

**SHARP**<sup>®</sup>

Image adjustment manual  
for Multi Display  
of PN-V602

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DISPLAY DIVISION  
BUSINESS SOLUTIONS PROMOTION GROUP  
SHARP CORPORATION

## Revision History

Version	Date	Significant changes
1.0	Aug.29,2011	-
1.1	Oct.3,2011	* [5]-2. Added the explanation of the method to save the current monitor settings to the "*Reset:" of "Measurement method when the LCD MONITOR that will serve as a reference is selected:" *[5]-4. Changed the explanation of "Acquire the monitor settings before the calibration".
1.2	Nov.18,2011	* [1]. Added the information as notes. * cover, reverse cover, header, footer. Changed the format.
1.3 (Draft)	Feb.6,2012	* Changed the name of the Calibration Tool *[5]-2. "Measurement method when the LCD MONITOR that will serve as a reference is selected" - changed the dialogue for checking the reset of the PICTURE adjustment setting that will be displayed when clicking the [Run Measurement]. *[5]-8. "How to use the sensor" - added the explanation of the ColorMunki Sensor. *[5]-20. Added the explanation of Arbitrary command send function <Hidden function>. *[5]-21. Added the explanation of Remote control simulation function <Hidden function>. *[5]-22. Added the explanation of "How to change data folders" <Hidden function>. *[5]-18-4. Changed the explanation of Deletion of the calibration data.
1.3	Mar.26,2012	*[4]-3. Added the explanation of "Adjust Color" function. *[5]-18-2: Changed the explanation of calibration storage location.

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## [Chapter1] Summary

This document has summarized the notes about the methods of the image adjustment for Multi Display of PN-V602. Please perform the image adjustment based on this document.

### *Note:*

- o "(V Series) Display Installation Tool with Calibration Utility" will be referred to as "Calibration Tool" in this manual.*
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- o As a part of our policy of continuous improvement, SHARP reserves the right to make design and specification changes for product improvement without prior notice. The performance specification figures indicated are nominal values of production units. There may be some deviations from these values in individual units.*
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Image adjustment of the LCD MONITOR is required mainly in the following 3 cases:

#### [1]-1. For New Installation:

If the specific color temperature and brightness need to be adjusted or the color needs to be adjusted due to the difference of the installation environment and the characteristic of the viewing angle, please perform the adjustment based on the following flowchart:

#### [1]-2. When the LCD MONITOR is replaced:

On the LCD MONITOR, the color temperature and the brightness will change with the hours of use. For this reason, if the LCD MONITOR is replaced due to the breakdown etc, there are some cases where the color temperature and the brightness will change and they are different from other LCD MONITORS.

If the color temperature and the brightness are required to be adjusted by a visual check,

please perform the adjustment based on the following flowchart:

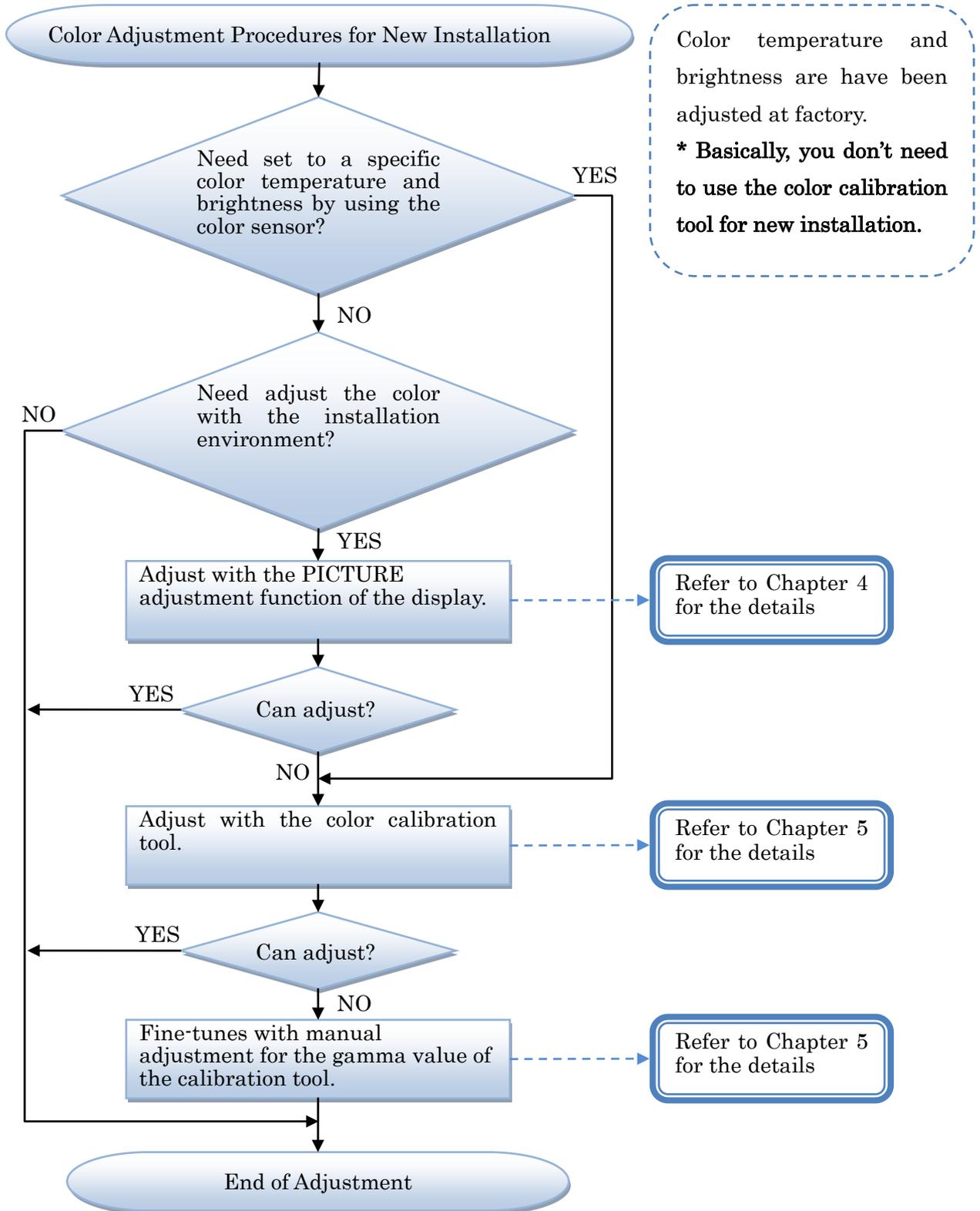
[1]-3. For difference of the color temperature and brightness between the LCD MONITORs due to change over time:

The color temperature and the brightness change with the hours of use.

