



KITTEN A DIESEL UAV-VTOL DRONE SPECIFICATION

APRIL 2024

- Provides a rugged, quiet and cost effective, all-weather, diesel-powered VTOL-UAV helicopter. Capabilities include aerial surveillance, movement of cargo from shore to ship and ship to ship, over the horizon fish finding etc. Like a kitten capable of seeing in the dark and at great distances, born to be curious. The KITTEN, with high intensity LED lighting, can light up the sky and get your message out.
 - Developed an inexpensive, quiet, reliable, and environmentally friendly diesel-powered UAV-VTOL (drone helicopter), using a rotor system that has been in operation in a two-man helicopter for decades.
 - The KITTEN design is to be easily operated by anyone with computer gaming skills. The KITTEN UAV-VTOL receives its commands from a computer keyboard and override control via a FBW (fly by wire) joystick. Operation can be from any operational base, dispatch center, mobile based unit, vessel or carry around handheld unit.
 - BASIC DIMENSIONS:
 - ✓ Length: 22 ft (6.71 m)
 - ✓ Rotor diameter: 25 ft (7.62 m)
 - ✓ Height: 8.1 ft (2.47 m)
 - ✓ Empty weight - 1,070 lbs. (530 kg) Note: Depends on the mission criteria
 - ✓ Useful load: Surveillance version - 473 lbs. (214 kg)
 - ✓ Logistic Max Payload - 372 lbs (168 kg) with 2 hrs of fuel
 - ✓ Max. takeoff weight - 1,543 lb (700 kg)
 - ✓ Operating speed zero to normal operating speed 97 knots (179 Km)
 - ✓ Max. Airspeed : - 99.9 knots (185 Km)
 - ✓ Endurance – 2 flight hours mission capability
 - ✓ Service Ceiling - 11,000 ft (3,352 m)
 - ✓ Hover in - Ground Effect: - 7,000 ft (2,133 M)
 - ✓ Hover Out – of Ground Effect – 5,000 ft (1,523 M)
 - ✓ Rate of Climb - 1,150 FPM (350 Meters per minute)
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MAJOR FEATURES:

- ✓ Very Low operating cost
- ✓ Fuselage laser welded aluminum frame with reinforced Kevlar/Carbon Fiber hand-layup vacuum infused composite skin
- ✓ Blades: carbon fiber rotor blades (NACA 23015 Airfoil)
- ✓ Operating speed zero to normal operating speed 97 knots (179 Km)
- ✓ DeltaHawk Engines DHK-180 V4 Turbocharged Diesel
- ✓ Power 134.2 kW (180 hp) 3,600 RPM Providing an operational 18,000 ft (5,486 m) capability
- ✓ Fuel: Diesel/Biodiesel and/or Jet-A/BAF Capacity 107.1 liters (28.3 US gallons) Note: Capacity is optional to meet client's requirement.
- ✓ Optional Retractable skids
- ✓ Easy to operate; Anyone that has computer gaming experience



• Electrical System:

- ✓ Powered by 28V DC
- ✓ A 28V DC external power receptacle
- ✓ Twin Alternator 70 amps each
- ✓ DC electrical power distribution system through a circuit breaker system
- ✓ New tail rotor now driven directly by DC motor (Eliminating tail rotor driveshaft and transmission)
- ✓ Optional Landing skids electrically retracted and extended
- ✓ Pitot and static system heat 28V DC

