The Spacewire interfaces for HERSCHEL/SCORE suborbital mission

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Short Paper

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ABSTRACT

The HERSCHEL rocket is a suborbital mission which will observe the Sun and the solar corona in UV and in visible light for measurements of coronal polarization. The SCORE coronagraph is an instruments of the HERSCHEL payload and it is a project born by collaboration between Naval Research Laboratory and Italian research institutes. In particular, the two SCORE cameras are developed at the XUVLab of the Department of Astronomy and Space Science of Florence University.
The Spacewire ESA standard interface was selected as the rocket interface due to its reliable, fast and low power transmission. All the HERSCHEL instruments communicate with the on board computer by means the IEEE1355 Spacewire standard protocol.
Since HERSCHEL is suborbital mission and its operation time will be only about 300s, the SCORE Spacewire interfaces have a customize design to perform specific and automatic procedures.
We developed in our laboratories a prototype and flight model which have an host controller that manages the whole automatic acquisition procedure and controls a SMCSlite Atmel device which realize the Spacewire codification. Although the Spacewire communication interface has been developed for a specific application, we have realized a generic interface enabling to implement a lot of smart and customizable procedures.