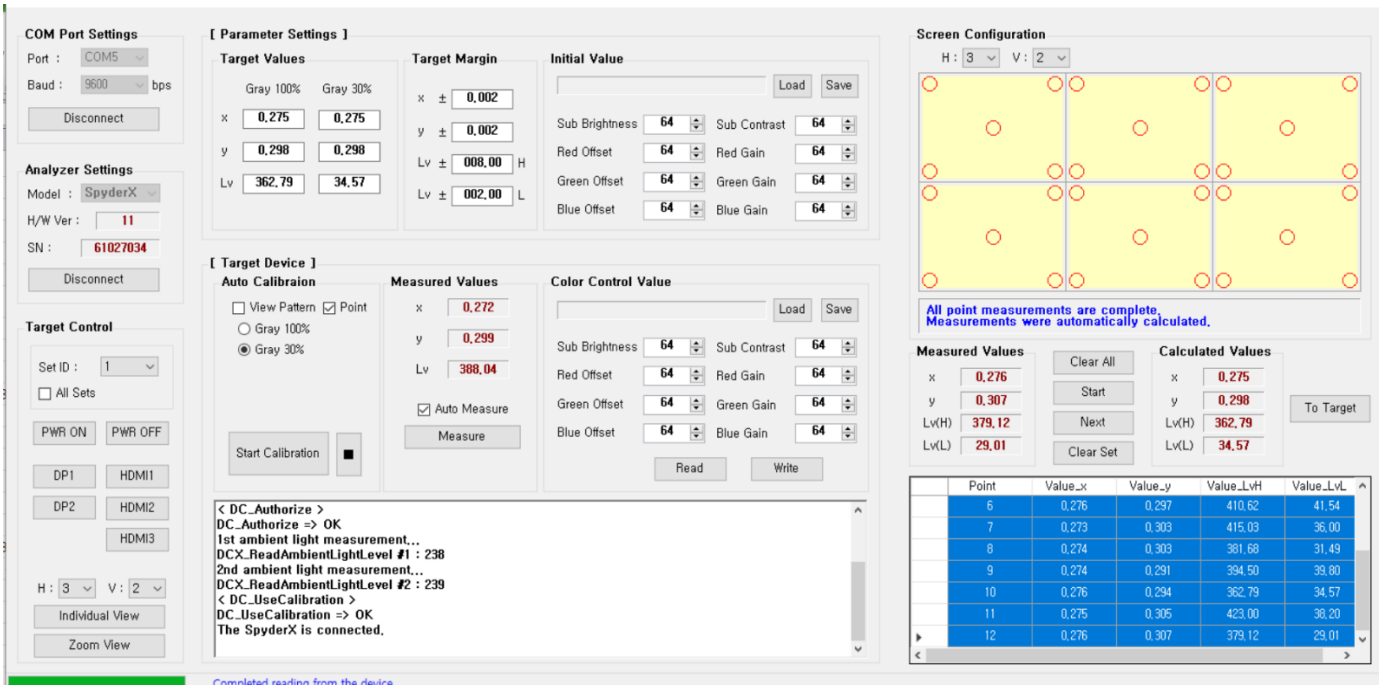
Quick Guide

NEX-Display Wall Calibrator (Auto CALI)



Before operating the unit, please read this manual thoroughly, and retain it for future reference .

