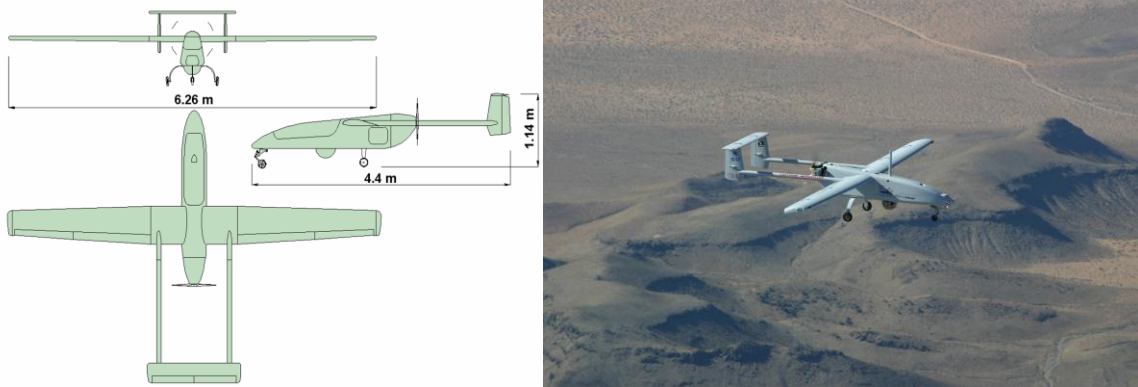


Aircraft System

The Aerostar Unmanned Aircraft System (UAS) is manufactured by Aeronautics Defense Systems in Israel. The system is comprised of two main components: Unmanned Aircraft (UA) and Ground Control Station (GCS).

AEROSTAR UNMANNED AIRCRAFT



Physical Characteristics:

Wingspan.	= 21'
Length.	= 14.5'
Body diameter	~ 14"
Weight (empty)	= 230 lbs (no fuel)
Weight (full/loaded)	= 440 lbs

The structure of the Aerostar UA includes a fuselage, wings, dual tailbooms extending from each wing, two vertical stabilizers, and one horizontal stabilizer, tricycle landing gear, arresting hook, navigation lights, and strobe light.

The fuselage is made of composite materials, mainly carbon and fiberglass, with epoxy resin. The fuselage has five compartments with maintenance access panels: nose, main, power, aft, and engine. The nose compartment includes access to the nose lamp power cable, pitot tube, and balance weights. The main compartment includes access to the payload components, C-Band communication components, C-Band antenna, backup battery, and nose wheel servo. The power compartment includes access to the direct current box, power supply panel, UHF receiver, UHF and Global Positioning System antennas, transponder, and fuel tank gauge. The aft compartment includes access to the Unmanned Multi-Application System (UMAS), UMAS backup battery, instrument box, Vertical Gyro Units (VGUs), and strobe light power supply. The engine compartment includes access to engine components.

The wings are made from composite materials and each include an aileron and flap. Ailerons provide longitudinal control. Flaps can be set in three positions: takeoff, flight, and landing. Each aileron and flap is controlled by independent servos. The dual tailbooms extend from each wing and house the wiring harness for the rudder servos (left and right tailbooms) and for the elevator servos and position lights (right tailboom). Each vertical stabilizer includes a rudder for vertical control. The horizontal stabilizer includes two elevators for lateral control.

The tricycle landing gear includes a steerable nosewheel controlled with an independent servo but corresponding to rudder inputs and two main landing gear. The two main landing gear do not have braking capability. The arresting hook is mounted to the bottom center of the main landing gear and provides stopping ability after catching a deployed arresting cable on the runway. Five navigation lights include one on each wing, two on the horizontal stabilizer, and one on the nose. A strobe light is mounted on the top of the fuselage.

The avionics system includes the UMAS, ten servo actuators, instrument box, two VGUs, and compass. The avionics system enables UAV control, reports UAV status, and provides auto-pilot control. The UMAS is the brain of the UAV. It is located in the aft compartment and provides flight control and stabilization, mission control via preprogrammed autonomous navigation by GPS and in-flight reprogramming, control of the payload, system logic, and data link management. The UMAS has built-in indicated airspeed (IAS), altitude, and GPS sensors. The UMAS interfaces with the engine computer unit (ECU), payload system, data link system, receives inputs from the anemometric system, cylinder head temperature sensor, fuel quantity gauge, vertical gyros, and magnetic heading sensor, and commands the servo actuators.

Thrust is provided by a Zanzoterra 498I engine via a pusher prop. The 498I is a two stroke, fuel injected, air cooled engine providing 38 HP at 6400 rpm. The ECU manages all the engine's operations and functions. Engine monitoring systems include engine temperature (ET), cylinder head temperature (CHT), and RPM. The engine also drives an alternator that provides 28 VDC to the electrical system. The electrical system includes a 28 VDC bus, a 12 VDC bus, and a 12 VDC back-up bus. The power supply box provides a receptacle (J33) for external power supply, four switches (main, VGU, video and telemetry transmitter, and all servos) and one payload circuit breaker.



The fuel system includes a fuel tank, sump, filter, pump, pressure regulator, over flow/vent line, fuel quantity gauge, return fuel lines, drain valve. The fuel tank capacity is 60 liters. The fuel pump produces up to 6 bar pressure and regulated to 3 bar.