

## **MAGNETIC TORQUE ROD-0.8**

### **Quick Detumbling, Quick Wheel Unloading.**

PS-MTQ-0.8 is a compact magnetic torque rod designed to support efficient attitude control for cubesat missions. By generating a controlled magnetic dipole moment and interacting with Earth's magnetic field, it enables post-deployment detumbling, reaction wheel unloading and low-power magnetic actuation without the need for consumables.



**With its integrated driver, digital interface, and compact mechanical footprint, PS-MTQ-0.8 simplifies satellite-level integration while delivering reliable magnetic performance for power and volume-constrained spacecraft platforms.**

### **KEY HIGHLIGHTS**

#### **High Magnetic Moment with Low Power Consumption**

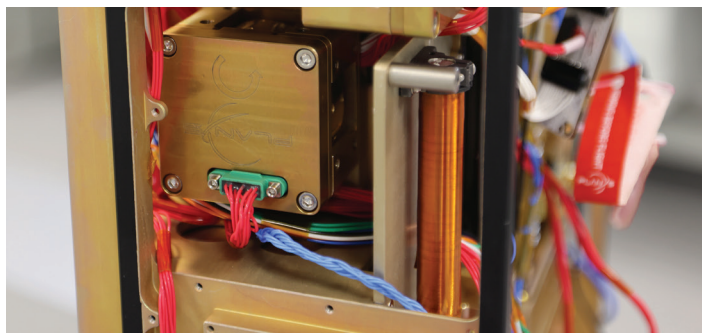
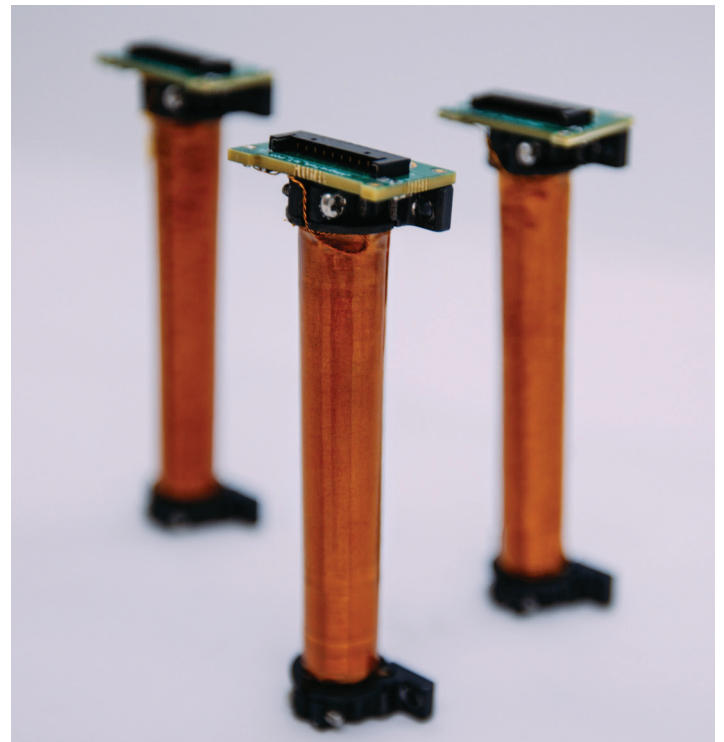
PS-MTQ-0.8 delivers a magnetic moment of  $0.85 \text{ A}\cdot\text{m}^2$  while operating from a 5 V supply interface. Its efficient design enables fast detumbling performance with low power demand, helping spacecraft stabilize quickly after deployment and transition to operational mode with minimum energy overhead.

#### **Fast Detumbling for 6U-Class Missions**

Designed for small satellite platforms, PS-MTQ-0.8 can detumble a heavy 6U satellite with an inertia of  $0.25 \text{ kg}\cdot\text{m}^2$  from  $10^\circ/\text{s}$  in approximately one hour, with power consumption of just 0.5 W even at maximum duty. This helps reduce commissioning time and supports earlier payload activation after launch.

#### **Integrated Driver for Simplified Integration**

The integrated driver eliminates the need for a separate driver card or digital-to-analog converter. The torque rod can be connected directly to a digital flight computer, reducing external electronics, harness complexity, board-level integration effort, and system-level design risk.



### **MISSION BENEFITS**

#### **High & Linear Magnetic Gain**

Compared to products of similar length PS-MTQ-0.8 has a high magnetic dipole moment and a completely negligible residual magnetization.

#### **Integrated Driver with Digital Interface**

PS-MTQ-0.8 can be driven directly by a digital computer with just two digital pins and I2C for current measurement. Power is received via just a constant 5V interface.

## TECHNICAL FEATURES

<b>Magnetic Moment</b>	0.85 A·m <sup>2</sup>
<b>Supply Voltage</b>	5 V
<b>Maximum Current</b>	90 mA (110 mA at -40°C)
<b>Interface</b>	2 pins (driver) & I2C (current measurement)
<b>Connector</b>	6/10 pin Molex Pico-Lock Options
<b>Mass</b>	61.5 grams
<b>Dimensions</b>	83 x 25 x 15 mm (including driver board)

## HERITAGE / QUALIFICATION

- ▶ **Proven in Orbit:** Heritage on 9 satellites with a collective operation time of more than 8000 days.
- ▶ **Radiation Test:** TID >28 krad

## STANDARDS & COMPLIANCE

- ▶ NASA-GEVS (GSFC-STD-7000) environmental verification.
- ▶ SpaceX Rideshare Payload User's Guide (Version 10, September 2024) launch-environment compatibility.

