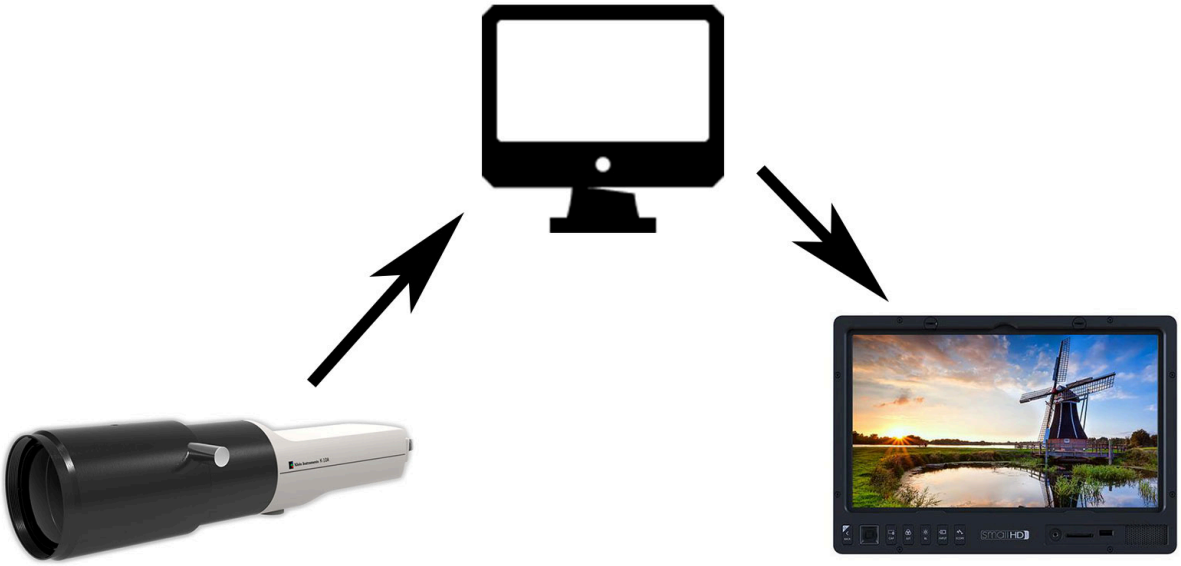
How to Calibrate Your Monitor with Free Software

Note: This article refers to SmallHD OS4, please refer to this tutorial for OS3.

Your SmallHD monitor's color is factory calibrated before it ships, however, as with all monitors, colors may begin to shift over time with use.

SmallHD is happy to calibrate your unit for you, but you can also do it yourself using a calibration probe and computer software. This works by connecting your monitor to your computer as a computer display and using calibration software to create a calibration LUT to load into your SmallHD monitor.



We recommend probes that can handle at least 2000 nits of brightness and 1:100000 contrast ratios (depending on your monitor Nit level, your probe should handle more). Common professional calibration probes include the Klein Instruments K-10A and Colorimetry Research CR-100. More budget probes are available on the market, you will get what you pay for in many cases.

SmallHD uses the professional software CalMan with a Klein Probe. Some probes will include their own software and there are free/open-source options on the market (some may or may not utilize a color

probe): DisplayCAL, Calibrize, and Natural Color Pro among a few . We will use DisplayCAL as an example, paired with the K-10A probe.

THINGS YOU NEED:

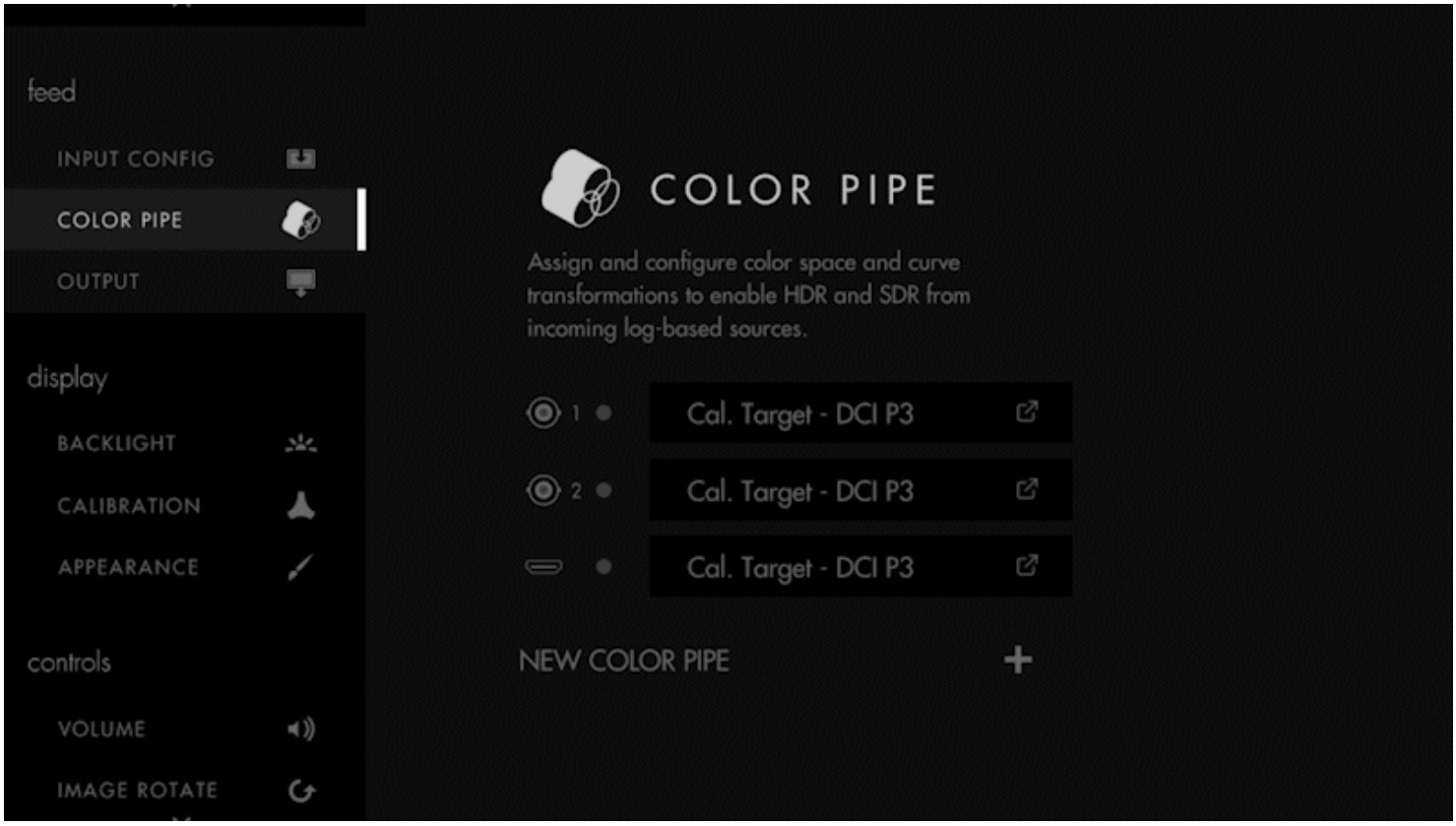
- Monitor
- Computer
- Software
- SmallHD OS4 or later (in this example)
- SD Card 2,4,8,16 GB properly formatted

