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CMND & Calibrate
CCK4602

User Manual

Version: 1.0.6
Date: 26 July 2017
Author: Vincent Storm

Version history:

Version	Date	Author	Changes:
1.0.1	02/06/2017	Vincent Storm	• First rework
1.0.2	27/06/2017	Vincent Storm	• Layout change • Correction in chapter numbering • Adding General information
1.0.3	26/07/2017	Vincent Storm	• Add **bold** text in Connect COM-port cable Connect the COM-port from your PC via a null modem (= cross) RS232 cable to the RS232 jack 2.5mm input of the first monitor **with monitor ID=1**.
1.0.4	1/09/2017	Vincent Storm	Add movie
1.0.5	6/10/2017	Vincent Storm	Update supported monitors
1.0.6	2/11/2017	Vincent Storm	Modified sw download link

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1. General information

1.1 Introduction

The uniformity in image representation is a vital element in creating a videowall that consists of multiple displays. However, due to factors like component variation and aging, it is inevitable for each display to produce images with slight differences in color and luminance even when related settings are identical among all displays.
The Color Calibration is designed to minimize such differences and enhance the image uniformity of all displays in a videowall application. It works by first measuring and comparing the color characteristics of each display, and then calibrating all displays with a common and optimal setting.
With the Color Calibration, you can also adjust color settings of each display easily on a host computer.

1.2 Notice

1.3 Help and support

Visit the Philips support website at http://www.philips.com/support/ for:

- Product documentation
- Specifications
- Contact details of the helpdesk
- Download the last available software

Visit the Philips support ticketing system at https://philips.supportsystem.com/ for:

- Allowing you to enter any after sales issue for which you need support
- Easily follow up on any tickets submitted
- A knowledge base that will enable you to find answers to questions we receive on regular basis (FAQs)
- An NDA section for specific questions that require an NDA to be in place with your company to get the detailed feedback

Visit the CMND website to find all info about CMND https://cmnd.io/

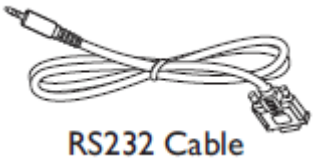
2. System requirements

- Windows 7 (32-bit/64-bit) or Windows 10 (32-bit/64-bit)
- DVI / HDMI or DP out
- An available RS232 port (USB to RS232 adaptor will also work)
- Free memory : 1 GB
- Hard disk space : 400MB
- CPU: Pentium 1GHz

3. Package content

- The color sensor (X-rite) with USB connection:

- What else do you need:
  - RS232 connection on your PC or USB to RS232 adaptor
  - Software package
  - a cross RS232 cable (null model cable)
  - an USB extender cable can be useful
  - SubD-9 to jack 2.5 mm, always delivered with the monitor, see picture below



4. Software installation

Download the color calibration from http://calibrate.cmnd.io/

Note: if the link is not yet available in above website, temporally the software can be downloaded from here

5. Specifications

5.1 Calibrated parameters

Tint: custom 10000K
Gamma: 2.2
Backlight: automatic aligned to the maximum light output

5.2 Supported tiling matrix

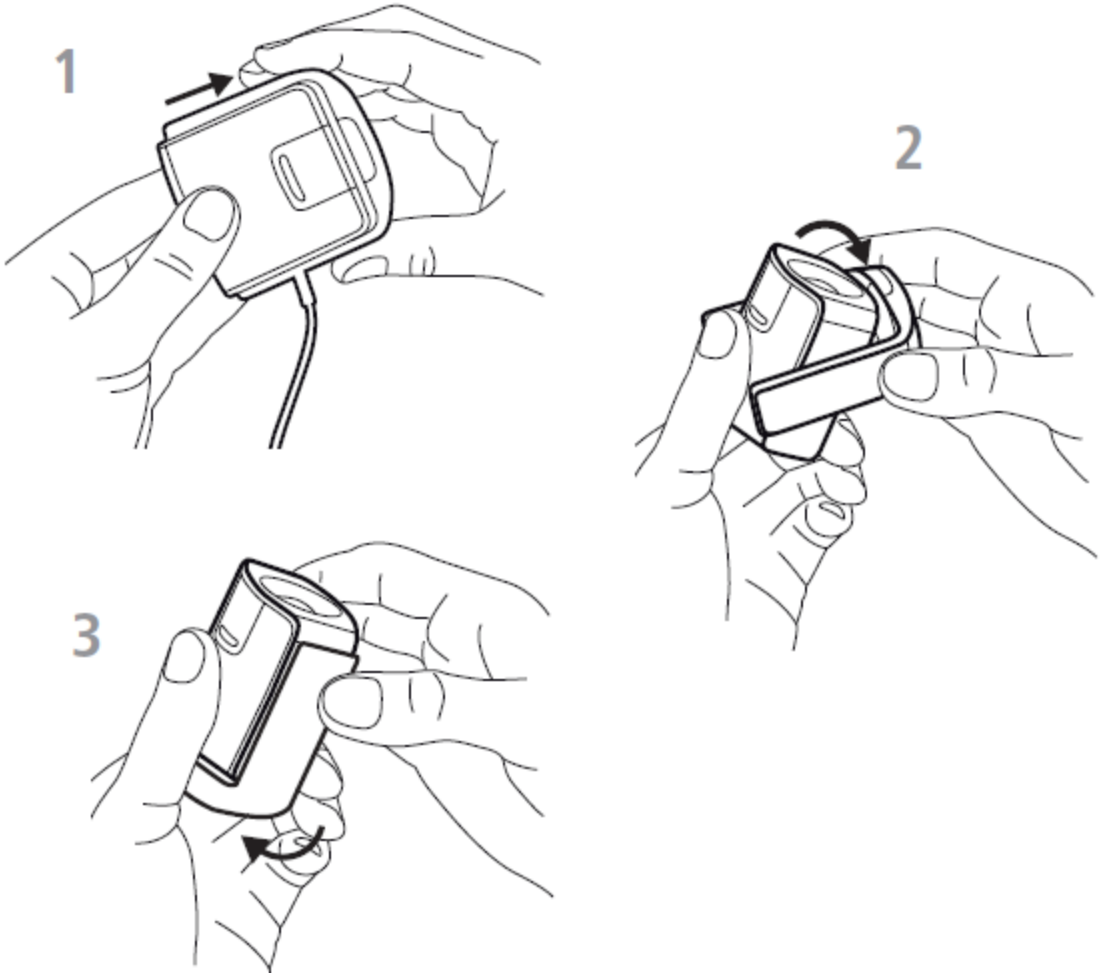
1x1 to 15x15 monitors.