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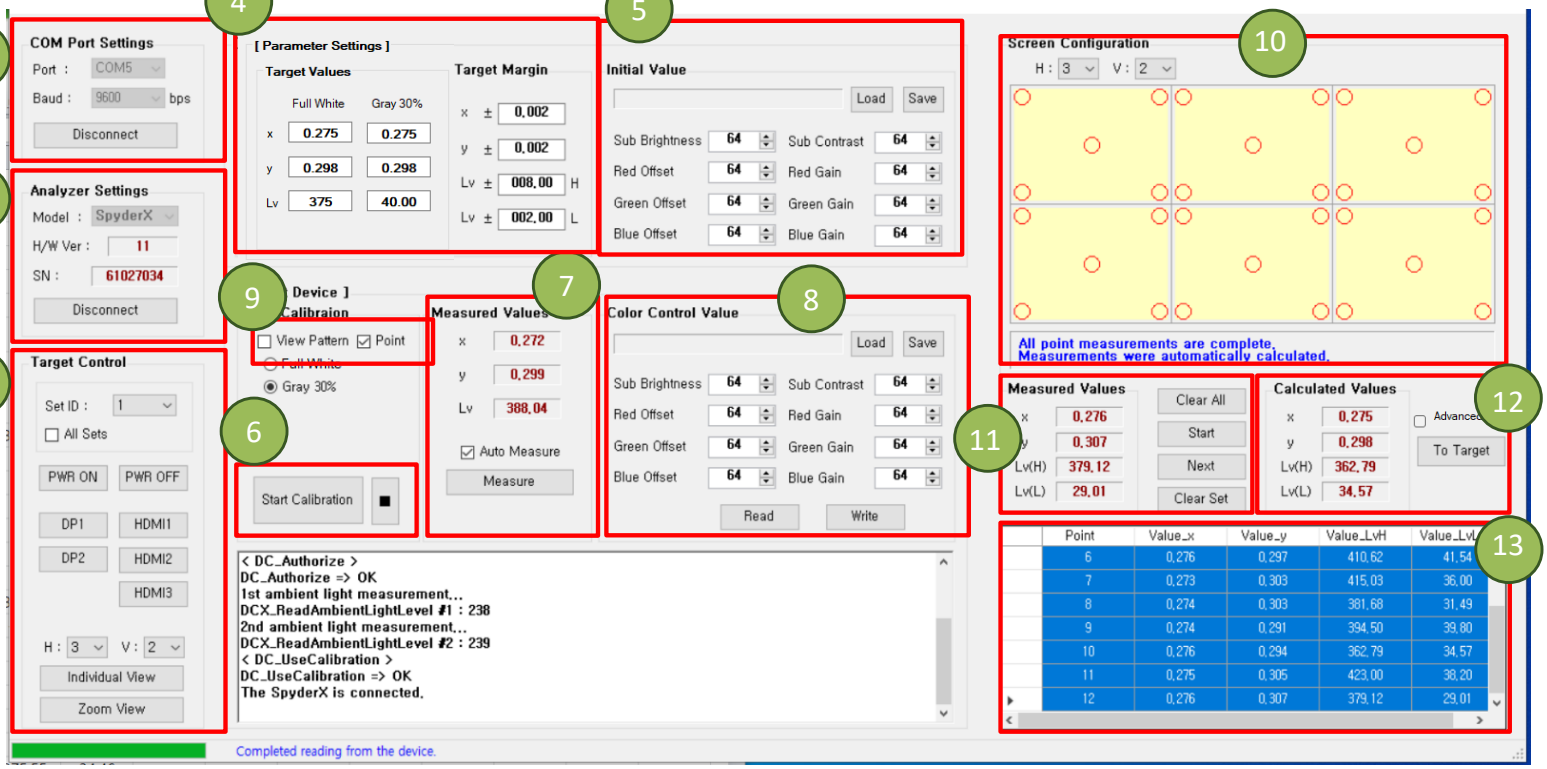
Wall Calibrator (Auto CALI) UI Description



1. COM Port (RS232C) connection

2. Analyzer (SpyderX) connection

3. Target Control (Basic display controls, Set selection)
Double-check selected Set ID from drop-down menu to ensure correct display is targeted for calibration.

4. Parameter settings (Target Values / Margins)

5. Parameter / Initial Values
Load and save parameter files.

6. Start/Stop Calibration

7. Measured values from Analyzer (SpyderX)

8. Color Control values of selected Set ID

9. View Pattern & adjustment points on connected displays.

10. Screen Configuration settings
Screen configuration & point indicator to be measured. Point selected for measurement appears solid red.

