VTOL HYDROGEN
SATCOM UAV

THURAYA TETRA GSM 3G 4G iridium inmarsat

SATCOM SYSTEM
AERONAUTICAL SATELLITE EQUIPMENT AND SERVICES

About

The TEYSAB drone provides a unique solution for successful specialized missions.

- Bidirectional satellite communications
- High performance hydrogen battery
- Vertical take off and landing (VTOL) system

Thanks to this unique combination

- Take off and land virtually from anywhere
- Easily manage your long-range mission
- Control your drone from anywhere in the world.

Dimensions and Payload

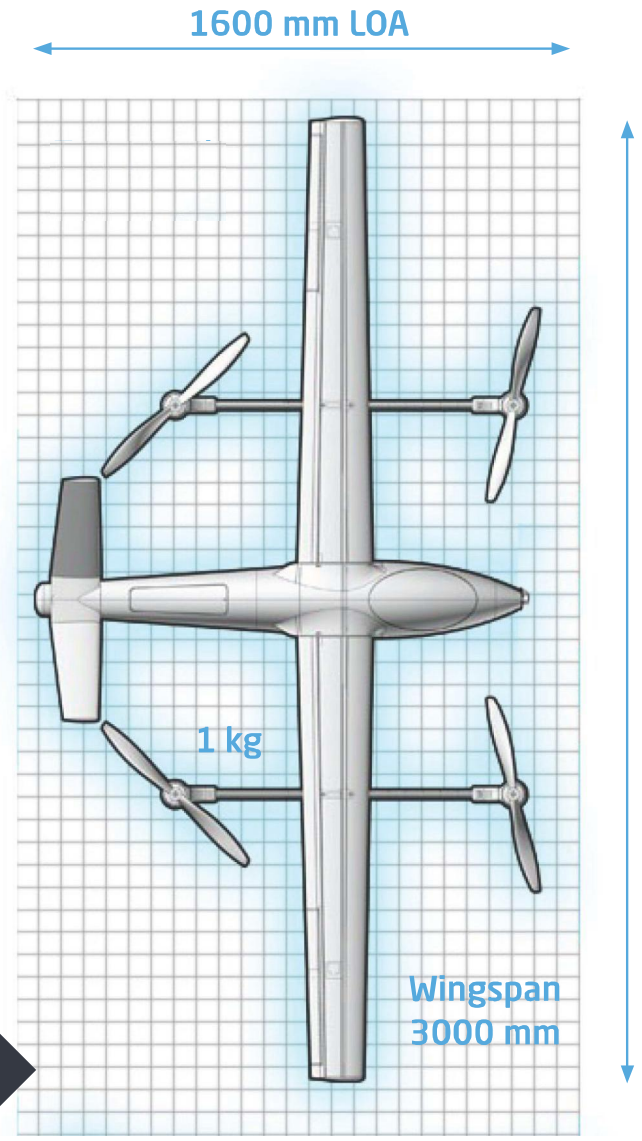
- Wingspan: 3 000mm
- Length: 1 580mm
- Maximum Take-off weight: 10,5 kg
- Wing Area: 65 dm2
- Wing Loading: ~180g/dm2

Design Highflights

- Carbon fiber and composite construction
- Fully sheeted 0,5 mm thick plug-In Wing
- Easy plug-In wing and V-Tail wing
- Payload up to 1 kg net capability
- Large air intake & cooling duct for ESC/motor cooling and hydrogen battery
- Highly aerodynamically efficient airframe
- Fully compatible LiPo or Hydrogen energy

The TEYSAB is delivered into one molded case of 180 x 60 x 52cm, with a total weight of the box of ~20kg, depending on options.

Control of the drone from any distance via satellite communications.



