

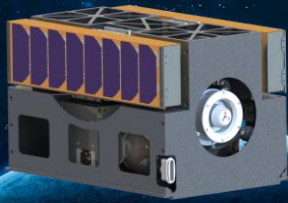
Courier 12U SEP Satellite Bus

Product Overview

ExoTerra's 12U Solar Electric Propulsion Satellite delivers up to 800 m/s to a 12U CubeSat. Courier begins with ExoTerra's Halo Hall Effect Thruster. Halo operates between 100-200W and packages within 1/4U, enabling it to operate within a CubeSat form factor.

Courier is powered by ExoTerra's high specific power Fold Out Solar Arrays (FOSA). 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.



Courier Provides
>800 m/s ΔV in a
Standard 12U bus

Revolutionary 12U Solar Electric Propulsion Module

ExoTerra's revolutionary 12U 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 550-800 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: >3U
Customer Mass: 1-5 kg
Customer Power: 75W
Propellant Capacity: 2.1 kg
BOL Power: 296 W
ISP Range: 715-730 s
Thrust Range: 4-8 mN
Radiation Tol: 100 kRad
Propellant: Xenon

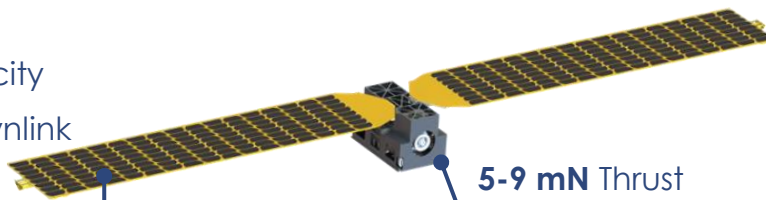
The system accommodates up to 3U of components and up to 5 kg of mass within a standard Planetary Sciences 12U deployment canister. Data interface is over an RS-422 or ethernet connection. We offer 4.5 or 120 Mbps downlink speeds.

3U Payload Volume

5 kg Payload Capacity

Up to **120 Mbps** downlink

75W Payload Power



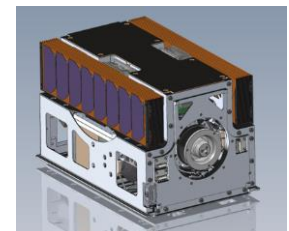
296 W Solar Arrays

5-9 mN Thrust

715-730 s Isp

14 kNs Impulse

100 kRad Electronics



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

For more information contact:

About ExoTerra

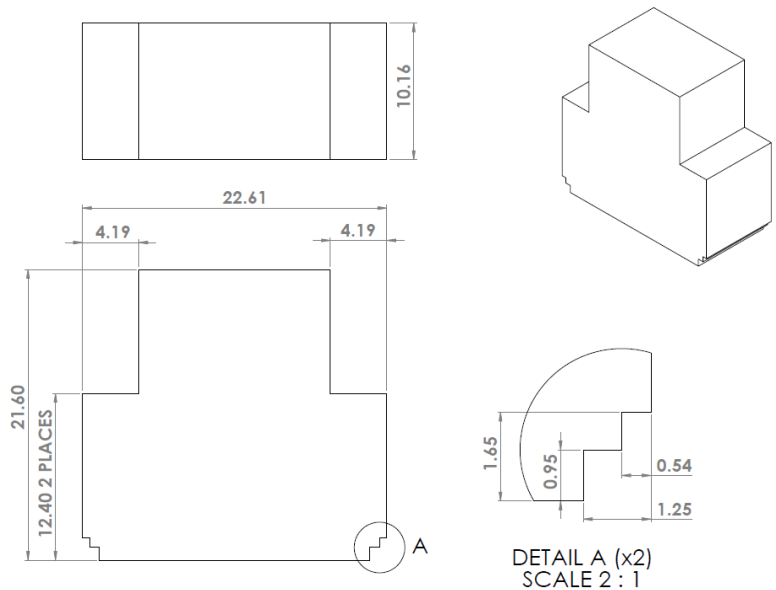
ExoTerra was founded in 2011 with a vision of reducing the cost of space exploration. We pursue this goal by developing affordable technologies that reduce the cost of gravity by minimizing spacecraft mass through electric propulsion, miniaturization of components, and in-situ resource utilization.

Bus and Module Options

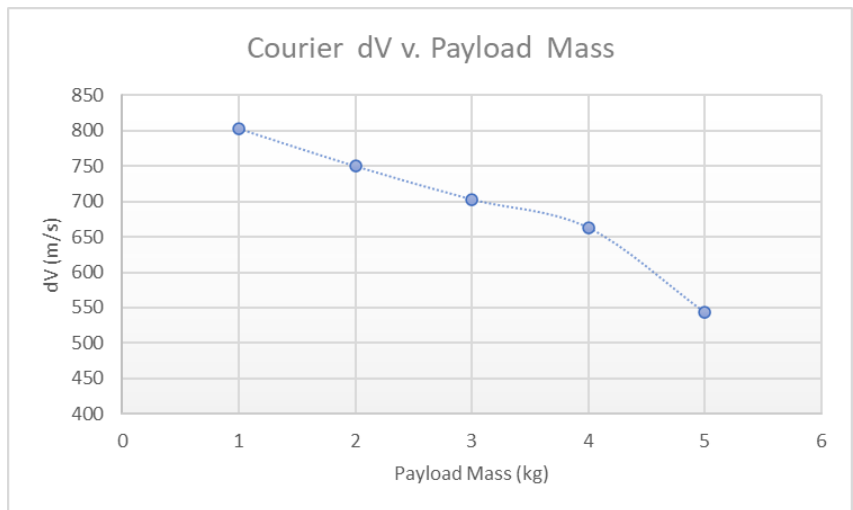
The standard Courier system fits within a 12U form factor. ExoTerra has 16U and 27U versions of Courier in work that offer increased payload mass, volume, power and ΔV . ExoTerra also offers stand-alone SEP and propulsion modules that can be attached to customer supplies spacecraft. Please inquire about details.

Courier Development Status

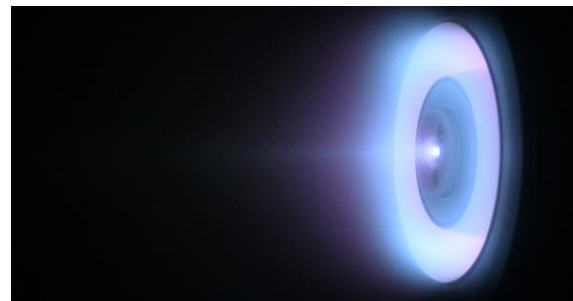
ExoTerra's Solar Electric Propulsion Components have completed environmental testing. The 12U Courier qualification program is in work, with its first flight funded to launch in December 2021 through the NASA Tipping Point Program



>3U Customer Envelope Dimensions (cm)



Courier Performance Envelope.
Maximum Isp Operating Point



Halo operating with xenon propellant

For more information contact: