The COTS-based Micro Earth Sensor(MESA) for small satellite to The Symposium on Microsatellites for Remote Sensing (SOMIRES 2013) and The 231th RISH Symposium

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Abstract

We introduce the COTS thermopile –based Earth Sensor(MESA) for Small Satellite .It have been developed by Japan Aerospace Exploration Agency (JAXA) ,and We Meisei Electric co.,ltd have took charge of electronics .The thermopile sensor is very popular for security and hearth equipment ,then it can be used with low cost and short delivery time .MESA has I2C interface for space craft system ,the electronics is very simple ,verl low power and very small size . It make the developing for space use altitude sensor low cost ,minimized developing schedule and very low resource . The 4pieses of multi-pixel array of thermopile are used for MESA , In fundamental developing phase , MESA have been tested and verified that it's performance is fine to detect Erath edge for satellite altitude control , and also the Flight Model complete now ,The Flight model is now in integration for Small satellite "SOCRATES" and it will be launched in 2013 .

Keywords :COTS thermopile ,Earth sensor, Small satellite

1. Introduction

The Earth sensor is one of altitude detection sensor for spacecraft and it is good performance sensor for Earth pointing satellite such as Earth Observation Mission . There are some Earth sensor for space use ,but all of them are large size and high cost because of these have been developed for large size space craft .The small satellite has possibility to make activation of use of space ,especially Erath observation .

The Erath sensor which is small size ,low cost and short delivery is required for Erath observation mission now.

2. Methods

The COTS thermopile sensor is very popular for security and hearth equipment ,then it can be used with low cost and short delivery time .MESA use the 4pieses of multi-pixel array of the COTS thermopile sensor .The points of MESA developing is follows .





Fig2-1:Caracterlistics of Rends







Fig2-3:Pixel location

- (3) Study structure to minimize components size.
- 4. Summary



3. Results and Discussion





Fig4-1:Over view of Flight model

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References

1)3M14 Development of COTS thermopile based Earth Sensor for Small Satellite by JAXA