Calibration Software

User Manual

TVLogic

1 Installation

The calibration software requires these minimum hardware specifications:

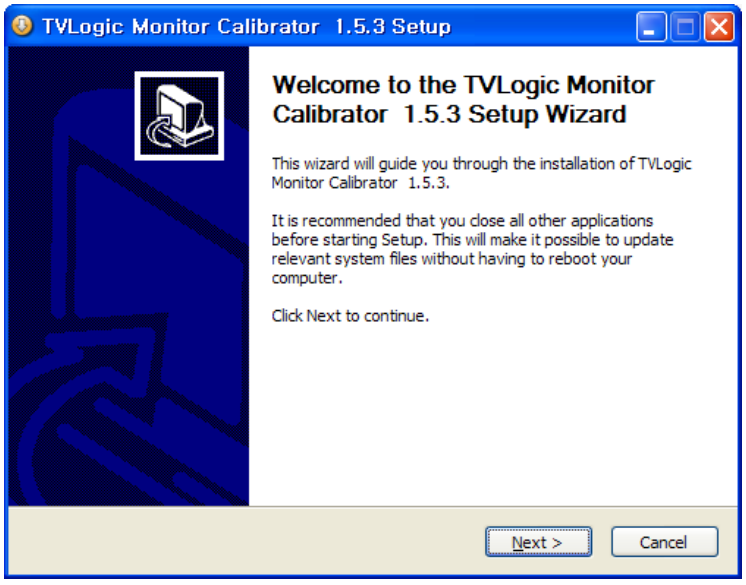
CPU	*Pentium PC*
System	*Windows 98SE/2000/ME/XP/7*
Display	*Any compatible 24 bit video card designed for windows 98/2000/XP/7 that supports the 1024 x 768 resolution*

Calibration software installation

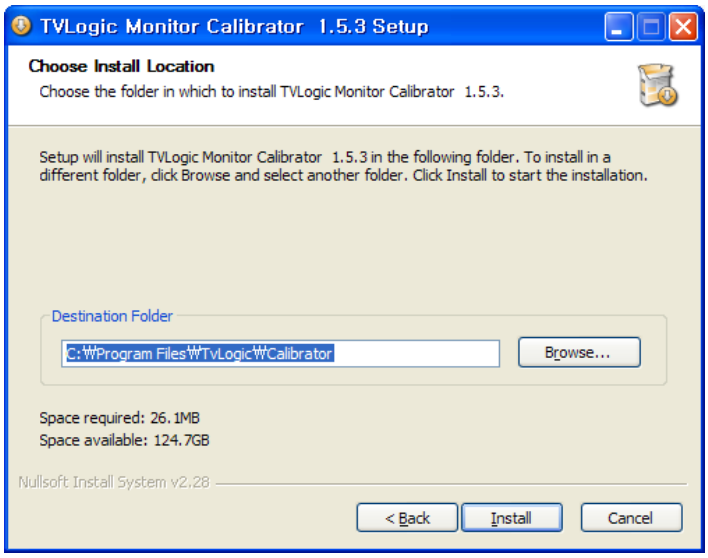
Step 1 TVLogic Calibration Program Installation

1.1 Launch “CalibratorSetup.exe”

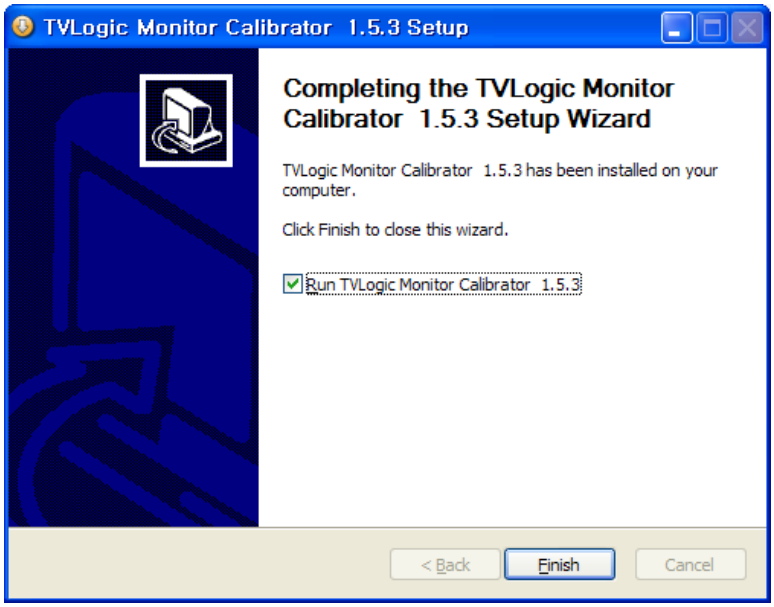
1.2 The “Calibration program setup window” will launch as shown below.
Click the “Next” button.



