Solar array drive assembly China

How does China's solar array drive a space station?

In order to drive the pair of 27-meter wings and rotate them smoothly towards the sun,the device acts as a central power house to both the wings and the station. China's dual axissolar array drive assembly also acts as an energy conversion and transmission center to provide sufficient energy for the operation of the space station.

What is a solar array drive assembly (Sada)?

In response to these requirements,Solar Array Drive Assemblies (SADA) which used to be standard equipments of large spacecraftshave gradually been incorporated in the mini/micro-satellites to rotate the solar arrays for maximum sunlight acquisition,and tremendously reduce the size and mass of the solar arrays.

What is a type 1 solar array drive assembly?

The Type 1 Solar Array Drive Assembly offers a minimum weight,minimum power solutionfor positioning solar array panels at the lower end of the size/power spectrum. Learn More > The small satellite Solar Array Drive Assembly (SADA) is a lightweight and compact power solution for positioning solar array panels.

What is side-drive solar array drive mechanism (SADM)?

Learn More > The Side-Drive Solar Array Drive Mechanism (SADM) consists of a slip ring assembly and an actuator coupled by a spur gear set,which,when driven by suitable drive electronics,will position the Solar Array toward the sun for maximum power and transfer the collected energy to the spacecraft power bus. Learn More >

Can bsada replace single axis solar array drive assembly?

In order to constantly align with solar vector,one of important means is to replace single-axis solar array drive assembly with biaxial solar array drive assembly(BSADA). However,BSADA may result in interference between solar array and satellite body,and is vulnerable to reaction force of solar array deployment.

Should a root hinge drive assembly be used in a large solar array?

Abstract: A root hinge drive assembly is preferred in place of the classical viscous damper in a large solar array system. It has advantages including better deployment control and higher reliability. But the traditional single degree of freedom model should be improved.

Standard Solar Array Drive Assembly . SADA-150. PRODUCT BRIEF . Version #:1.0 6/4/2024. Standard Solar Array Drive Assembly (SADA-150) o In-Line Design with High Torque Output. o High-Efficiency Slip Ring Design. o Flight-Proven Design with 100% Successful Performance Heritage. o Compact Hybrid Stepper Motor and Harmonic Drive.

(a) The basic elements of the solar array drive system and (b) the solar array drive assembly [7]. Typical workflow of the solar array drive system. Disturbance characteristics of the varying gear ...

The solar array drive assembly performs key system functions, rotating the solar arrays to keep them optimally oriented with respect to the Sun and providing a path for power transfer from the arrays to the CubeSat bus. The prototype system is shown in Figure 2. This prototype was specifically developed to

China Aero-Polytechnology Establishment, No.7, Jingshun Road, Chaoyang District, Beijing, 100028, China 1daxue129.student@sina , 2cheng_wei@buaa .cn Abstract. Solar panel is an important structure of the spacecraft, SADA (Solar Array Drive Assembly is often used as the drive organ to realize the step-skipped gesture adjustment. Firstly ...

A dynamic model of the solar array drive assembly (SADA) system consisting of a stepper motor and two flexible solar arrays is investigated. The fluctuation compensation of the rotating speed and vibration suppression is studied by integrating the sliding mode control (SMC) method and input shaping (IS) technique. The dynamic equations of the system are derived by ...

The disturbance torque generated via solar array drive assembly (SADA) can significantly degrade the key performance of satellite. The discussed SADA is composed of a two-phase hybrid stepping motor and a set of two-stage straight gear reducer. Firstly, the vibration equation of the two-phase hybrid stepping motor is established via simplifying and linearizing the ...

In contrast, increasing the tilting degree of freedom (DOF) of solar array, that is, replacing the previous single-axis solar array drive assembly with the biaxial solar array drive ...

The solar arrays are driven by the SADA system to track the sun, of which the modeling and driving process have been focused on. Bodson et al. [16] established the mathematical model of the permanent magnet (PM) stepper motor and used the exact linearization methodology to develop a control law for the high-performance positioning. Zribi ...

The SADM sub-assembly is the Solar Array Drive Mechanism which supports the Solar Array and allows it to rotate at command. To minimize mass and volume, the SADM is a direct drive concept (no reduction gear box), which offers an optimized total mass down to 1.65 kg and a highly compact volume as implied by dimensions in Fig. 3.:

µSADA -Miniaturised Solar Array Drive Assembly for 6U/12U CubeSAT IMT srl 01/03/2023 Slide N°11 µSADA Performances Pointing Mechanism Pointing Accuracy: ±0.3° with zero reference Drive direction: Forward and reverse rotation (endless rotation) Nominal Speed Range: ± 0,07 °/s (selectable by digital command) Max.

The CubeSat Solar Array Drive Assembly (SADA) can facilitate higher average orbital power and enable peak

power tracking for MMA"s suite of CubeSat solar arrays. It features +/-180-degrees of actuation, up to 16 signal/power feed ...

SADA (Solar Array Drive Assembly) is used to drive solar array rotating in spacecraft in order to get the most solar energy. The disturbance generated by SADA driving its load will influence the imaging quality and pointing accuracy of spacecraft. This research focuses on the disturbance properties of SADA driving a flexible load. Firstly, the disturbance model of ...

In this paper, a method of using a root hinge drive assembly (RHDA) to control the solar array deployment is provided and a multi-DOF mechanism dynamic model of the system is established.

The small satellite Solar Array Drive Assembly (SADA) is a lightweight and compact power solution for positioning solar array panels. Continuous rotation of the solar array is facilitated by the integration of a slip ring assembly. Position telemetry is made available using Moog"s noncontact position sensor technology.

A root hinge drive assembly is preferred in place of the classical viscous damper in a large solar array system. It has advantages including better deployment control and higher reliability. But the traditional single degree of freedom model should be improved. A multiple degrees of freedom dynamics model is presented for the solar arrays deployment to guide the ...

The Solar Array Drive Assembly (SADA), consists of a one axis tracking system for solar panels for a CubeSat pla orm. The SADA design considers thermal insula on of mechanical components in order to reduce the risk of fa gue of materials due to thermal cycles during opera on.

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