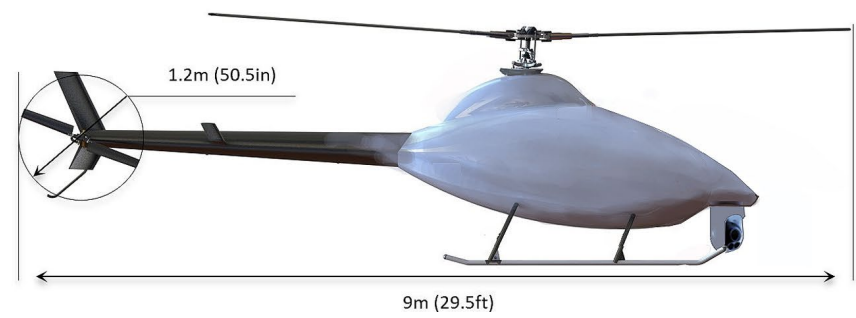
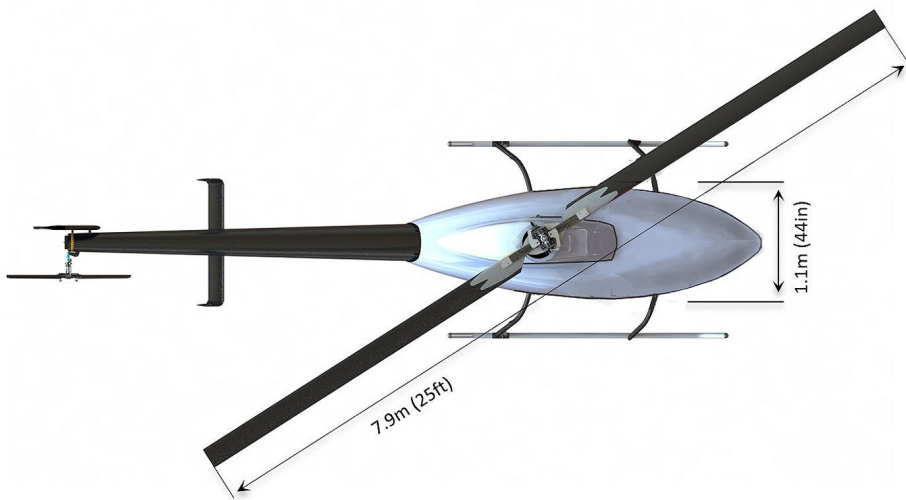


• Flight Control System:

- ✓ MicroPilot's Helicopter Drone Autopilot provides extraordinary user definability.
- ✓ Integrated GPS (including GPS receiver, gyros, all sensors, and GPS antenna)
- ✓ Autonomous takeoff and landing supported by AGL
- ✓ User definable PID feedback loops (for camera/FLIR stabilization etc)
- ✓ RPV and UAV modes
- ✓ Change altitude at waypoint, change airspeed at waypoint
- ✓ User definable holding patterns

- ✓ User definable error handlers (loss of GPS, low battery etc.)
- ✓ Equipped with an ultrasonic altitude sensor, supports autonomous takeoff and landing
- ✓ 150 mips RISC processor accommodates your current needs and tomorrow's requirements
- ✓ GPS waypoint navigation with altitude and airspeed hold
- ✓ Powerful command set
- ✓ Fully integrated with 3-axis gyros/accelerometers, GPS, pressure altimeter, pressure airspeed sensors, all on a single circuit board
- ✓ Extensive data logging and telemetry collects the data you need
- ✓ Includes HORIZON^{mp} ground control software.
- ✓ Drone Control and System DATA Link VHF or UHF line of sight; plus Sat Link

- Transponder: Mode-S, ADS-B out Transponder (IFF)



The Kitten

**Surveillance VTOL-UAV
Diesel Powered**





PAYLOAD FEATURES:

- ✓ Communication with Long Range Acoustic Device (LRAD) 1,200-watt PSAir32N siren and loud hailer system (non-lethal crowd control)

THERMAL NIGHT VISION TECHNOLOGY WITH LONG RANGE HD COLOR CAMERA SYSTEM:

The FLIR M400XR offers detailed 640 × 480 thermal video, a long range HD Color camera, and a tight-beam LED spotlight for improved target identification.

In addition to active gyro-stabilization and radar tracking, the M400XR's integrated video tracking can lock onto and follow objects within its field of view.

- ✓ Optimized for long-range detection with 4X optical, thermal zoom
- ✓ Active gyro-stabilization provides a steady view in rough air.
- ✓ Enhanced awareness and low light detection with 30X high definition visible camera
- ✓ An isothermic color palette instantly reveals fire and hotspots through smoke and steam
- ✓ On-screen temperature display helps pinpoint trouble areas
- ✓ Video Tracking
- ✓ Designed for surveillance operations, video tracking allows the crew to monitor a target of interest
- ✓ Video tracking keeps the M400XR pan and tilt locked on any target using both visible or thermal cameras
- ✓ ONVIF compatibility and IP video enables integration with NVRs and Network Video Management systems



