



# HYDROS™

## High-Performance Water-Based Propulsion for Small Satellites

### Description

---

The HYDROS® thruster is a ‘hybrid’ electrical/chemical propulsion technology that provides truly green, safe, high-thrust, high fuel economy propulsion. HYDROS uses water as propellant, so it is safe for personnel during satellite integration and poses no significant risks to primary payloads during launch. Once on-orbit, HYDROS uses an electrolysis system designed for zero-G operation to split the water into its constituent elements, hydrogen and oxygen, for bi-propellant combustion through a rocket nozzle.

### Why HYDROS™?



#### Flight Heritage

Proven capability on-orbit



#### Safe “Green” Propellant

Can be handled by and doesn’t harm humans



#### Customizable Fuel Capacity

Easily integrate with spacecraft, landers, and rovers



#### High Specific Impulse

A superior Thrust-to-power solution



#### Lower Input Power

Than electric propulsion technologies

## Specifications

| Description                | Specification    |
|----------------------------|------------------|
| <b>HYDROS-C</b>            |                  |
| Specific Impulse           | >310 s           |
| Thrust                     | >1.2 N           |
| Orbit-Averaged Thrust      | 2.2 mN           |
| Thrust Efficiency          | 0.13 mN/W        |
| Impulse per Thrust Event   | > 1.75 Ns        |
| Total # Thrust Event       | 761              |
| Total Impulse Delivered    | > 2,151          |
| Water Capacity             | 0.5 kg           |
| Dry Mass                   | 2.2 kg           |
| Wet Mass                   | 2.7 kg           |
| Time to Refill Gas Plenums | 825 s            |
| Size                       | 190 x 130 x 92mm |
| DC Power (MAX) W/ Heaters  | 5-25 W           |
| DC Power (Nominal MAX)     | 16W              |
| DC Power (Standby)         | 3.5W             |
| Qualification Level        | TRL 9            |

| Description                | Specification |
|----------------------------|---------------|
| <b>HYDROS-M</b>            |               |
| Specific Impulse           | >310 s        |
| Thrust                     | >1.2 N        |
| Orbit-Averaged Thrust      | 6.8 mN        |
| Thrust Efficiency          | 0.16 mN/W     |
| Impulse per Thrust Event   | > 1.75 Ns     |
| Total # Thrust Event       | 10,300        |
| Total Impulse Delivered    | > 18,000      |
| Water Capacity             | 6.0 kg        |
| Dry Mass                   | 7.7 kg        |
| Wet Mass                   | 13.7 kg       |
| Time to Refill Gas Plenums | 269 s         |
| Size                       | 381 x 191 mm  |
| DC Power (MAX) W/ Heaters  | 7-40 W        |
| DC Power (Nominal MAX)     | 28W           |
| DC Power (Standby)         | 3.5W          |
| Qualification Level        | TRL 7         |