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The **Sierra Satellite** Telecommunications Module

The TEYSAB is the only drone on the market able to have a SIERRA transceiver on board that combines (optional):

- Inmarsat satellite
- Thuraya satellite
- Iridium satellite
- Globalstar satellite
- GSM 2G/3G/LTE/4G+
- TETRA
- UHF
- VHF

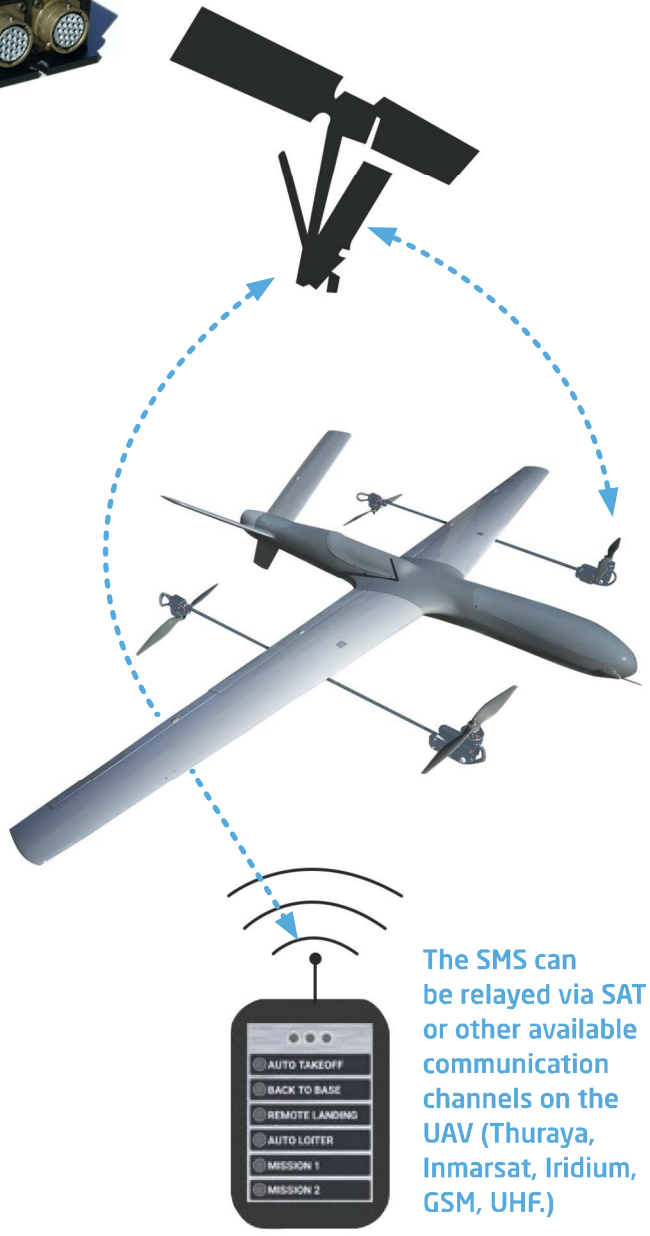
The onboard satellite telecommunication transceiver "SIERRA" has features that enable bidirectional communication from preferred/best selected aerial channel.
This system uses a mix of ground infrastructure and satellites, radio vectors, working together to ensure to have at least one transmission channel in worst case scenarios.

The SatCom SIERRA also has triangulation abilities that establish geo location without GPS which confirms accuracy of standard satellite GPS.

The SatCom SIERRA automatically takes over AutoPilot guidance if the VHF link is lost due to extended distance, blocked signal by terrain, construction or any other reason.

The SatCom SIERRA has embedded encryption.

One button control for most common functions with user customizable Android App



The SMS can be relayed via SAT or other available communication channels on the UAV (Thuraya, Inmarsat, Iridium, GSM, UHF.)

