SPACE SYSTEMS SYMPOSIUM (D1)
Poster Session (P)

Author: Mrs. Lei Yan
Technology and Engineering Center for Space Utilization, Chinese Academy of Sciences, China, yanlei@csu.ac.cn

Mr. Liang Fang
Technology and Engineering Center for Space Utilization, Chinese Academy of Sciences, China, fangliang@csu.ac.cn

MODULAR DESIGN METHOD USED FOR SCIENCE EXPERIMENT CONTROL UNIT IN SPACE

Abstract

Science experiments in space always need an electronic unit to control the experimental process, In the past, scientist had to develop individual device for each experiment. It made the development costs very high. Actually, all these experiment control units have a lot in common. For example, most of two-phase flow experiments need heating, image acquisition, flow control and so on. By using modular design, both common demands and individual demands can be met very well. The four stages of modular design are summarized as follows: requirement analysis, modular partition, general-purpose module identification and module series design. Mathematic methods such as sets, graph theory, mathematical modeling, have been used in analyzing. Finally, a module series based on OPEN VPX standard has been proposed, these modules can be used to Control Scientific experiments in space.