WORKFLOW:

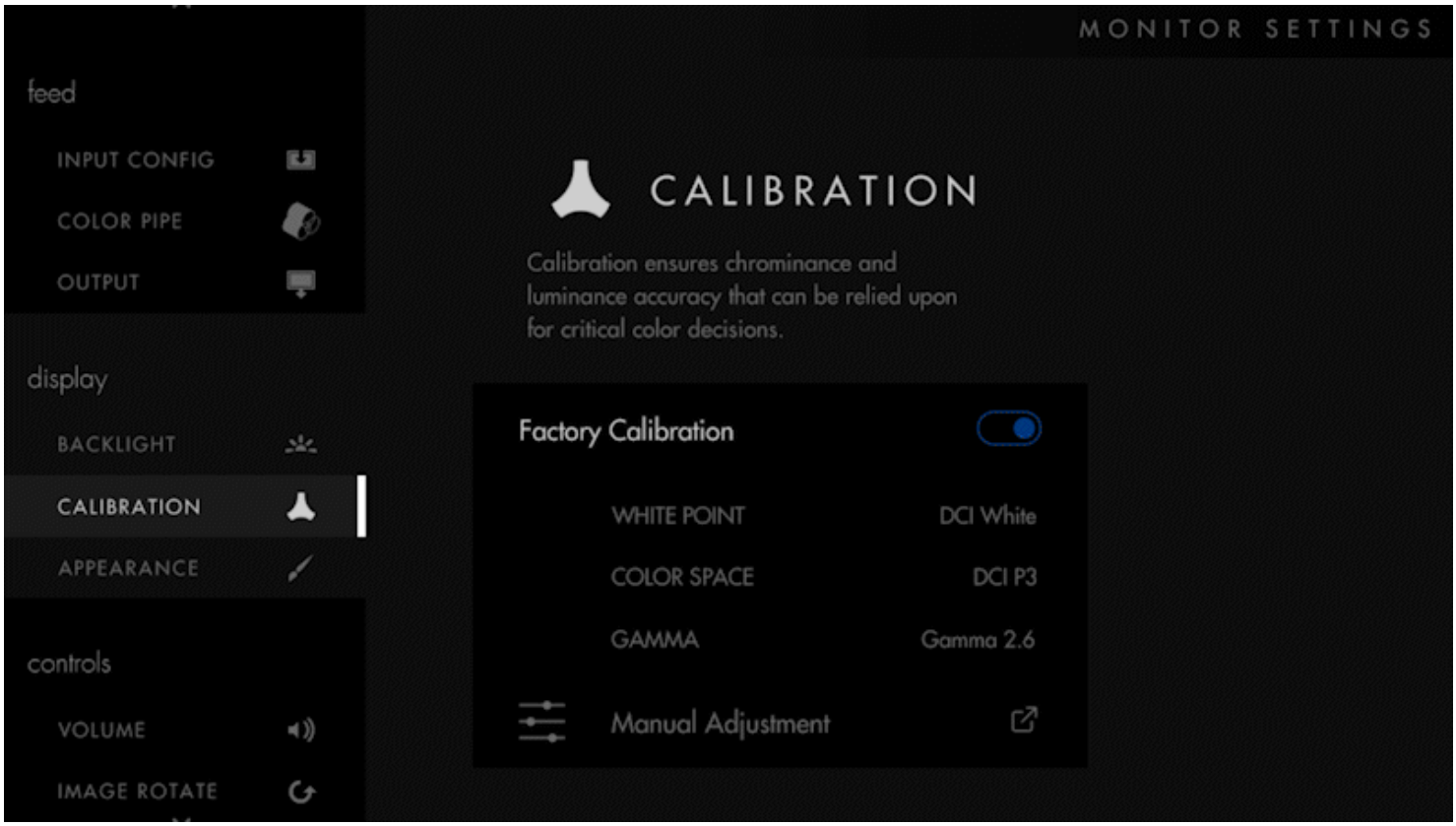
First, power on and connect your SmallHD monitor to your computer via HDMI and make sure it's detected as a display and receiving a signal.

Turn on the monitor allow it to warm up at least 45 minutes. You can run video or a test signal during this time.