6. Start the color calibration

Before you start the calibration warm up the monitor(s) for minimum 1 hour.
Movie of a 2x2 color calibration

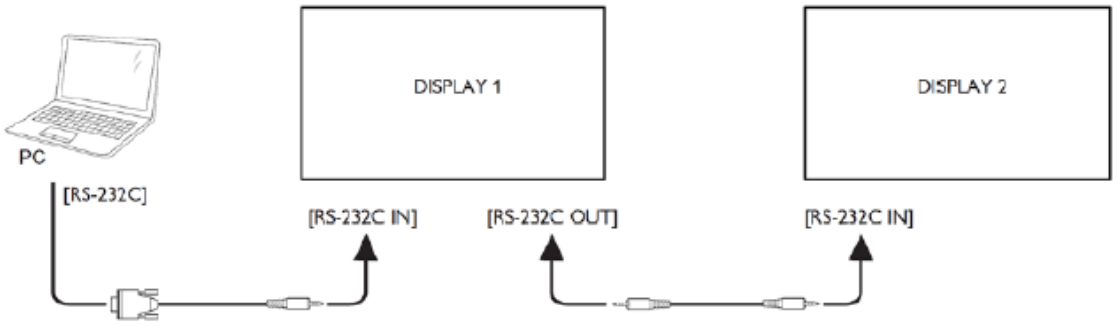
6.1 Connect color sensor

1. Lift up the diffuser arm
2. Rotate the diffuser
3. Click the diffuser in the rear position
4. Connect the USB cable of the color sensor to your PC



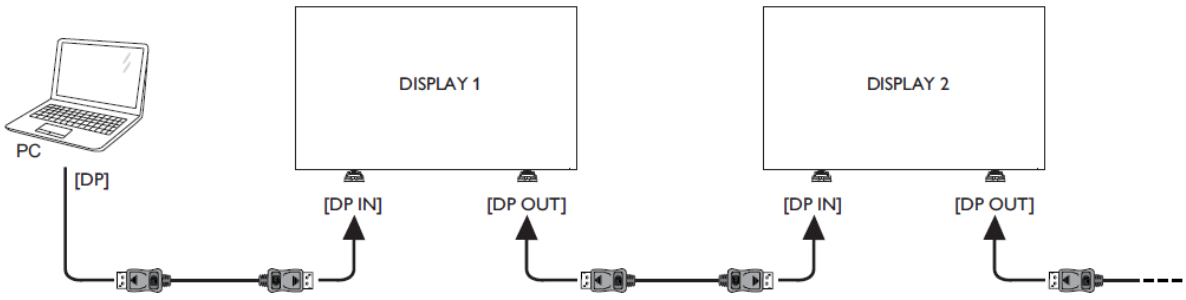
6.2 Connect COM-port cable

- Connect the COM-port from your PC via a null modem (= cross) RS232 cable to the RS232 jack 2.5mm input of the first monitor with monitor ID=1.
- Make sure all the monitors are daisy chained via RS232
- It won't work via TCP (WiFi/RJ45 input)



6.3 Video signal

- Connect the digital out (DVI, HDMI or DP) from your PC to the first monitor
- Use the same source inputs as your customer will use
- Set the screen options in your pc as "extended"
- Disable your PC's screensaver
- If your customer use display port and DVI, than calibrate the videowall twice, once via source selection display port and once via source selection DVI



6.4 Setup the monitors

- Set the monitor ID and tiling correct on all the monitors, see the manual of your monitor(s)
- Make sure you do have content over the complete videowall or single display