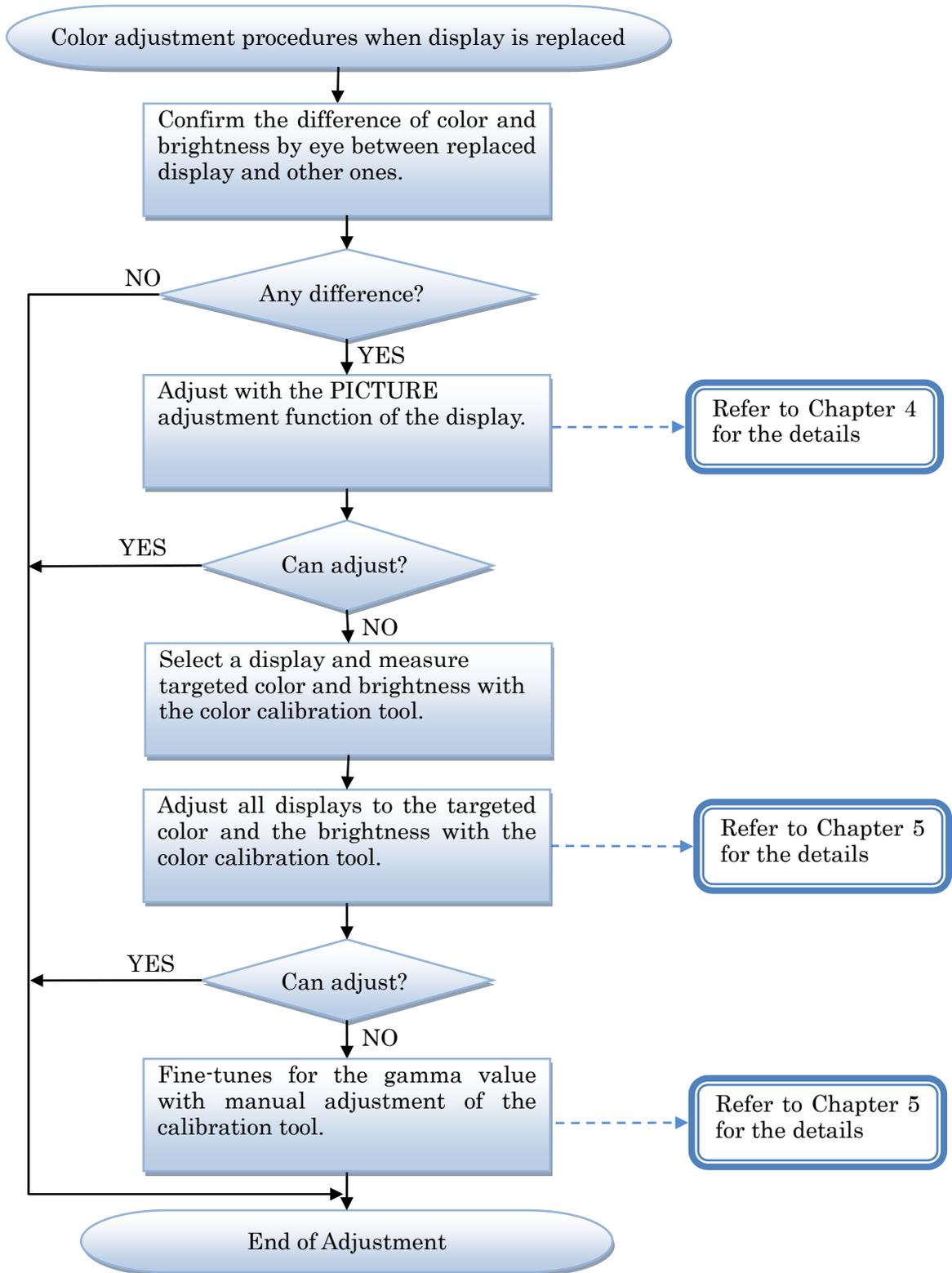
If the difference of the color temperature and the brightness between the LCD MONITORs is remarkable, please perform the adjustment based on the following flowchart:

[Chapter2] Color Adjustment

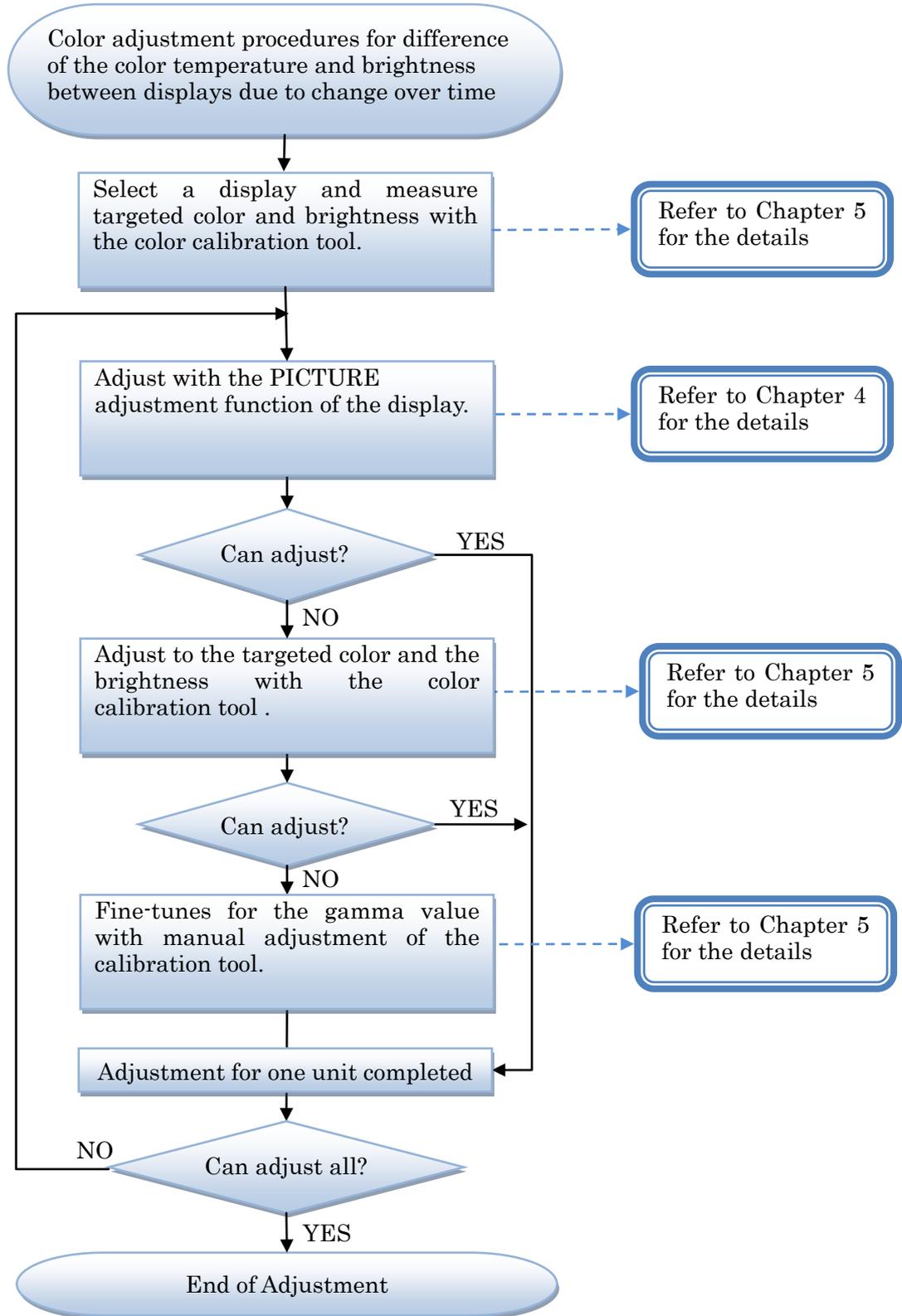
[2]-1. For New Installation:



[2]-2. When the LCD MONITOR is replaced:



[2]-3. For difference of the color temperature and brightness between the LCD MONITORs due to change over time:



### [Chapter 3] Preparation for the image adjustment

When performing the image adjustment, please conduct the following items as the preparation.

- As the brightness of the LCD MONITOR does not stabilize immediately after the power ON, please perform the adjustment after 60 minutes or more has been passed with the backlight being lit.
- The higher the temperature of the LCD MONITOR, the lower the brightness. Please perform the image adjustment after the final installation condition is ready.

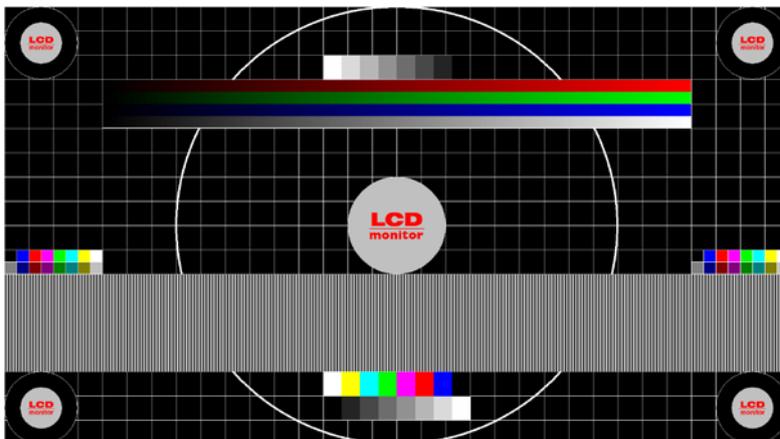
### [Chapter 4] Adjustment method by the PICTURE adjustment function of the LCD MONITOR

#### [4]-1. AUTO adjustment of the PICTURE (AUTO GAIN)

When using D-sub (VGA) or BNC (RGB) of PC, the Auto Adjustment (AUTO GAIN) in the "PICTURE" menu needs to be performed on the combination with PC connected for each LCD MONITOR. Input level of R/G/B signal can be calibrated by this procedure. This is the most basic adjustment for the analog PC input. If the combination of PC and the LCD MONITOR is changed, this procedure needs to be performed again.

This adjustment is not necessary for other inputs (HDMI / DVI-D / Component / Composite / S Video).

- (1) Input the PC signal to D-sub(VGA) or BNC(RGB) terminal.
- (2) Start the utility (Adj\_uty.exe) for the adjustment on PC. The following pattern for the adjustment will be displayed. The utility (Adj\_uty.exe) for the adjustment is included in CD-ROM packed with the product.



- (3) Execute the "AUTO" in "SCREEN" menu. This operation is called as AUTO ADJUST.
- (4) Execute the "RESET" in the "PICTURE" menu.
- (5) Execute the "AUTO" in the "PICTURE" menu. This operation is called as AUTO GAIN. After executing the AUTO GAIN, the balance of the RGB of ADC which is an internal setting of the "ANALOG GAIN" and "ANALOG OFFSET" in the "PICTURE" OSD menu is automatically adjusted against the analog input signal.

<Tips>

Even when the adjustment is performed with the calibration tool the AUTO adjustment for the PICTURE (AUTO GAIN) is required.

#### [4]-2. Brightness Adjustment

If the brightness (brightness of the backlight) is different, please adjust the "BRIGHT" setting.

- (1) Input the image of 100% white screen from PC.
- (2) Check the brightness of each LCD MONITOR by the brightness meter or the visual check.
- (3) Adjust the brightness or the visual brightness on the "BRIGHT" setting.