1.3 Designate the location where the program will be installed in your PC, and click the “Next” button.



1.4 If you can see the image below, the installation was successful.



1.5 Please copy “LicenseKey.tvl” file into the \bin folder (found under the Calibration program directory)

2. Calibration

The purpose of our calibration tool is to optimize the colors of LCD displays by compensating factors which affect the LCD panel.
This calibration program is used for all of our LCD monitors.
For a detailed calibration procedure, please refer to the following.

Calibration procedure

Before you begin

1. PGM port (15 Pin Port)
   Please connect the 15 pin serial cable to monitor's factory PGM port to your PC's serial port.

   RS-232 port (9 Pin Port)
   Connect the monitor's factory RS232 port (PGM port) to the PC's serial port with the 9 pin serial cable.
   Please don't connect the serial cable to the monitor directly. Use additional cable or connector

   RS-232 port support model: 9pin to 9pin connector (TX,RX,GND only)
   PGM port support model: 15pin to 9pin connector

Fig 1: Connecting to the serial port

2. If you are connecting a Klein K-10 or a DK-PM5639, connect it to the Klein K-10's or DK-PM5639's serial port with the USB port of your PC.

   If you are connecting an X-Rite, CA-210, CS-200, or an Eye-One, connect the probe with PC through the USB port.
   Those probes which connect with USB should install the device driver offered by the measurement device company.
   (The XVM-245W supports the Klein K-10, Konica-Minolta CA-210, CS-200 and X-Rite i1 Display3 probes)

3. Put the measurement device facing toward the center of the monitor.

4. Set the input source of the monitor as SDI-A.
   FCM Series, LHM Series: After input the DVI input signal, set the input source of the monitor as DVI.

5. If you pre-heat (or turn on) the monitor for more than 30 minutes before the calibration, you can get more accurate result.

Calibration Procedure

1. Launch the calibration program. The main window appears as below.

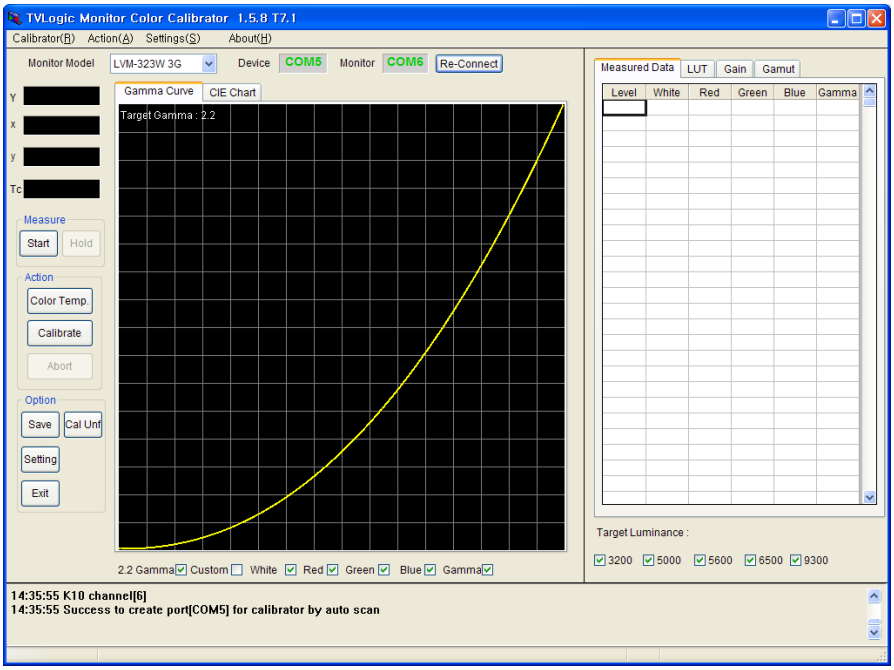


Fig 2 Calibration main window

The probe and the monitor's ports will be displayed on the top side of the screen.
If the connection between monitor and probe is well, the port's sign will be highlighted in green. If not, the port's sign will be highlighted in red.