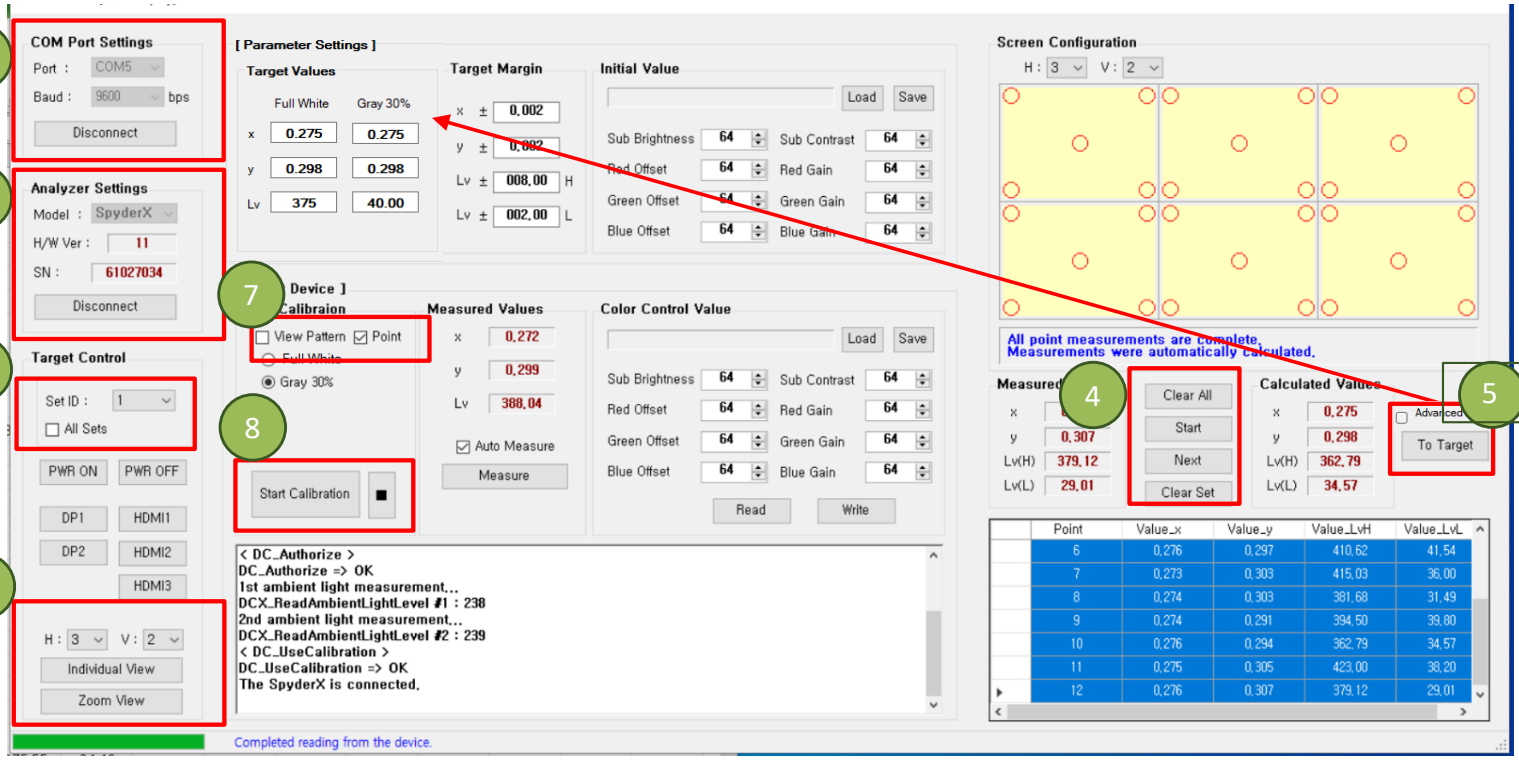
11. Measured Values
Clear All: Clear measurement data in measured data table (see #13)
Start: Start measurement
Next: Next measurement pattern or point
Clear Set: Clear measurements for selected set only

12. Calculated Values (available after measurement)
Averaged x, y; lowest Lv based on measured value.
Applied to target values when “To Target” is clicked.

