

IAF SPACE SYSTEMS SYMPOSIUM (D1)
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SATELLITE DATA OVER POWER BUS

Abstract

This paper reports a satellite power and data distribution bus system named Data over Power bus(DoP bus). The DoP bus firstly uses robust power storage and distribution methods to ensure high-efficiency and high-reliability power delivery to satellite subsystems, smart battery cells and individual power control nodes are used to archive these goals. Secondly, communication data will be modulated through the control nodes and injected on top of the power line; therefore, no extra communication wiring is required. Since all subsystems are connected to the same network, payloads can exchange data to any destination without using the OBC workload. The DoP bus can be implemented with the existing payload bus, for instance, CAN and I2C, to archive a plug-n-play environment without modifying the payloads. The proposed satellite bus will be used for future modular satellite designs and enable future on orbit servicing missions.