

AeroStar Aircraft Description



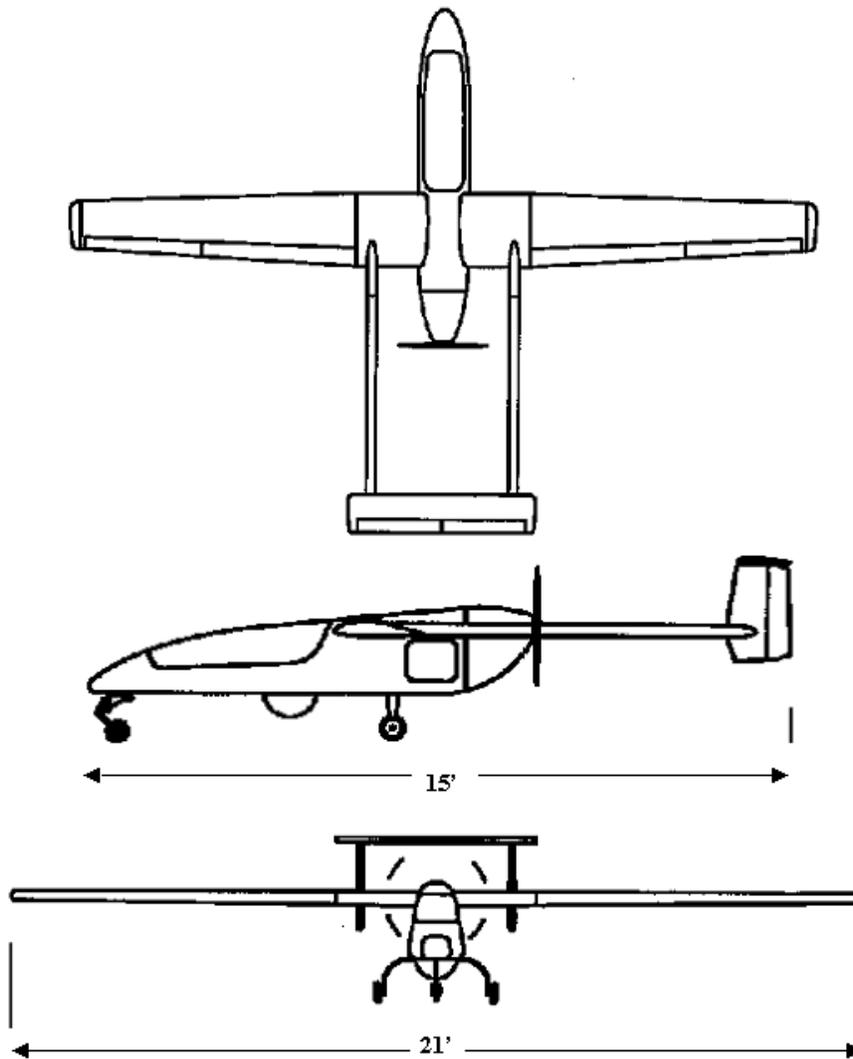
Aerostar is a fixed wing vehicle, manufactured by Aeronautics Defense Systems Ltd, of Israel. Aeronautics Defense Systems Ltd. specializes in the development, production, integration, and operation of UAV/ROA systems. Aerostar has been operated by the Israeli Defense Department since 1999. In addition, Aerostar is being operated in a number of countries, including, Russia, Ivory Coast, and Angola. In the United States, the US Navy (NAVAIR) is using Aerostar as a test vehicle for payload and concept of operations evaluations nation wide. General Dynamics has operated the Aerostar at NAS Fallon, NV in support of Naval training exercises during 2004 and 2005. Aerostar was also flown in Southwestern New Mexico by the New Mexico State University's Physical Science Laboratory (NMSU/PSL) TAAC organization during December 2004. The Aerostar UAV/ROA system has conducted over 15,000 hours of flight operations and is considered to be a very safe and reliable aircraft.

