



Calibrating Datavideo Monitors
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Perhaps the most important way to make sure that your video really looks as good as it can on other monitors is to monitor the video during production with a properly calibrated monitor. Below are some methods to calibrate Datavideo monitors like the TLM-404, TLM-700, TLM-70D, TLM-702, TLM-170MD, TLM-702HD and the TLM-700HD

Manual Monitor Calibration using SMPTE colour bars

The following technique was suggested by an old broadcast engineer who began working in video when tape was two inches wide and scene changes were made with razor blades and tapes; Fades and dissolves did not exist! Back then you may have had to walk up 6 flights of stairs to the studio and back, often carrying a 65-pound camera. Test instruments were expensive and often unavailable. So network engineers had to find a convenient, simple and reliable way to calibrate monitors that could be done in the field. (You could always recognize one of these guys by the Wratten 47B (dark blue) they kept in their wallets or in their mechanical pencil pocket protectors, along with their little screwdrivers etc.)

To calibrate a monitor is to adjust it so that it displays colour, brightness, hue etc to a set standard. A major aid to standardize monitor calibration, is the use of SMPTE/EBU Colour bars or [BBC test cards](#): a pattern of coloured strips (and in some cases grey scale strips) of very specific colours, arranged in a very specific way.

To do the following calibration procedure, you will need a source of standard colour bars. There are several possible places to get this: your camera may generate bars from a menu option; perhaps your black burst generator puts out T-Bars; you could use a graphics program or editing package on your computer to display an image of standard SMPTE colour bars. There are numerous places on the Internet to download standard colour bars if you don't have them; just do an Internet search for "colour bars" and take your pick.

This procedure is described using SMPTE bars, but EBU bars will work for most of this technique as well. As you will see, the bars are different in formats, in part because of the differences in broadcast systems between NTSC and PAL, but much of the usage will be the same. You can use the SMPTE bars regardless of where you are and what video system you are producing for, just as you can use EBU bars wherever too. You'll notice that the EBU bars don't have the grey scale information though.



The first thing to do is to get the colour bars displayed on the monitor that you want to calibrate. And then, locate the image controls on the video monitor, as these are the ones we will be adjusting.

Turn the contrast control to its midpoint. Turn the Chroma (colour) control all the way down so the screen image is in shades of black, white, and grey.



GRAY (80 UNITS)	YELLOW	CYAN	GREEN	MAGENTA	RED	BLUE
BLUE	BLACK	MAGENTA	BLACK	CYAN	BLACK	GRAY
1	WHITE (100 UNITS)	+Q	BLACK	3.5	7.5	11.5
						BLACK

Look in the lower right corner of the SMPTE colour bars. In the absolute lower right corner is a black square. Immediately to the left of that black square are three thinner vertical bars. (These are called Pluge Bars, which stands for Picture Lineup Generating Equipment). Actually, when the monitor is correctly adjusted, you should only see two of these bars. Adjust the brightness control until the bar on the right is just barely visible, and the bar in the middle is just not visible.

Now look at the lower left hand corner: the second box in from the left is a pure white. Turn the contrast control all the way to maximum and watch the white box flare and bloom. Now turn down the contrast control just until the white box begins to change noticeably. At this point, the Pluge Bars should still look as you set them in the previous step above: only the right most should be barely visible. If that is not the case, adjust the brightness control until it is.

Some Datavideo monitors have a blue only switch, after switching this advanced feature on, look at the top half of the bars. The large vertical bars should look like alternating bars of equal brightness. Adjust the Chroma (colour) control until the grey bar on the far left and the blue bar on the far right are of equal intensity. As an aid in doing this, look at the line of horizontal bars and match the grey vertical bar on the left with the grey horizontal bar on the right. Or do the same with the blue bars.

Next adjust the hue control until the cyan and magenta vertical bars are of the same brightness. Use the same technique described above, matching the vertical bar with the diagonally opposite horizontal bar of the same colour.

The goal of these last 2 adjustments, to Chroma and hue, is to make the 4 large vertical bars (grey, cyan, magenta, and blue) of all the same intensity or brightness.

When that is done, turn off the blue only switch (or remove the blue Wratten 47B filter if you are following below instruction for monitors without blue only), and look at some program material (video) with skin tones as a somewhat subjective (though accurate) basis for making fine tuning adjustments to Chroma and hue if necessary.

You might find that your Datavideo monitor doesn't have a blue only switch, not to worry, you can follow the above instructions by using some blue lighting gel (like Wratten 47B dark blue!). Alternatively, do this next bit strictly by eyeball and luck: put the colour control to the midpoint, and adjust it so that the vertical yellow bar is a lemon yellow (no orange or green tint) and the vertical magenta bar should not tilt toward red or purple.

We hope this helps you get the best out of your Datavideo Monitor!