<Tips>

\* Even if there is no PC, 100% white screen can be displayed without inputting the video signal by setting to "WHITE" for "Display Color Pattern" in the "PICTURE" OSD menu. Using the calibration tool, the white screen can also be displayed by setting the "Display Pattern" of the calibration to [ON].

#### [4]-3. Adjustment of WHITE BALANCE

If the color is different between the LCD MONITORS, please adjust the WHITE BALANCE.

- (1) Input the 16-level grayscale image from PC.  
(If you don't have this image, input the image of 100% white screen.)



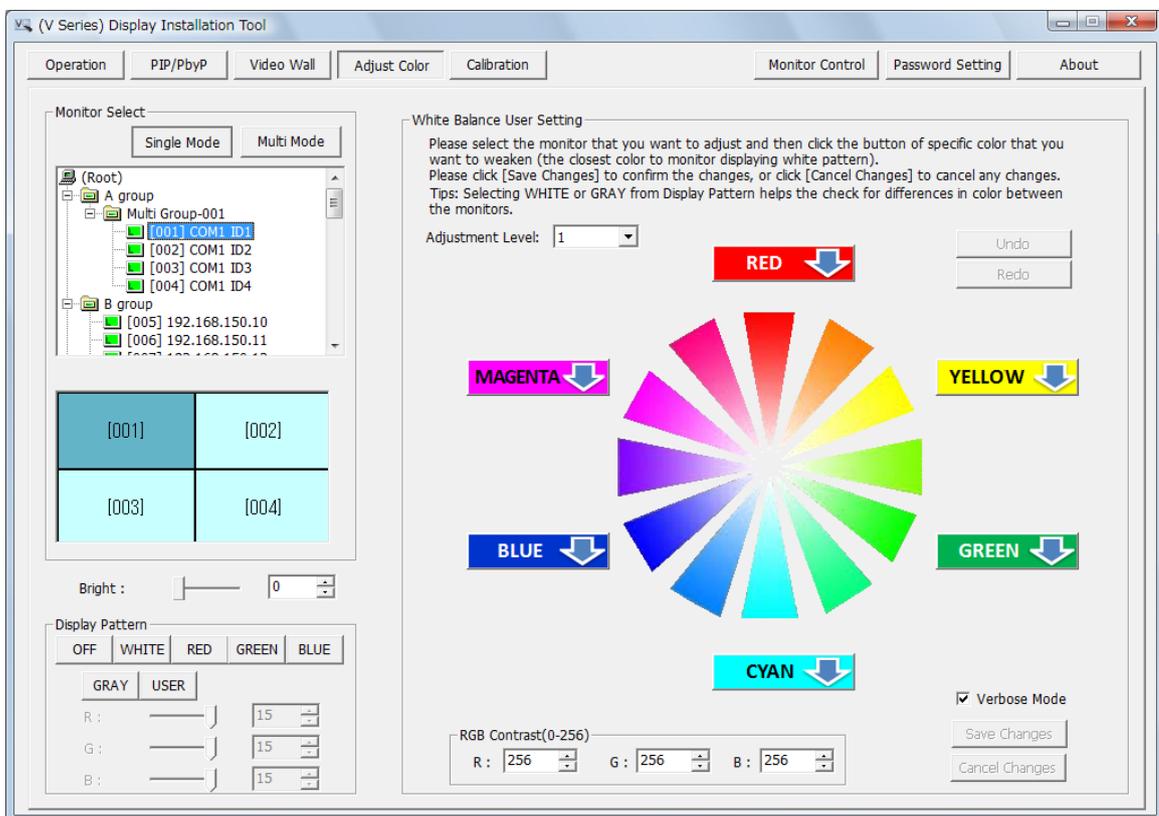
- (2) Check the color balance of each LCD MONITOR.
- (3) Set the "WHITE BALANCE" to the "USER" in the "PICTURE" menu.
- (4) Adjust the color among RGB you feel strong by decreasing the "R/G/B-CONTRAST" from 256 that is the default value.
- (5) Especially if the balance of RGB of the black side is poor, adjust the color by increasing/decreasing the "R/G/B-OFFSET" from 0 (default). After adjusting the "R/G/B-OFFSET", adjust the balance of all colors with the "R/G/B-CONTRAST".

<Note>

When increasing the "R/G/B-OFFSET" more than 0, the black level will change to too high and when decreasing the value less than 0, the black level will be too low. Please check the grayscale image of the black side and the color balance carefully enough when adjusting.

<Tips>

- \* Even if there is no PC to input the video signal, the solid gray can be displayed by setting to "USER" for "Display Color Pattern" in the "PICTURE" OSD menu and setting R/G/B to the same value.
- \* "Adjust Color" in Calibration tool can also be used to display the built-in pattern in the LCD MONITOR to check and adjust the color of the monitor.



#### [4]-4. Fine-tunes with the target contents

The basic adjustment has been completed at [4]-1 to [4]-3. Please check the image with the target content. If the fine-tune is required, please perform the procedure below:

(1) Input the target content.

(2) If the image is different between the LCD MONITORS, please perform the adjustment for each case below:

[Case1] Color balance is different

➔ Please adjust the "R/G/B-CONTRAST" with paying attention to the balance of white and gray.

[Case2] Depth of the color is different:

➔ Adjust the "COLORS".

[Case3] Brightness of the gray level is different:

➔ Adjust the "GAMMA".

<For PC DVI-D/HDMI/ D-SUB/RGB Input>

"STD" is the gamma to perform the gradation characteristics that is equivalent to the standard mode of AQUOS. Since the dark section of the gray level is darker, the image can be displayed more sharply. "2.2" is the standard setting for the general display for PC. If it is set to "2.0" or "1.8", the brightness is lighter than "2.2" and if it is set to "2.4", the brightness will be darker. "USER" is the gamma that is set with the calibration tool. Please set to the "USER" after the calibration.

<For AV DVI-D/HDMI/Components/S Video/Video Input>

"STD"(Default) is the gamma to perform the gradation characteristics as well. If it is set to "LIGHT1" or "LIGHT2", the brightness will be lighter and if it is set to "DARK", the brightness will be darker. "USER" is the gamma that is set with the calibration tool. Please set to the "USER" after the calibration.

