

Lunar Exploration (3)
Lunar Technologies (2B)

Author: Dr. Qiang Zhang
Beijing Institute of Control Engineering(BICE), China Academy of Space Technology(CAST), China,
zhang007qiang@163.com

Mr. Guoqing Yu
Beijing Institute of Control Engineering, China Academy of Space Technology (CAST), China,
13641287452@163.com

THE DESIGN OF A DUST SHIELDING MECHANISM FOR STAR SENSOR

Abstract

This paper summarizes the design and the development of a dust shielding mechanism specifically targeting China's lunar probe Chang'e-5T. When the lunar probe lands on and ascends from the moon, the dust will be disturbed by the lunar probe. Therefore, a dust shielding mechanism is needed to protect the star sensor onboard. The dust shielding mechanism covers the star sensor to avoid the penetration of dust. It is uncapped when the star sensor is functional. Light weight and dust shielding are the two major challenges of the product design. The mini step motor and mini harmonic drive transmission are applied in the product. The stroke switches are used as the angle sensor, which can indicate the status of covering or uncovering. The rubber ring adhibited in the cover is designed to prevent dust. The design configuration was exposed to completely qualification. The results satisfy all requirements of the mission.