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THE STANDARDIZED MODULAR ASSEMBLY DESIGN FOR CUBESAT DEPLOYER

**Abstract**

The CubeSat deployer is the interface structure between CubeSat and launch vehicle. With the dramatic increase of the number and variety of CubeSats, the main goal of the CubeSat deployer is to meet the requirements of rapid launch and mass deployment of CubeSats in different units and sizes. In accordance with the principle of simplicity and reliability in aerospace systems, the CubeSat deployer is divided into nine independent components on the basis of the minimum functional units required to achieve reliable separation of CubeSat. The modular assembly of nine components can realize the support and fixing of the structure body, the unlocking and rotation of the door, the monitoring of the separation signal, as well as the separation guide and the customization of separation speed. Combined with the structure spectrum of CubeSat, the respective standards of the nine components that make up the CubeSat deployer are defined, meanwhile, the standardized and modular assembly methods and specifications of CubeSat deployer are provided. The designers can just choose different parts and components to assemble the CubeSat deployer quickly according to the assembly process specifications, without having to spend time on newly developing a specific CubeSat deployer. After the ground tests, the standardized modular assembled CubeSat deployer can withstand the mechanical environment in launching process and achieve reliable electromagnetic unlocking and separation. The module division, standards and specifications in standardized modular assembly can make the CubeSat deployer as Commercial Off-The-Shelf and realize the reuse of components in different CubeSat units, therefore, the production cost is reduced and the development time is shortened. In addition, the standardization of the interfaces of CubeSat deployer are applicable to the separation of a single CubeSat and the launching of multi CubeSats.