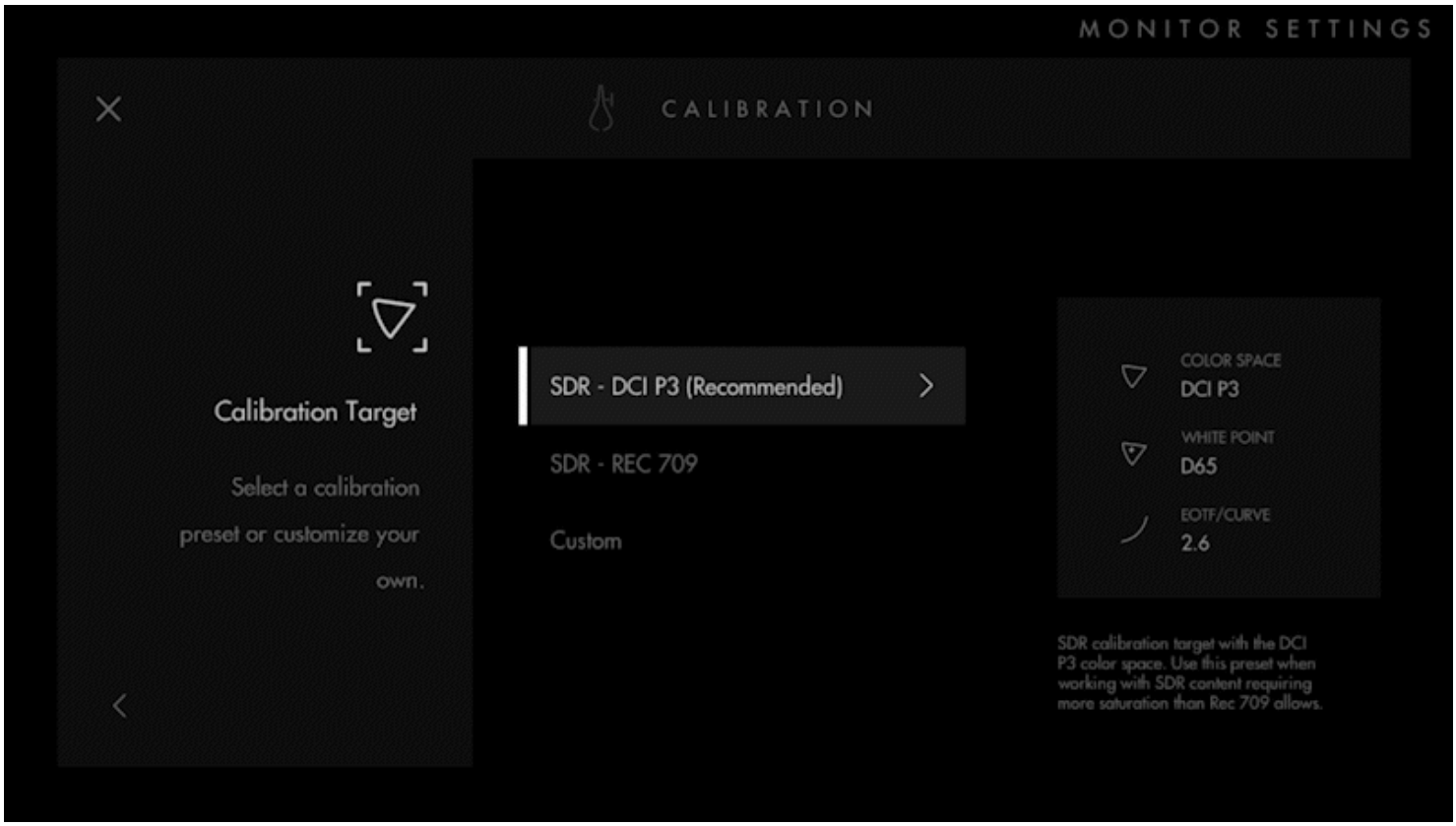
Enter your monitor's settings page and select Calibration.



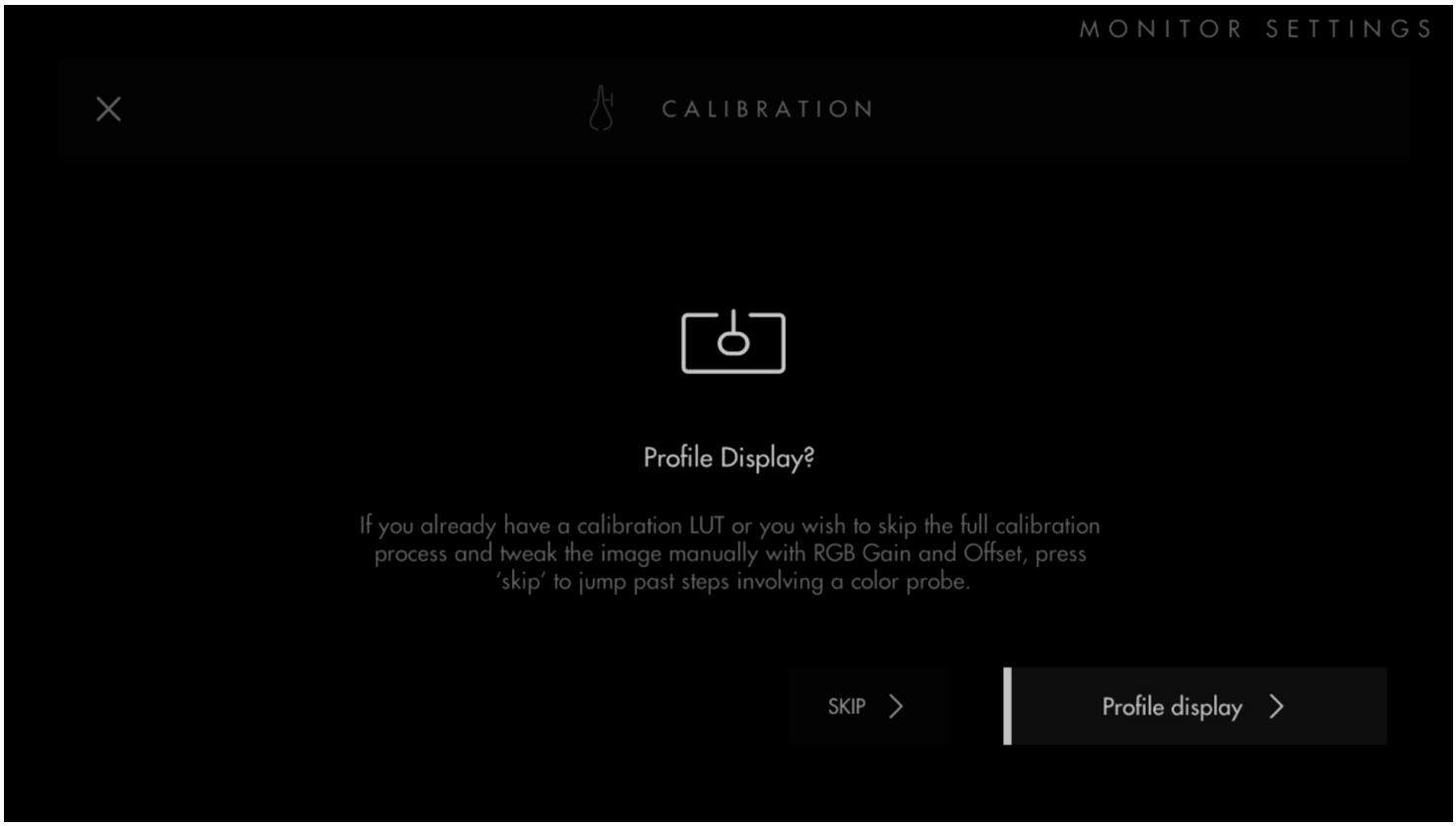
Scroll down to reveal additional options and select Create New Calibration. You will enter a calibration wizard with introductory pages to the calibration process.