"CONTRAST/BLACK LEVEL/TINT" are basically unnecessary to change. In case of necessity, please use those for the fine-tunes.

<Notes>

\*On the PICTURE adjustment items, the settings are independently stored for each input

mode. If the adjustment is performed by the calibration tool, the adjustment result can be reflected by setting the gamma to the "USER" with the input mode that is actually used. The calibration result can also be reflected to the specified input ports by executing "Copy setting to another input mode" after the calibration.

<Tips>

- \* With the input of AV system, the detailed color adjustment such as the "FLESH TONE" and "Color Management (C.M.S-HUE,C.M.S-SATURATION,C.M.S-VALUE)" besides the adjustment items above is possible. Please use this when setting the image quality you want.
- \* "VIVID" mode, "HIGH ILLUMINANCE" mode, and "sRGB" mode can be selected as the color mode. "VIVID" mode is to make the gamma setting that the image looks vividly. "HIGH ILLUMINANCE" mode is to make the gamma setting and the color adjustment that the image looks clearer even in the bright environment like the semi-outside etc.. "sRGB" can be used for the color management such as the color matching with the printed media.

#### [4]-5. RGB INPUT RANGE Settings

When inputting the image from PC to the input terminal of the LCD MINITOR, the symptom that the black area looks grayish color may occur. This is caused because the LCD MONITOR receives the image as the Full range (0-255) even though the PICTURE RANGE output from the graphic board is output as the limited range (16-235).

This symptom can be improved by changing "RGB INPUT RANGE" in the "PICTURE" OSD menu setting.

Please check the grayscale image, and then set up the appropriate range.

Please conduct this procedure after [4]-1. AUTO adjustment of the PICTURE (AUTO GAIN).

Item Name	Option	Explanation
RGB INPUT RANGE	AUTO	Automatically set depending on the input signal. This setting can be set only for the input terminals of PC HDMI and AV HDMI.
	FULL	Display the range being input as the original range. When the signal of Full range (0-255) is input, the image will be displayed with the most appropriate range (0-255) but when the signal of Limited range (16-235) is input, it will be displayed with the range that has no black and white (16-235). This setting is mainly used by inputting from PC.

		This setting can be set for the input terminals of PC DVI-D, PC HDMI, PC D-SUB, PC RGB, AV DVI-D, and AV HDMI.
	LIMITED	<p>Display the range being input by expanding from (16-235) to (0-255).</p> <p>When the signal of Limited range (16-235) is input, the image will be displayed with the most appropriate range (0-255) but when the signal of Full range (0-255) is input, it will be displayed with the area of black and white being saturated (-16-275).</p> <p>This setting is mainly used by inputting from AV device.</p> <p>This setting can be set for the input terminals of PC DVI-D, PC HDMI, PC D-SUB, PC RGB, AV DVI-D, and AV HDMI.</p>

#### [4]-6. LOCAL DIMMING

PN-V602 has the LOCAL DIMMING function and it controls the brightness for each area of the LED Backlights, depending on the contents for saving energy and improving the contrast.

Item Name	Option	Explanation
LOCAL DIMMING	OFF	No Local Dimming. Backlights are always lit even under the black screen.
	LOW	Mode that the halo phenomenon (*1) has been reduced. Approx. 70% of the backlights are always lit under the black screen.
	MIDDLE	Approx. 20% of the backlights are always lit under the black screen.
	HIGH (Default)	Highest contrast and low power consumption mode. Almost all backlights are not lit under the black screen.

\*1: Halo is the phenomenon when the backlights being lit and the backlights not being lit are lined up, the image quality becomes worse due to the occurrence of the light leakage on the backlights not being lit.

When setting the LOCAL DIMMING to "HIGH", it may look like the annual tree rings when displaying the uniform image and the grayscale may slightly be saturated when displaying the bright image. In that case, please set to "MIDDLE", "LOW", or "OFF".

Note: When using the calibration tool, please set to "OFF".

## [Chapter 5] Adjustment method with the Calibration Tool

### [5]-1. Summary

Please read carefully the operation manual of Display Installation Tool for V Series with Calibration.

In the following two cases mainly categorized, perform the adjustment with the calibration tool:

(Case1) When it is necessary to set to the specific color temperature and brightness using the colorimeter:

#### [Example]

When you wish to match all LCD MONITORS to the characteristic of sRGB(6500K/gamma 2.2) with 400cd/m<sup>2</sup>.

➔ Perform the calibration of the given brightness/color temperature/gamma as the adjustment target.

It is not necessary to measure the monitor that will serve as a reference, described in the instruction manual.

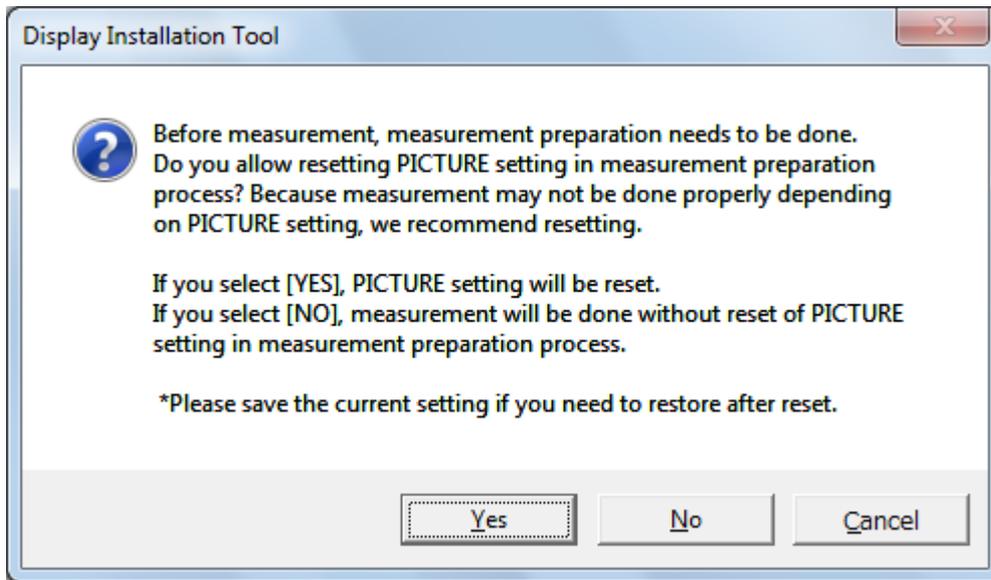
From the [Calibration] tab, please set the target value in the "Setting target value", and then execute the calibration.