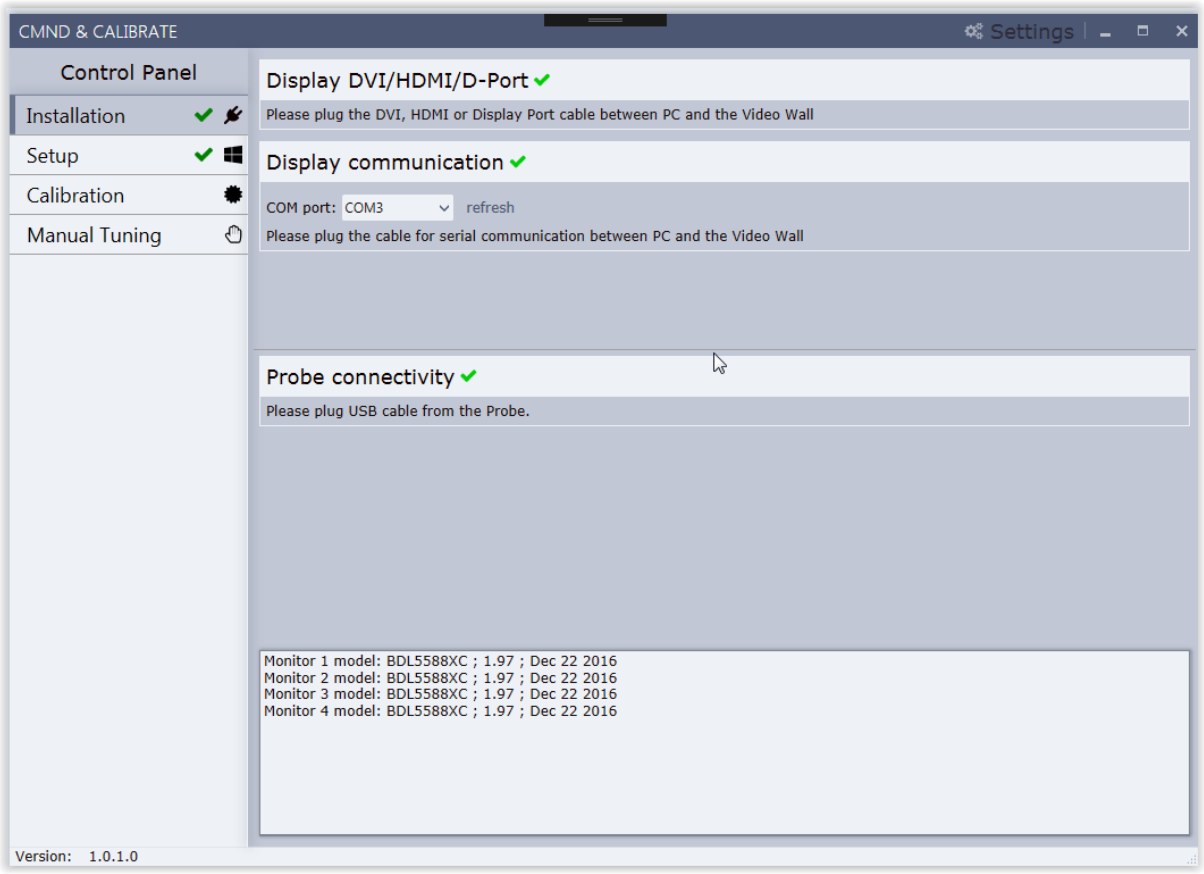
6.5 Run the calibration software

6.5.1 Start the program

- Before you start the calibration warm up the monitor(s) for minimum 1 hour
- Start the calibration software CMND & Calibrate

