



# COLD GAS 1U CUBESAT PROPULSION MODULE

PUBLIC DATASHEET

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**This document contains public information about the product.**

## About the Product

Building on years of green propellant research at DLR's Institute of Space Propulsion, ISPTech brings low cost, reliable, and high-performance propulsion systems to commercial and institutional markets.

The Cold Gas 1U CubeSat Propulsion Module provides a high impulse propulsion capability in small form factor. This 1U Module can be used CubeSats as small as 2U up to much larger configurations as its compact form factor allows it to be flexible incorporated into any CubeSat design. Furthermore, this cold gas propulsion system operates under 6.9 barD and thus is not classified as a pressure vessel, thus making the system safe, simple and effective.

This system provides a higher thrust capabilities with an insignificant power consumption as compared to an Electrical Propulsion system. Compared to a Hot Gas Propulsion system, it provides a more simple, reliable and safer propulsion system while still offering comparable performances. Thus, enabling your CubeSat to perform manoeuvres such as orbit raising and de-orbitation without imposing significant constraints on your system.

This CubeSat module can deliver more than 390 Ns impulse or over 87 m/s deltaV for a 5 kg 3U CubeSat, 41.4 m/s deltaV for a 10 kg 6U CubeSat, and 20.2 m/s deltaV for a 20 kg 12U CubeSat. All of this with a simple and reliable cold gas propulsion system with no pressure vessel and minimal active components while also being compliant with all launch and safety regulation.



*Figure 1: Cold gas thruster during testing*

## Your Advantages

- The propulsion system uses a propellant that is non-flammable, non-toxic, high-density, chemically stable, self-pressurising, and has a low freezing point
- A simple self-pressurising system with less active components and thus fewer possible points of failure
- Avoids pressure vessel regulations
- Insignificant power consumption
- Pulse mode operation allows for precise actuation
- ITAR free and REACH compliant
- No preheating or conditioning required

## Status

In development with in-orbit demonstration scheduled for Q2 2026.

# Cold Gas 1U CubeSat Module

## Specifications

Specification	Value	Comment
<b>Dimensions</b>	X: 100 mm Y: 100 mm Z: 113.5 mm	Compatible to 2-24U CubeSats. z-length customizable on request.
<b>Cold Gas Thruster</b>	1x 3 mN Thruster ISP ~ 43 s	At nominal condition at 25 °C. (Operating temperatures and thus thrust can be increased with optional heaters)
<b>Total Impulse</b>	> 390 Ns	Can be available with different tank sizes.
<b>DeltaV</b>	> 87 m/s > 41.4 m/s > 20.2 m/s	Assumed Satellite Wet Mass: 5 kg for a 3U CubeSat 10 kg for a 6U CubeSat 20 kg for a 12U CubeSat
<b>Supply Voltage</b>	10-32 VDC	customizable on request
<b>Survivability Temperature Range</b>	-34°C to +71°C	maximum
<b>Operating Temperature Range</b>	-24°C to +71°C	customizable
<b>Wet Mass</b>	up to 1.7 kg	-

## Temperature dependence of Thrust

The plot below shows the temperature dependence of Thrust with the saturated propellant temperature.