The Sierra Satellite Module allows

- Control your drone from anywhere in the world.
- Transmission of images and/or real time video to anyplace in the world

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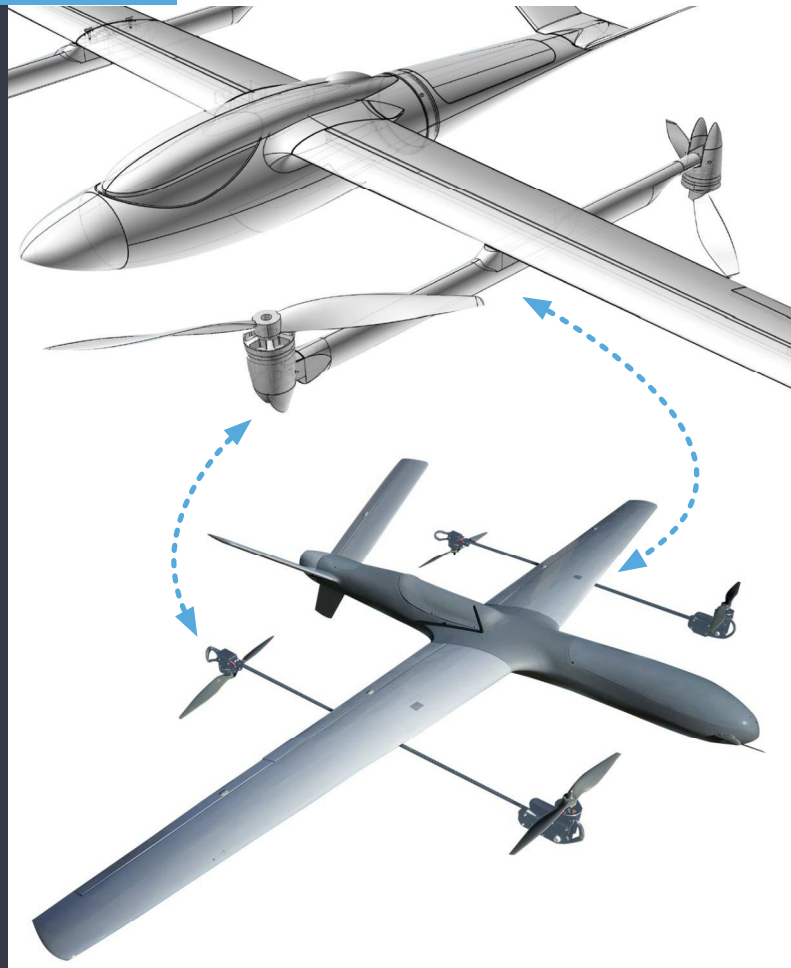
Vertical Take Off and Landing Capability

Vertical Take Off & Landing (VTOL).

- Two optional arms create a quad-motor copter to lift the aircraft to an altitude of 30 -100 meters within 30 seconds.
- Once the chosen transition altitude is reached, motors tilt in order to start forward in regular aircraft mode.
- When mission is completed, the UAV returns to the vertical take off point. Motors tilt back in original position to land vertically lile a regular quad drone.
- Each arm can lift up to 7kg vertically, providing great stability, even in strong winds.
- Control of the VTOL system is automatically managed though the main autopilot.



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KAPTOR
IMSI Catcher

FEATURES

- SDR modems technology from 300khz to 6ghz
- Monitors automatically the best available frequency and channels
- Create file Excel with phone numbers, operator and broadcasted info
- Up to 4 channels option to monitor simultaneously different frequency range/band
- Passive un-detectable system
- Can localize geographically target

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Hydrogen Energy
Power System

Renewable and sustainable energy source for your TEYSAB (Optional):

The TEYSAB is the only drone on the market with an interchangeable energy system. Within minutes you can swap from LiPo batteries to hydrogen generator and vice-versa.

This power flexiblity allows:

- Use of your available energy source on the spot.
- Adapt the energy system to the mission.

Hydrogen Energy System Description

The 45 cells stack (650W continuous / 1000W peak) is a standard PEM fuel cell stack developed for long endurance UAV operation. It includes an electronically controlled fuel cell stack with an integrated cooling system and hybridization card.

This generator is the most effective in the world and with only 0,75 kg weight can generate up to 24V / 26A.

A fully wrapped carbon fiber reinforced aluminum-lined composite cylinder is used to store the hydrogen (up to 700 bars).

The hydrogen tank can be filled directly from standard 210 bars hydrogen bottles that can be easily be purchased on the market (Air Liquid is one such resource).