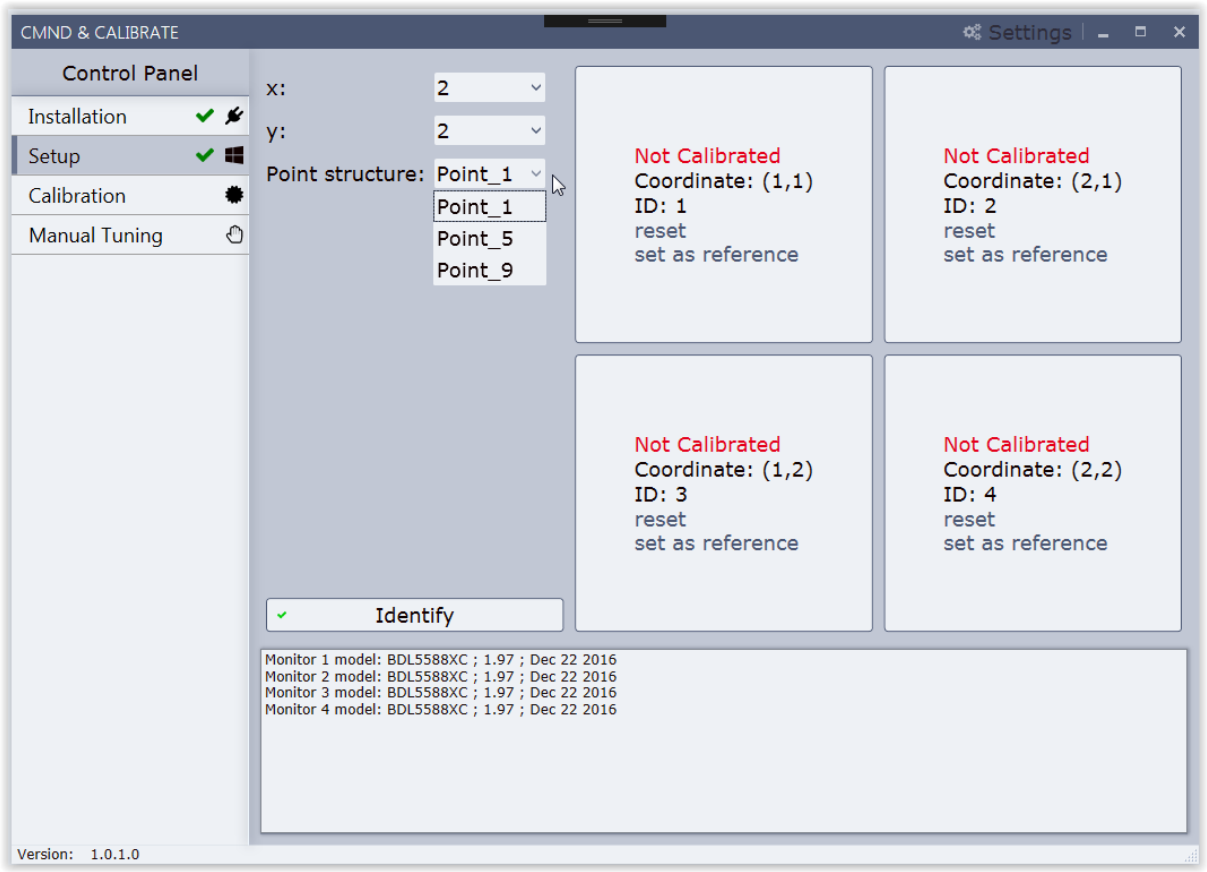
6.5.2 Installation tab

- In the “Installation” tab select your COM-port number
- The software will check automatically the communication to the monitors via RS232 (make sure the setting is correct in all monitors), the EDID information will be read via the video signal cable.
- The probe (color sensor) connection is checked via USB
- All 3 parameters must be green:
    - Display DVI/HDMI/D-port: read “PHL” from the EDID table
    - Display communication: read model name via RS232
    - Probe connectivity: check the color sensor



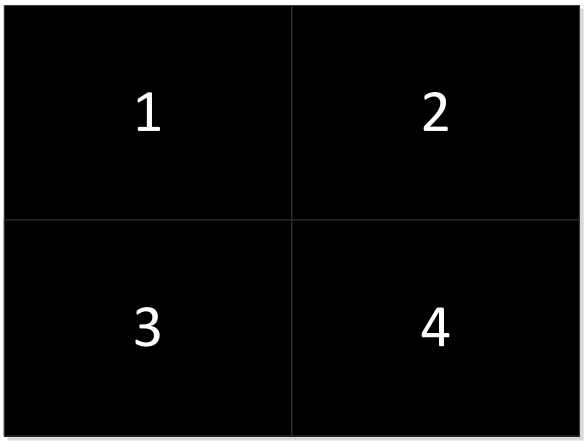
6.5.3 Setup tab

- In the “Setup” tab select your matrix: maximum matrix is 15x15
- Point structure: how many points must be aligned in each monitor, recommended value = 5



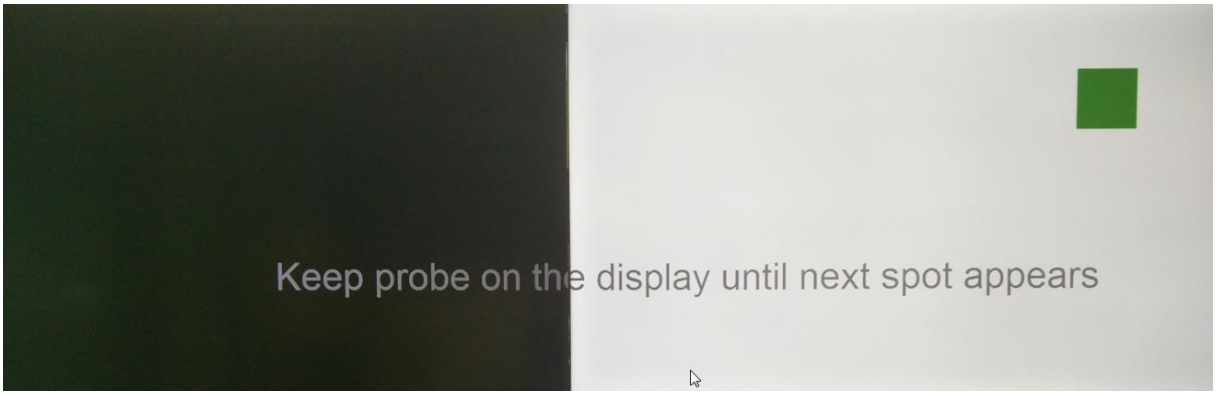
<u>Note:</u> On the bottom of the window of the program on PC you might see some error in red, adapt where needed according to the errors.

