

SPACE EXPLORATION SYMPOSIUM (A3)
Moon Exploration – Part 3 (2C)

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THE PAYLOAD MANAGEMENT AND CONTROL FOR CHANG'E-3 LANDER

Abstract

Chang'E-3 is the third lunar probe of China. It consists of the lunar lander and a rover. It belongs to the second phase of the lunar exploration project, which will conduct the soft landing and in situ exploration. It will be launched before the end of 2013.

The main objectives of the project are to survey topography and geological structure to analyze the content and the distribution of the mineral composition and chemical elements, to explore the earth's plasma layer, and to carry out optical astronomy observations based on the moon. The lander payload subsystem consists of the descent camera, topography camera, extreme ultraviolet camera, astronomical telescope and the payload controller. The rover payload subsystem consists of the panoramic camera, X-ray spectrometer, infrared spectrometer, moon detection radar and the payload controller.

In this paper the lander payload controller will be introduced. The design of the payload controller is very different from Chang'E-1 and Chang'E-2. Due to the strict restrictions of the weight and power consumption, the electronics units of topography camera, extreme ultraviolet camera and astronomical telescope are integrated designed in the payload controller. The different software will be integrated and running on the same computer. The functions of the payload controller include power supply and distribution, data acquisition, image compression, data processing, data transmission, operation mode control and health management. The architecture and characteristic of the system will be described in the paper, and the new designs and technology will also be described.