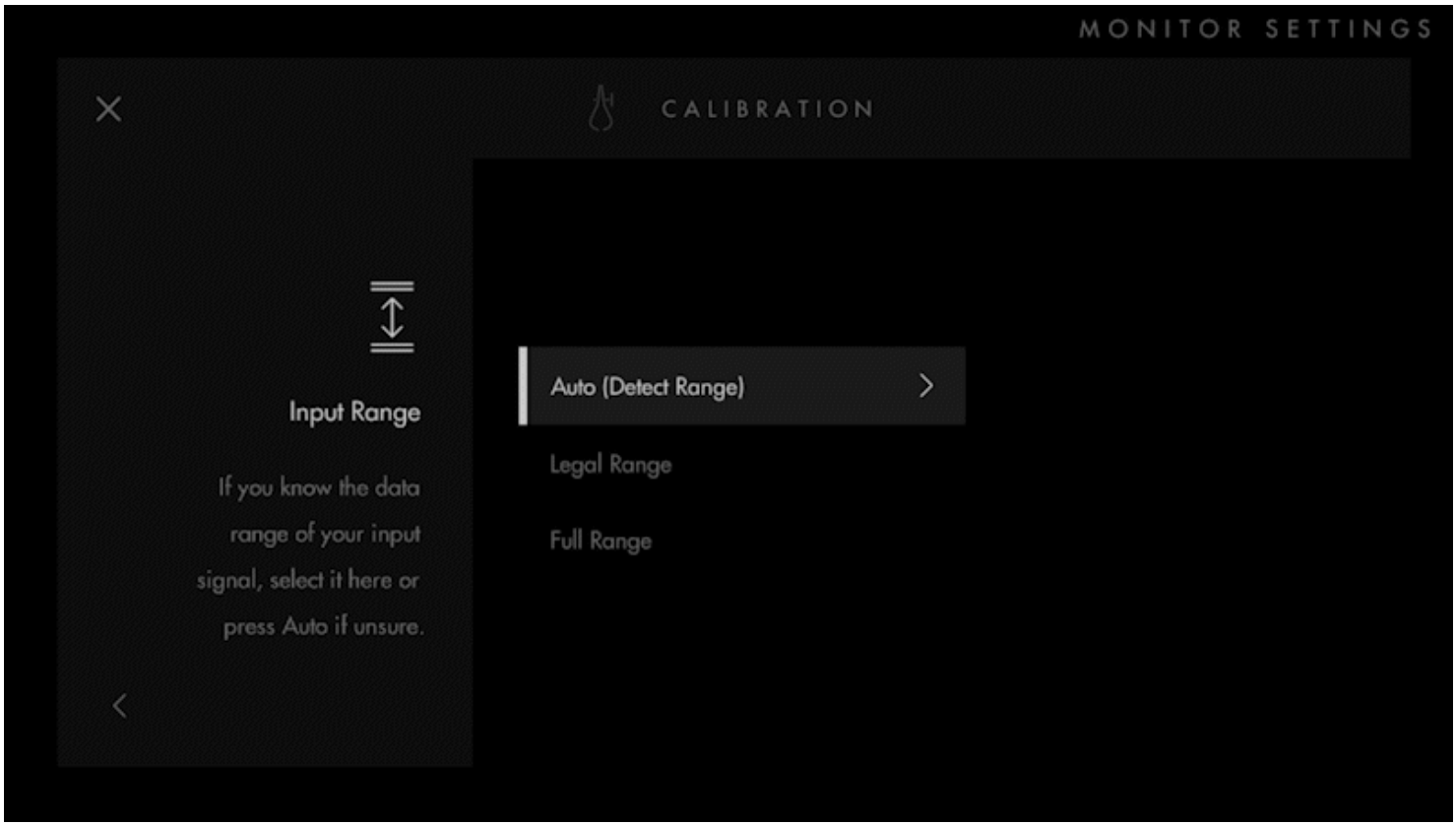
After clicking through the introduction, you will choose your calibration target. For non-HDR monitors, SDR - REC709 will be the recommended calibration. Select your calibration target and in the next screen, select Accept Calibration Target.



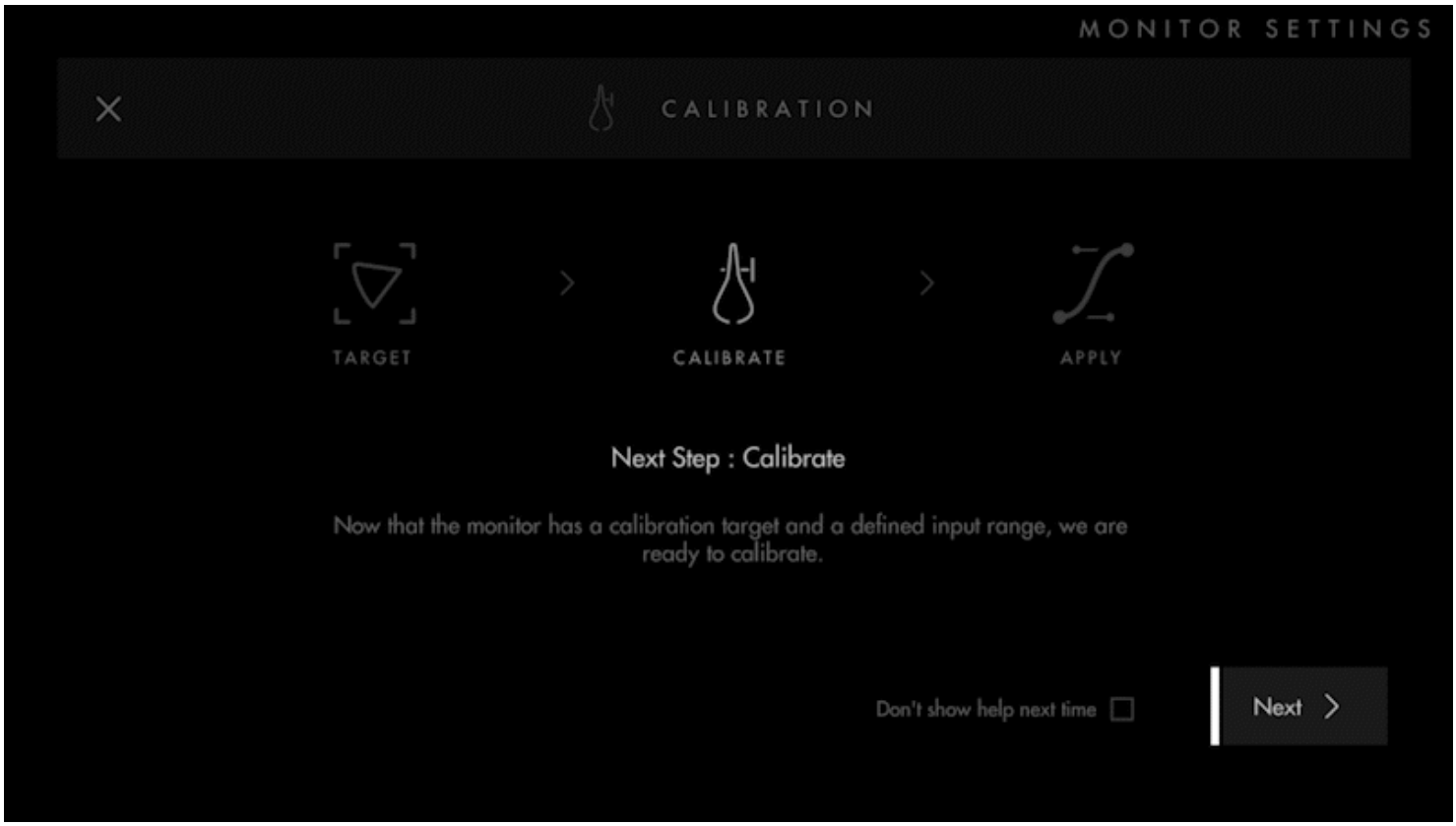
In the Profile Display? Page, select Profile Display if a new calibration LUT hasn't already been created.



