Flanders Scientific Inc.

Automatic Volumetric Calibration Instructions - DM Series

ver.1.17 (Updated 5-5-2023)

AutoCal

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

Automatic Volumetric Calibration - DM Series

Flanders Scientific Inc.

Automatic Volumetric Calibration provides a simple, fast, and accurate way to calibrate your FSI monitor. This automatic calibration routine is currently compatible with the Colorimetry Research CR100, CR250, & CR300, the Klein Instruments K80 & K10A, the Minolta CA310 & CA410, and the xRite i1D3DS OEM.

Before plugging your probe into your monitor you will want to ensure that the following prerequisites are met:

1. Verify your monitor is running firmware version 2.0.0-2370 or later and the S/N field on the monitor's System Status menu is populated, then load the default profile from the System Menu. If the S/N field is blank on the System Status menu please contact support and do not run AutoCal.

2. If using a colorimeter ensure that your colorimeter has the correct matrix or matrices stored on it for the display or displays you wish to measure. The name of the colorimeter matrix must match the model name of the monitor you wish to calibrate. Valid matrix names are **DM160, DM170, DM211, DM220, DM231, DM240, DM241, DM250, DM420, DM550**

3. On DM160, DM170, DM211, DM220, DM231, DM240, DM241, DM420, and DM550 disconnect all signal cables from the monitor. For DM250 please see the optimizing calibration for DM250 topic on page 3 of this document.

Automatic Calibration Steps

Step 1: With the monitor powered on plug the probe into the monitor's USB Type A Port.

Step 2: From the Monitor's Color Management Menu select GaiaColor AutoCalibration, confirm that you want to start alignment, then select the probe you will use from the list of available options.

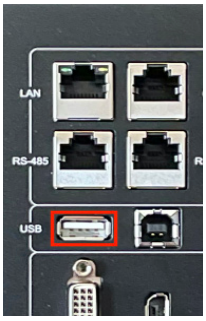
Step 3: Use the on-screen guides to position your probe correctly in the center of the screen.

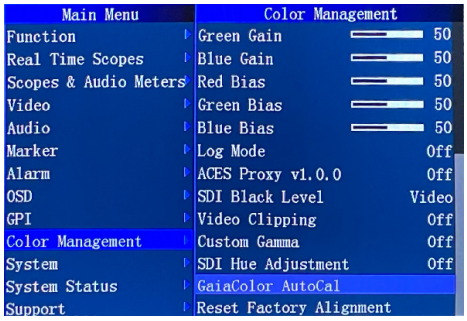
Step 4: If your monitor is already warmed up you can Press Enter on the monitor at any time to start the automatic calibration routine. If your monitor was not previously warmed up you can simply leave the probe plugged into the monitor and the calibration routine will start automatically after one hour. Note, if using a spectroradiometer it may take up to 30 seconds after pressing Enter for calibration to start.

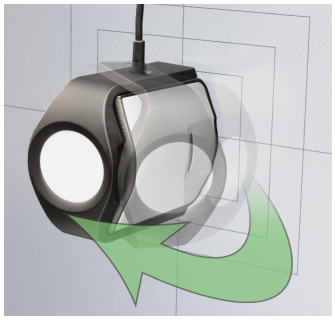
Step 5: The calibration will take approximately 6 to 18 minutes (50 to 90 minutes with a spectroradiometer) depending on the monitor / colorimeter combination in use. Once the alignment data is saved you will be prompted to reboot the monitor to complete the process.

Step 6: LUTs for any Gamut, EOTF, and Color Temperature combination will be automatically generated, saved, and applied on demand the first time you select them. This process takes approximately 10 seconds.*

**Once LUTs have been automatically generated and saved for any given configuration you will be able to switch to these selections instantly in the future without having to wait 10 seconds for the LUTs to be created for that configuration. By automatically generating LUTs on demand only as needed no time is wasted calculating and saving LUTs for configurations you will not use.*







If using an i1D3 OEM please make sure to open the diffuser covering the probe's lens before starting calibration. The lens should be pointing towards the screen and the white diffuser disk should be pointing away from the screen.