(Case2) If the adjustment is not adjusted enough, even though you adjusted the color temperature/brightness of the LCD MONITORS that are configured as the multiple-displays with the PICTURE adjustment function of the LCD MONITOR:

➔ Select and measure the LCD MONITOR that will serve as a reference, and then perform the calibration based on the measurement result as the adjustment target. Please perform the calibration with the procedure described in the instruction manual.

### [5]-2. Measurement method when the LCD MONITOR that will serve as a reference is selected:

When clicking the [Run Measurement] from the [Measurement] tab, the dialogue will be displayed to check whether the PICTURE adjustment setting should be reset or not.



\* Reset:

In the case of the measurement with the same PICTURE adjustment setting as the factory default, reset the setting and then perform a measurement.

For example, if you collect the LCD MONITORs that were used in the different environments such as the demo and assemble the multiple-displays, you may not know what adjustment value was used on each LCD MONITOR so the setting value should be reset before the measurement. If you save the current monitor settings in advance, please follow the procedure described in "[5]-4. Acquire the monitor settings before the calibration", and then save the settings.

<Note>

If the setting is reset, the gamma will return to the "STD". If "2.2" etc other than "STD" is desirable as the base, please perform the appropriate setting, and then make a measurement without conducting the reset.

If the setting is reset in this dialogue, the menu setting of the PICTURE adjustment will be reset but the adjustment value of the BRIGHT will not be reset. If you also reset the brightness to the factory default, please execute the Factory Reset in the [Write data] tab. (refer to [5]-13. Factory Reset)

\* Not Reset:

In the case of the measurement with the PICTURE adjustment value currently set:

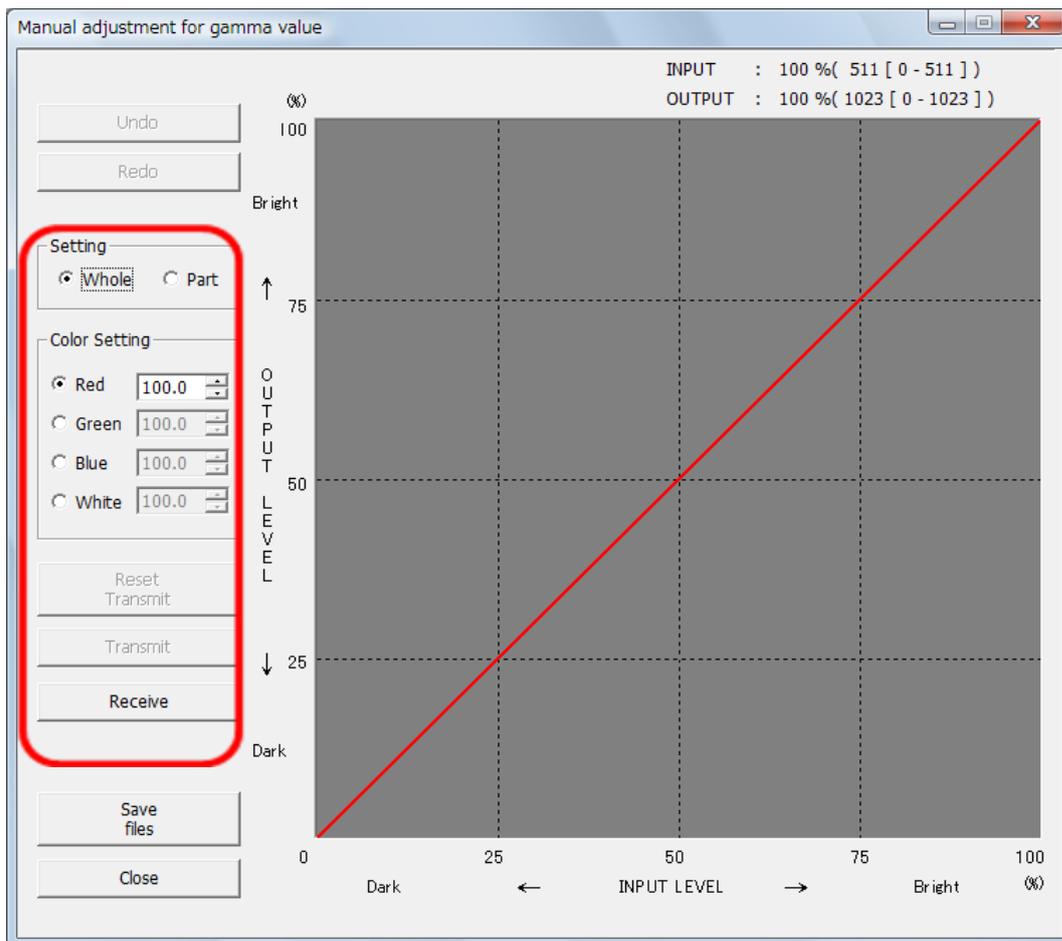
Make a measurement without resetting.

For example, when measuring with the condition which has already been calibrated with the calibration tool, please make the measurement without resetting.

[5]-3. When performing the fine-tunes of the color temperature after the calibration: Manual adjustment for gamma value

Even if you perform the calibration due to the unevenness of the color caused by the color unevenness of the panel and viewing angle, the color may be different from the other monitors by looking with your eyes though the measurement value is the same:

In such a case, please perform the manual adjustment for gamma value with the procedure below:



- (1) Select the LCD MONITOR that will be the target for the adjustment, and click the [Manual adjustment for gamma value] in the [Write data] tab.
- (2) Select the [Whole] in the "Setting".
- (3) Select the [White] in the "Color Setting".
- (4) Click the [Receive], and read out the calibration result from the LCD MONITOR.
- (5) Select the color, "Red", "Green", and "Blue" that you would like to adjust in the "Color

Setting", and then perform the fine-tunes of the value with the grayscale or the display pattern shown. All colors can be adjusted while maintaining all gamma curves.