Next, you'll be asked to select the Input Range. Select Next and you will have the choice of Auto calibrating by feeding full white and black screens into the monitor or just choose either Legal or Full Range options. (We recommend Full)



Next you will Calibrate. Select Next and you will be brought to a calibration UI that will display the feed from your computer with no calibration applied, so your probe can start measuring.

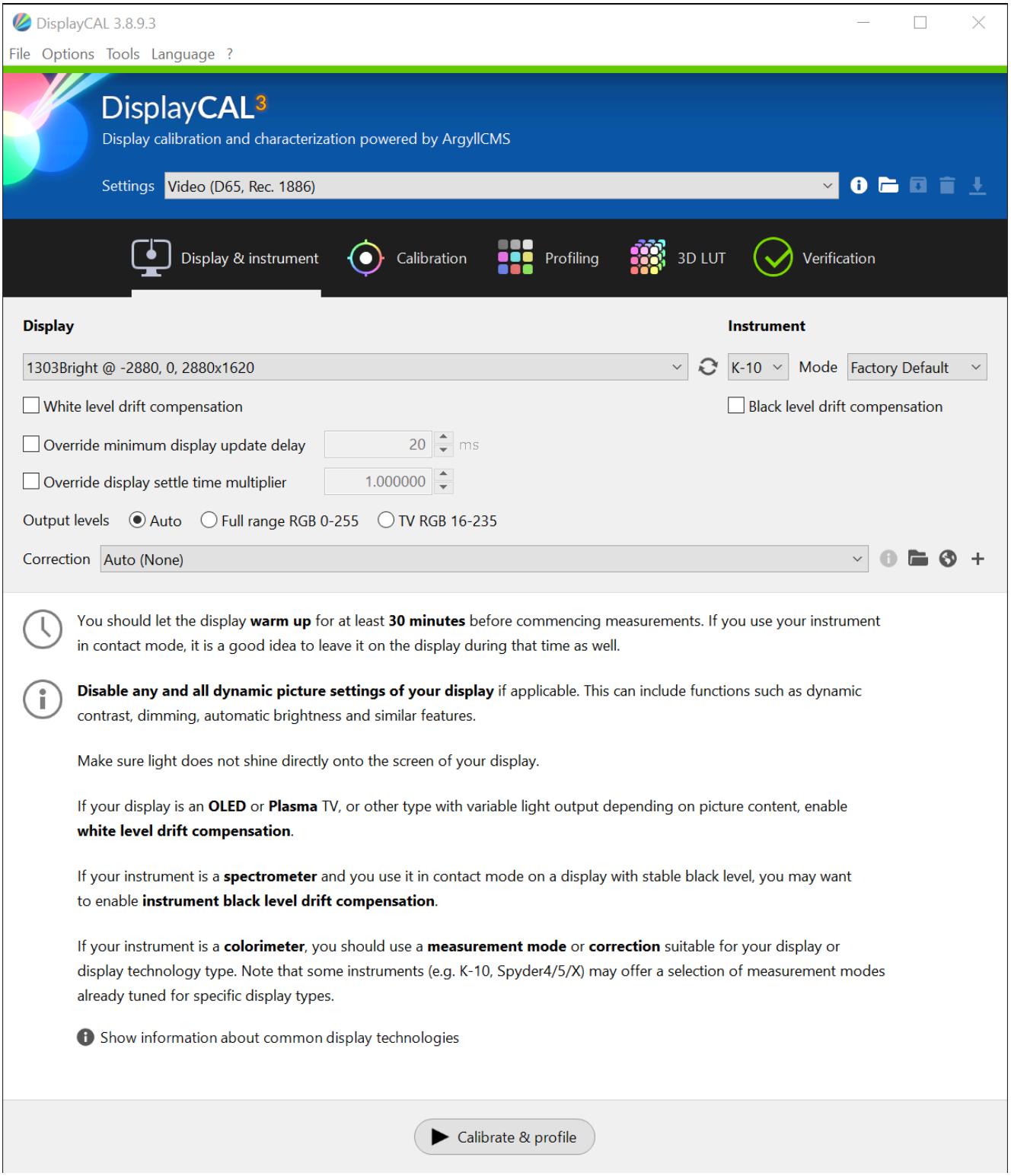


Position your probe according to the manufacturer’s recommendations.

