SDSU Controller dual head video output with Voodoo

Background

The Weave autoguider has video from 2 heads. When taking an image with Voodoo the camera will happily take a first image, however it is not possible to immediately take a second image.

This is not an issue with UltraDAS

The Problem

A single CCD47-20 has 1072 serial pixels and 977 parallel pixels. With 2 heads, voodoo needs to be setup to receive pixels from both, the image size is therefore 1072+1072 serial pixels and 977 parallel pixels. Unfortunately during a voodoo 'apply' these values are also written to the locations NSR (number serial reads) and NPR (number parallel reads), NSR and NPR are used to calculate the number of serial and parallel clocks. As the same clocks are applied to each CCD, twice the number of serial clocks that are required are sent. By design the controller when reading out pixels does not communicate with the host computer, therefore the command to take a subsequent image is ignored until the superfluous pixels have all been sent.

The Solution

In file tim4720bs.asm in the RDCCD command.

If during assembly the CCD type is identified as AGWEAVE (i.e. a 2 head camera) then the UDAS bit in the noticeboard is checked to see if voodoo is in use. If it is then the constant NSTOT (1072) is saved to NSR. Voodoo expects the appropriate number of pixels and this number of pixels are sent by the SDSU.