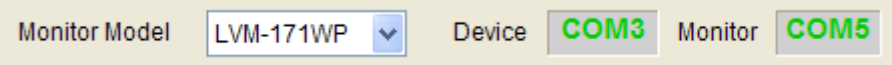


Fig 3 Status of connected serial port

3. Our calibration software supports the automatic detecting of the applied model for most of our monitors. However, monitors using the Genesis scaler (LVM-071W, LVM-091W, LVM-XX2W, FCM and LHM series) cannot afford this feature. In this case, you must choose the applied model manually. Afterwards, click the "Re-Connect" button for re-connection.

4. If the measuring device is not detected, check and make sure that the “Measuring Device” selection under the Setting menu is selected correctly.

5. Before starting the calibration, set the gamma and target luminance level in the Settings menu. (See 3.Setting for more info.)
   NOTE: To calibrate the XVM-245W using K-10 probe, select the XVM cal file of K-10 in the setting by pressing “Set” button next to the measuring device selection.

6. Click the “Calibrate” button for the adjustment of the Gamma curve and color temperatures.

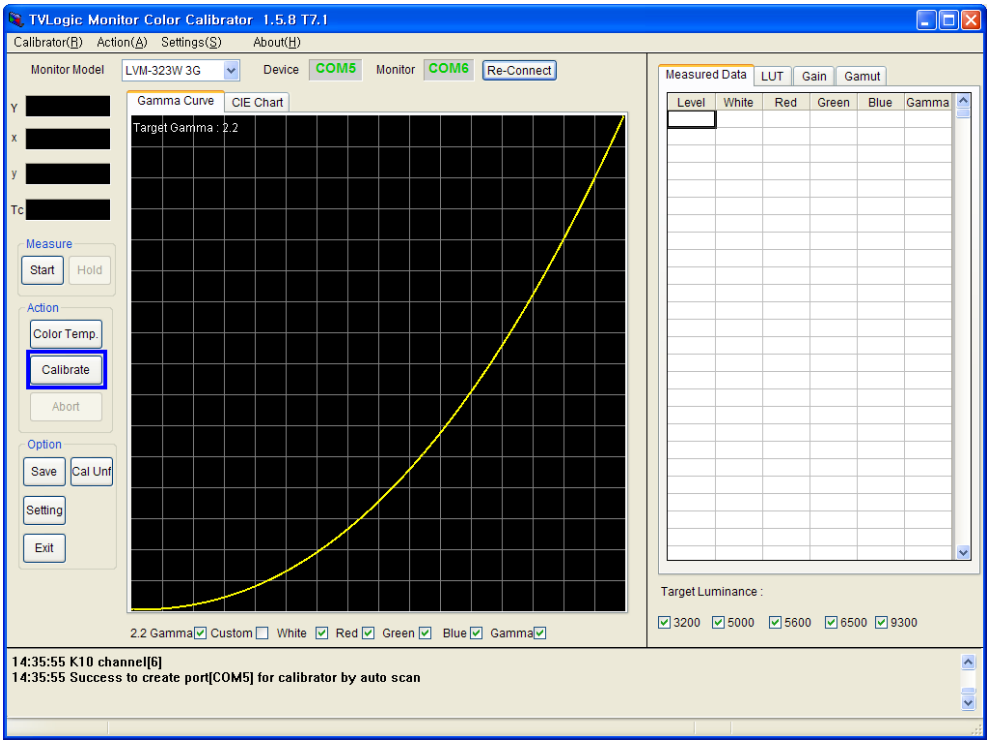
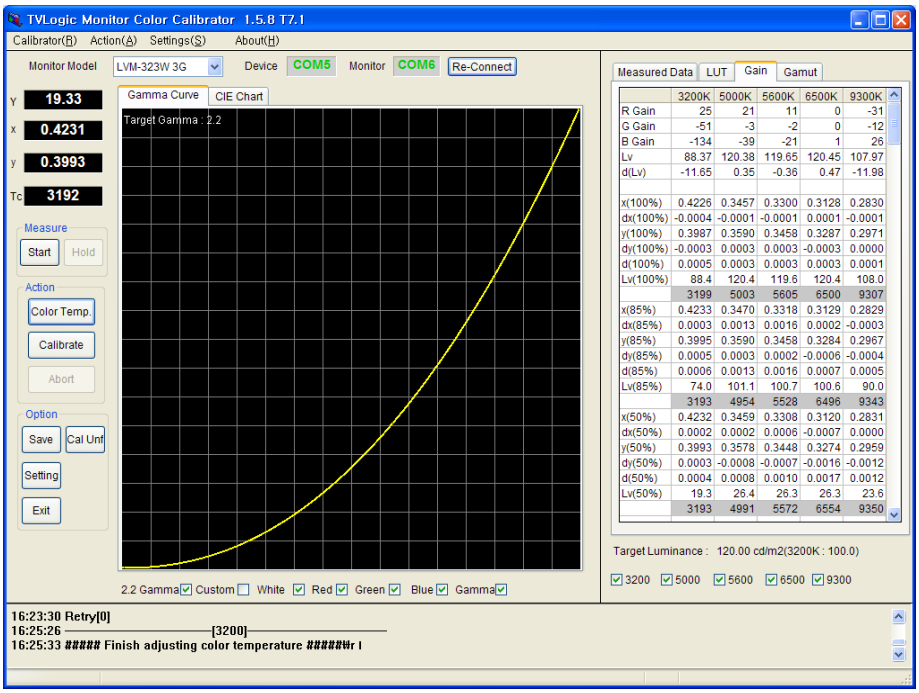