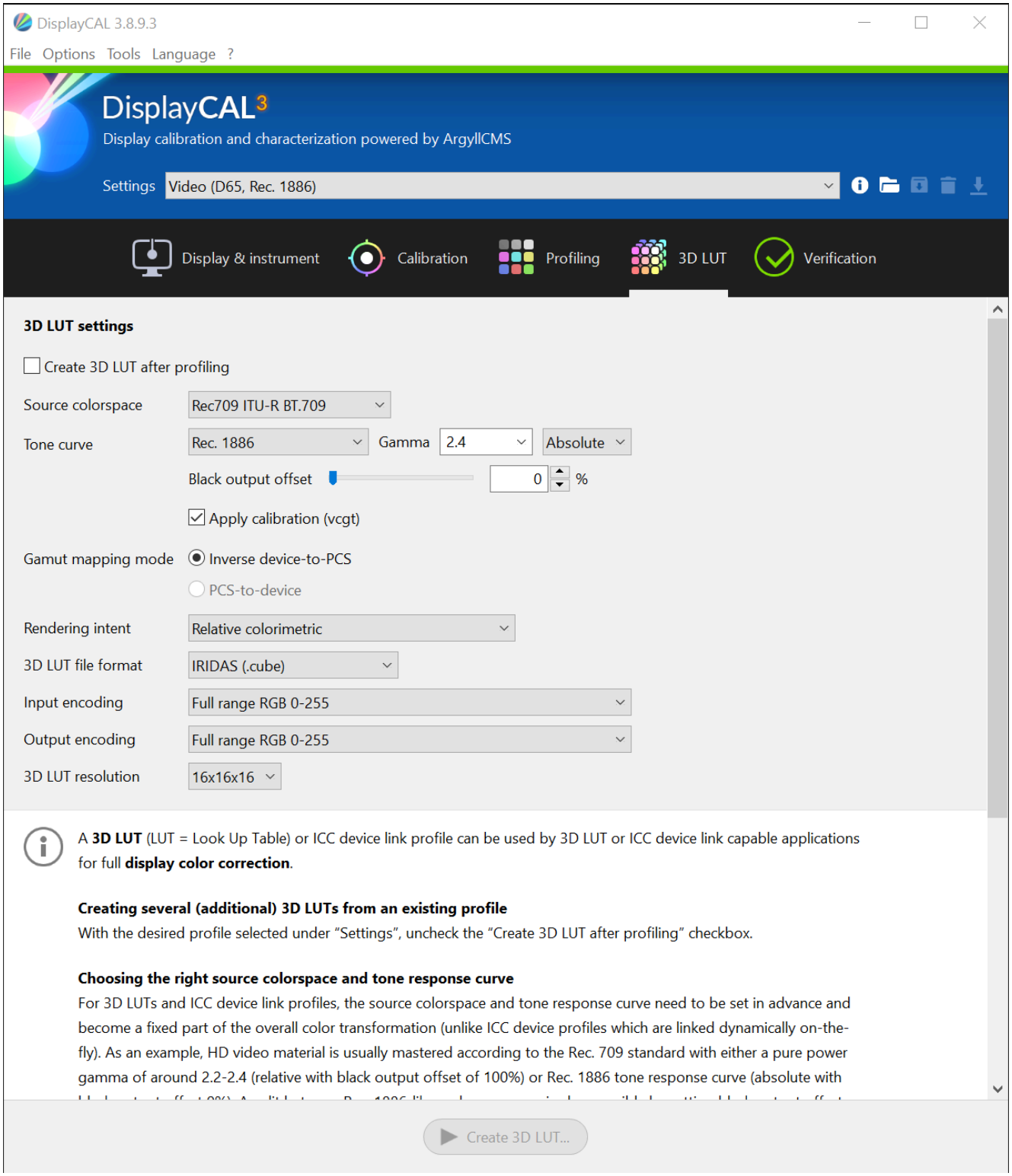
Follow the DisplayCal instructions, making sure that you have the correct monitor and probe selected. Also make sure that your calibration settings match the calibration target. We are not affiliated with DisplayCal so please refer to the documentation and support from DisplayCal for operating the software.

Be sure to select the correct color space (rec.709 etc) and white point to match what you chose in the menus.

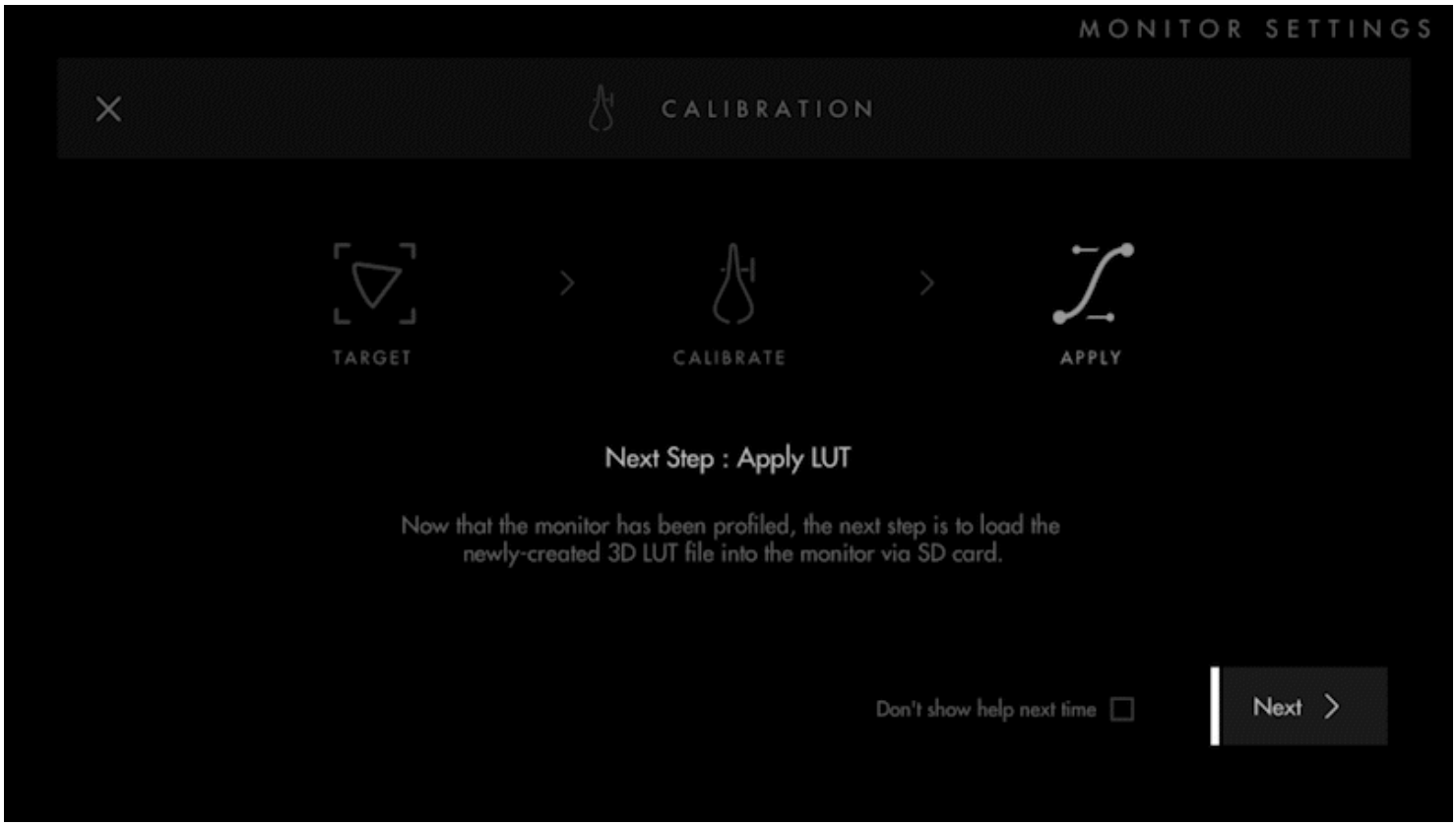
You will have an option to test this calibration to be sure its correct. Cheaper probes will possibly not be accurate so they should be checked, it may take a second or third run to get the unit the way you want it to be. Showing true white.



