

# Calibrating KODAK PROFESSIONAL PORTRA Black & White Paper in Durst Lambda Digital Laser Imagers



This procedure will show you how to use the controls within your Durst Lambda Digital Laser Imager to adjust exposure of each CMY color separately to provide a final excellent black-and-white image. The following information explains how to control cyan with D filter, magenta with the M filter, and yellow with the Y filter.

Use a color print of the Lambda calibration target for color comparison purposes. Note the location of the cyan, magenta and yellow separation step tablets. Now locate the D-max step in each tablet (extreme right). These are not obvious in the monochrome print.

Initially, a handheld X-Rite densitometer (or equivalent color densitometer) is required for this calibration, not the Lambda X-Rite densitometer. It will be used to read the RGB densities of the C, M, and Y separation D-max steps in the following neutral images. The C, M, and Y separation D-max steps are located in the above color reference print. The Lambda X-Rite densitometer should only be used for the final step, as described in the following procedure.

## PROCEDURE

1. Select "New Media" in the Durst calibration system.
2. Select "negative" and "reflection media" in the setup menu.
3. Set the following basic calibration filters to:

	Lambda 130	Lambda 76
D	90	57
Cyan	0	0
Magenta	50	95
Yellow	90	90

Do not adjust the aim neutral D-max values; these are all set to 200 by default. Also, do not adjust the cyan filter at any time (this stays at 0).

4. Expose and process the calibration target image. Read just the C, M, and Y separation D-max steps with a handheld X-Rite densitometer. You may need the color reference target mentioned above to locate the C, M,

and Y D-max steps. Record the red density of the cyan D-max step, the green density of the magenta D-max step, and the blue density of the yellow D-max step. The aim densities are as follows:

Cyan D-max	R $1.50 \pm 0.05$
Magenta D-max	G $1.22 \pm 0.04$
Yellow D-max	B $0.58 \pm 0.03$

If the red density of the cyan D-max step is outside the range specified above, or if the D-max appears to have plateaued for several steps, proceed to step 5. If the cyan density is within range, but the magenta and yellow are not, go to step 6. If all three densities are within range, go to step 7.

5. If the red density of the cyan D-max step is too dark (greater than 1.55) or too light (less than 1.45), adjust the D filter (only). Repeat the exposure/process cycle with each new D setting until the red density is on aim. (Example, if your first exposure is too dark, add D in the "setup" menu to reduce exposure.)

**Note:** In each iteration, start over by using "New Media" and simply change the D filter, holding the M and Y filter settings constant as specified in step 3. **Never** calculate a new LUT (Look Up Table) between iterations.

Proceed to step 6 when the red density is in range.

6. Use the "New Media" for each iteration and only change the M and Y filter setting, keeping the D filter constant and at the same value as in step 5. Repeat the exposure/process cycle with new M and Y filter settings (add M or Y filtration if the D-max is too high) until the green density of the magenta D-max step and the blue density of the yellow D-max step are on aim and do not appear to plateau. If either the magenta or yellow step tablet appears to have plateaued in the high-density steps, the filter setting is too low and must be increased. Add more filtration until the steps can be discerned. Then proceed to step 7.

# Calibrating KODAK PROFESSIONAL PORTRA Black & White Paper in Durst Lambda Digital Laser Imagers

---

7. At this point, the D, M, and Y filters have been adjusted to bring the separation C, M, and Y D-max values within aim. The C filter should be 0. Up to now, you should not have read the strip using the Lambda X-Rite densitometer or run a Lambda “calculate” step. Your last calibration exposure should be on aim for C, M, and Y D-max values. You should still be on the last “New Media” LUT. The text in the calibration target image should look clean with very little fringing (see the text above step 21 in the neutral tablet; it is very small but should look clean).

Next, read the neutral tablet into the Lambda calibration system. The neutral D-max values that appear on the video screen should be close to R = 216, G = 244, B = 224. Enter the exact red, green and blue D-max values into the neutral D-max aims (replacing the 200 values) on the screen. Most important is that the aim neutral D-max be the same as the actual neutral D-max.

8. Press calculate. This procedure is complete.



## Important

The blue channel degrades with each additional iterative correction (the density scale gets compressed into the top four or five steps), causing a loss of highlight detail. Therefore, more than one calculation is not recommended.

## Recalibration

Because the monochrome exposure correction affects only density and not hue, a calibration LUT should provide consistent image quality for a long time, assuming the laser output is fairly stable. You may not have to recalibrate as often as for color paper, which relies on exposure correction for neutral balance.

To recalibrate, start from “New Media” again, not the working LUT, and enter the final D, M, and Y filter values from the last calibration. The C filter should be 0. Do not set the neutral D-max aims yet (leave them at 200 in each channel). Print and process a calibration target image. Verify that the C, M, and Y separation D-max steps are on aim for density, and that there is no D-max plateau in any separation tablet. Otherwise, repeat steps 5 and 6 above until they are on aim. Then, repeat step 7 and 8 above. Record the final filter settings for the next calibration.



Kodak Professional Division  
EASTMAN KODAK COMPANY

**Kodak Professional**