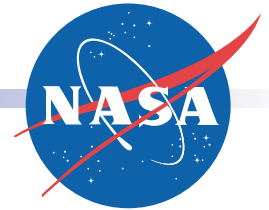


MiniStar™ Satellite Platform



An affordable, flight proven, and versatile Taurus-Pegasus-class spacecraft suitable for small-to-medium-sized payloads.

DESIGN

Orbital's innovative MiniStar satellite platform is designed to be launched as a dedicated or a ride share on a Pegasus or as a secondary payload on a Taurus. The octagonal core bus is comprised of two decks—one for bus components and one for payload components—connected together vertically by strong but light stringers, with shear plates attached to the eight sides. Selective redundancy allows for a very high probability of success after a five-year lifetime.

PAYLOAD SUPPORT

Designed for flexibility, the MiniStar bus can be adapted to a variety of space science and technology validation missions. The lightweight 100 kg bus is qualified to support payloads up to 25 kg with ample internal and external volume available. The power subsystem has extensive heritage and can provide up to 25 W (orbit average) to the payload with the baseline solar array configuration. The spin stabilized attitude control system provides 0.25° pointing accuracy and is ideal for inertial pointing space science missions.

HERITAGE

The MiniStar relies heavily on heritage designs, providing a low-risk platform for a wide range of scientific payloads. Heritage MiniStar missions include ACRIMSAT, REX and REX-II. The power, command and data handling, and communication subsystems are derived from the STEP series of spacecraft.

COMMERCIAL PRODUCTION APPROACH

To date, Orbital has already built and delivered seven MiniStar buses. The MiniStar bus was designed for low rate production line assembly and testing, which provides cost and schedule advantages through the use of mature designs, familiar manufacturing and test equipment, dedicated and experienced personnel, and established vendor sources.

SHARED LAUNCH OPPORTUNITIES

MiniStar's unique design offers frequent, cost-effective launch-sharing opportunities. Depending on the payload height and complexity, for example, two MiniStar satellites readily fit within the Pegasus rocket. Additionally, MiniStar spacecraft can also obtain rides as a secondary payload on a Taurus. These options make this bus one of the most affordable means for putting an instrument in orbit.

DATA SERVICES

Customers can purchase the MiniStar spacecraft itself, or the spacecraft, launch, operations and data delivery as a turn-key service. For the OrbView-1 and OrbView-2 programs, Orbital provided end-to-end payload services and is paid for the delivery of data. For each mission, the company produced the satellite bus, integrated the payload, and launched the satellite on Pegasus. Orbital currently conducts mission operations from its own ground station, delivering data to principal investigators via direct downlink and the Internet.



The ACRIMSAT was launched as a secondary on a Taurus.



ACRIMSAT during final integration



Stowed ACRIMSAT – On orbit

MiniStar™ Satellite Platform

Technical Specifications

Core Bus Features

Bus Dry Mass	100 kg
Payload Mass Capability	25 kg
Redundancy	Selective Redundancy
Orbit:	
Altitude	500 to 1000 km
Inclination	All Inclinations
Launch Vehicle Compatibility	Pegasus, Taurus
Typical Mission Lifetime	5 years with Ps=0.91
Delivery	24 Months ARO

Structure

Bus Dimensions (D x H)	68 cm x 62 cm
External Payload Volume (D x H):	
Pegasus	76 cm x 90 cm
Taurus (secondary P/L)	75 cm x 20 cm
Construction	Aluminum with Al Honeycomb Equipment Decks
Shape	Octagonal

Power Subsystem

Available Payload Power (EOL)	25 W (orbit average)
Bus Voltage	28 ± 4 VDC
Solar Arrays	4 Silicon Panels
Batteries	2 x 4 A-hr, NiCd

Attitude Control Subsystem

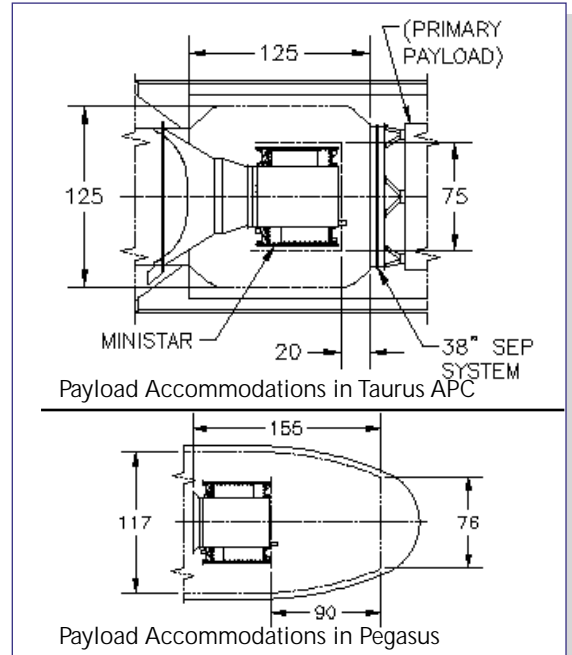
Stabilization Type	Spin
Pointing Capabilities:	
Control	0.20°
Knowledge	0.15°

Command & Data Handling

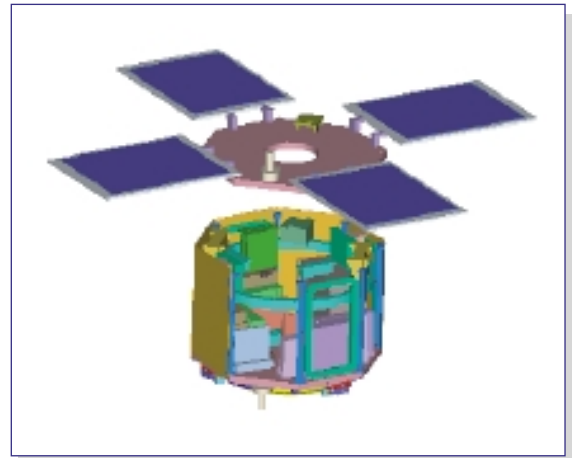
Flight Processor	80C186
Rad Tolerant	Yes
Data Storage Capacity	4 MB EDAC RAM (expandable)
Interface Architecture	RS-422
S-Band Uplink/Downlink Rates	2 kbps/115.2 kbps (selectable)

OPTIONS

- Mission operations by Orbital for 2 years
- Deletion of SDMS delivery



All dimensions in cm



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