After calibration is complete, create a calibration LUT from the 3D LUT tab. Load this LUT onto an SD card and insert it into your monitor.



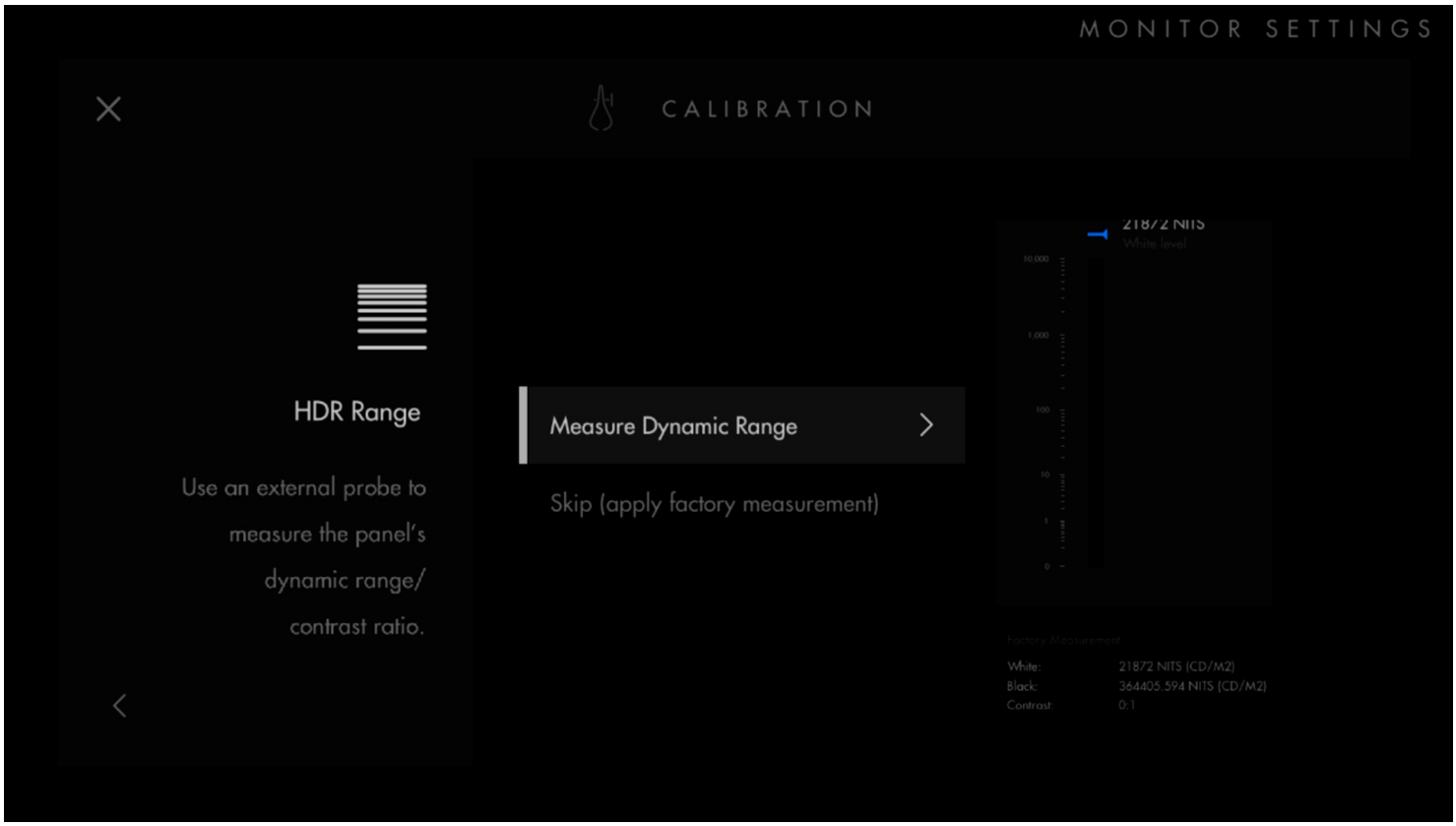
On your monitor, which should still be in the calibration screen, select Done and in the following page, select Next then Browse for LUT



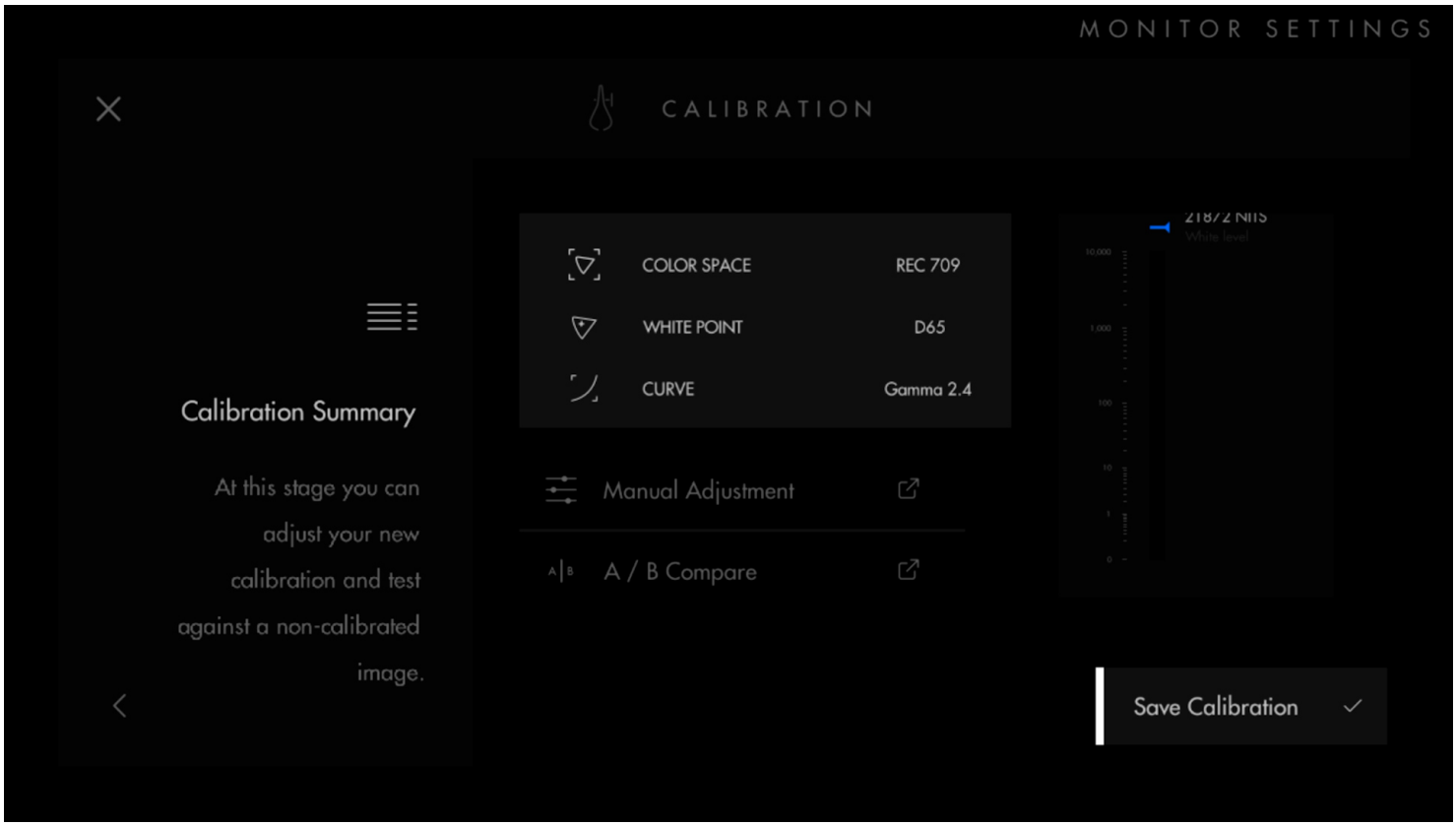
Select the LUT file you created and select Select. In the confirmation window, you can see your applied LUT affecting the screen. Our new calibration is more natural compared to the blue shifted old calibration. Select Keep to continue.


