

# Cygnus™

Cargo Delivery Spacecraft for the International Space Station (ISS)

## FACT SHEET



### Overview

Orbital ATK developed the Cygnus advanced maneuvering spacecraft to demonstrate cargo delivery services under a NASA Commercial Orbital Transportation Services (COTS) Space Act Agreement. Orbital ATK uses Cygnus to perform ISS resupply flights under the Commercial Resupply Service (CRS) contract. Orbital ATK is under contract to conduct eight missions to deliver approximately 23,000 kilograms of cargo to the ISS. The first of these was successfully completed in early 2014.

The Cygnus system is a low-risk design incorporating elements drawn from Orbital ATK and its partners' existing, flight-proven spacecraft technologies. Cygnus consists of a common service module and a pressurized cargo module. Cygnus is used to carry crew supplies, spare equipment and scientific experiments to the ISS.

The service module incorporates avionics systems from Orbital ATK's flight-proven LEOStar™ and GEOStar™ satellite product lines plus propulsion and power systems from our GEOStar communications satellites.

The pressurized cargo module is based on the Multi-Purpose Logistics Module (MPLM), developed by Thales Alenia Space for NASA.

### FACTS AT A GLANCE

#### Mission Partners

**Orbital ATK**

Prime contractor; engineering and development; Cygnus Service Module, mission and cargo operations

**Thales Alenia Space**

Pressurized cargo module

**Mitsubishi Electric Corporation (MELCO)**

Proximity link system

**Draper Laboratory**

Guidance, navigation and fault tolerant computer support

**Odyssey Space Research**

Visiting vehicle requirements support

**JAMSS America, Inc.**

Operations support

**Vivace**

Systems engineering support

## Specifications

### Service Module

Heritage: GEOStar™, LEOStar™  
Power Generation: 2 fixed wing solar arrays, ZTJ Gallium Arsenide cells  
Power Output: 3.5 kW (sun-pointed)  
Propellant: Dual-mode N<sub>2</sub>H<sub>4</sub>/MON-3 or N<sub>2</sub>H<sub>4</sub>

### Pressurized Cargo Module

Heritage: Multi-Purpose Logistics Module  
Total Cargo Mass: 3,200 - 3,500 kg  
Pressurized Volume: 27 m<sup>3</sup>  
Berthing at ISS: Node 2 Common Berthing Mechanism (CBM)

## Key Contacts

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Cygnus approaching the ISS



The Cygnus Service Module incorporates systems from Orbital ATK's flight proven LEOStar and GEOStar satellite product lines



Cygnus is boosted into orbit by Orbital ATK's Antares™ medium-class space launch vehicle



Cygnus spacecraft at the Wallops Island, Virginia launch site