

Dropsonde System for Unmanned Aerial Vehicles

Anasphere, Inc.**Technical Abstract**

A small, modular dropsonde launcher is being developed for Unmanned Aerial Vehicles (UAVs). Some critical measurement needs can only be satisfied by in-situ measurements. Key examples of such measurements include detailed atmospheric profiles, point meteorological conditions on the surface, and in-situ measurements for calibration and validation of remote sensing systems. Phase I work saw the design and fabrication of a new type of dropsonde with a novel form factor and the associated launcher. The system was installed in a representative UAV nose. System components were successfully tested. Phase II will involve finalizing the launcher and dropsonde designs, developing the associated control and data handling system, building and testing the integrated system, and finally conducting test flights on a UAV. The ultimate result of the project will be a dropsonde system that can be fitted to many NASA UAVs, including small UAVs, and enable them to gather in-situ atmospheric profiles and surface measurements using dropsondes. The Phase II entry TRL is 5; the expected exit TRL is 8.

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Very Dense High Speed 3u VPX Memory and Processing Space Systems

SEAKR Engineering, Inc.**Technical Abstract**

While VPX shows promise as an open standard COTS computing and memory platform, there are several challenges that must be overcome to migrate the technology for a space application. For the Phase I SBIR, SEAKR investigated the 3u VPX architecture for the space environment for advanced memory and processing systems. The SBIR investigation focused on researching innovative switch fabric architectures, identifying and qualifying the building blocks for a space qualified VPX system, and addressed some of the challenges associated with VPX flash memory modules. The areas of innovation that have been addressed are outlined below: Research and evaluate the basic building blocks required for a high speed switch VPX architecture; Explore advanced EDAC and innovative wear leveling techniques for commercially upscreensed flash memory for space applications; Evaluate different techniques for very high speed flash memory access rates. The Phase II SBIR will build on the Phase I study to produce a deliverable engineering model of a 3U VPX flash memory module.

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