- (6) Click the Transmit button to set up the currently displayed gamma values to the LCD MONITOR, and then check the image.
- (7) Repeat Step 5 and Step 6 until the color is matched.
- (8) Adjustment is completed.

<Note>

If the adjustment value is beyond 100.0, the gamma curve becomes saturated. Please set the value at or below 100.0.

<Tips>

When "Part" is selected in the "Setting", you can set up the gamma curve that you like by specifying the area in the graph. This method is very complicated so we do not recommend it. To make an adjustment properly, please adjust using the grayscale more than 64-level while checking the image very carefully.

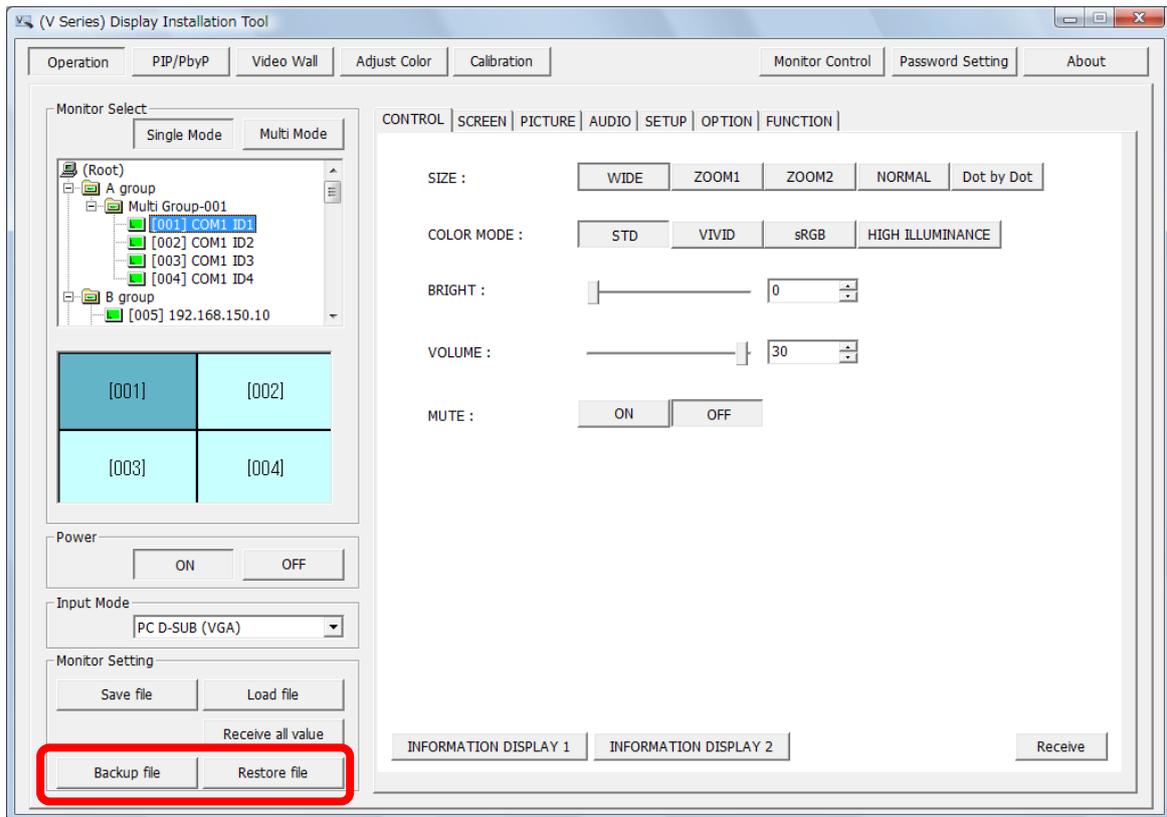
#### [5]-4. Acquire the monitor settings before the calibration

Before performing the calibration/measurement, we strongly recommend to back up the monitor settings with the procedure below:

The image adjustment value is changed in the calibration processing and the reset of the image adjustment settings is recommended in the measurement processing.

In the preparation processing of the calibration/measurement, the various monitor settings are temporarily changed and then those settings will be returned to the original settings in the subsequent processing. If the communication error etc occurs, however, it may be unable to return the original settings.

In case of emergency, when using the calibration tool we strongly recommend to back up the monitor settings so that you can restore the settings to the original state.



#### [Acquisition of the monitor settings]

- (1) Click the [Operation] button.
  - (2) Select the monitor that is the target for the adjustment in [Single Mode], and then click the [Save files] button.
  - (3) Click the [Backup file] button, and then click the [OK] button in the [Backup Setting Value Target: ALL].
  - (4) Save the data with the name that the target monitor can be identified.
- ➔ The readout of the monitor settings is conducted and it will be saved in the specified file. Repeat Step(3) and Step(4) on all concerned monitors for the calibration.

#### [Reconfiguration of the acquired monitor settings]

- (1) Click the [Operation] button.
  - (2) Select the monitor that is the target for the adjustment in [Single Mode], and then click the [Restore file] button.
  - (3) Select the file that is relevant to the target monitor, and then click the [Open].
- ➔ The reconfiguration of the monitor settings will start. (After the restore is completed, the monitor will restart.)

Repeat Step2 and Step3 on all monitors that you would like to reconfigure.

[5]-5. Operation when the calibration mode is [ON]

When the calibration mode is [ON], the following items will be set up. When the calibration mode is [OFF], the setting will return to the saved settings. After the calibration, please make sure to set to [OFF].

[Items that will be set up when the calibration mode is [ON]]

- 1 POWER → ON
- 2 POWER MANAGEMENT → OFF
- 3 BACKLIGHT OFF → OFF

(This setting does not return to the original setting even if it is set to [OFF].)

- 4 SELF ADJUST → OFF
- 5 AUTO INPUT CHANGE → OFF
- 6 SCHEDULE → all items OFF
- 7 LED → YES
- 8 POWER ON DELAY → 0 second

[5]-6. Reflect the calibration result to each input mode

Calibration adjustment results are saved in "USER" in "GAMMA" settings.

