New Design Concept for Universal CCD Controller

Wonyong Han
Korea Astronomy Observatory

Currently, the CCDs are widely used in astronomical observations either in direct imaging use or spectroscopic mode. However according to the recent technical advances, new large format CCDs are rapidly developed which have better performances with higher quantum efficiency and sensitivity. In many cases, some microprocessors have been adopted to deal with necessary digital logic in a CCD imaging system. This could often lacks the flexibility of a system for a user to upgrade with new devices, especially if it is a commercial product. A new design concept has been developed which could provide the opportunity to deal with any format of devices from any manufactures effectively for astronomical purposes. Recently available PLD (Programming Logic Devices) technology makes it possible to develop such digital circuit design, which can be integrated into a single component, instead of using microprocessors. The design concept could dramatically increase the efficiency of a CCD imaging system, particularly when new or large format devices are available and to upgrade the performance of the system. Some variable system control parameters can be selected by a user with a wider range of choice. The software can support such functional requirements very conveniently without using low level programming. This approach can be applied not only for astronomical purpose, but also some related fields, such as remote sensing and industrial applications.

MEMO