Control, Housekeeping, and Spectrograph Electronics Design of FIMS

H. Jin[1], J. G. Rhee[2], J.-H. Park1, K.-I. Kang[2], Y. S. Park[1], K. N. Kong[1], U.-W. Nam[1], J. Seon[2], K. W. Min[2], E. J. Korpela[3], J. Edelstein[1]

[1]Korea Astronomy Observatory

[2]Satellite Technology Research Center, Korea Advanced Institute of Science and Technology

[3]University of California, Berkeley

The FIMS (Far-ultraviolet Imaging Spectrograph) electronics system consists of 4 units - a low voltage power supply, a detector electronics, a digital signal processing unit, and a signal monitoring and controlling electronics. We are going to present here the design of the signal monitoring and controlling electronics. The signal monitoring and controlling electronics can be divided into three small parts - a control board, a housekeeping board, and a spectrograph electronics. The control board is going to control some heaters, a high voltage power supply, a filter wheel, a contamination door, and a motor for shutter operation. The housekeeping board is going to get health information classified into 32 monitoring items, to adjust the voltage level of the high voltage power supply, and to generate sun-warning signals. Monitored signals will be converted into 10bit digital signals through sample/hold amplification circuits and each analog monitoring signal has a set-level and a conditioning circuit. The spectrograph electronics system, which includes a motor-driving circuit, temperature sensors, positioning sensors, and a sun warning sensor, makes connection between the e-box and the spectrograph unit and controls the status of various signals from the spectrograph unit. A shape memory alloy actuator will be used to open the contamination door.