Fig 4 Program Calibrating Monitor

7. A message stating that “Finished calibrating LCD Panel” will be displayed if your calibration procedure was successful.



	3200K	5000K	5600K	6500K	9300K
R Gain	25	21	11	0	-31
G Gain	-51	-3	-2	0	-12
B Gain	-134	-39	-21	1	26
Lv	88.37	120.38	119.65	120.45	107.97
d(Lv)	-11.65	0.35	-0.36	0.47	-11.98
x(100%)	0.4226	0.3457	0.3300	0.3128	0.2830
dx(100%)	-0.0004	-0.0001	-0.0001	0.0001	-0.0001
y(100%)	0.3987	0.3590	0.3458	0.3287	0.2971
dy(100%)	-0.0003	0.0003	0.0003	-0.0003	0.0000
d(100%)	0.0005	0.0003	0.0003	0.0003	0.0001
Lv(100%)	88.4	120.4	119.6	120.4	108.0
	3199	5003	5605	6500	9307
x(85%)	0.4233	0.3470	0.3318	0.3129	0.2829
dx(85%)	0.0003	0.0013	0.0016	0.0002	-0.0003
y(85%)	0.3995	0.3590	0.3458	0.3284	0.2967
dy(85%)	0.0005	0.0003	0.0002	-0.0006	-0.0004
d(85%)	0.0006	0.0013	0.0016	0.0007	0.0005
Lv(85%)	74.0	101.1	100.7	100.6	90.0
	3193	4954	5528	6496	9343
x(50%)	0.4232	0.3459	0.3308	0.3120	0.2831
dx(50%)	0.0002	0.0002	0.0006	-0.0007	0.0000
y(50%)	0.3993	0.3578	0.3448	0.3274	0.2959
dy(50%)	0.0003	-0.0008	-0.0007	-0.0016	-0.0012
d(50%)	0.0004	0.0008	0.0010	0.0017	0.0012
Lv(50%)	19.3	26.4	26.3	26.3	23.6
	3193	4991	5572	6554	9350

