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Space Systems and Architectures Featuring Cross-Platform Compatibility (7A)

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NAOSAT: A SCALABLE NANOSATELLITE ARCHITECTURE

Abstract

The reusability of components in small (micro and nano) satellites is a key issue concerning the mission development cycle and, thus, the overall costs. The Cubesat standard has been extensively used to implement low cost/short cycle missions with many purposes (Science, technology demonstration, educational outreach, etc) mainly due to the standardization of aspects like the main structure (allowing the implementation of subsystems from different providers) or the simplification of the interface to launch vehicle through standard PODs.

Nevertheless, the Cubesat standard is still very limited in size and volume to enable complex Science experiments, which would require high power demand, bulky instruments, etc.

For this reason, Emxys developed the NAOSAT architecture, as a scalable nanosatellite platform section which can be implemented either in standard 3U cubesat structures or in an extended version, developed by Emxys, and named XCube. XCube is a 20 x 20 x 40 cm 15Kg platform, intended to extend the capabilities of Cubesats with a minimum design effort.

This contribution describes the technical approach for the design of XCube and the difficulties and lessons learned during the development of the different platform subsystems in order to be interchangeable between both platforms.