



**Flanders
Scientific
Inc.**

CRI Colorimeter Matrix Creation with CRI Utility

Matrix creation using CR100 colorimeter and reference spectroradiometer

Flanders Scientific, Inc.
6215 Shiloh Crossing
Suite G
Alpharetta, GA 30005
Phone: +1.678.835.4934
Fax: +1.678.804.1882
E-Mail: Support@FlandersScientific.com
www.FlandersScientific.com

CRI Colorimeter Matrix Creation with CRI Utility

This guide will walk you through creating a display specific matrix on a CR100 colorimeter with a reference spectroradiometer using CRI's Colorimeter Utility. When complete the matrix will be stored on the CR100 and directly accessible by FSI's GaiaColor AutoCal as well as 3rd party calibration applications like LightIllusion's ColourSpace and Portrait Display's Calman.

Begin by setting your FSI monitor to its default profile:

On DM Series: Menu > System > Load Profile > Default. When prompted, confirm by selecting Yes.

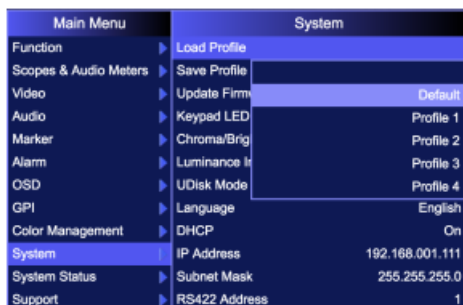
On XMP and XMP C Series: Menu > Profile Load > Default.

Next, you will put the monitor in its panel native gamut setting.

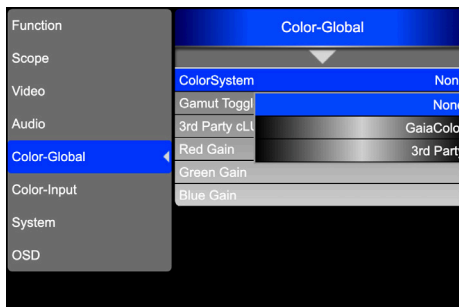
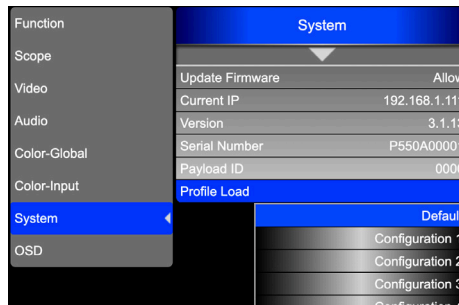
On DM Series: Bypass the 3D LUT in the monitor's Color Management menu by selecting Color Management > LUT Bypass > 3D LUT. *Remember to set LUT Bypass back to None when you have finished creating your matrix.*

On XMP Series: Switch to ColorSystem None from the monitor's Color-Global menu. *Remember to set ColorSystem back to GaiaColor when you have completed creating your matrix.*

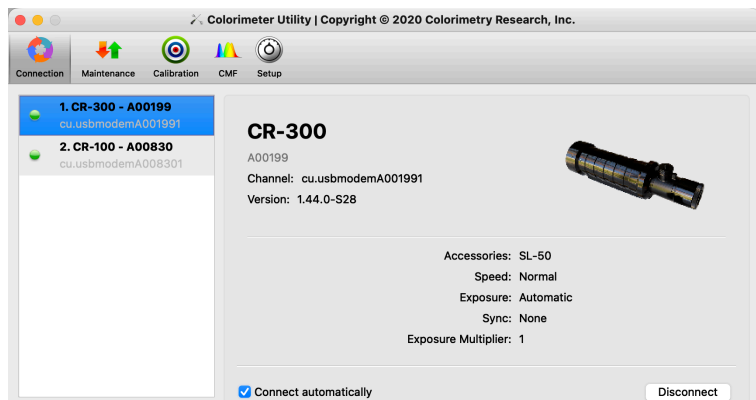
Achieving Panel Native Gamut on DM



Achieving Panel Native Gamut on XMP



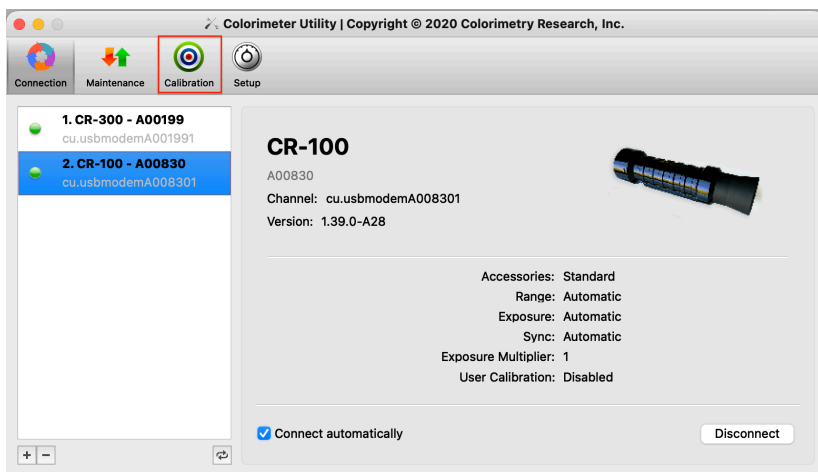
Next, connect your CR100 and, if applicable, your CRI spectroradiometer to your computer.



