

SKY EAGLE UNMANNED AERIAL VEHICLE (UAV)

SPECIFICATION

30 JANUARY 2024



Puma Aero Marines Sky Eagle (UAV) is a pusher Unmanned Aerial Vehicle (UAV) primarily that can provide multiple roles to include LDAR missions and aerial firefighting.

This low cost, extremely reliable aircraft has great performance, very heavy duty landing gear for robust operational capabilities. This design is perfect for operational requirements for conducting missions at hot high altitudes, flying low through mountain valleys and over the jungle.

The fuselage and landing gear made from a laser welded aluminum frame and carbon fiber with Core-Cell hand lay-up vacuum infused skin panels. The panels are mechanically fastened, providing easy quick access for maintenance. The wing, tail booms and vertical stabilizer are also carbon fiber with Core-Cell and vacuum infused. The horizontal stabilizer is constructed of aluminum.

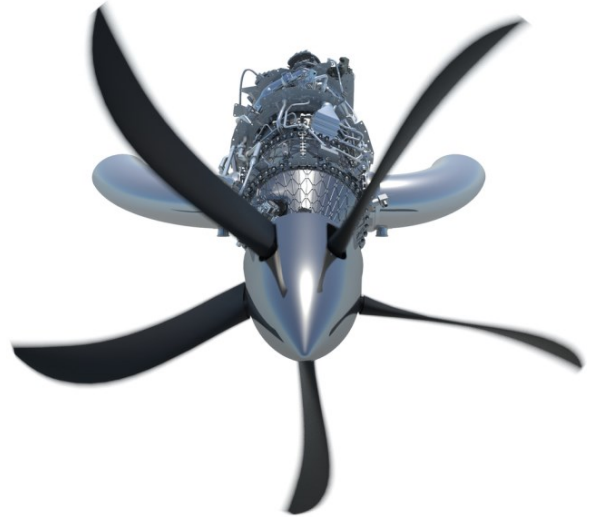
The Sky Eagle extremely maneuverable aircraft, ideal for operations over rugged terrain. This propeller design for In-flight reversing is accomplished without disrupting air flow over the control surfaces making the Sky Eagle capable missions where a low air speed is beneficial.

The Sky Eagle utilizes the well founded Citation II jet air foil but make of carbon fiber, capable of lifting Sky Eagle straight away into the air, permitting operations from short field unapproved runways. The Sky Ranger is designed to incorporate many existing commercial "off the shelf" time-tested, obtainable, and reliable aviation components. The focus will be on avoiding components from areas that may be interrupted or compromised by international supply chain difficulties.



Sky Eagle UAV - General Characteristics:

- Engine: Single General Electric Catalyst GE93 series: Advanced Turboprop Engine 1,600 sHp or the Pratt & Whitney PT6E-67XP engine 1,200 sHp (890 kW)
- Propeller system: Avia V510 5-bladed quiet propeller, a five-bladed pusher propeller. The pusher propeller allows simulating the characteristics of a jet fighter.
- Reversible pitch propeller
- Very low heat signature with exhaust being augmented and mixed by the propeller
- Lower Time Between Overhauls 4,000-6,000 hours with a Low overhaul cost
- Engine requires no hot section inspections between overhauls
- No fuel nozzles, using a slinger ring system (no nozzles to inspect or maintain)
- Speed brake
- Electric retractable landing gear
- Short rough field operations
- Long airframe and engine warrantee
- Normal Cruise: 272 kts @ Fuel Flow 42 gph (284 lb per hr / 128.6 kg per hr)
- Completely autonomous



Sky Eagle UAV Dimensions:

- **Length:** 41 ft 8 in (12.7 m)
- **Wingspan:** 51 ft 7 in (15.7 m)
- **Aspect ratio:** 6:1
- **Airfoil:** NACA 64-2A215
- **Height:** 14 ft. (4.26 m)
- **Empty weight:** 4,300 lb (1,950 kg)
- **Gross weight:** 11,575 lb (5,252 kg)
- **Fuel capacity internal:** 4,320 lb (1,960 kg / 640 gals.)

