



**Flanders
Scientific
Inc.**

XM551U, XM651U, XM650U Calibration

Using LightSpace CMS with Direct LUT Upload Capability

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Pre-Calibration Steps

Monitor Settings

Before starting calibration please set all gain, bias, and rotary knob controls back to default.

From the COLOR menu on the monitor set COLOR SYSTEM to LightSpace and set the LUT MODE to your choice of Normal or Advanced. LightSpace is compatible with both modes and will automatically detect and load the correct LUT size and format for your LUT MODE. See the monitor user manual for details on Normal vs. Advanced Mode operation.

Next, set the GAMUT selection on the monitor to match the color space you plan on calibrating for (e.g. Rec709, P3, etc.) Then set the LUMINANCE MODE to the desired setting. We suggest 100 for SDR.

The last monitor menu selection to consider is the RANGE selection. The RANGE setting on the monitor should be set to match the output range of your test pattern generator source. For example, if using Resolve as your test pattern generator with Resolve set to Video Range the monitor should also be set to Video Range. A mismatch between your test pattern generator output range and your monitor's RANGE setting will lead to an incorrect calibration result.

Clear Panel Noise

If you are using an XM OLED and plan to run the Clear Panel Noise function we suggest doing so before calibration.

Warm-up

A warm-up period of 1 hour is suggested before starting calibration. For proper warm-up please set the monitor to the LUMINANCE MODE selection you plan on using and send the monitor a test signal. For XM OLEDs we advise alternating patterns of full field Red, Green, Blue, and White.

Connecting the monitor to your network

After the monitor has been turned on connect the display's ethernet port to your local network. The display will obtain an IP address via DHCP. If your display fails to obtain an IP address, please unplug the ethernet cable, reboot the monitor, and connect the ethernet cable only after the display has completed its boot cycle. The assigned IP address can be seen from the monitor's SYSTEM menu. Take note of this IP address as you will need it to connect LightSpace to the display.

General work-flow notes before you get started

LightSpace is a very flexible calibration system with a large number of potential user defined variables including but not limited to what test pattern generator will be used, how many test patches will be measured, what type of probe will be used, and whether the user will calibrate just the 3D LUT or if the user will calibrate using both 3D and 1D LUT positions. Sample LightSpace work-flows are described below, but there are many valid variations on these processes. Most of the variations follow the same basic steps so the work-flows described below should be useful to all users, but if you have questions specific to your work-flow please feel free to contact Support@FlandersScientific.com for further assistance.

Sample LightSpace Work-flow (Resolve as TPG, Probe CR100, 1D+3D LUT Upload)

Connecting to Resolve as your test pattern generator

Start DaVinci Resolve and create a new timeline. There must be content in your timeline before starting calibration.

Verify that the monitor is receiving a signal from Resolve then click on the Color Tab in Resolve.

Click on the Workspace menu in Resolve. Select Monitor Calibration. Select LightSpace. A pop-up dialog in Resolve will request an IP address, which can be found once you start LightSpace.

Start LightSpace and click on the network manager icon. In the Network Manager window click on enable and then take note of the IP address listed. Enter the IP address in Resolve and press Connect. Do not close the Calibration network connection window in Resolve as this will terminate your connection.

Connecting your probe

With the CR100 plugged into your computer return to LightSpace and click on the tools menu.

Select Discoverable Probes and click on Colorimetry Research CR-100 as your calibration probe. Make sure that Virtual Probe is not selected.

Connecting LightSpace to the Monitor

From LightSpace click on the File menu, then select Upload. From the Upload dialog window select XM as your device type. Next type in the monitor's IP address, which can be found on the monitor's SYSTEM menu.

Next select the Color Gamut memory position where you will save your LUTs. This selection should match the GAMUT selection made on the monitor as outlined in the pre-calibration steps at the beginning of this document.

Finally, with NULL Cube checked select 1D+3D, then press upload. This will load unity LUTs to the both the Front 1D LUT and 3D LUT memory positions. Next do the same for the back 1D LUT selection, with NULL cube checked, press upload. By uploading NULL cubes to these three positions you are effectively bypassing any previously loaded calibrations so that you may profile the monitor in its native, uncalibrated, state.

Once NULL LUTs are loaded in all 3 positions press Close within the upload dialog window.

Profiling the Monitor

Next select either the Calibration Interface or Display Characterization icons to begin profiling the monitor. Grey Only Large (Calibration Interface) is suggested if you are short on time and 17x17x17 or 21x21x21 Display Characterization is suggested for optimal SDR results.

From the Display Characterization / Calibration Interface window select Options. Make sure the CR100 serial number is listed at top of the options window. Set Extra Delay Time to 1.0 Seconds.

To Sync the CR100 set Sync Frequency to Manual and select Probe Calibration. Follow the prompt and click Ok. It may be advisable to type in a custom number here based on your source frame rate, contact FSI support if you have questions about this selection.

Under Calibration Settings, select the correct calibration matrix that is stored on the CR100. Then press Ok.

Next place your CR100 probe at the center of the monitor and press the Measure (Display Characterization) or Profile (Calibration Interface) button. A dialog window will ask you to give your **profile a name**. Select something easily identifiable and press OK to begin the profiling process.

Once your profile completes select the Convert Colour Space icon.

In the Convert Colour Space window enter your desired LUT name in the NAME field.

From the source dialog select your target colour space from the colour space dropdown menu (e.g. Rec709). From the destination dialog select your **calibration profile**. Then click create new to generate your calibration LUT.

Once your LUT is generated select File, then Upload. From the upload dialog make sure NULL Cube is unchecked. Select 1D + 3D, verify you are saving to the correct memory position option, and then press Upload. This will save the calibration LUTs to the Front 1D and 3D LUT calibration positions. Your calibration is now complete.

Additional Considerations

On XM OLED models you may get better final calibration results by calibrating with a Back 1D LUT plus 3D LUT. If you plan on utilizing the Back 1D LUT for calibration please remember to calibrate for this position first, upload to the monitor, then profile with this Back 1D LUT active. Your 3D LUT will then be created using this profile with Back 1D LUT active as the destination.

Please keep in mind that OLED monitors can suffer from burn in, especially at high luminance. For this reason windowed patterns should not be used for extended periods of time.

Questions? E-mail: Support@FlandersScientific.com or Call: +1.678.835.4934