Fig 5 Completed calibration

Saving the Calibration data

1. To save the calibration result data, please click the “Save” button.

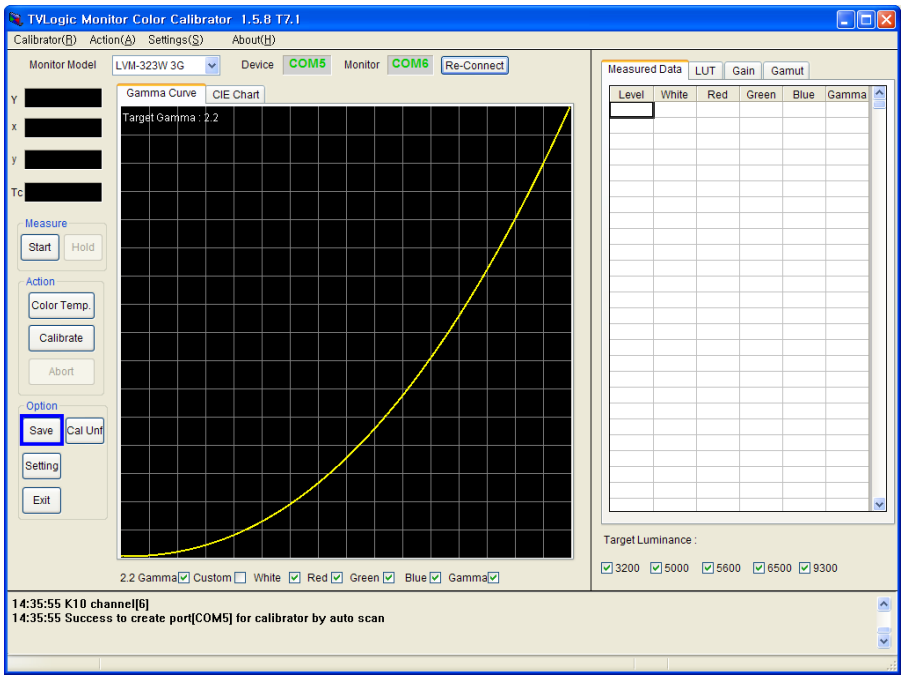


Fig 6 Save calibration result

2. Input the Monitor’s serial number (or File name) and the file format.

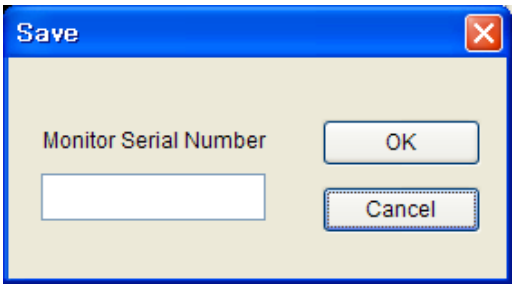


Fig 7: Save file dialog

3. File will be saved under the directory:
“C:\Program Files\TvLogic\Calibrator\data”

Measuring the monitor

1. If you want to know the current color temperature and the brightness of the monitor, you can measure the monitor by selecting the “Start” button.

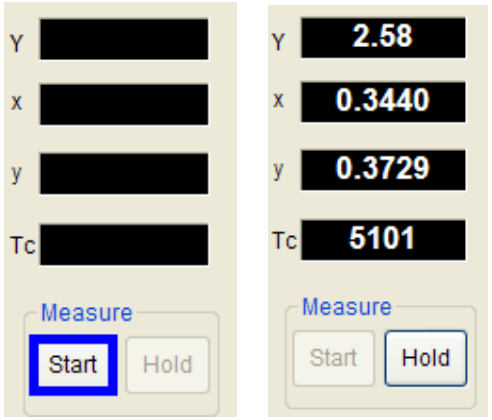


Fig 8 Status of measuring

Tip) Y: Luminance [cd/m^2]
x,y: C.I.E. 1931 color space
Tc: color temperature

3. CL-Soft Settings

The Settings menu is located on the left-bottom side of the calibration program. Under the Settings menu, you can set the following various settings.

Calibration Tab

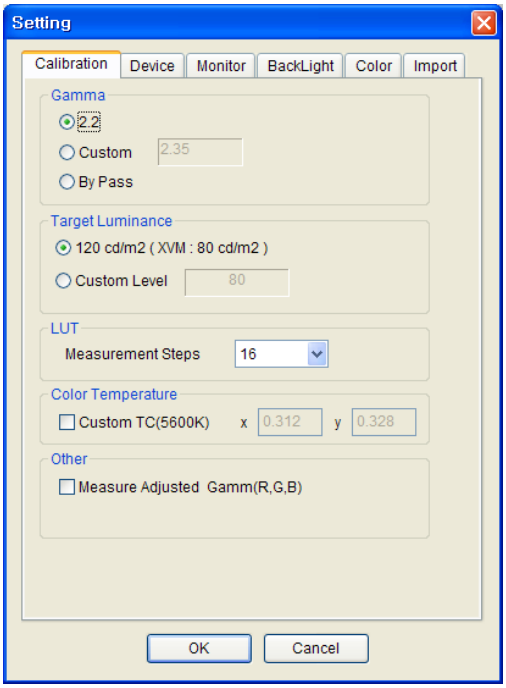


Fig 9 Setting calibration dialog

Gamma

Gamma 2.2 is the default setting. However, the user can change it by using the “Custom” menu and also allows the user to bypass the Gamma adjustment by using “By pass” option.

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Target Luminance

When adjusting for the color temperature, the user can set the target luminance value. The user can also set the target luminance by using “Custom Level” menu.

Measurement Steps

When adjusting the Gamma value, each measuring interval from 1 to 64 steps can be selected. The lower figure, the more precise measuring data can be achieved. The recommended step size is 16.

Custom TC (5600K)

The user can program the custom color coordinates in 5600K color space.

Measure Adjusted Gamma(R, G, B)

This feature is used to measure red, green and blue after the gamma correction. If the user doesn’t use this feature, the R, G and B graphs will be displayed as before the calibration.