Sky Eagle UAV Performance:

- **Maximum speed:** 302 knots (345 mph / 555 km/h)
- **Cruise speed:** 272 kts @ Fuel Flow 42 gph (284 lb per hr / 128.6 kg per hr)
- **Stall speed:** 69 knots (79 mph; 127 km/h) in landing configuration with gear and flaps down
- **Range on internal fuel:** 3,700 nm
- **Rate-of-Climb:** +6,000 feet-per-minute (High rate of climb)
- **Service ceiling:** 35,000 ft (10,667 m) maximum certified ceiling
- **Loiter Time:** 16 hour flight time

Flight Control System:

- ✓ MicroPilot's 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 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

- ✓ On encrypted microwave backed up by UHF (Cell Site Tech)
- ✓ Star Link
- ✓ IRS

Landing Gear:

Heavy duty rugged design to operate from un-improved runway Electrical retractable landing gear
 Maximum landing gear extended speed VLE/VLO 175 knots
 Suspension oleo nitrogen over hydraulic struts

Main Landing Gear:

- BERINGER AERO Four Wheel & Brakes series (RF-010)
- Dimensions : 18x5.5
- Steel floating disc
- These wheels and brakes are ETSO and TSO C26 certified
- Two Tubeless 850-10 10 ply tires (VTIRE 139 knots)
- Dual; twin piston brake caliper (EA-008.X)
- ANTI-SKID - ALIR system - pressure regulators
- Four brake hydraulic master cylinders

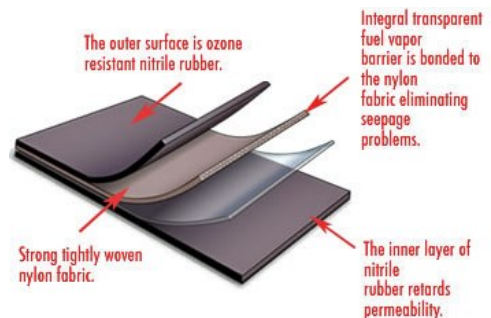


Nose Gear:

- Dual wheel type
- BERINGER AERO two Wheels series (RA-014)
- Two Tubeless 500-5 6 ply tires (VTIRE 139 knots)
- Nose wheel steering direct to rubber petals

Fuel System:

- Wing fuel tanks: one left and one right total Capacity 4,320 lb
- (1,960 kg / 640 gals.
- Engine driven fuel pump (high pressure)
- Primary driven boost pumps (low pressure)
- Two electric boost pumps two in each fuel tank (low pressure)
- Two airframe fuel filters (one for each fuel tank)
- Two wing tanks along with two drop tank electrical selector valves
- Fuel cell are self-sealing, constructions conform to military MIL-T-6396
- Fuel management is automatically controlled



Electrical System:

- Powered by 28V DC / 400 AMP Fail-safe System
- A 28V DC external power receptacle just aft of the right landing gear
- Starter-generator 400 AMP switches with line contactor limiter.
- DC electrical power distribution system through a circuit breaker system
- One Main & One Standby Batteries MCI TRUE BLUE TB17 LITHIUM-ION BATTERY
- 17 amp-hour battery nominal at 23°C/73.4°F
 - Charge Voltage: 28 VDC nominal
 - Output Voltage: 26.4 VDC nominal
 - Output Current: 500A continuous, 840A max
 - Protection: Overcharge, over-discharge, over-current, short circuit, over-temperature, under-temperature and charge current limiting
 - Energy Density: 64.4 Wh/kg / 87.1 Wh/liter
 - Operating Temperature: -40°C to 70°C (-40°F to 158°F)

System Operator's Camera

System Operator's POV (Point of View) camera mounted for direct sight flight and an either day or night camera.

Optional Aerial Brush and Structure Fire Fighting Response:

Rapid initial attack air tanker for the front lines of fire suppression. As an initial attack air tanker, the Sky Eagle is appreciated among aerial firefighting circles as fast and maneuverable, as well as both operationally effective and economical. Designed to fight wildfires and structure fires

