

## Development status of thermal control unit for lunar surface scientific instruments in SELENE-2 mission

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We are developing the temperature control unit for long-term survival instruments in the SELENE-2 mission. In the SELENE-2 mission, several geophysical instruments are being considered to deploy on the lunar ground surface, including a seismometer, a magnetometer, a heat flow meter, and a VLBI radio source. These types of instruments require a long-term observation term beyond the lunar nights to obtain statistically sufficient amount of data. The lunar survival module was designed for temperature control of the instruments in the severe temperature environment (variable in -200 to 100 degC) on the lunar surface.

Conceptual examinations were conducted by numerical thermal modeling and thermal vacuum tests with a bread board model. Results of both thermal calculations and thermal vacuum tests showed a sufficient potential of the long-term survival on the Moon without high power consumption by heaters. We started designing an engineering model of the module based on the above mentioned results. The status and recent progresses of the lunar survival module developments are reported in this presentation.

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