13. Display of measured data, point-by-point.

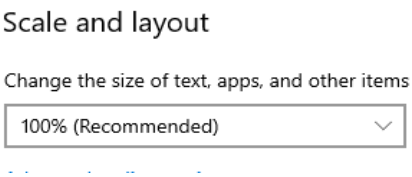
How to use Wall Calibrator (Auto CALI)

Overview



*If the adjustment point circles on screen are significantly larger than depicted in "Screen Configuration" interface:

- Adjust the resolution of the extended screen (1920X1080 60Hz)
- Setting -> Display -> Extended Screen -> Scale and layout -> 100%



Step 1. Connect to displays via RS232

Step 2. Connect SpyderX analyzer tool

Step 3. Enter video wall configuration settings (Horizontal, Vertical set count)

Step 4. Measurements by Point (see p.5 for more detail)

- Click "Start" button.
- Place analyzer flat/flush on point circled in red. Do not exert too much pressure on panel surface.
- Click "Next" for Gray 100% measurement. "Next" text will turn gray.
- When text returns to black, click "Next" button for Gray 30% measurement.
- Click "Next" button and repeat steps on next indicated point(s).

Step 5. After Calculated Values appear, click the "To Target" button to save the calculated value as the target values.

Step 6. Select Set ID (start with #1) for calibration. Set ID will automatically change to the next after each calibration point.

Step 7. Ensure that "View Pattern" & "Point" boxes are checked.

Step 8. Click "Start Calibration" button**

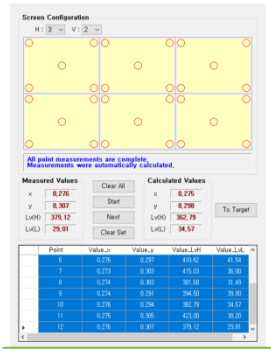
Step 9. Repeat Step 8 for each calibration point (see pg. 6-8 for more detail)

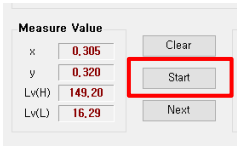
Step 10. Conduct manual adjustments as needed.

***NOTE – You may encounter max or min value errors during calibration. See p.10 for explanation of error messages*

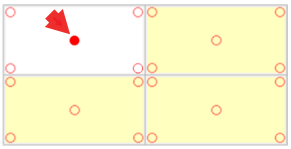
How to Use the Screen Configuration Window

Ex: 2x2 configuration

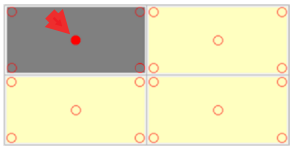




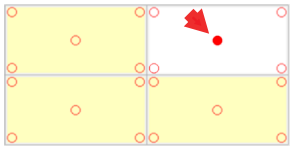
Step 1.
Click the “Start” button.



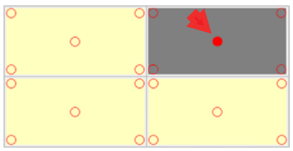
Step 2.
First Point (Gray 100%). After measuring, click the “Next” button.



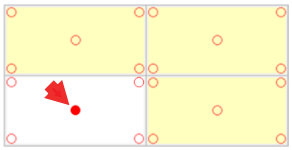
Step 3.
First Point (Gray 30%). After measuring, click the “Next” button.



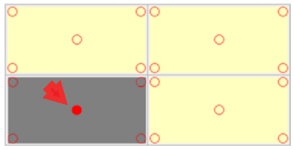
Step 4.
Second Point (Gray 100%). After measuring, click the “Next” button.