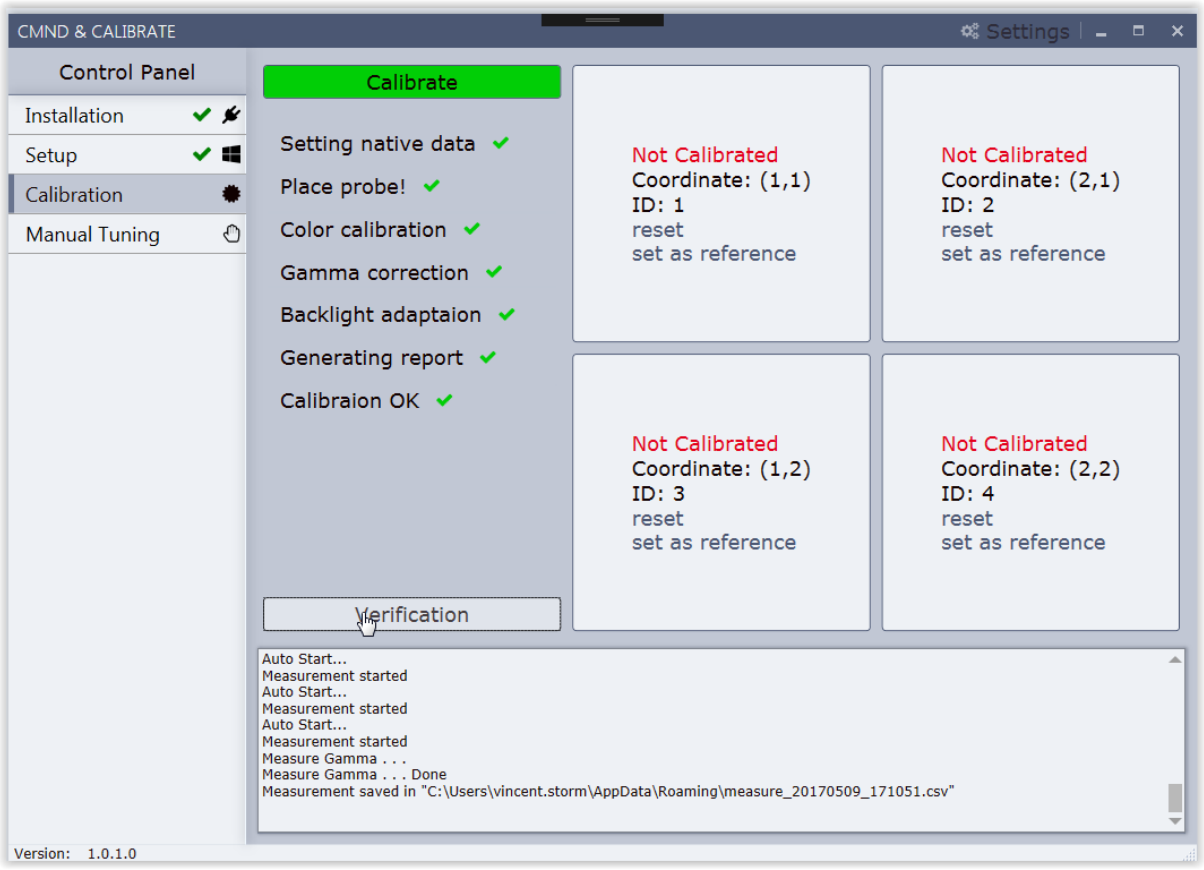
- Click on “Identify”, it will read the model numbers via RS232
- On the videowall you should see on each monitor a number, this pattern is generated from the PC
- Example of a 2x2 :



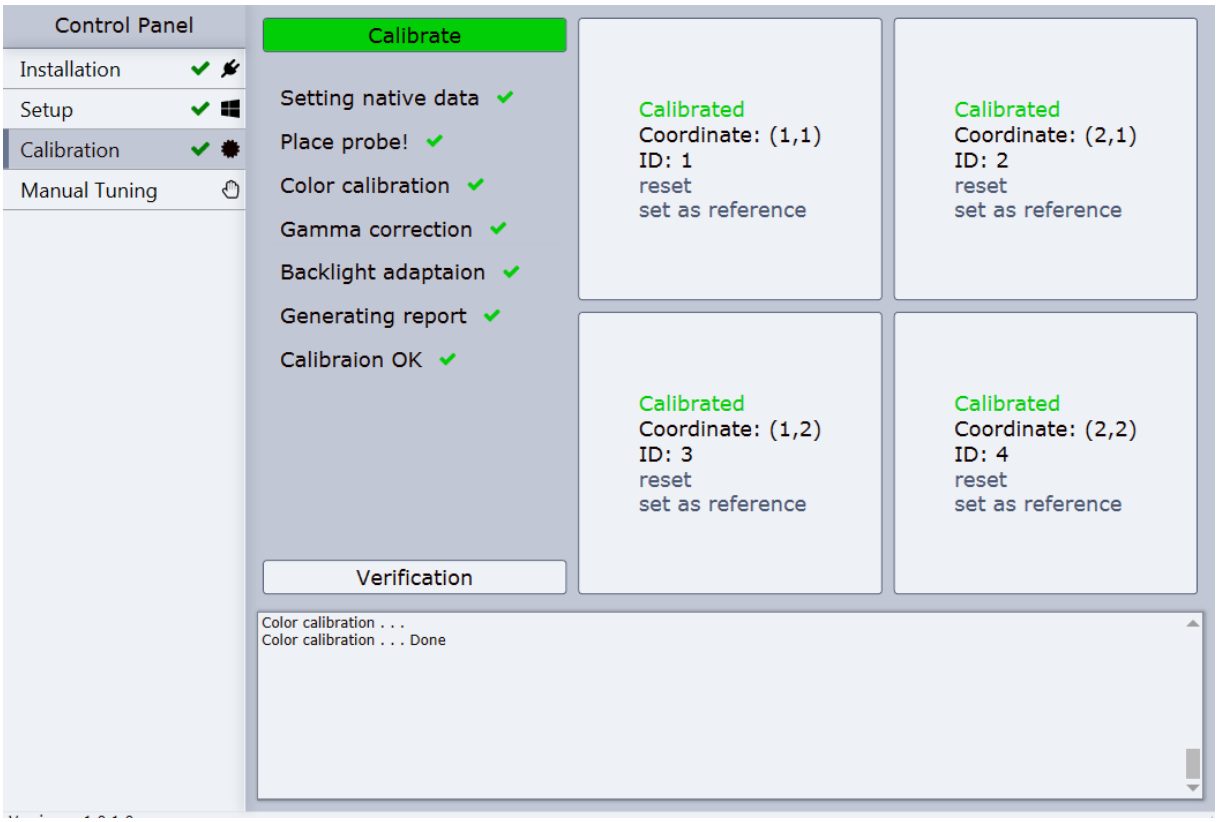
6.5.4 Calibration tab.

