takeoff from unprepared area in broad wind conditions. Powerful anjj reliable pneumatic launcher with advanced safety features. Training available at company's facilities as well as at client's facilities.
	**Car Top Launcher.** Takeoff from car. Simple, small and low-cost solution for reliable automatic takeoff from unprepared area. Integrated and safe engine starter.

Landing Gear Upgrade

	**Heavy Duty Landing Gear.** Land on unprepared fields. High shock absorbing capacity, large inflatable wheels.

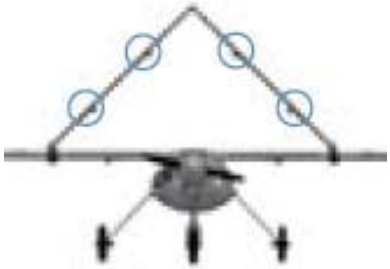
Engine Options

	**3W 28 CS engine upgrade.** Upgrade to a more powerful 3W 28 CS engine. Shorter takeoff run from runway, ability to takeoff form unprepared runway, improved climb rate.
	**Electronic Fuel Injection (EFI) upgrade for 28i.** Advanced fuel injection system from Currawong Engineering. High engine reliability under broad atmospheric conditions. No adjustment needed, improved fuel efficiency, highest power output, operation in wide range of temperatures and altitudes.
	**80 W Generator system upgrade.** Onboard generator system, factory installed on 28i/CS engine. High efficiency and reliability. Includes 6V and 12V outputs, short circuit protection, integrated Li-Polymer charger, integrated current sensors and RS-232 connection for monitoring power parameters in real time.

Fuel System Upgrades

	**7500 cc fuel tank.** Large glass fiber fuel tank for maximum endurance. With carbureted engines, 12-15 hours endurance can be achieved. With EFI engine 20+ hours can be achieved.
	**Fuel level sensor for 7500 cc fuel tank.** Precise fuel level sensor integrated inside the 7500cc fuel tank. Essential for long endurance missions.
	**Header Tank Fuel Sensor.** The point level sensor in the header tank is a safety feature that detects the low fuel condition. Increases system reliability and indicates condition when the aircraft need to land immediately.

Various Accessories and Upgrades

	4-servo V tail upgrade. Each tail plane control surface is split in two equal sides, each having own servo - total of 4 servos forthe tail plane. This option increases reliability of the system in case of a tail plane servo failure.
	Pitot-Static tube. Combined Pitot-Static tube provides both dynamic and static pressure measurements in a single package. Can be mounted and removed using two screws for simple UAV transportation.
	Heated Pitot-Static tube. Heated Pitot-Static tube for operations at low temperatures. Low-power design with smart fault detection signal output. Swappable with standard Pitot-Static tube.
	Push-pull connectors for wing. Preinstalled Fischer 102 Series push-pull industrial connectors between the center and the tip wing sections.
	Rugged Transportation Case. Rugged and watertight transportation case for maximum protection of the PGB UAV. Supplied with additional internal case for small components, spare bolts, screwdrivers and tools.