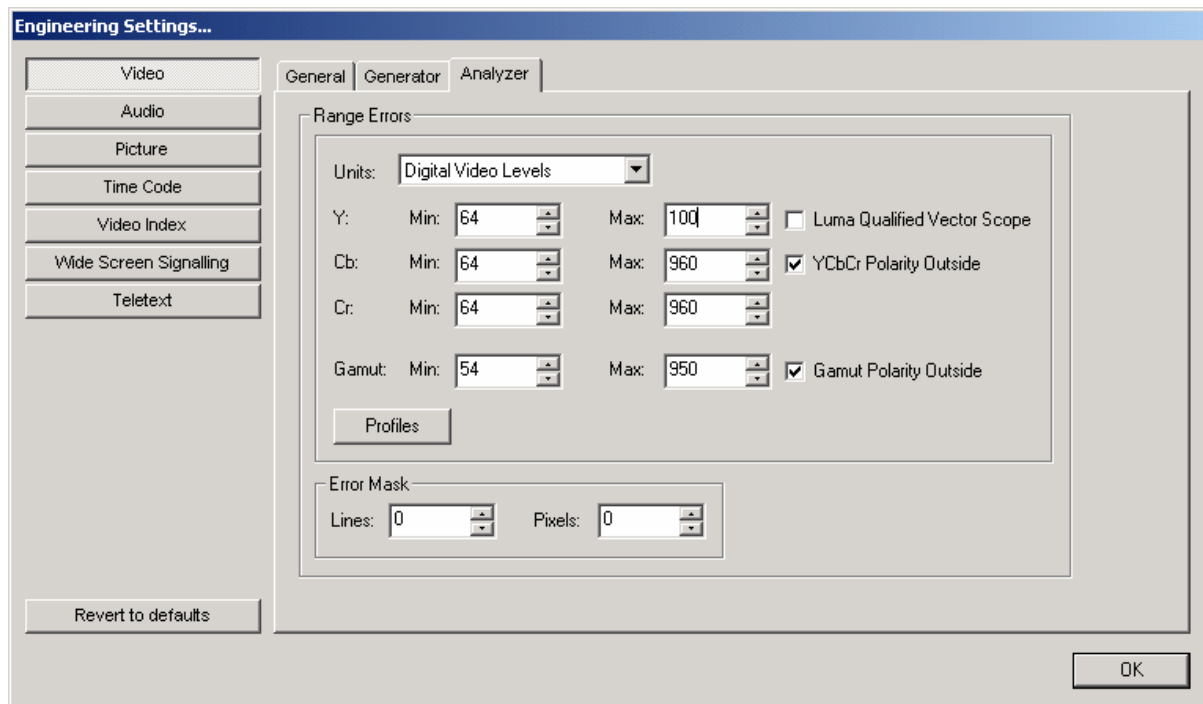


Application Note 1

How to detect stuck pixels in my CCD camera.

With CCD cameras, it is important to have a speedy way of detecting failed pixels. Traditionally this has been done by looking at the analog video on a 'scope, and painstakingly checking each line at a time. By using OmniView, this process can be radically improved, by using the Range Checking feature. You will also need either the serial digital output, or the analog monitoring output from OmniView, to be connected to a suitable picture monitor.

We shall assume that the failed pixel is showing a dark grey when the camera is pointing at black. However the technique can be applied to other failure conditions in a similar way. So we set the camera up such that we expect a uniform black output. In terms of the 10 bit digital number, black level is normally at the 64 level. The default valid video range for error checking is 64 to 940/960. In this instance, we are checking for a black level significantly higher than 64.

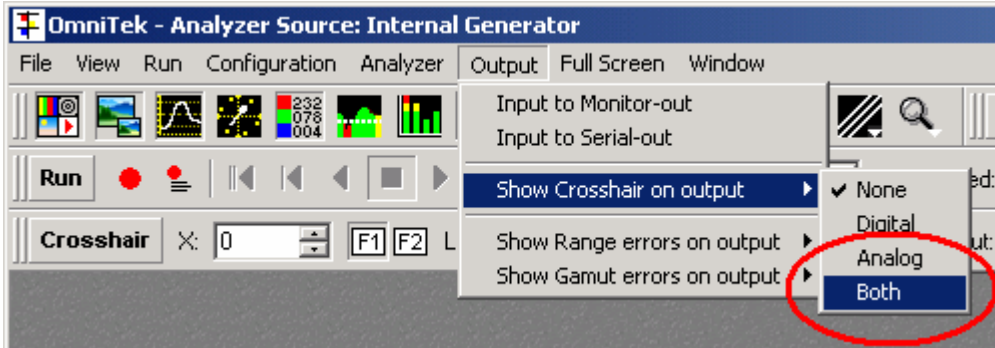


So open the Engineering dialog, select the 'Video' button, and then select the 'Analyzer' tab. Set the maximum valid luma value to be 100. You should also set the Error Mask to 0 lines and 0 pixels, as otherwise errors around the edge of the picture are masked.

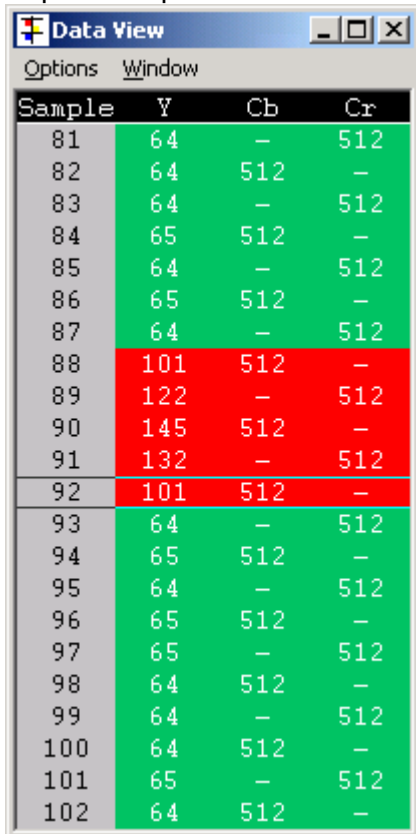
Your settings can be saved using the 'Profiles' button, so you can quickly switch between the usual range settings, and these special settings.

At this stage, your output monitor should be showing a uniform black output, apart from the failed pixel that may be just visible as slightly brighter. Now turn on range error highlighting onto the monitor, by looking at the 'Output' menu, 'Show Range Errors on Output', and then select the output that you are monitoring. Any pixels that have a luma value greater than 100 will be keyed over with a flashing black and white image, making them extremely easy to spot.

So now we can easily spot the bad pixels. The next thing is to be able to precisely locate them.



This can be very easily done by switching on a crosshair onto the output picture. This is done from the 'Output' menu, selecting 'Show Crosshair on Output', and again selecting the required output.



Sample	Y	Cb	Cr
81	64	-	512
82	64	512	-
83	64	-	512
84	65	512	-
85	64	-	512
86	65	512	-
87	64	-	512
88	101	512	-
89	122	-	512
90	145	512	-
91	132	-	512
92	101	512	-
93	64	-	512
94	65	512	-
95	64	-	512
96	65	512	-
97	65	-	512
98	64	512	-
99	64	-	512
100	64	512	-
101	65	-	512
102	64	512	-

Then place the mouse over the 'mini-pic' area on the vga monitor.

Whilst viewing the external video monitor, click with the left mouse button, and drag the cross hair on top of the flashing black and white pixel.

To help you find the exact line, you could open the 'Data View window'. If you are on the bad pixel, you will see it highlighted on the dataview in red.

If the cursor is not on the current line, it is easy to make small changes using the crosshair toolbar.