Read-only Storage
SD Card
AVF_INFO
System Volume Information
1301 1.cube
1303 2.cube
SHD K10-A 2.cube
SHD K10a 1.cube
SHD LUT 1-2.cube
SHD LUT 1.cube
SD Card › 1303 2.cube
BACK
CAP
LUT
BL
INPUT
SCOPE
smallHD

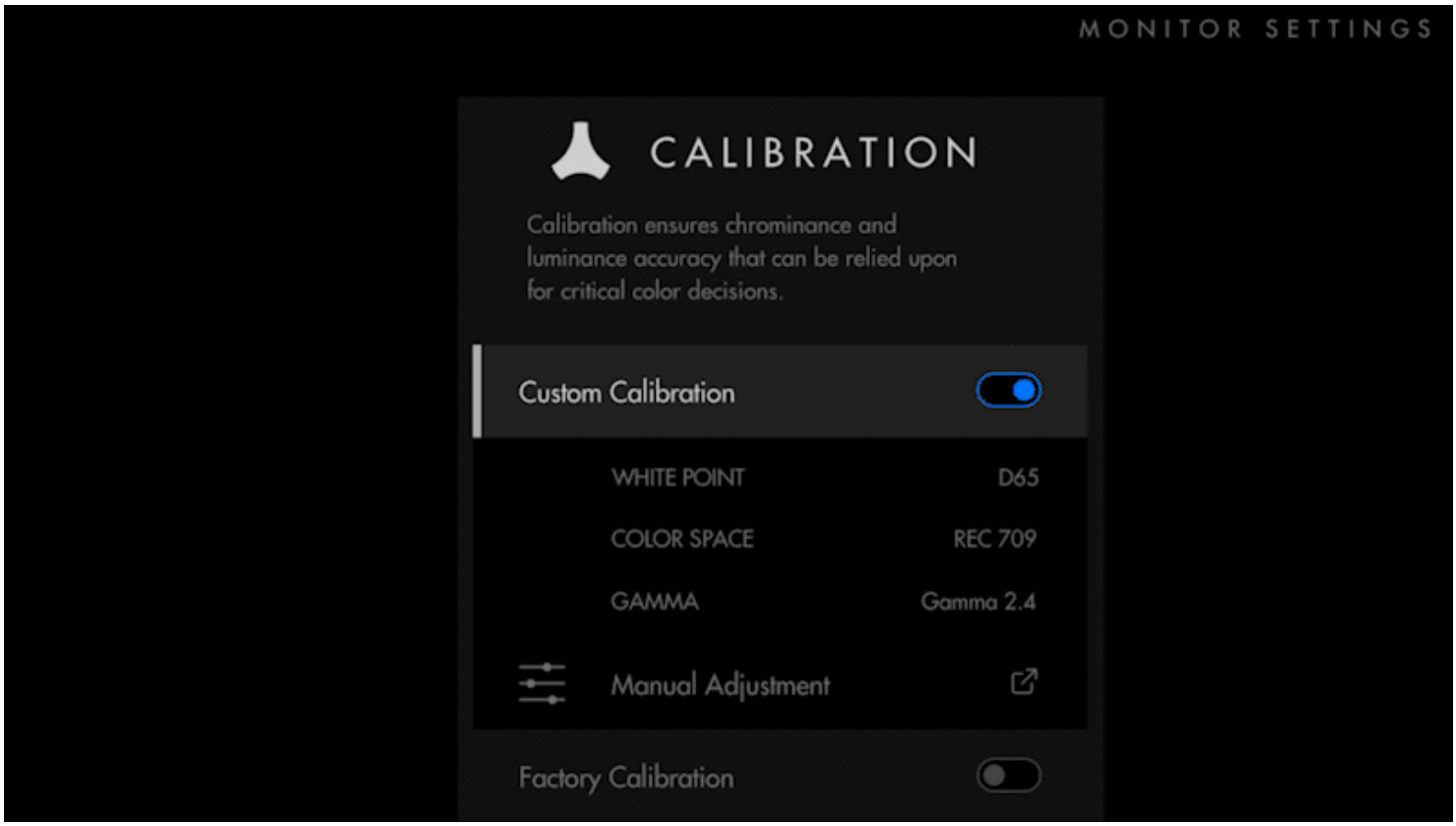
Next you will be prompted to select your HDR Range option. You can use your probe to measure the monitor's dynamic range and enter the values, or select Skip to apply factory measurements. We will skip in this example.



You will be presented with a Calibration Summary screen. Here you can use Manual Adjustment to tweak the calibration, as well as compare a before and after with A/B Compare. Select Save Calibration to save your settings.



Your calibration will show up as Custom Calibration in the Calibration settings. You can toggle between Custom Calibration and Factory Calibration at any time.


MONITOR SETTINGS
CALIBRATION
Calibration ensures chrominance and luminance accuracy that can be relied upon for critical color decisions.
Custom Calibration
WHITE POINT
D65
COLOR SPACE
REC 709
GAMMA
Gamma 2.4
Manual Adjustment
Factory Calibration