Calibration will not start and monitor shows “Please connect *Meter* to the monitor!”	This message can occur if the probe you are connecting does not match the probe model you selected from the monitor’s menu when starting Automatic Calibration. This message can also appear if you do not have a correctly named matrix loaded to the probe. For example, if connecting to a DM170 a matrix named DM170 must be stored on the probe. After some firmware updates it may be necessary to power cycle the monitor twice before probes will be recognized again. If the problem continues disconnect the probe, power cycle the monitor, ensure the probe is plugged into the monitor’s USB Type A Port, and try again.
Is disconnecting all signal cables before starting automatic calibration required?	**No, but it is critically important that if a signal is left connected that the signal not drop out, disconnect, or change format for the duration of the AutoCal process.** Disconnecting cables allows the monitor to generate its own screen sync whereas leaving a signal connected forces the monitor to sync to the connected signal’s frame rate. For the DM550, DM420, DM241, DM240, DM231, DM220, DM211,DM170, and DM160 disconnecting cables if possible is a best practice. For the DM250 please see the optimizing calibration for DM250 topic for further considerations.
Optimizing calibration for the DM250	DM250 panels exhibit small shifts in native panel response depending on signal / screen refresh rate. It is therefore a best practice to optimize your calibration for the frame rate you plan on using most often. If no signal is connected during AutoCal the monitor’s calibration will be optimized for 30P and 60P signals. If you wish to optimize calibration for 24P or 25P instead simply connect a stable 24P or 25P signal to the monitor during AutoCal. Calibration results will remain quite good for all frame rates regardless of the sync used during AutoCal, but best results will always be found at the refresh rate used during AutoCal.
The monitor or probe was unplugged before calibration completed	Previous calibration data is not deleted until the new calibration completes successfully so a mid-calibration power interruption to monitor or probe is not generally a problem. Simply unplug the probe from the monitor, power cycle the display, then reconnect the probe and start again.
Can I start my calibration right away or is warm-up necessary?	Best results will be obtained by calibrating a monitor that has had time to warm-up and stabilize. If the monitor was already in use before you begin calibration then you can typically start your calibration immediately. The monitor has an automatic 1 hour countdown timer built-in to autostart your calibration after warm-up so if your monitor was just recently turned on and you have the time available we do suggest allowing that warm-up to run. DM series monitors warmup and stabilize fairly quickly so if you are pressed for time starting calibration without extensive warm-up (e.g 10 minutes) will still yield good results, but the best practice when time is available is to allow for 30 to 60 minutes of warm-up. Some monitors, like the DM241, will benefit more from extended warmup (30 to 60 minutes) than others (e.g. DM220 typically needs only a few minutes of warm-up). Keeping your probe plugged into the monitor during the warm-up period is also a good practice to allow the probe to warm-up and stabilize as well.
Poor results or calibration failure when using CR100	When using the CR100 please ensure that Exposure Multiplier is set to 1, Sync is set to Auto, Max Exposure is set to 500ms, and Max Flicker Frequency Search is set to 250Hz. Incorrect probe settings can cause problems during AutoCal.
DM250 Boot Cycle	When turning the DM250 on it may take up to 45 seconds for the full boot cycle to complete. The image may momentarily flash as it reaches its final calibrated position.
Calibration Validation Considerations	If you’d like to validate your AutoCal results with 3rd party software we suggest using the same or similar equipment and settings used during AutoCal. If validating with a colorimeter using the same probe with the same or similar matrix will provide the most consistent readings between calibration and validation. We also suggest validating with an L32 or 10% window size as that is approximately what is used during the AutoCal process and will help avoid any influence from loading behavior at variable patch sizes on some technologies.
Resetting Factory Alignment	If you are getting sub-optimal results or unexpected calibration behavior it can be helpful to reset / clear the factory alignment data before starting a new AutoCal. The password to clear alignment data is *flower*. DO NOT enter this password unless you have all equipment on hand to run a direct connect volumetric calibration. Once the alignment data is cleared / reset your monitor will no longer be calibrated and this process is not reversible.
Black/Distorted Screen or Stuck Saving Alignment Data	Interrupting the AutoCal process or performing it incorrectly (e.g. probe lens covered) can cause these states. As of firmware 2.0.00-2370 you can bypass these error states by booting into recovery mode. Start with the monitor off, but plugged in, then use the key sequence Menu, Enter, Up, Down, Menu, Enter, Up, Down, Menu, Down, Power to boot into recovery mode. Finally start calibration again and then power cycle as normal when complete. Contact support if you require further assistance.