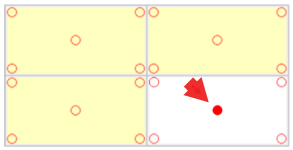
Step 5.
Second Point (Gray 30%). After measuring, click the “Next” button.



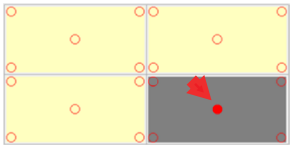
Step 6.
Third Point (Gray 100%). After measuring, click the “Next” button.



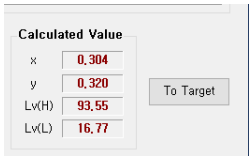
Step 7.
Third Point (Gray 30%). After measuring, click the “Next” button.



Step 8.
Fourth Point (Gray 100%). After measuring, click the “Next” button.



Step 9.
Fourth Point (Gray 30%). After measuring, click the “Next” button.



Step 10.
After Calculated Values appear as shown above, click the “To Target” button to save the calculated values as the target values.

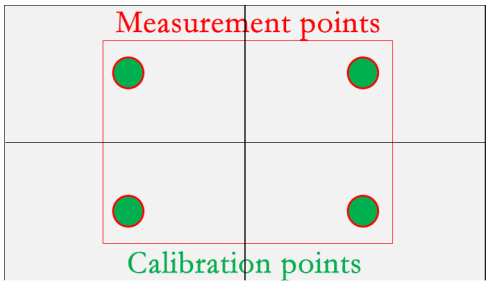
Calibration Process Summary

Ex: 2x2 configuration

Step 1.
RS232C connection.

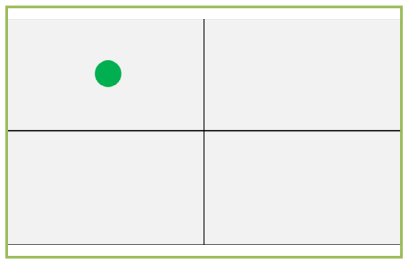
Step 2.
SpyderX connection.

Step 3.
Click to check “View Pattern” & “Point” boxes.

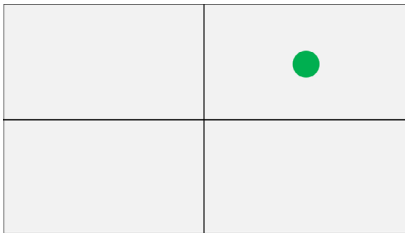


Step 4.
x/y coordinates, Lv measurements of 4 center points using SpyderX (refer to Screen Configuration window).

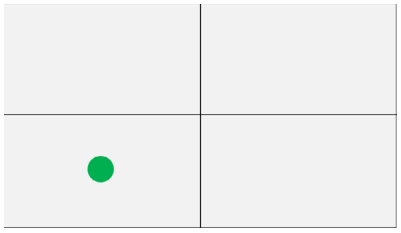
Step 5.
Click the “To Target” button to save the calculated values as the target values.



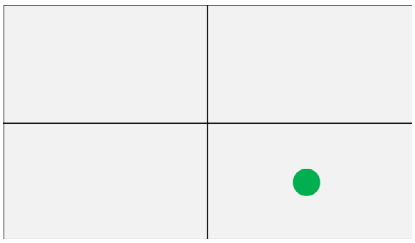
Step 6.
Position the SpyderX on the calibration point and click “Start Calibration”.
The “Screen Configuration” GUI will indicate where the SpyderX should be positioned, but only after clicking “Start Calibration”.
(Center point each display).



Step 7.
Position the SpyderX on the next calibration point (Set ID 2) and click “Start Calibration”.



Step 8.
Position the SpyderX on the next calibration point (Set ID 3) and click “Start Calibration”.



Step 9.
Position the SpyderX on the next calibration point (Set ID 4) and click “Start Calibration”.

- After completing the above steps, conduct manual adjustments as needed.
  (Ex: If a display appears more reddish relative to others, lower the Red Gain value; if greenish, lower the Green Gain, etc.).
  If multiple gain values are adjusted upward, reduce Sub-Contrast value.

