

SETTING THE REGION OF INTEREST (ROI)

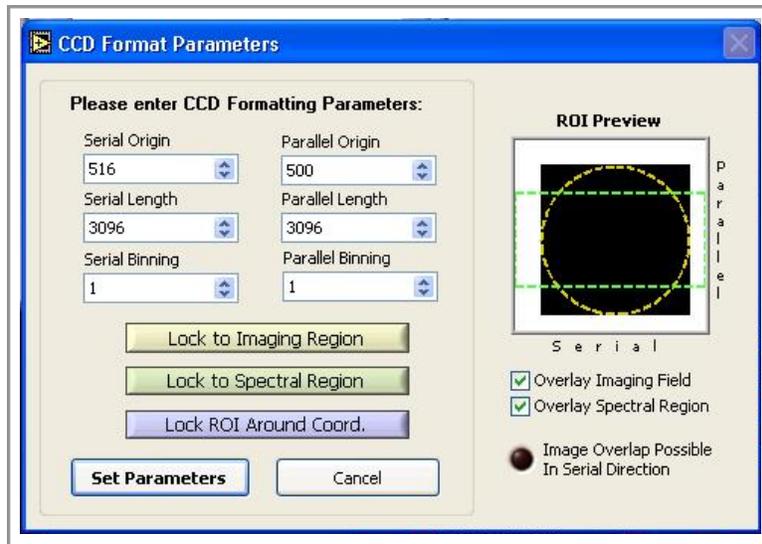
The Fairchild CCD contains 4096 x 4096 pixels, but any subsection of the detector may be read out during an exposure. To select a standard ROI, click on the *CCD ROI Mode* pull-down menu (right side of *Camera Control* subpanel), and make a selection. Descriptions of the standard modes are given in the table below.

Standard ROI Modes

Mode	Binning	Serial Origin	Serial Length	Parallel Origin	Parallel Length	Approx. Image Size
Imaging 1x1	1x1	516	3096	500	3096	19 MB
Imaging 2x2	2x2	516	1548	500	1548	5 MB
Imaging 3x3	3x3	516	1032	500	1032	2 MB
Spectroscopic 1x1	1x1	0	4142	1100	1896	16 MB
Spectroscopic 2x2	2x2	0	2071	1100	948	4 MB
Spectroscopic 3x3	3x3	0	1381	1100	632	2 MB
Slit Imaging/Alignment	1x2	1250	1200	1100	948	800 KB

Note: Origins are given in un-binned, absolute pixels; lengths are given in terms of binned pixels

Users may also define a custom mode by selecting “Set user-defined mode...” from the down-menu. Upon clicking this option, the *CCD Format Parameters* window shown below will appear.



The origin, length, and binning in the serial (dispersion) and parallel (spatial) directions of the current ROI are automatically loaded into the boxes but can be edited. The “ROI Preview” picture on the right side of the window displays the region of the CCD that will be read out corresponding to the formatting parameters on the left side of the screen (the black region denotes the area to be read out). This preview will update itself as the origin, length, and binning parameters are changed (if it does not update immediately, try clicking on the preview window). Selecting “Overlay Imaging Field” and “Overlay Spectral Region” will outline the regions of the CCD where the imaging field and spectra fall.

There are four types of custom modes a user may wish to define; they are described below.

i) *Custom Imaging Mode*

In this case, the user may want to read out the same region of the CCD as defined in the standard “Imaging 1x1” and “Imaging 2x2” modes but with different binning values. To accomplish this, one may click the ***Lock to Imaging Region*** button. Pressing this button disables the origin and length controls, automatically adjusting them (as governed by the binning values) to keep the ROI locked to the standard imaging portion of the chip. Users may then adjust the serial and parallel binning values as desired and click the **Set Parameters** button when satisfied with the ROI.

ii) *Custom Spectroscopic Mode*

This mode is similar to the “Custom Imaging Mode” discussed above. Pressing the ***Lock to Spectral Region*** button results in the disabling of the origin and length parameters, which will subsequently re-adjust their values (according to the binning) to keep the ROI set to the standard spectral region of the chip. Users may then adjust the binning values as necessary.

iii) *Center ROI Around An Object*

This mode is useful if a user would like to have a smaller ROI centered around a particular object. When the ***Lock ROI Around Coord.*** button is pressed, input boxes for the x & y coordinates of the object to be centered will appear, and the serial and parallel origin controls will be disabled. The observer may center an ROI around an object by (1) inputting its x & y coordinates, (2) selecting the desired binning values, and (3) choosing the width (serial length) and height (parallel length) of the box.

NOTE: When entering coordinates for an object, the *CCD Format Parameters* window assumes that the CCD ROI Mode has NOT changed since the image was taken from which the object’s coordinates were measured. For example, if the x & y coordinates for the object were determined from an exposure taken in the “Imaging 2x2” mode, this mode should be selected from the *CCD ROI Mode* drop-down box *before* selecting the “Set user-defined mode” option. If this protocol is not followed, the computation of the object-centered ROI will be flawed.

iv) *Other Custom Mode*

If the user does not want to create an ROI covering the standard imaging or spectroscopic region and does not want to center a region on a particular object, a new custom mode may be created by simply adjusting the origin, length, and binning in the serial and parallel directions. Guidance for the creation of such a mode may be found by observing the *ROI Preview* window as the parameters are changed. As parameters are edited, the black shaded region, which represents the portion of the CCD being read out, will update to match any changes.