Comm Tab

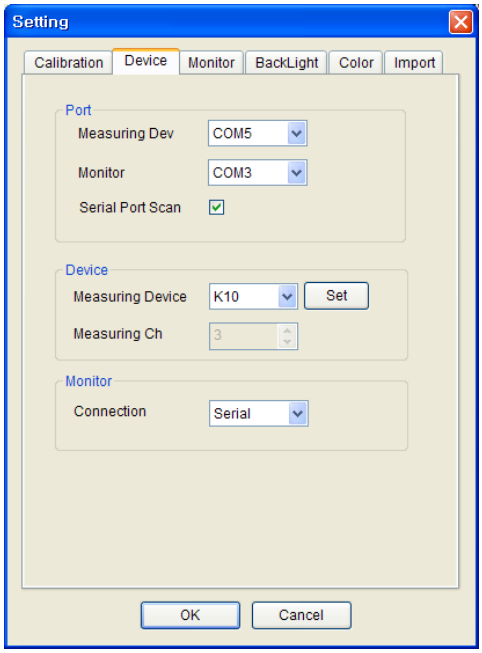

Fig 10 Setting communication dialog

Measuring Dev

Measurement device port selection

Monitor

Monitor connection port selection

Serial Port Scan

Activates automatic port scan for connected devices.

Measuring Device

The user can choose from 7 different probes: Klein K-10, X-Rite (DTP94), CA-210, CS-200, DK-PM5639 , Specbos 1211, i1Display2 and the i1Display3.

Available Option according to the measurement device.

Set (K-10, i1Display3) : Proper channel setting for each monitor’s panel.

0 Cali (CA-210) : This button is activated only when the CA-210 is selected. Clicking the button will perform zero calibration.

Measuring Ch (CA-210) : This menu supports the CA-210 probe for color coordinates and data channel selection.

Connection

Available connection methods are serial cable and USB. If the model supports USB connection, USB should be selected. (e.g. LVM-074W)

Monitor Tab

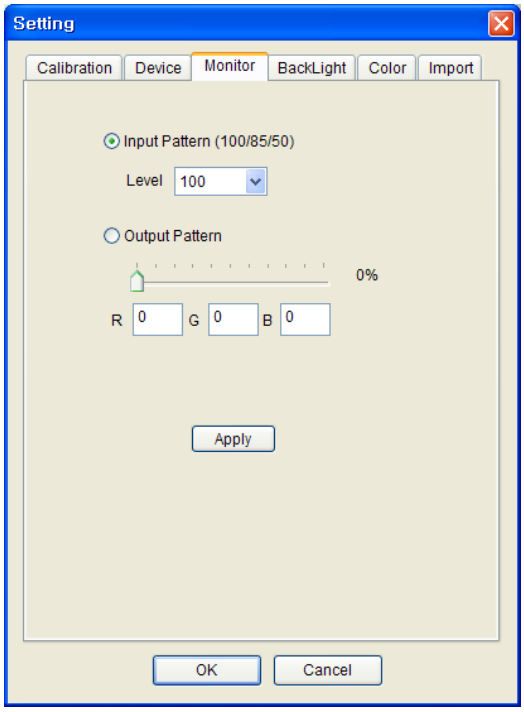

Fig 11 Setting pattern dialog

Input Pattern/Output Pattern

The user can display the input pattern or output pattern on the monitor. The input level can be selected between ranges of 50, 85 and 100.
In case of 8bit panel, each output level for R, G, and B can be selected from 0 to 255 and in case of 10bit panel, each output level for R, G, and B can be selected 0 to 1023.

After the input of the appropriate values, click the “Apply” button.

BackLight Tab

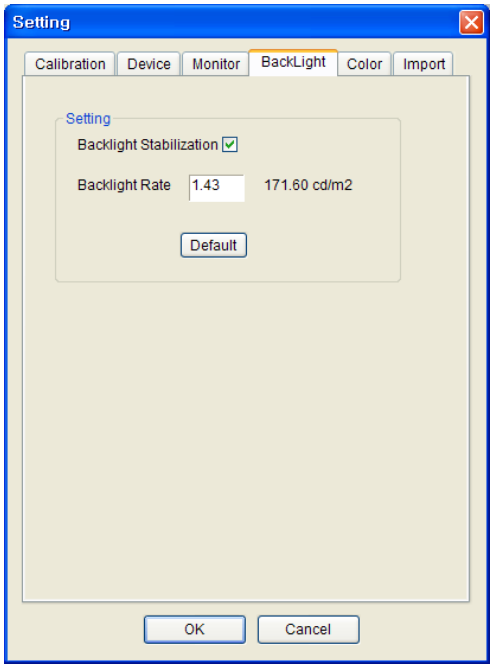

Fig 12 Setting backlight dialog

Backlight Stabilization

After powering up, the LCD panel needs some time for the stabilization of the backlight. This process takes about 20 min ~ 60 min. We recommend the user to choose the “Backlight Stabilization”. When the user selects this function, the calibration procedure will start immediately after the backlight stabilized.