- In the “Calibrate” tab select “Calibrate”: this will launch the calibration
  Note: read first below before starting the actual calibration
- A green spot will appear on the first display
- Put the color sensor on this green spot and do not take it away
- The calibration will automatically start and the green spot will disappear
- Keep the color sensor on the same position until the next green spot appear
- If the green spot is in the middle than keep it there until “finished” appears on the monitor

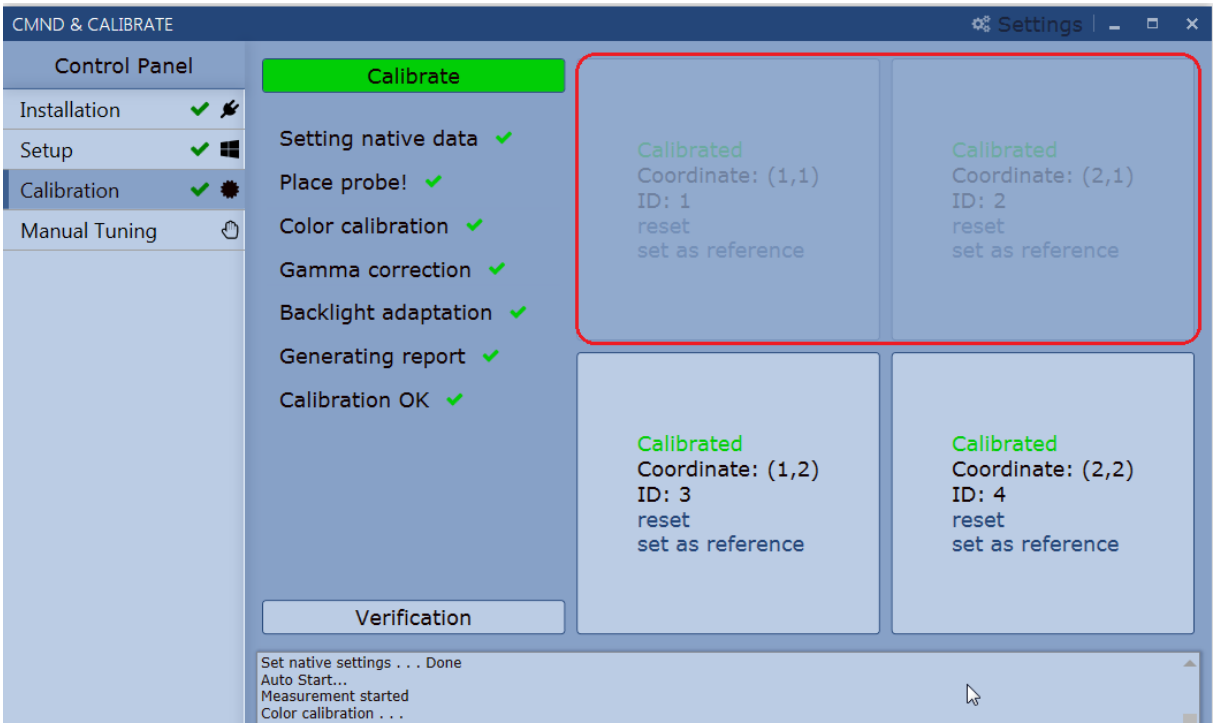




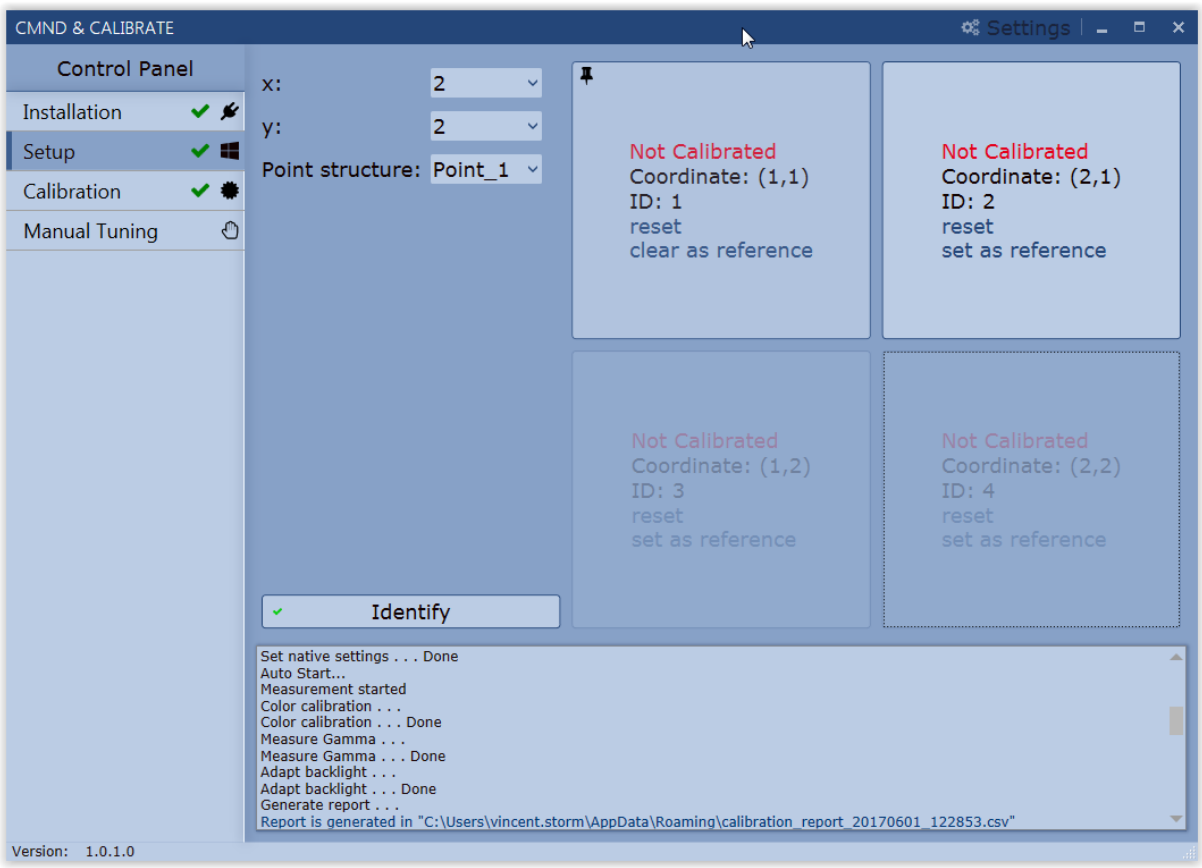
After the calibration is done the green message “Calibrated” will appear on every calibrated monitor. See below screenshot



<u>Note:</u> the monitors in the software calibration tool can be deselected, means those monitors will not be calibrated
See below screenshot in red marker as an example, monitor “ID: 1” and “ID: 2” will not be calibrated

