

Calibrating KODAK PROFESSIONAL PORTRA Black & White Paper in the Durst Dice America Epsilon 30 LED Printer



This procedure will show you how to use the controls within the Epsilon 30 Printer to adjust exposure of each CMY color separately to give a final excellent black-and-white image. This procedure will show you how to control cyan with the Density filter, magenta with the M filter, and yellow with the Y filter.

The initial M, Y, and Density filter settings in the procedure below were determined for the Epsilon 30 with LED cooling kit, Software Version 2.5 Revision 02 only. Settings for other models may differ slightly.

Use a color print of the Epsilon 30 calibration target for color comparison. Note the location of the cyan, magenta and yellow separation step tablets and locate the D-max step in each tablet (extreme right)—they are not obvious in the monochrome print.

The procedure below requires that an X-Rite densitometer (or equivalent color densitometer) is available to hand read the RGB densities from the C, M, and Y separation D-max steps.

PROCEDURE

1. Start by selecting “Paper,” “List Paper Types,” then “New Paper” in the Durst calibration system
2. Select “New Reflection Paper” and set up “Description,” “Width,” and “Length.” Leave everything else at their default values.
3. “Open” the file and then “Paper,” “Paper Calibration,” and “Show Current Paper Data.”
4. Set the following “Basic Calibration Filter” values to:

D	0.700
Cyan	0.000
Magenta	0.000
Yellow	0.000

Do not adjust the cyan value at any time; this is always zero (0.000).

5. 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. The aim densities are as follows:

Cyan D-max	R 1.50 ± 0.05
Magenta D-max	G 1.22 ± 0.04
Yellow D-max	B $0.58 - 0.03$ (no upper tolerance)

If any of the measured densities are outside the ranges specified, or if any of the next lower steps to the D-max step appear to have hit a plateau for several steps, proceed to step 6; otherwise, go to step 7.

6. 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 Density filter (only), and repeat the exposure/process cycle with each new Density setting until the red density is on aim. (Example, if your first exposure is too dark, you need to add Density in the “current paper calibration” menu to reduce exposure.)

Note: Do not calculate a new LUT (Look Up Table) between iterations.

Proceed to Step 7 when the red density is in range.

7. If the green or blue D-max densities are too high, keep the Density filter at the same value as in Step 6 and repeat the exposure/process cycle with new M and Y filter settings. Add M filtration if the green D-max is too high; subtract M or Y filtration if the green or blue D-max is too low. Do so until the green and blue densities of the D-max steps are on aim and the adjacent steps can be discerned (no plateau).

Note: Up to now you should not have read the strip using the Epsilon X-rite DTP36, nor should you have ever run an Epsilon “calculate” step. Your last calibration exposure should be on aim for C, M, and Y D-max. The text in the calibration target image should look clean and should have very little fringing. (See the text above step 21 in the neutral tablet; that text is very small but should look clean.)

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8. Read the neutral tablet into the Epsilon calibration system (e.g. measure the densities using the X-Rite DTP36). Note the neutral D-max values that come up under Step 21 of the Measured Density Values on the video screen; they should be close to R=2.16, G=2.44, B=2.24. Enter the exact red, green and blue D-max values from Step 21 into the RGB D-max aims at the lower right of the screen. The important thing here is that the aim RGB D-max values be the same as the actual Step 21 RGB D-max values.

If all of the above are not true, start over at step 6.

9. Press “calculate” and then “OK/Save.” This procedure is complete.



Important

Additional calibration iterations do not improve calibration and may lead to banding.

The “LED Balance” procedure is not required. The default settings are fine.

Follow the standard procedure for setting “Feed.”

Use only “Print Mode HIQ” for PORTRA Black & White Paper.

Suggested Options:

In the case of typical RGB images, there are significant improvements to be had by evoking “Contrast 1,” “Contrast 2,” upper scale contrast increases and/or use of the density sliders starting from “Contrast 2,” etc. In addition, images that have been converted in Adobe Photoshop™ from RGB Color Mode to Grayscale Mode tend to appear different in density than ones that have been printed directly from full color. We invite the user to experiment.

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 LED output is fairly stable. You may not have to recalibrate as often as for color paper, which relies on exposure correction for neutral balance.

However, when print results (D-max, sensitometry, highlight detail, etc.) indicate that a new calibration should be done, do so by creating a new Portra B&W paper channel.

We suggest that the name of the channel contain the date of its creation, e.g., PortraB&W27Aug01. Do not run a calibration procedure on the current PORTRA Black & White Paper channel as you would do for a color paper.

Obtain the “Basic Calibration” values for the current paper using the following steps:

- a. At top banner: Paper/List Paper Types
- b. Click on the name of the current paper channel
- c. Click on Open
- d. At top banner: Paper/Paper Calibration/Show Current Paper Data
- e. Copy the “Basic Calibration” D, C, M and Y values onto a piece of paper
- f. Click on Cancel

To create the new paper channel:

- a. At top banner: Paper/List Paper Types/New Paper/New Reflection Paper
- b. Enter the D, C, M and Y values from above into the Basic Calibration of this new paper's screen. Note that the value for C should still be zero (0.000).
- c. Press OK. (Do not set the neutral D-max aims yet.)

Leave the neutral D-max aims as they are in each channel. Print and process a calibration target image. Verify that the C, M, Y separation D-max steps are on aim for density. That is, verify that they are inside of the +/- values given in Step 5 and that there is no D-max plateau in any separation tablet (all steps increase in density as they go from D-min to D-max). If those criteria are true, go on to Steps 8 and 9.

If D-max aims for all three separation steps are not within tolerance, repeat Steps 6 and 7 above until all three are on aim. Then, continue with Steps 8 and 9. Record the final filter settings (the Basic Calibration values) for the next calibration.

To eliminate confusion about which paper channel to use for printing PORTRA Black & White Paper on the Epsilon 30, we suggest that you now delete the previous PORTRA Black & White Paper channel.



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