The hydrogen can be compressed into the tank using an optional compressor in order for the TEYSAB UAV to reach the maximum endurance.

Aero Hydrogen Generator

Hydrogen Tank

Empty Weight 1.7 kg / 0.7 / 1.3 / 1
Water Volume 3.5 L / 0.8 / 2 / 2
Diameter 115 mm / 99 / 109 / 106
Length 450 mm / 196 / 365 / 111

Hydrogen Compressor

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TEYSAB UAV
Automatic Pilot Flight Modes

Renewable and sustainable energy source for your TEYSAB.

MODE- Fly-By-Wire:
- Assisted real time flight mode that corrects attitude automatically.
- Adjusts for winds to maintain altitude and speed.
- True heading is corrected in real time automatically.
- TEYSAB UAV flies securely, making calculated adjustments autonomously.
- Ranges: max pitch: 30°, min pitch: 20°, max roll: 40°, max speed: 120m/s, min speed:15m/s

MODE- Auto:
- Completely automated flight follows a pre-registered mission by the operator.
- Maximum of 255 way-points.
- Additional features are available including loiter mode (maintain altitude and speed. circling around a defined GPS point with correction of winds).

MODE- RTL (return to launch):
- Automatically comes back to a defined GPS point.
- Upon return choose; in-flight loiter, auto landing or manual landing.

MODE- Automatic Self Landing:
- System utilizes a laser radar altimeter (LIDAR) for precise landing flare. Features 1cm resolution with 500 altitude calculation per second from 40 meters altitude.
- Pre-recorded terrain information.
- Airspeed digital sensor calculate in real time true speed.
- Finds its home, even without GPS.

Automatic Pilot Specification

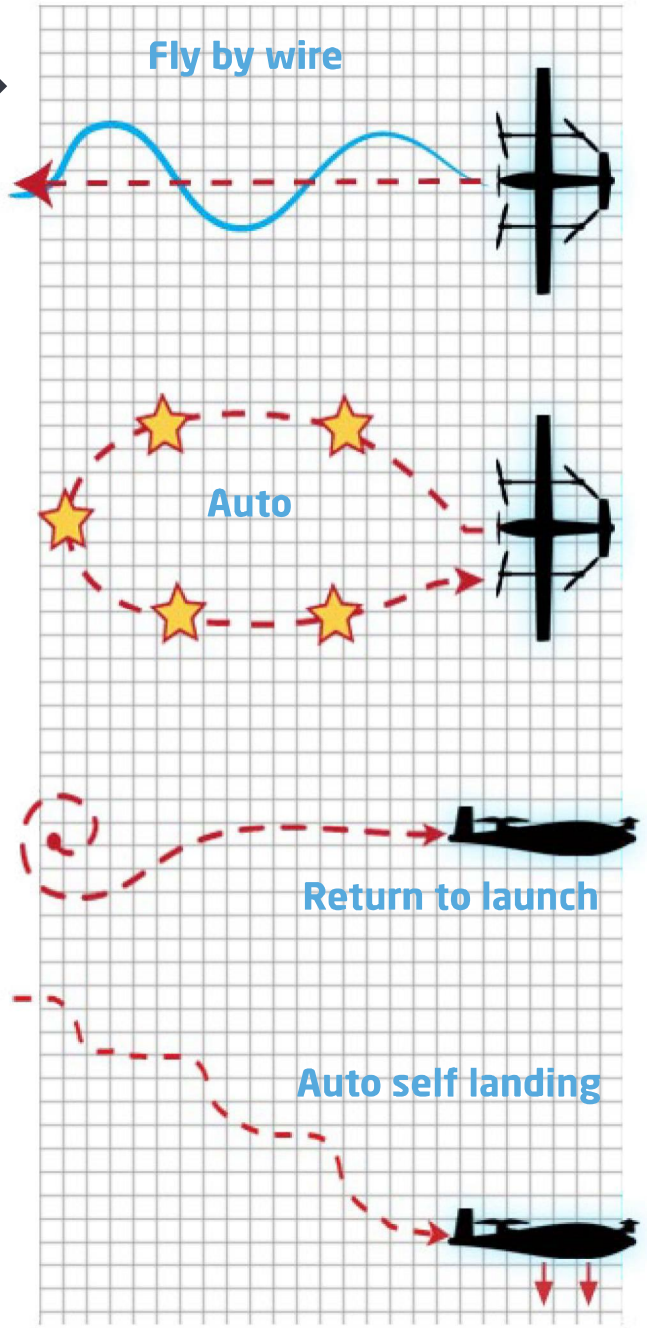
Processor
- 1.2GHz 64-bit quad-core ARMv8 CPU
- 1GB RAM