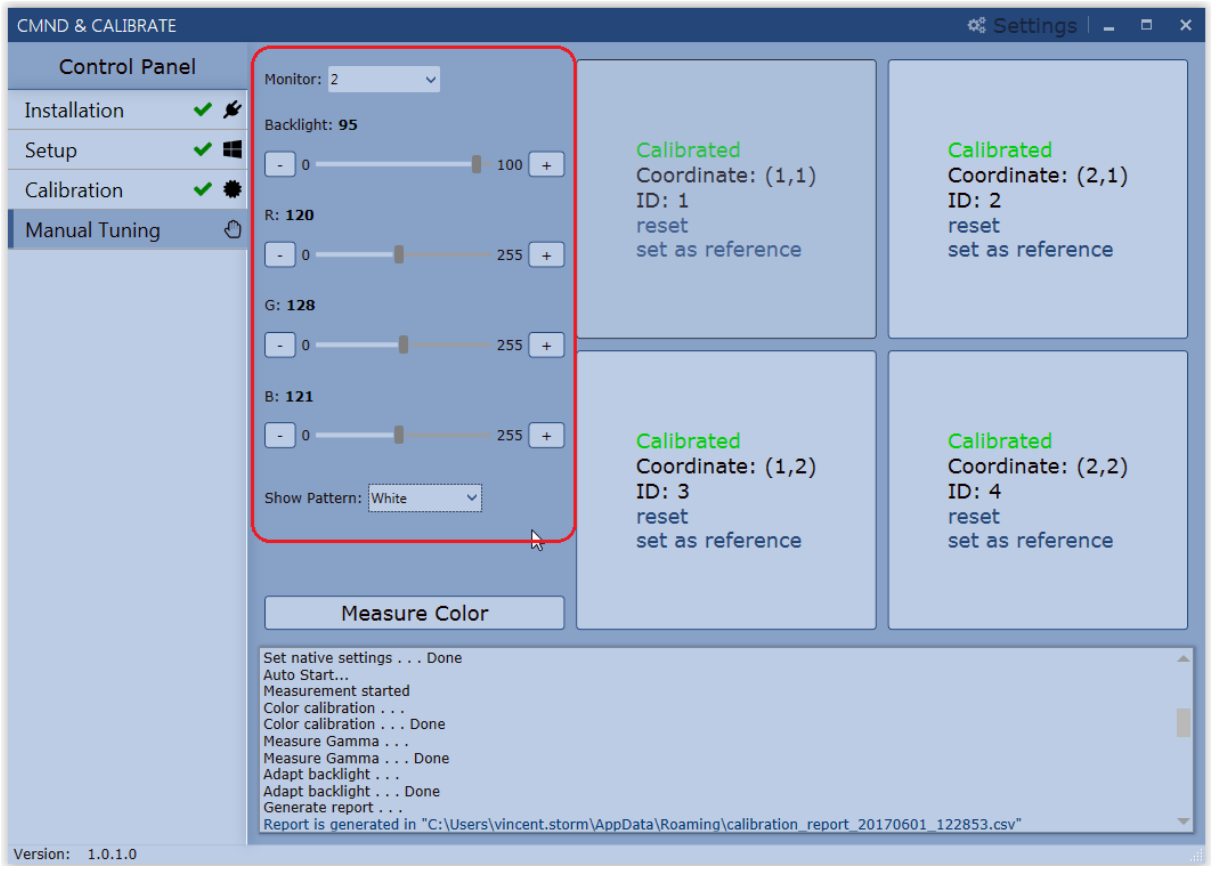


- Set as reference is used to adjust the backlight of 1 monitor measured from another monitor
- it will also adjust the colors to a target value set in the PC
- Select in 1 monitor “set as reference”, the light output of this monitor will be measured and used as target value to adjust the other monitor(s)
- In example below, the light output on the first monitor will be measured and the second monitor will be aligned to the same light output



6.5.5 Manual tuning