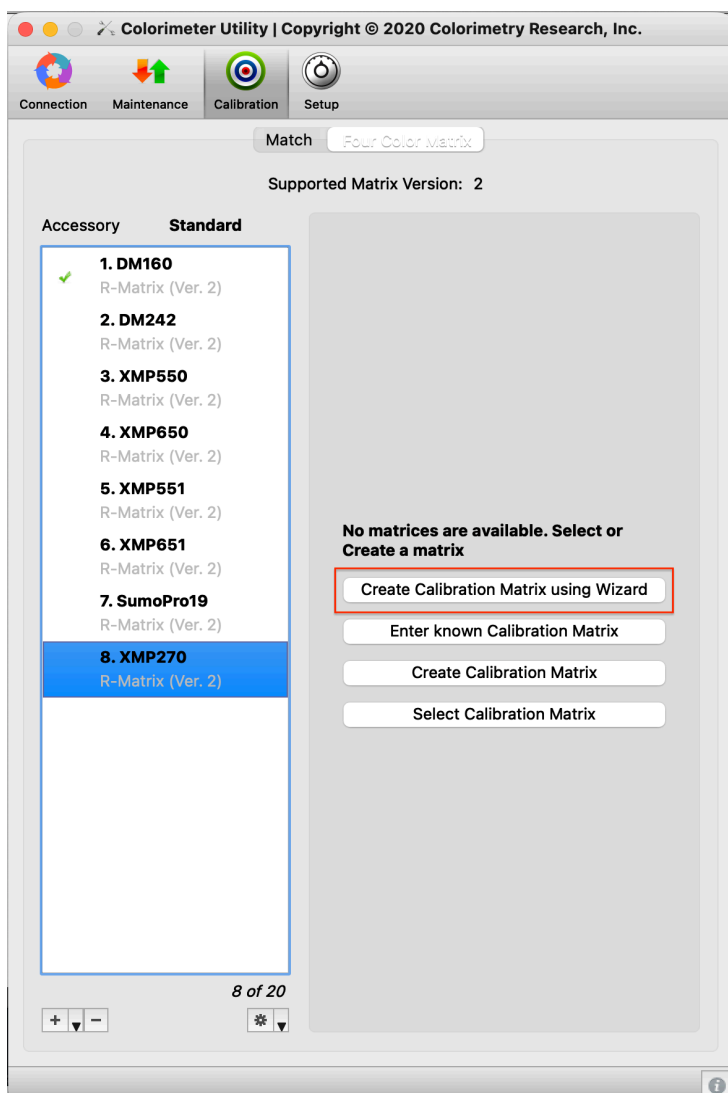
Then open the CRI Utility. If you are using a CRI spectroradiometer (e.g. CR300) as your reference instrument please ensure both devices are detected by the Utility before continuing. If using a reference spectroradiometer from a different company only the CR100 will be shown.

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Now select the CR-100 as shown, then click on calibration.

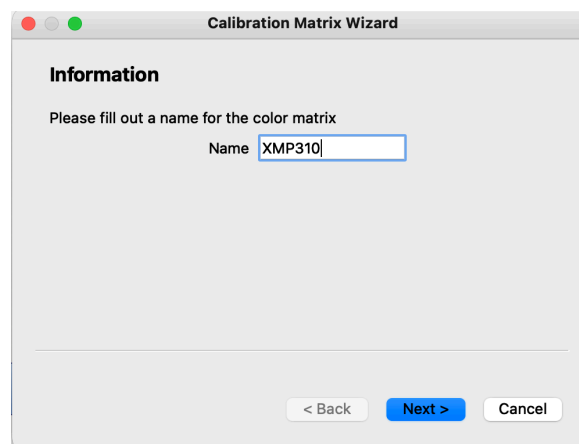


From the calibration window first ensure that the display you intend to create a matrix for is not already listed.

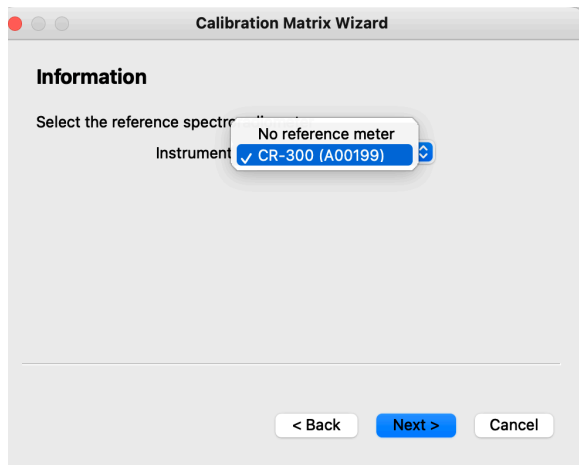


If a matrix is already saved to the CR100 with the name you intend to use first delete or re-name that preexisting matrix. Keep in mind that GaiaColor AutoCal will automatically select the appropriate matrix stored to the colorimeter based on matrix name so it is important to prevent duplicate names. If you want to save older matrices for later recall you can use the CRI Utility's export / import option. Similarly, only 20 matrices can be stored to the colorimeter's flash memory at a time so if you require more than 20 matrices you can use the import / export options to save and recall additional matrices.

