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MLB Super-Bat UAV Specifications July 2011



Figure 1: Super-Bat UAV

Introduction

The MLB Super-Bat is a small, unmanned aerial vehicle (UAV) that has mission capabilities typically found only in larger UAVs. The Super-Bat is a complete UAV system that can operate autonomously, deliver high quality video imagery, and can be transported in a small SUV. The aircraft operates autonomously, has a 10-hour duration, and telemetry range of up to 10 miles (can be extended with optional long-range data link equipment).

Because of its small size and lightweight, the Super-Bat is launched using a car-top (non-moving), bungee-powered catapult and lands autonomously on skids. A small clearing is adequate to operate the Super Bat. A 2.0 cubic inch gasoline engine powers the aircraft and its muffler reduces the noise level to nearly inaudible at a distance of 1000 feet. Typical altitude for operation is 200 to 3000 feet above the local terrain, with a cruising speed of 40 kts and a maximum speed of 65 kts. The Super Bat can easily operate in limited visibility conditions without danger to persons on the ground or possibility of detection. An optional lighting system allows nighttime operation of the Super Bat. Our aircraft have flown under 200 foot cloud ceilings and in gusty winds exceeding 35 mph.

A pusher engine configuration is used to permit unobstructed installation of sensors in the nose and the Super-Bat has uses gimbal turret camera system that is automatically aimed at locations specified by the operator. The TASE family of gimbal systems (manufactured by Cloud Cap Technologies) is used in the Super-Bat and is available with E/O, IR, and SWIR camera configurations. The aircraft and its systems are modular in design for simple maintenance and replacement of damaged components. The airframe is

constructed of Kevlar, carbon fiber, and aluminum. The Super-Bat has a 103 inch wingspan and a ready-to-fly weight of 34 pounds.

Cloud Cap Technologies Piccolo autopilot and ground station are used for the flight control of the Super-Bat. A laptop PC with a moving map display shows the aircraft's location, speed, and height in real time and allows the operator to fly the UAV using simple mission commands. System monitoring windows are used to keep track of the Bat's critical systems and a live video capture window with optional video stabilization and object tracking capabilities. The flight path is specified as a series of mission legs, each with its own altitude, speed, and waypoint. The operator can change the mission plan by "dragging and dropping" waypoints over the map display and then uploading the new flight plan to the aircraft.



Specifications:

Name: MLB Super-Bat

Uses: Short range surveillance

Country: USA

Powerplant: 26cc 2-stroke engine

Fuel: Gasoline, JP-8, Jet-A, pump diesel, or Kerosene. 40:1 oil mixed in.

Dimensions: 8.5 x 5.3 x 2.25 feet assembled, 3.5 x 1.25 x 1.5 packed.

Shipping Boxes: (1) 50"x20"x18", (1) 74.5"x14"x15.5", (1) 32"x20"x13", (1) 16"x14"x14"

Weight: 34 lbs with fuel and TASE Gimbal sensor.

Performance:

Speed 35 to 65 kts

Duration 10 hours maximum

Ceiling 10,000 feet

Range 6-10 mile radius (telemetry limited), 400 miles fuel limited.

Sensor: TASE or TASE Duo gimbal systems with E/O, IR and SWIR cameras. Wing mounted digital camera for high-res photography.

Payload: 5.0 lb max assuming sensor payload is removed, 2.5lb otherwise

Data Link: 2.4 GHz video downlink, 900 Mhz spread spectrum 2-way modem

Launch: Bungee-catapult launched

Guidance: Autonomous flight operation. Mission plan created with Cloud Cap Piccolo ground station. Optional manual RC control for landing in restricted areas.

Recovery: Land on skids autonomously in 100 x 40 meter area.

Operational: Winds up to 25 kts, operable in moderate precipitation.

MLB Bat UAV Frequency Information:

Video:

1 Watt EIRP, Antenna is a zero db, fixed frequency (user configurable before flight): 2.410, 2.430, 2.450, 2.470, 2.413, 2.433, 2.453, 2.473GHZ

Manufacturer: Black Widow AV, Broomfield, CO

<http://www.blackwidowav.com/bwav2401000components.html>

Telemetry:

1 Watt EIRP Antenna is 0db, spread spectrum 902 to 928 MHZ, 400 KHZ increments

Manufacturer: Microhard, Calgary, Canada

FCC ID#NS902P5

Super-Bat Pricing

<u>Item</u>	<u>Price Each</u>
Super-Bat UAV complete system with TASE gimbal turret	\$115,000
Super-Bat UAV with TASE gimbal turret	\$75,000
Super-Bat UAV Ground station	\$35,000
Optional TASE Duo gimbal (price increment to baseline system)	\$15,000

Basic Flight Training /Flight Services

<u>Item</u>	<u>Price Each</u>
On-Site training for 2 teams (3 person per team, within USA)	\$3,000 per day+travel
On-Site support (within USA)	\$4,000 per day+travel
On-Site support (outside USA)	TBD

Super-Bat Quantity Pricing

<u>Item</u>	<u>Units</u>	<u>Cost</u>
Super-Bat UAV System	1	115,000
Super-Bat UAV System	10	105,000

Super-Bat UAV System	100	95,000
Super-Bat UAV	1	75,000
Super-Bat UAV	10	70,000
Super-Bat UAV	100	65,000
Super-Bat Groundstation	1	35,000
Super-Bat Groundstation	10	30,000
Super-Bat Groundstation	100	25,000

Super-Bat Spares Parts Price List

<u>Item</u>	<u>Cost</u>	<u>Comment</u>
Wing (1)	1,500	Field Replaceable
Fuselage	3,000	
Tail	900	Field Replaceable
Boom (2)	500	Field Replaceable
Landing gear (2)	500	Field Replaceable
Engine	1500	Field Replaceable (500 h)
TASE Gimbal	20,000	Field Replaceable
Aiframe w/o autopilot or gimbal	27,000	
Digital still camera	600	Field Replaceable
Flight Computer	10,000	
Batteries (Li-Po)	500	Field Replaceable (200 h)
Video Transmitter	1,500	Field Replaceable
Propellor	25	Field Replaceable
Servo (1)	100	Field Replaceable
Antenna (modem)	100	Field Replaceable
Catapult	10,000	Field Replaceable
Tracking Antenna	3,500	Field Replaceable
MLB Repair/Refurbishment	5,000	Labor only (200 h)
MLB Labor rate for repair	75./hour	Labor Only
Shipping	1,000	Within U.S.

Terms:

A non-refundable deposit (50% of total hardware order) is required before construction begins. Delivery will be approximately 90 days after receipt of initial payment. Please contact MLB for a more specific delivery date estimate. California customers may be subject to additional sales tax. All foreign sales are subject to export license restrictions and possible extra shipping, tax, export fees. All products are sold without warranty and the purchaser assumes all liability for any items purchased from MLB. The end user is responsible for compliance with all FAA and FCC regulations that may apply to the operation of this equipment. UAV activity within the United States is heavily regulated by the FAA and the end user is responsible for clearing all flight operations with the proper authorities. These prices are subject to change without notice.