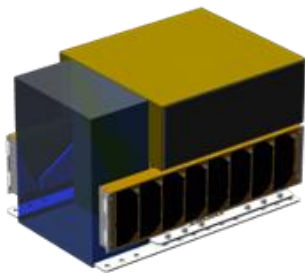


Courier 8U SEP Module

Product Overview

ExoTerra's 8U Solar Electric Propulsion Module delivers up to 1270 m/s to a 12U CubeSat. Courier begins with ExoTerra's Halo Hall Effect Thruster. Halo operates between 85-450W and packages within 1/4U, enabling it to operate within a CubeSat form factor.



Courier Provides >4U of Volume within a Standard 12U bus

Courier is powered by ExoTerra's high specific power Fold Up Solar Arrays (FUSA). The arrays generate 296 W at BOL and mount to a single axis gimble to increase orbit average power.

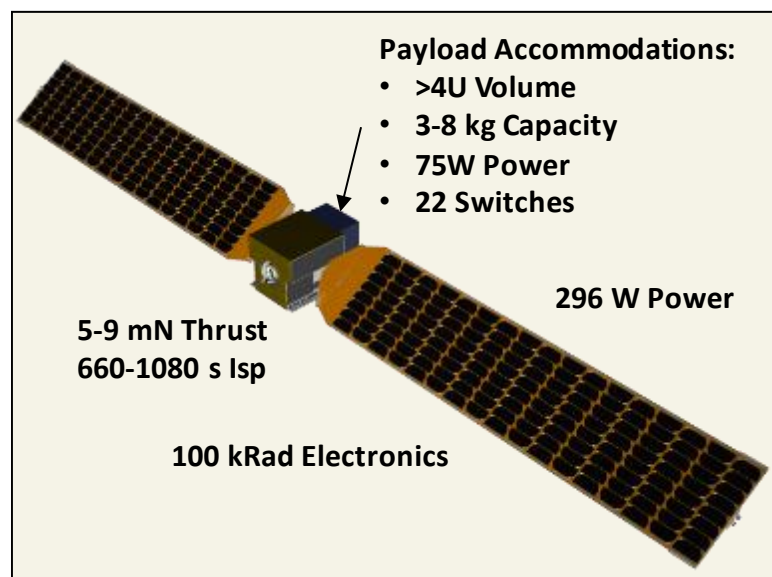
ExoTerra's 100kRad radiation tolerant Electric Power System bridges the power and propulsion with a lightweight, high efficiency power distribution and power processing unit. The system efficiently and reliably delivers the power to components throughout the spacecraft.

Big Satellite Performance in a Small Sat Package

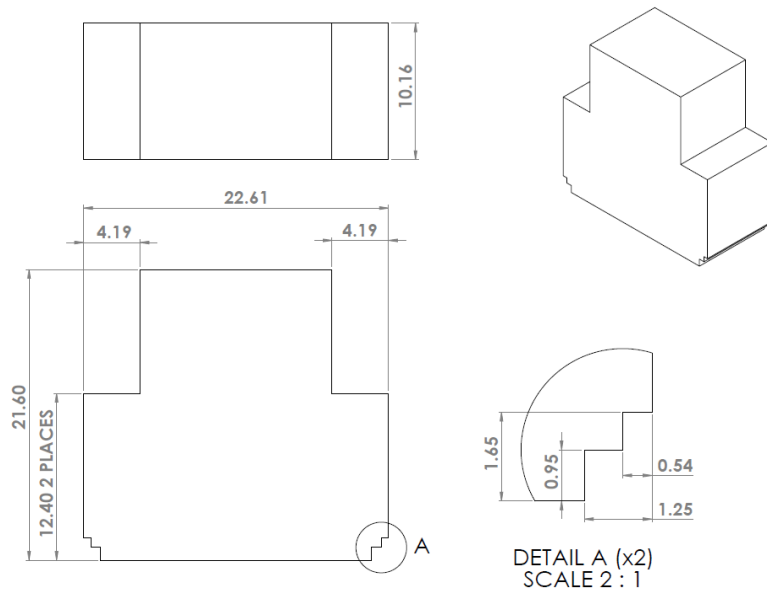
ExoTerra's revolutionary 8U Solar Electric Propulsion Module, Courier, brings large satellite power and propulsion performance to the CubeSat world. CubeSats no longer have to settle for sub-optimal orbits or short duration missions. Courier's 435-1270 m/s ΔV offers the ability to optimize the mission orbit by adjusting inclination or orbit altitude after a rideshare drop-off, reduces life cycle cost by extending mission lifetime up to 5 years, enables end of life deorbiting, or performs large orbit insertions. In addition, the module's high specific power solar arrays can deliver up to 75W of power to the payload when the thruster is not in use, expanding payload performance options and increasing telecommunications potential. Designed for interplanetary missions, the 100 kRad electronics offer extended mission lifetime and reliability to any mission.