It is possible to adjust each monitor manually, select your monitor and you can change the “backlight”, the Red, Green and Blue colors manually of the selected monitor, see the red marker below.



7. Supported monitors

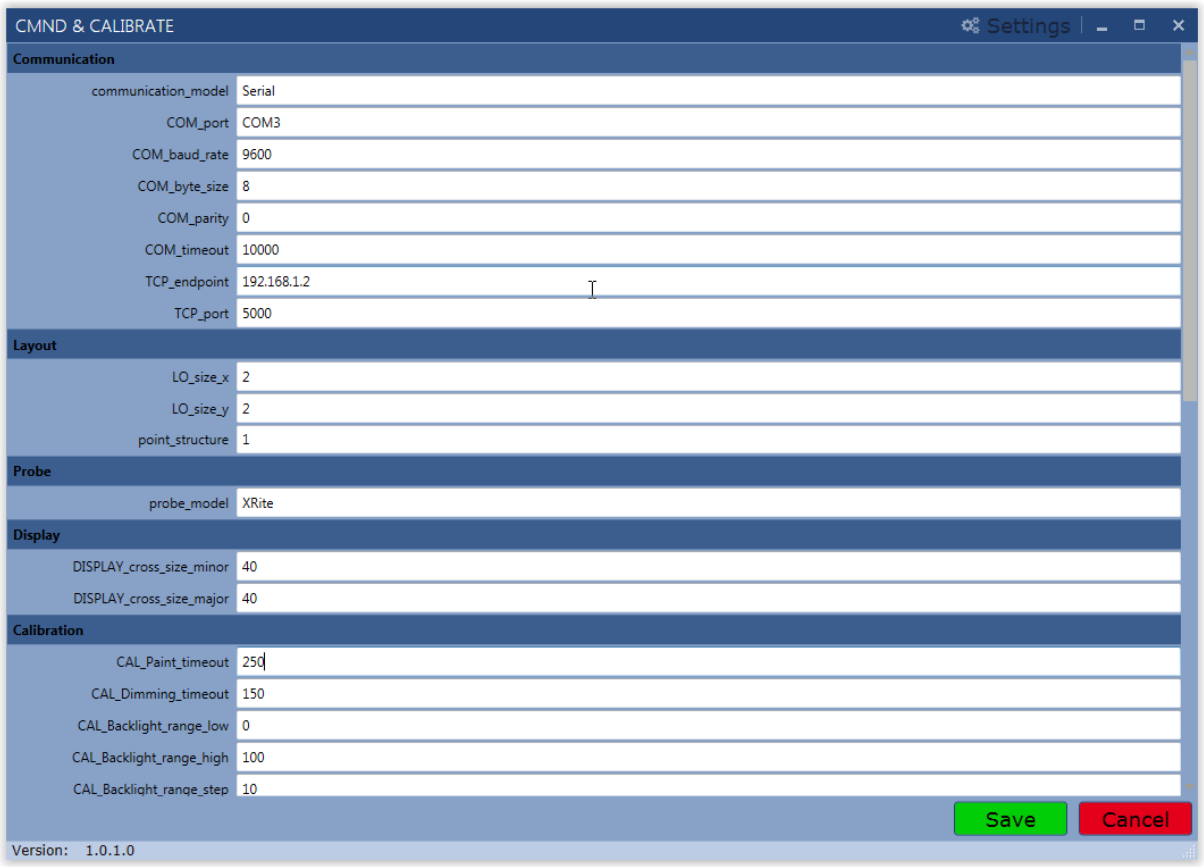
- 65BDL3000Q
- BDL4280VL
- BDL4680VL
- BDL5580VL
- BDL4780VH
- BDL4988XL
- BDL4988XC
- BDL5588XL
- BDL5588XH
- BDL5588XC
- 55BDL1005X
- 55BDL1007X
- 65BDL3010T
- BDL6526QT

- BDL6520QL
- BDL3260EL
- BDL4260EL
- BDL4660EL
- BDL5560EL
- BDL4765EL

- Firmware must be at least 1.94 for all above monitors

8. Ini file

Normally you don’t need to change any setting in this ini file.



9. Trouble shooting