



Hinges Nano:

NANOSAT SIZED HINGES FOR RELIABLE DEPLOY OPERATIONS



SUMMARY

The Nano Hinges are mechanically simple, minimalistic, ultra-slim, sheet metal machined, sturdy and thick with very few failure points. They are mechanically actuated by loaded torsion springs calibrated to each individual array, attached via soldering or epoxy to the applied surface, lubricated with solid (powdered) graphene and coated in corona dope for any non-conductive surface. The mechanical movement range is also hard-in-design specific to the particular hinge by stops incorporated into the geometry of the assembly. Each individual hinge can also, optionally, be configured as conductive to carry current from panel to panel.

FEATURES

- Hard-stop custom deploy angle specified before manufacturing
- All components are sheet metal machined with micron-precision and welded
- Corona dope coating for electrical isolation
- Powered graphene lubrication for internal mechanisms
- Optional single-channel electrical conductivity per hinge
- Mechanically minimalistic, single spring operated
- Ultra-slim, yet sturdy and over-engineered design
- Custom configurable choice of mechanical mating
- Designed for NanoSat applications, missions and requirements.
- Manufactured according to NASA and ESA space standards and materials.
- Repetitive functional and performance tests provided with documentation.

PERFORMANCE AND PRODUCT PROPERTIES

- **Weight (depends on configuration):** approx. 1 gram
- **Dimensions (LxWxH):**
 - **Deployed (90 degrees):** 6mm x 15mm x 6mm
 - **Closed (0 degrees):** 6mm x 15mm x 3.25mm
 - **Interface Dimensions:** 2.5mm x 15mm
 - **Plate Thickness:** 1mm
 - **Surface separation when closed:** 1mm
- **Axis Diameter:** 6mm
- **Interface Flatness:** +/- 0.01mm
- **Operating Temperature:** -100C to +150C



MATERIALS

- Only TML and CVCM < 1% materials used, NASA and ESA approved.
- Hinge Material: BeCu CNS 17200 Y1/2
- Spring, Axis: Stainless Steel 304
- Lubrication: Powdered graphene
- Electrical Isolation: Corona Dope

TESTING

All antennas are provided with tests reports regarding:

- Thermal Bake out (10E-5 mbar @ 50C for 72 hours)
- Full vibration test for Falcon 9, Electron, Soyuz, Dnepr and Long March 2D

Test	QT	AT
Functional	✓	✓
Vibration		✓
Thermal Cycling		✓
Thermal Vacuum		✓
Repeatability (100 times)	✓	✓

AVAILABILITY AND LEAD TIME

- 4 to 6 weeks



