

Rover UAV

DESCRIPTION OF AIRCRAFT SYSTEM

Summary: The Rover UAV is an electric powered, small UAV (wingspan=72”) that is flown solely under manual R/C control. The manufacturer (Integrated Dynamics) information sheet mentions an autopilot, used for beyond-visual-range autonomous flight, but this is the civilian version and has NO autopilot, NO autonomous capability, and is NOT flown beyond visual range. The data sheet is included for reference but the specifications below are based on actual test flight at U.S. Army Redstone Arsenal.

Description:

Wingspan:	72 in.
Length:	54 in.
Height:	12 in.
Wing Area:	860 sq.in.
Empty Weight:	5.5 lb (w/o Batteries)
Max Take off weight:	11.0 lb
Propulsion:	Electric motor (Axi 2826/12 brushless)
Motor Battery:	Li-Polymer battery (4cell-5000 mAh)
Controls:	Aileron, elevator, rudder, throttle
Speed Range:	20 – 60 mph
Range:	0.5 mile radius (visual range of pilot)
Endurance:	15 min. nominal
Recovery:	belly landing
Tracking &Telemetry:	Eagle Tree “Sea Gull” telemetry with map display; Streaming video from forward-looking camera
Ground Station:	Laptop PC with Eagle Tree map/telemetry display
Payload Capacity:	2.2 lb
Typical Payload:	Daylight TV camera

(Please also see manufacturer’s information sheet which follows)

Earlier Flight Test Results:

In early March 2011, GTRI was requested to perform preliminary evaluation on the Rover UAV. After completion of a two-day training program, Rover was flown and GTRI pilots trained. Nine (9) test flights were performed at Range TA-3 on the U.S. Army Redstone Arsenal, Huntsville, Alabama. These tests proved the Rover UAV to be stable in flight and safe to operate. It has moderate wing-loading which proves helpful in windy conditions. NO incidents occurred during testing. GTRI pilots practiced flying the Rover UAV for two days and rapidly achieved proficiency. This testing also provided an opportunity for GTRI to develop a Pre-Flight Checklist, Safety Procedures, and familiarity with maintaining the system, that will prove valuable if/when a COA is approved for operation in NAS. Photos of the Rover UAV, taken during manufacturer’s training and during flight test at range TA-3 are included in the following pages.



Figure 1. GTRI Personnel and Rover UAV during training program



Figure 2. Rover ready for launch



Figure 3. Rover being launched



Figure 4. Rover UAV landing

ROVER

ENG, CIVILIAN SCIENTIFIC UAV SYSTEM



Specifications:

Role	ENG, Experimental Payload testing, Aerial Photography
Wingspan	1.95m (6 ft.)
Length	0.16 m (4.5 ft.)
Height	0.3 m (1 ft.)
Wing Area	0.62 sq. m (6 sq. ft)
Dry Weight	<2.5 kg (5.5 lb)
Max Take off weight	5 kg (11 lb)
Propulsion	Electric motor
Batteries	Li-Ion batteries
Speed Range	30 – 100 kmph (20 – 60 mph)
Range (GPS/Autonomous)	>5 km (3.1 miles)
Endurance	1 hour (enhanceable)
Recovery	Deep Stall landing
Stabilization	ID-AP5000 Digital Autopilot with Navigation and Stability modules
Tracking &Telemetry	Video & data telemetry modules Laptop PC Ground Station.
Payload Capacity	1kg (2.2 lb)
Typical Payloads	Daylight TV camera/IR option. Digital still camera option.

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