

Aurora

Reliable, Affordable Electric Propulsion for Small Satellite Missions

The Orbion Plasma Propulsion System - Aurora is based on the most reliable, well-known forms of electric propulsion (EP) in existence—Hall-effect thruster (HET) technology.

Commonly used in spacecraft propulsion for over 30 years, HET is a type of ion thruster which accelerates propellant via an electric field. Trapped within an intense magnetic field, electrons ionize the propellant—in the case of the Aurora, inert xenon gas—creating ionized plasma. The resulting exit velocity of the plasma of up to 15,000 meters per second produces the thrust needed to maneuver small spacecraft 70kg and larger.

Orbion's Aurora EP Solution Enables All of the Following for Smallsat Missions:

- Maintaining Very Low Earth Orbit (VLEO)
- Orbit raising to higher altitudes from launch vehicle deployment
- Constellation deployment from a single launch vehicle
- Cislunar and interplanetary missions
- Collision avoidance
- End-of-life de-orbit



Aurora Thruster System

Hall thrusters have shown significant propellant savings over chemical propulsion-based systems. And of course, the less propellant needed translates to more payload for your mission.

Specification	Value
Input voltage from spacecraft	28 V unregulated (acceptable range: 24 – 35 V)
Dry mass of system	< 6 kg
Data interface with spacecraft	RS-422
Radiation	Both LEO and GEO/Cislunar options available
Total impulse	> 200 kN-s

Aurora

Designed, Manufactured and Tested in the USA

Performance Data (Xenon)

Power (W)	\dot{m}_a (mg/s)	Thrust (mN)	I_{sp} (s)
100	0.53	5.7	950
150	0.72	8.8	1110
200	0.92	12	1220
250	1.1	15	1320
300	1.3	19	1370



Xenon is a colorless, odorless, nontoxic gas present in the atmosphere. Decades of development experience prove that Xe is the highest-performing EP propellant in the periodic table. Xe is immune from freeze damage, will not contaminate nor damage spacecraft surfaces, has a high storage density (2kg/liter - 2x greater than liquid water), and is easily metered with proven techniques. Xe is trusted by the most demanding customers.

Our Design

Aurora is a complete integrated system, including thruster, power processing unit, propellant management assembly, and electrical harnessing that was designed from the ground up to be an affordable, reliable, mass-producible product. We didn't just design a new thruster; we instead designed an entirely new process. The Aurora system is manufactured using modern automation, with robots and automated test facilities replacing small teams of lab technicians in white coats. Our manufacturing process can produce one to two units per run, or 1,000 units per run – all of them enjoying the same low price and high reliability.

Visit the 2020 website for Aurora's downloadable spec sheet and user's guide:
orbionspace.com/downloads.

Online product configurator releasing soon.



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