Method of UAV/ROA Control. During takeoff and landing, Aerostar is flown remotely by real-time command and control from the external pilot. Once the air vehicle reaches a safe transfer altitude, typically 800 – 1,000 ft. above ground level, the external pilot transfers control to the internal pilot. The internal pilot can fly Aerostar in both remote and autonomous modes. No Aerostar flight operation will be flown in an over-the-horizon (OTH) environment where satellite communication (SATCOM) is necessary. Positive flight control of the Aerostar by the external or internal pilot shall be maintained at all time. The internal pilot utilizes a Windows based computer and graphical user interface (GUI) to display health and status information of the air vehicle. Displays include data link quality, airspeed, altitude, heading, engine RPM and temperature, pitch and roll, GPS position (displayed on a moving map), and voltage levels.

Normal Operation. Aerostar is capable of autonomously executing the mission plan (route, altitude/s, delays, etc) that has been loaded into the on-board flight management system (FMS). Yet, the internal pilot, through the communication link, can assume remote control of the Aerostar instantaneously and maneuver the Aerostar at any time. Real-time remote control instructions to the Aerostar overrides and updates any mission data previously inserted into the on-board FMS.

Loss of Link. In the event there is a loss of the control link between the Aerostar and internal or external pilot there is no longer any capability to exercise real time control of

the vehicle. In this situation Aerostar will autonomously execute the most recent loss of link commands inserted into the Aerostar's on-board FMS.



1.0 Physical

1.1 Dimensions

Wingspan:	21.3
Wing Area:	35.7 sq. ft.
Wing Chord at root:	2.0 ft.
Wing Chord at tip:	1.3 ft.
Total Length:	14.4 ft
Height (on wheels):	3.8 ft.

1.2 Weight

Max T/O Weight:	440 lbs
Empty Weight:	231.5 lbs
Max. Fuel Weight:	99 lbs

Max. Payload Weight: 120 lbs

2.0 Vehicle Performance

2.1 Speeds

Cruise / Loiter 58 – 62 kts
Dash 80 kts
Vmax 110 kts
Stall, flaps up: 42 kts (48.3 mph)
Stall flaps 38 deg.: 38 kts (43.7 mph)
Best climb: 62 kts (71.3 mph)

2.2 Limits

Rate of Climb 500 ft/min
Service Ceiling 12,000 ft MSL
A/C Range: 75 km (Tested, actual undetermined)
Take-off distance: 820 ft/ 1100 ft (sea level)
Glide rate (no wind): 1:10
Operational Temps: -4°F to 153° F

2.3 Endurance

Endurance in loiter speed:

Altitude (MSL)	Endurance (Loiter Speed)
5,000 ft	8 Hr
10,000 ft	6 Hr

Note: Chart assumes Standard Atmosphere.

3.0 Propulsion System

3.1 Engine. AeroStar utilizes a Herbrandson 290cc – opposed two cylinders two stroke engine which produces 24 HP at 6600 RPM. The propeller, laminated wood, is in a pusher configuration with a 29 inch diameter and 18 degree pitch.

4.0 Electrical Power System

4.1 Alternator. 28v @ 28 amps

4.2 Backup Batteries. (Provides 2 hours of backup power under full load).
28v – Data Links / Payload / IFF / Position Lights / 12v battery and 6v battery
12v – Autopilot
6v – Servos

5.0 Data Links

5.1 Uplink.

Primary: S – Band (2.2 GHz – 2.3 GHz)
Secondary: UHF (434 MHz)

5.2 Downlink. L – Band (1.71 GHz – 1.85 GHz)

6.0 Safety Features

Strobe and Anti – Collision Lights

Mode 3 A / C IFF Transponder

Redundant Power Supplies

Emergency Return Home Mode: Automatically returns home to a predetermined recovery location in the event of failure on both uplinks. Vehicle will return on a preprogrammed path and altitude to minimize airspace conflicts.

Visual Signature

7.0 Visual Signature. Daytime observers looking for the A/C can usually find it at distances around 1.8 miles (variable).