- User Contrast value of 55 is automatically assigned when calibration starts.

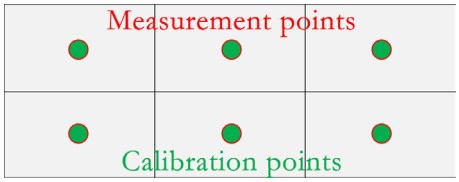
Calibration Process Summary , cont.

Ex: 3x2 configuration

Step 1.
RS232C connection.

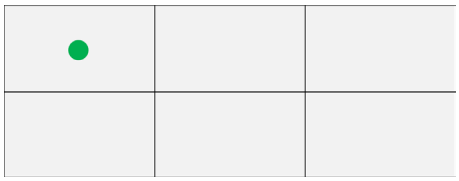
Step 2.
SpyderX connection.

Step 3.
Click to check “View Pattern” & “Point” boxes.

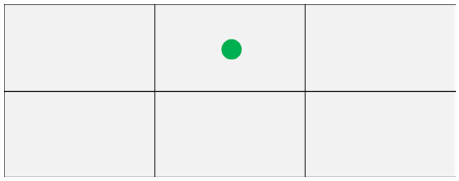


Step 4.
x/y coordinates, Lv measurements of 6 center points using SpyderX (refer to Screen Configuration window).

Step 5.
Click the “To Target” button to save the calculated values as the target values.



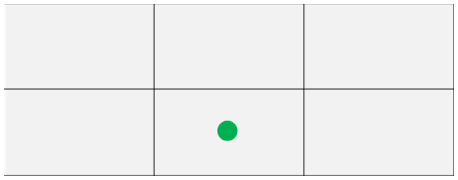
Step 6.
Position the SpyderX on the first calibration point and click “Start Calibration”. Refer to “Screen Configuration for confirmation of calibration point after clicking.



Step 7.
Position the SpyderX on the next calibration point (Set ID 2) and click “Start Calibration”.

Step 8.
Position the SpyderX on the next calibration point (Set ID 3) and click “Start Calibration”.

Step 9.
Position the SpyderX on the next calibration point (Set ID 4) and click “Start Calibration”.



Step 10.
Position the SpyderX on the next calibration point (Set ID 5) and click “Start Calibration”.

Step 11.
Position the SpyderX on the next calibration point (Set ID 6) and click “Start Calibration”.

- After completing the above steps, conduct manual adjustments as needed.
  (Ex: If a display appears more reddish relative to others, lower the Red Gain value; if greenish, lower the Green Gain, etc.).
  If multiple gain values are adjusted upward, reduce Sub-Contrast value.

- User Contrast value of 55 is automatically assigned when calibration starts.

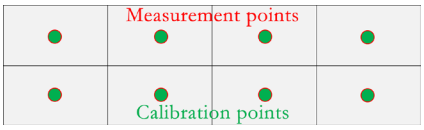
Calibration Process Summary , cont.

Ex: 4x2 configuration

Step 1.
RS232C connection.

Step 2.
SpyderX connection.

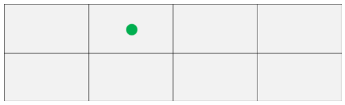
Step 3.
Click to check “View Pattern” & “Point” boxes.



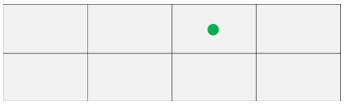
Step 4.
x/y coordinates, Lv measurements of 8 center points using SpyderX (refer to Screen Configuration window).

Step 5.
Click the “To Target” button to save the calculated values as the target values.

Step 6.
Position the SpyderX on the first calibration point and click “Start Calibration”. Position the SpyderX on the first calibration point and click “Start Calibration”. Refer to “Screen Configuration for confirmation of calibration point after clicking.

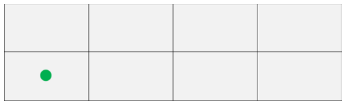


Step 7.
Position the SpyderX on the next calibration point (Set ID 2) and click “Start Calibration”.