Visual Range Performance

Detect a 10 meter (30 foot) object from:	3.7nm (6850m)
Detect Human Sized Target	1.0nm (1800m)
NATO Target 2.3m x 2.3m at 50 Pct.	2.5nm (4720m)





Optional Equipment:

- ✓ Optional Mobile Command Post: all in one; enclosed drone transport, mobile drone command post and support tandem axles gooseneck trailers.
- ✓ Airframe cargo-hook
- ✓ Sling Assembly w/ Remote Release Swivel Hook for Helicopter

Maintenance:

- ✓ Easier system maintenance, with "black box" or cable change out/swap program
- ✓ Detailed diagnostic codes downloaded to a PC for quick, easy troubleshooting
- ✓ Dependable diesel power, direct injection requires no tune-ups.



Overhaul and Replacement:

Major Components (Engine, transmission, rotor-head & rotor blades) require overhaul and/or replacement every 2,000 flight hours. (Approximate cost is \$185.00 USD per hour of operation).

Every 2,000 flight hours, the Puma is required to be sent to an authorized facility for overhaul.

- ✓ Overhaul or Replacement: Engine, transmission, rotor head and accessories.
- ✓ New Components: Rotor blades and batteries.
- ✓ Upgrades: All current software upgrades complete

Warranty:

- Airframe: 3-Year Limited Warranty
- Avionics: 1-Year Limited Warranty
- Continental Aerospace Technologies GmbH: 500 hour Limited Engine Warranty
- Rotor System: 1-Year / 1,000 hours / 1,000 cycles, whichever comes first. Limited Warranty
- Gyro-Tech Rotor Blades: 5-Year Limited Warranty

Additional:

- One Man Portable Ground Control Station (MPGCS) with Remote Video Terminal (RVT)
 - Recommended spare parts for first year of operation
 - Rotor Blade slings & straps
 - Engine inlet plugs
 - Fuel sump and oil drain wrenches
 - Skid wheels
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- Pitot tube covers
- System test and diagnostic unit

Documentation and Technical Publications

- Operating Manual/Drone Flight Manual
- Electrical Load Analysis (ELA)
- Operators check list with performance information
- Airframe, Engine & Rotor Maintenance Manuals
- Airframe, Engine & Rotor Parts Manuals
- Maintenance Logs: One Airframe & Engine
- Auto Pilot Operators Guides

Support:

Provisions made to provide tools and equipment to support the VTOL-UAV operation. All specialty tools and maintenance manuals to include but not limited to operational flight software provision for particular missions

- Training of Initial drone pilots, system operators and maintenance personnel
- Training simulation software and hardware.



SPECIFICATION SUBJECT TO CHANGE



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OTHER OPTIONAL SYSTEMS

Long Range Search Radar

NOTE: HD Cyclone Doppler Radar provides over the horizon target acquisition as far as 96 mi around the Boss. The new six-foot open array radar weighs only 26 pounds. The radar was inspired from an aircraft wing with 100-knot wind rating. Plots targets as small as birds, providing the targets direction, range, and speed.

- ✓ Tracks multiple targets
- ✓ AIS automatic identification system of other vessels is incorporated
- ✓ Very high definition
- ✓ Active gyro-stabilization
- ✓ Can sea birds and/or small drone swarms

LiDAR SENSOR provides Channed Mapping & Possible Mine Detecting

Productivity gain of more than 50%

With the 4X bathymetric product line, Leica Geosystems introduces an innovative high-resolution technology, increasing the point density by factor 4 compared to previous versions. The Leica HawkEye 4X offers unrivalled bathymetric point density and water penetration down to 50 m depth at the same accuracy, same turbid water performance and with increased sensitivity, offering a productivity gain of >50%.

The world's most competent deep water bathymetry solution

This flagship system expands on the competence of [Leica Chiroptera-5](#) by providing superior capability in deeper waters. Do you currently own a Leica Chiroptera-5 but need to expand into deeper waters? Just add the HawkEye 4X deep water module.

From shore to deep waters

- 40,000 points per second deep bathymetric channel acquire accuracy and data density in **deep water surveying** down to 50 meters depth
- 140,000 points per second shallow bathymetric channel optimize **coastal mapping** and shallow water surveys down to 25 meters depth
- 500,000 points per second topographic channel collect the required detail and resolution for your **topographic LiDAR application**.

