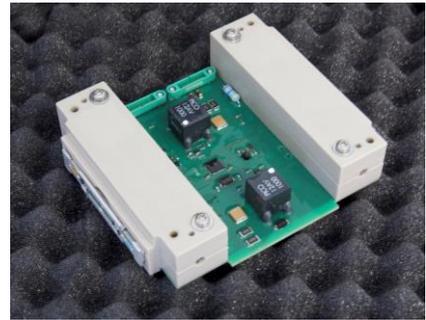


# PLASMA BRAKE (APB)

**A LIGHTWEIGHT DEORBITING SYSTEM FOR USE IN LOW EARTH ORBIT. IT IS MOST EFFECTIVE ON ORBITS WHERE ATMOSPHERIC DRAG IS NON-EXISTENT**

APB is capable of deorbiting up to 1000kg satellite from up to 1000km. As the module is lightweight and requires little power to work, it is excellent for deorbiting CubeSats also.

The Plasma Brake Module consists of a micro-tether of required length on a roll, deployment system and control electronics.



Dual Plasma Brake Cube Sat flight model

## SCIENCE BEHIND THE TECHNOLOGY

A plasma brake uses Coulomb drag to interact with the upper atmosphere plasma, slowing down a spacecraft. As the spacecraft slows down its orbit starts to shrink. As the spacecraft comes closer to the ground it will start to deorbit naturally and will burn up in the atmosphere. The main use for plasma brake is to deorbit a satellite at the end of its life.

## MODULAR STRUCTURE FOR CUSTOM REQUIREMENTS

APB can be fitted with 100 to 5000 meters long micro-tether. Multiple Plasma Brake Modules can be fitted in to a satellite for quicker deorbiting. Due to APB's low power requirement, it can be fitted with solar panels that are independent from the satellite's main bus, providing a failsafe in case the satellites power production is faulty. An automatic de-orbiting functionality can be added in case of a detected satellite failure.

Specs that can be modified for customer's needs:

- Length of the micro-tether (amount of drag created by it)

## SAFETY

Plasma brake is design wise, safe to use due to its minimal system requirements. To operate it only needs to be opened and charged electrically. The power requirements are tiny compared to the drag created by the brake. The Plasma Brake is safe for other satellites due to its micro-scale tether thickness. A micro-tether hitting another satellite, which is highly unlikely, can only leave a mark few micrometers deep. For more details about the plasma brake safety, a separate Microtether Safety Document is available with simulation results as well as literary references via e-mail request through [sales@aurorapt.fi](mailto:sales@aurorapt.fi).

## SPECS

	CubeSats	Micro and small satellites
Power	0.25 – 1 W	1 – 4 W
Thrust	Up to 100 nN / m	Up to 100 nN / m
Mass	< 100 g	< 1 kg
Form	3 x 3 x 8 cm	10 x 10 x 10 cm
Availability	Samples: 2020-Q3 Deliveries: 2021-Q2	Samples: 2020-Q3 Deliveries: 2021-Q2