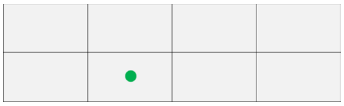


Step 8.
Position the SpyderX on the next calibration point (Set ID 3) and click “Start Calibration”.

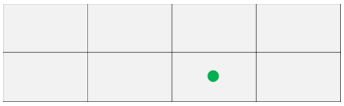
Step 9.
Position the SpyderX on the next calibration point (Set ID 4) and click “Start Calibration”.



Step 10.
Position the SpyderX on the next calibration point (Set ID 5) and click “Start Calibration”.



Step 11.
Position the SpyderX on the next calibration point (Set ID 6) and click “Start Calibration”.



Step 12.
Position the SpyderX on the next calibration point (Set ID 7) and click “Start Calibration”.

Step 13.
Position the SpyderX on the next calibration point (Set ID 8) and click “Start Calibration”.

- After completing the above steps, conduct manual adjustments as needed.
  (Ex: If a display appears more reddish relative to others, lower the Red Gain value; if greenish, lower the Green Gain, etc.).
  If multiple gain values are adjusted upward, reduce Sub-Contrast value.

- User Contrast value of 55 is automatically assigned when calibration starts.

Manual Color Adjustment

Adjusting Display Brightness:

- Increase/reduce the value on Sub-contrast, Red gain, Blue gain, Green gain simultaneously.
- When the goal is adjusting brightness, it is recommended that the values be adjusted in intervals of 1.
- Keep watch of the differences on the display as values are adjusted.

Basic Color Adjustment:

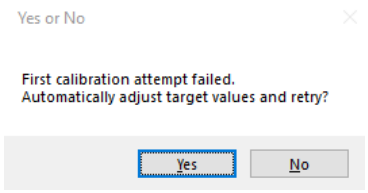
When one display looks more reddish than other displays, users should reduce the red gain value of that display, keeping watch of the differences manifested on the display as you decrease the value. Increasing green and blue gain may yield similar results while slightly increasing brightness. Users may need to compensate for changes in brightness caused by gain increases or decreases by increasing or decreasing Sub Contrast values. If gain values have been increased, sub contrast values may require decrease, and vice-versa.

Problem & Solution:

Problem	Solution
More Red	Reduce red gain or increase blue and green gain.
More Green	Reduce green gain or increase blue and red gain.
More Blue	Reduce blue gain or increase red and green gain.
More Yellow	Reduce red gain and green gain or increase blue gain.
More Red Pink	Reduce red gain and blue gain or increase green gain.
More Dark Green	Reduce green gain and blue gain or increase red gain.
More White	Reduce red gain, green gain and blue gain.

Calibration Errors and Readjustment

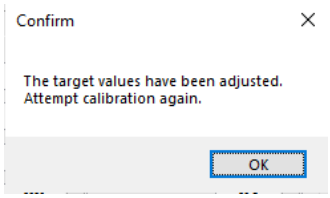
Error messages may appear during calibration when the maximum or minimum values are reached for Sub Contrast, Sub Brightness, Gain, or Offset. The software will conduct automatic adjustments to Target Values for up to three calibration attempts.
After this, manual adjustment of Target Values may be necessary. Below is a summary of what happens during a max or min value failure:



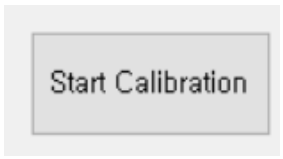
Step 1. If a max or min value failure occurs, the log will indicate the failure type and the message above will appear in a pop-up window. Click “Yes” to automatically adjust target values.

Target Values will be changed automatically.

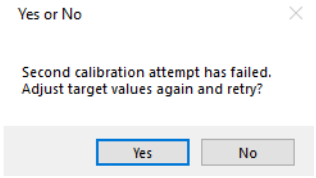
Step 2. Target values will be adjusted — the most common adjustment is a reduction in full white target Lv and an increase in gray 30% target Lv.



