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Memo

To: Jill Bechtold
From: Michael Lesser 
Date: 17 March, 2005
Re: MAESTRO Camera shipment

The MAESTRO CCD Camera is complete. This memo describes its characteristics at the time of shipping. The camera is considered shipped and placed and will be stored in its shipping container at ITL. The system is called MAESTRO in our records.

1. The CCD is type JPL4096, University of Arizona Imaging Technology Laboratory serial number SN3464.
2. The read noise measured in the final system is 3.4 electrons for both channels. The system gain is set to 1.9 e/DN for both channels.
3. The full well is about 96,000 electrons, or 50,000 DN.
4. The dewar uses DT670 diodes as temperature sensors. The CCD set temperature is -125C.
5. The dewar is an IR Labs model ND-8, serial number 3521. The UA A-tag number for tag dewar is A313130.
6. The CCD controller is an Astronomical Research Cameras, Inc. Gen 3 system (with a standard gen2 video card). The controller serial number is CON20 with power supply PS20. It has been wired and tested for 4 channel readout, although only two channels are currently used. The controller A-tag number is A313620.
7. A shuttle PC computer, LCD monitor, keyboard, and mouse are supplied with the camera. The PC has one PCI fiber optic interface card installed to run the camera.
8. The PC is installed with the *AzCam* data acquisition package, AzCamServer and AzCamTool. *AzCam* information can be found at <http://www.itl.arizona.edu/AzCam/AzCam/html>. The software specific to this system is in the "maestro" directories.
9. ITL document ITL1026 describes the system wiring.

Notes

The CCD has four working amplifiers, but one produces high read noise with significant pattern noise for unknown reasons. We removed the CCD from the MAESTRO system and verified the noise is intrinsic to the CCD by operating it in a test dewar. After reinstallation, we disconnected noisy amplifier (and the other amp on the same register) and now operate the device though only two amps.

The CCD has significant dark 'spots' which are visible in flat fields. These are intrinsic in the CCD and are not surface particles. For this reason, we expect to replace the CCD at a future time. We have another low noise, three amplifier device available for this project. We will build an electrical adapter to install it in the dewar and change the software. This device swap can be done in less than a week. We believe it is prudent to wait until the new dewar faceplate is fabricate and installed, since device handling will be required at that time. It may also be desirable to complete some telescope Engineering before the final device is installed.

We note the current dewar window, which is the original flat window purchased for lab testing, vignettes very severely.