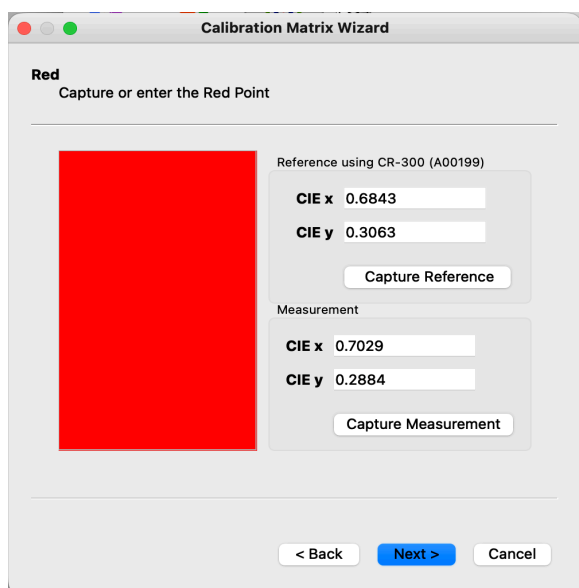
Next, click on Create Calibration Matrix Using Wizard. You will then be prompted to name the matrix, make sure this is configured as required by GaiaColor AutoCal. Then click Next.



The next prompt will ask you to select your reference spectroradiometer. If using a CR250, CR300, or similar spectroradiometer from CRI it should be selectable in the drop-down. Your readings will be automatically taken from that device as you move through the rest of the process. If using a spectroradiometer from a different provider select No Reference Meter, your reference values will instead be entered manually. Click Next to continue.

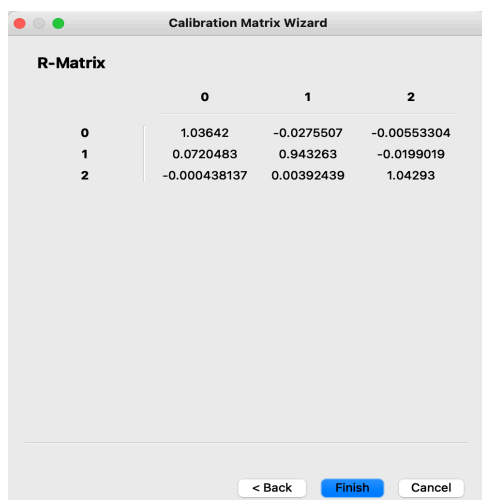


The matrix creation wizard will next prompt you to capture readings of Red, Green, Blue, and White with both your reference spectroradiometer and your CR100 colorimeter. While the program generates its own small test patches we strongly suggest using 100% Red, Green, Blue, and White test patches over SDI from a reference source, like DaVinci Resolve with a professional I/O device, to avoid potential OS level color management variables in your test patch generation. Additionally, an L32 (~10%) test patch size should be used. On some monitors, like DM250 or DM220, this will help avoid loading behavior that can occur when using large test patch sizes in the Bypass 3D LUT mode. This is less critical on XMP series as the monitor was set to default earlier in this document and this will result in a peak luminance setting well below any loading thresholds on the display regardless of patch size.



For best possible results it is advisable to measure the same exact area of the screen with your colorimeter and your spectroradiometer sequentially, which will mean moving the probes for each reading. However, uniformity is typically sufficiently good enough on most monitors to allow for simultaneous readings with the probes placed next to one another without it causing any significant issues or impacts to accuracy so this is often an acceptable and practical option as well.

If you are using a CRI spectroradiometer you can simply click Capture Reference for each of the 4 reference test patches. If using another brand of spectroradiometer you will manually type in the x and y values for Red, Green, and Blue and the x,y,Y values for White. The Capture Measurement button will take the reading from your CR100 colorimeter. Once both reference and measurement values are shown for any given test patch you can then click Next to continue through the patch sequence.



Once readings have been taken for all 4 test patches your calibration matrix will be displayed. You can then press Finish to complete the process, at which point the matrix is now saved to probe memory.

After a matrix is created you can test the matrix by selecting the matrix, clicking test, and taking new readings with just your CR100 for the same Red, Green, Blue, and White test patches with the matrix now active. When complete, a summary will appear showing you the level of agreement between spectroradiometer and colorimeter with matrix applied.