Backlight Rate

Backlight rate is a ratio to set the target brightness value. This feature is not available for LVM-XX0W series.

Color Tab

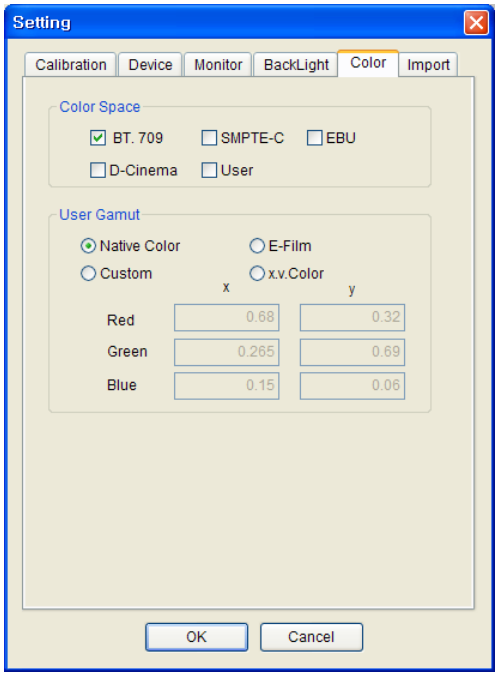

Fig 14 Setting Color Dialog

Color Space

Color space selection for XVM and LEM Calibration

User Gamut

If the “User” box is selected in the Color Space selection above, the User LUT will be programmed to the color space of the monitor after calibration.

Import Tab

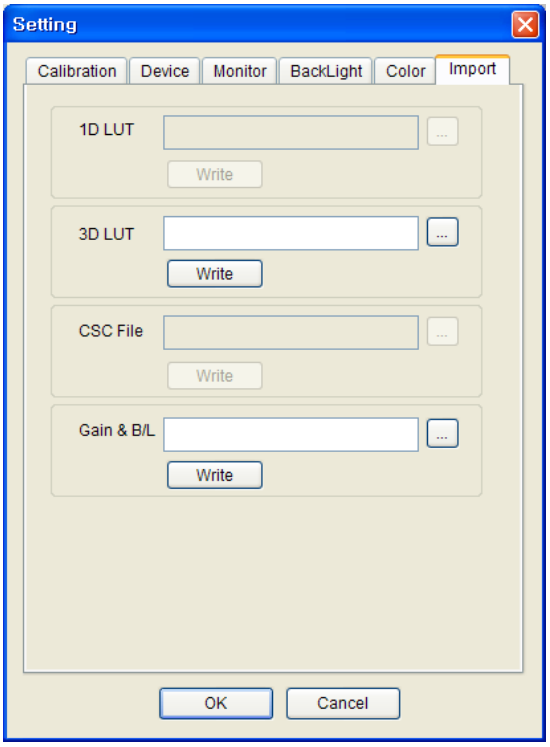

Fig 13 Setting Import dialog

1D LUT

This channel is used to apply the stored 1D LUT File to the monitor.

3D LUT

This channel is used to apply the stored 3D LUT File to the monitor.

CSC File

This channel is used to apply the stored CSC File to the monitor.

Gain & B/L

This channel is used to apply the File which stored Gain and Backlight values to the monitor.

TIP . K-10, i1Display3 Setting Dialog

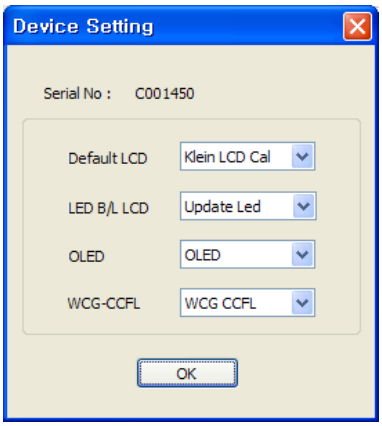

Fig 16 Device Setting

When the K-10 or i1Display3 is connected to PC for the first time, the "Device Setting" pop-up appears as above. (Fig.16)

Default LCD

This channel is used for color calibration of normal LCD display which is CCFL backlight type.

LED B/L LCD

This channel is used for color calibration of LED backlight type displays like XVM-245W.

OLED

This channel is used for color calibration of OLED panel equipped displays like LEM-150 and TDM-150W.

WCG-CCFL

This channel is used for color calibration of LCD display which is Wide Color Gamut – CCFL backlight type.

