

A few scanning tips

A Simple Way to Get Better Scans

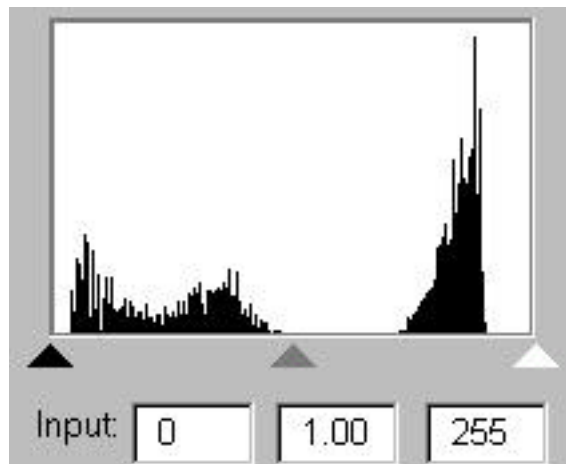
Histogram

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First let's make the tones better, to improve the contrast of the image.

The controls named Contrast and Brightness are of **very little value**. Even detrimental perhaps. They discard data indiscriminately, in an unintelligent manner. More about this later, but suffice it to say that the Histogram tool is very much more versatile and useful.

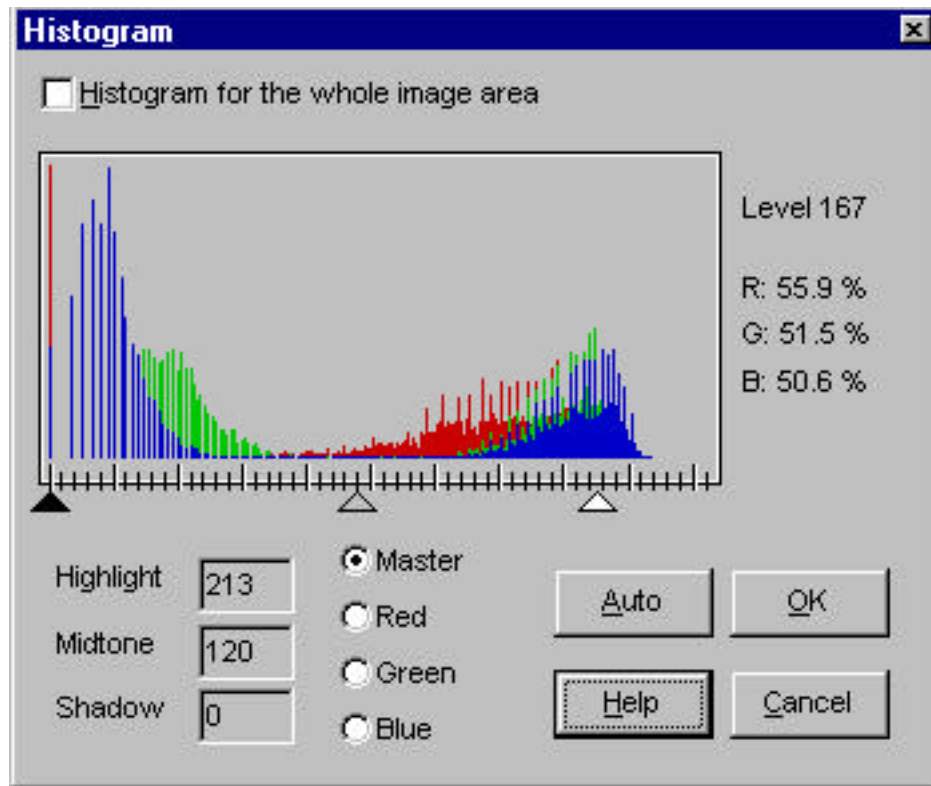


The Microtek histogram tool (partially shown here) is found in the ScanWizard Settings Windows, called the **Shadows and Highlight Tool** in the manual, and is under the third icon on the toolbar, the one that looks like a little histogram:



The Umax histogram tool is in the VistaScan 2.45 toolbar, next to the right end, is called a "histogram", and the icon also looks like a little histogram:





The Umax Vistascan 2.45 histogram tool, shown to make the point that it does exactly the same thing, and works the same way.

Vistascan 3.5 has the same Highlight, Shadow and Midpoint slider controls that do the same thing, but no longer has the data graph as a guide. However Vistascan 2.4x does, and MagicScan does, and both are [downloadable](#) at the UK Umax support site (both are only for SCSI Umax models).

This standard technique is general for most scanner brands. The HP scanners are exceptions, and generally do not provide this standard tool (the 6200 series has it). The better DeskScan II TWAIN software is downloadable from the HP web site to offer some control to 4P/5P models, but the histogram as such is not included. It is not that the HP scanners do not do this, but instead they do this step automatically, and manual control is not available to the user. Most scanner brands usually also have an Auto Contrast button that works automatically too, but images vary, and many users demand to have full control of their images.

Whatever your Histogram tool is named, it will work as described here.

What's a histogram?

The Histogram shows the total tonal distribution in the image. It's a barchart of the **count** of pixels of every tone of gray that occurs in the image. It helps us analyze, and more importantly, correct the

contrast of the image.