- Customer Volume: >4U
- Customer Mass: 3-8 kg
- Customer Power: 75W
- Courier Dry Mass: 12.8 kg
- Propellant Capacity: 2.1 kg
- BOL Power: 296 W
- I_{SP} Range: 660-1080 s
- Thrust Range: 5-9 mN
- Radiation Tol: 100 kRad
- Propellant: Xenon

The system accommodates up to 4U of components and up to 8 kg of mass within a standard Planetary Sciences 12U deployment canister. Courier supplies the user up to 25 switches, including 28V, 12V, 5.5V and 3.3V with 5 software programmable switches.



Courier Frees CubeSats From Their Rideshare Drop-Off Orbit, Expanding Mission Opportunities



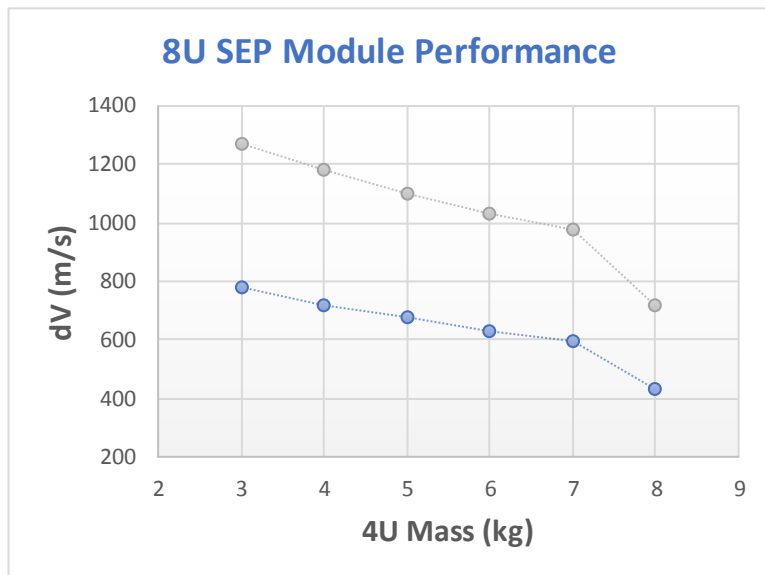
>4U Customer Envelope Dimensions (cm)

12U Bus Option

The standard Courier system is a Power and Propulsion Module. ExoTerra offers a full bus option including GN&C, Processing and Telecommunications. Packaging of components within SEP Module volume can be accommodated in some cases. Please inquire about details.

About ExoTerra

ExoTerra was founded in 2011 with a vision of reducing the cost of space exploration. We pursue this goal by developing affordable technologies that minimize spacecraft mass and volume while enhancing their performance and offering unique capabilities. ExoTerra closed on an investment round in 2018 to qualify Halo and the Courier system.

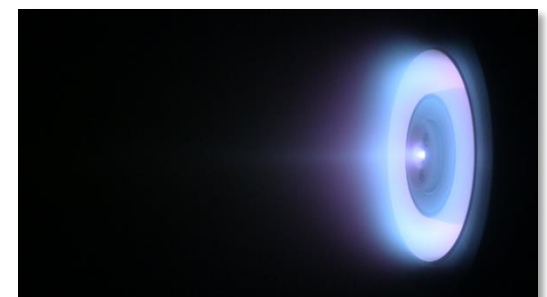


Courier Performance Envelope.

The lower curve depicts operation at Maximum Thrust while the upper curve represents Maximum Isp

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Halo operating with xenon propellant