* Once the Device Setting is completed, above pop-up will not appear again. If you want to re-set the options, enter the [Setting] menu and select [Calibration] tap and then press “Set” button on the [Measure Device].

TIP . Uniformity Calibration (XVM-245W)

To proceed the Panel Uniformity Calibration of XVM-245W, please refer to the following.

1. Click “Cal Unf” button. (Fig.17)

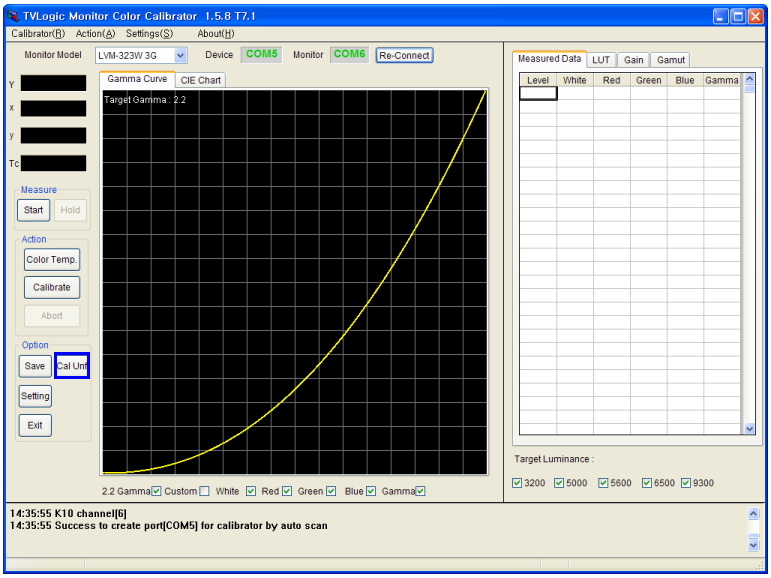

Fig 17 Calibration Uniformity

2. Center : 980, Auto Move : Uncheked
   After click the button, the Calibration Uniformity pop-up appears as below. Then set the values as follows.
   Center : 980, Auto Move : Uncheked

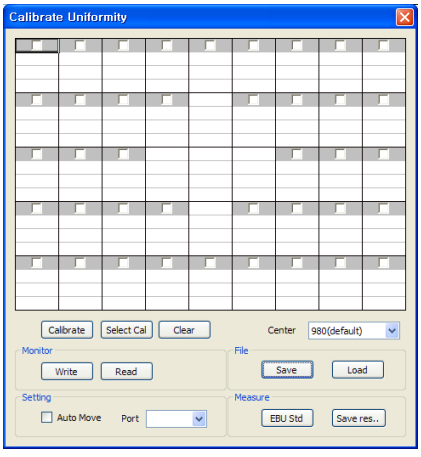

Fig 18 Calibration Uniformity Dialog

3. Click “Calibrate” button to start the Uniformity Calibration.
   After starting the procedure, black mark will be appeared on the center of the screen. Put the measurement device on the black mark and click next step button. Repeat same steps constantly till the calibration is done.

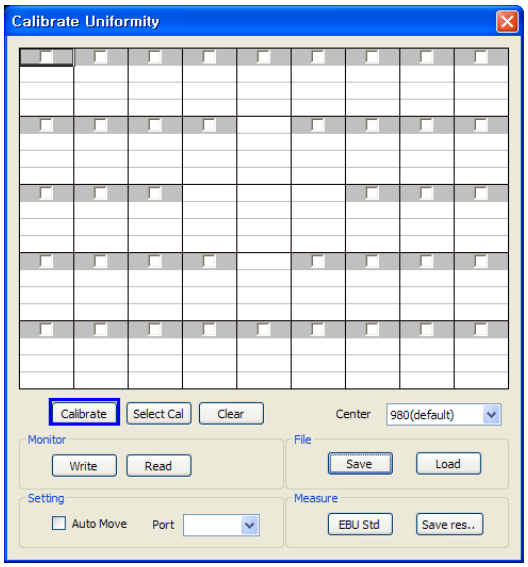

Fig 19 Calibration Uniformity Progress

Each Button’s feature

Select Cal : Used to calibrate the selected(ticked) locations only.
Clear : Set all values as maximum values.
To save the values to the monitor, use “Write” button.
Write : Used to save the marked value on the table.
Read: Used to load the saved value.
(Minimum F/W Version :2.07 or 3.01)
Save : Used to save the marked value on the table as a file.
Load : Used to load the saved value as a file.
To apply the value to the monitor, use “Write” button.

MEMO