Gray? Yes, photographers know that color prints must first have the exposure and contrast set right, exactly the same as for B&W, and only then do you worry about the color balance.

Technically, the histogram is a map of Luminance, which is based on the way the human eye perceives brightness of different colors. The world won't end if you simply think of luminance as brightness, that's actually quite fine for our purpose (and it's really fun to watch the purists have a fit anyway <grin>). Here is [more detail about histograms](#) if you're still curious about Luminance.

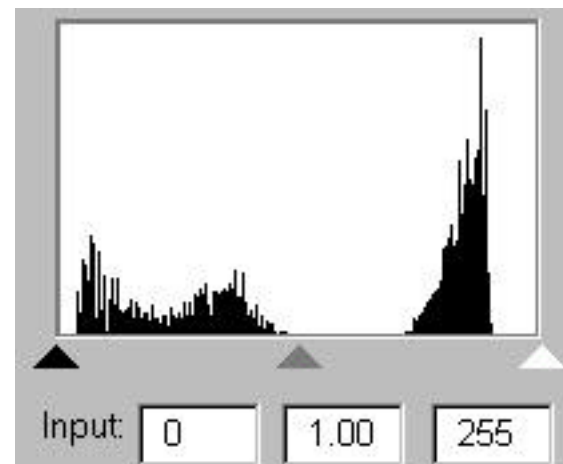
Scanning B&W photos uses exactly the same procedure as described here (for GrayScale, but not for Line art). The histogram shows the tone values as gray anyway.

Every pixel in the Color or Gray image computes to a Luminance value between 0 and 255. The Histogram graphs the pixel count of every possible value of Luminance, or brightness if it helps to think of it that way. Luminance is brightness the same way the human eye sees it, as opposed to absolute brightness. Anyway, the total tonal range of a pixel's 8 bit tone value is 0..255, where 0 is the blackest black at the left end, and 255 is the whitest white at the right end. The height of each vertical bar in the histogram simply shows how many image pixels have luminance value of 0, and how many pixels have luminance value 1, and 2, and 3, etc, all the way to 255 at the right end.

The histogram barchart shows at a glance the relative image tone distribution over the entire range. What it is now, and what it needs. In this image, we have a very high count of pixels that are near, but not at, the white end. We also have many that are near, but not at, the black end. Our image does not totally fill the possible range from darkest to lightest tones. Our image could have more contrast. But we can fix that very easily.

OK, **let's begin** with the Simple Way technique now...

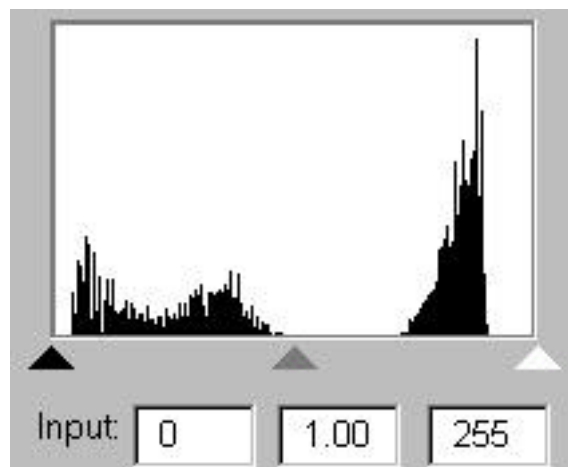
Umax VistaScan automatically starts each preview at defaults, but Microtek ScanWizard has manual **Reset button** because it remembers previous settings. There are pros and cons for either way (a configurable choice would be great!). There may be a reason to retain settings for several scans,



but ordinarily when starting a new image preview, we want to eliminate all of the adjustments made to the previous image. The Reset button is in every ScanWizard tool, and is also at the bottom of the extended Settings Window (I'd like to see it on the toolbar with the Preview button). It resets all previous adjustments to defaults, for a fresh start for this image, **the proverbial known starting place** so we know where we are.

Reset, then do a Preview scan. The Preview scan makes the histogram data available. The histogram represents the area of the image that is marked in the Preview area to be scanned. The scanner software stores the histogram data for the entire preview area, but shows in the histogram only the data to represent the currently marked Preview area specified for the scan.

This is the histogram for this photo seen after the Preview scan. We can just about explain the



three peaks in the histogram. There is the highest peak due to the light background towards the 255 end, meaning that many pixels are nearly white. Yellow is way up there too. Then the midrange red and green



values, and the very dark green leaves near 0. The peaks mean that the pixel count with those tone values were high. The photo's upper left corner is more white than the other corners, meaning those values are closest to 255.

Place the mouse over a part of your ScanWizard graph, and it will show the histogram Gray value there and shows the total count of pixels with that value.

The tone values at the ends with zero pixel count are of the most interest. Note that for this image, the original histogram values don't extend full range 0..255. 0 is the blackest black, and 255 is the whitest white, and we don't have any of either, at either end. But we can expand what tones we do have for best effect, by **"Setting the Points"**. This is a very standard scanner technique, really **THE** standard technique, and is the reason that any better scanner software provides the Histogram tool. You can ignore it, but you and your scans would be missing out on a really great thing.

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