Sensors
- MPU9250 9DOF IMU (first IMU)
- LSM9DS1 9DOF IMU (second IMU)

Sensors
- MS5611 Barometer
- U-blox M8N Glonass/GPS/ Beidou
- RC I/O coprocessor

Power
- Triple redundant power supply

Interfaces
- UART (I2C & ADC)
- PWM / S.Bus input
- PWM servo outputs
- 4xUSB and LAN ports
- 802.11n Wireless LAN



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TEYSAB UAV Vital Specifications

Your UAV-Satcom includes theses vital features that set it apart from other brands/models.

FEATURE	Vertical Takeoff / Landing Option
SPAN	3 m
MAX TAKE OFF WEIGHT	10,5kg
OPERATIONAL TIME FRAME	< less than 5 minutes (d/n)
TAKE OFF DISTANCE	0 meters at MTOW
LANDING DISTANCE	0 meters on automatic
MOTORS	Electrical
MAX ALTITUDE AMSL	5, 000 m
OPERATIONAL TEMP.	[-20°C ; +50°C]
OPERATIONAL WEATHER	Certified under light rain
MAX SPEED	130 km/hr @ MTOW
MIN SPEED	60 km/hr (fixed wind) @ MTOW
TRANSMISSION DISTANCE	Telem/control @ 866Mhz 10km guaranteed. Video2 SD 2.4Ghz up to 10km and LTE
TRANSMISSION ON THE MOVE	Telemetry and control @ 866Mhz - UHF Video2 SD 2.4Ghz up to 30km
GPS	GPS L1 & L2 - Glonass - Gallileo NO GPS/Dead reckoning
AUTONOMY	1 hours lipo - 40 min 0.8 litre 310 bar hydrogen cylinder / 1.5 hr 2 litre 300 bar cylinder / 2.2 hr 2 litre 450 bar cylinder / 3.5 hr 3. litre 450 bar hydrogen bottle
LASER	Up to 600m

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About **ICSAT** & **AEROSATSYSTEM**

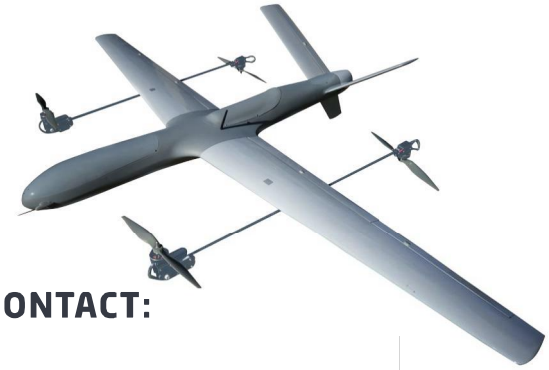
ICSAT (Europe & USA) and AEROSATSYSTEM (MENA) are the commercial branches of Satcom System which has been into design and manufacturing innovative aeronautical and telecommunication equipment for more than 15 years.

Those equipments are used on variety of civil and multipurpose platforms such as helicopters, aircraft and UAV/drones.

The product range includes SatCom transceivers, antennas, hub USB and LAN, USB repeaters, geolocation devices and all related accessories.

All equipment manufactured by SatCom System complies with DO-160 standards.

Our most recent design, this innovative UAV/DRONE with 3 meters wingspan was created for specialized missions.



CONTACT:

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