Step 3. The pop-up message above will appear after Target Value adjustment. Click “OK” to proceed.



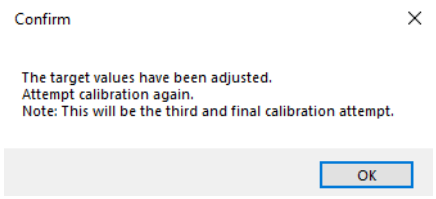
Step 4. Click “Start Calibration” to begin a second calibration attempt.



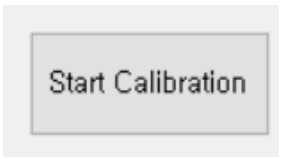
Step 5. In the event of a second calibration failure, the log will indicate the failure type and the pop-up message above will appear. Click “Yes” to automatically adjust target values once more.

Target Values will be changed automatically.

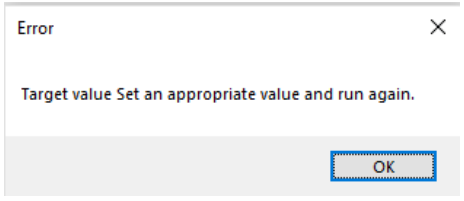
Step 6. Target values will be adjusted once again—further minor adjustments to the full white target Lv and an increase in gray 30% target Lv.



Step 7. In the event of a third calibration failure, the log will indicate the failure type and the pop-up message above will appear. Click “Yes” to automatically adjust target values a final time.



Step 8. Click “Start Calibration” to begin a third calibration attempt.



Step 9. In the event of a third and final calibration failure, the pop-up message above will appear. Further manual adjustments to target values may be necessary. Consult with p.11 for more information on max/min value failures.

Max & Min Value Calibration Failures

Basic Information on Calibration Failures

When a maximum (128) or minimum (0) Color Control Value is reached before completion of the calibration process, calibration automatically stops. An error message will appear in red in the log located at the bottom/center of the user interface. This message will indicate whether the failure is a max or min value failure, and it will also indicate the specific Color Control Value involved (e.g. Sub Contrast max, Sub Brightness max, Blue Offset min).

Calibration Failures and Likely Causes

Sub Contrast: If a failure message indicates that the Sub Contrast maximum value has been reached before completion of calibration, it is likely caused by the Target Lv for Full White being too high for the target set. This typically means that the set which was targeted during the calibration failure has a relatively low capacity for luminance at Full White compared with other sets in the video wall array.

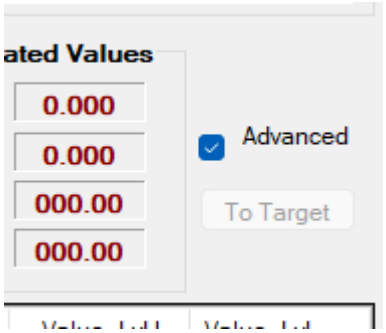
Red, Green, Blue Gain or Offset Failure: Max or min value failures can be related to inherent differences in both luminance and "default" color states of individual panels, as color values are tied to luminance. Differences in color characteristics can lead to individual sets' limitations in reaching ranges of target x, y coordinates. This failure likely means that set targeted during the calibration failure has inherent, significantly different color characteristics and/or luminance limitations relative to the other sets in the video wall array.

Sub Brightness: This can be related to inherent limitations in target luminance for Gray 30%. A Sub Brightness failure typically requires that the user increase the target Lv for Gray 30%.

Final Countermeasure

"Advanced": Follow steps 1-3 on p.4.
Before starting Step 4, check the box for "Advanced" located above the "To Target" button.

When pressing the "To Target" button after measuring, "Target Values" for x/y coordinates values will be averaged. Full White target value will be the lowest value measured, while the Gray 30% target will be an average of measurements.



Step 4: Proceed with Steps 4-10 on p. 4.