In the input mode that the calibration has been performed, all items in PICTURE menu are reset, and the "GAMMA" is set to "USER", and then the calibration result is reflected.

If the calibration is performed with the "Pattern in this display", the calibration result is also reflected to PC D-SUB Input.

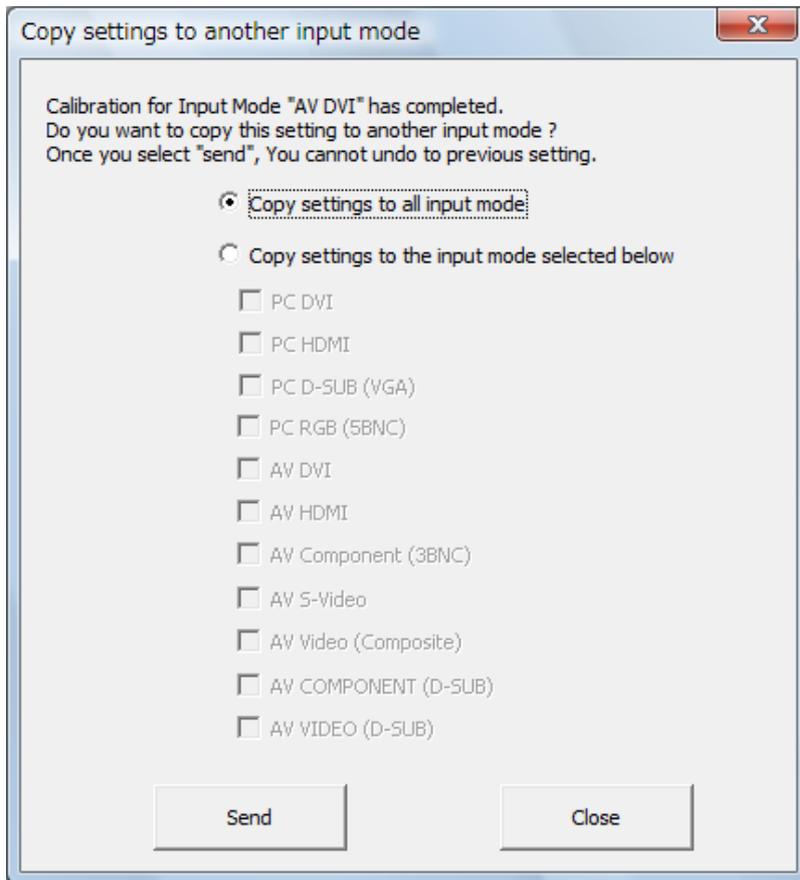
If the calibration is performed with the "Display Pattern" being ON, the calibration result is only reflected to PC D-SUB Input.

Since the items of the PICTURE adjustment memorize the settings for each Input mode independently, for the mode that the calibration is not performed, the calibration result can be reflected by performing the settings below:

[Method to reflect the calibration result on each Input Mode 1]

(1) Immediately after the completion of the calibration, please click on the [Copy setting to another input mode] button.

(2) Select the target input mode.



(3) Click on the "Send".

Note: Please perform this immediately after the completion of the calibration.

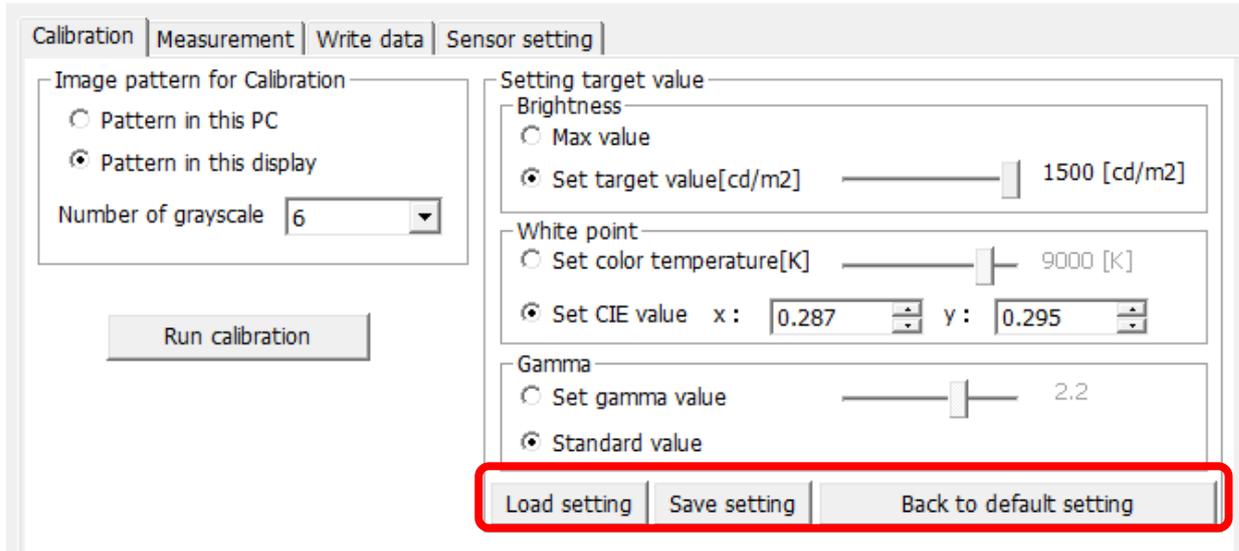
[Method to reflect the calibration result on each Input Mode 2]

- (1) Click the [Operation] button.
- (2) Select the target monitor.
- (3) Change to the Input Mode that you will use.
- (4) Click the [RESET] in the "PICTURE" tab.

Note: If a video signal has not been input, Reset cannot be conducted. Please input the video signal before resetting.

- (5) Click the "USER" in "GAMMA" settings.
- (6) When the [Multi Mode] is selected, click the [Send].
- (7) Repeat Step(4) ~ Step(6) for all Input Modes that will be used.

## [5]-7. Setting of the target value of the calibration



Once the target value is decided, please be sure to save it with the [Save setting].

The saved file can be reconfigured from [Load setting].

Before performing the calibration, please also make sure if the target value is not the default but the value you set.

When the [Back to default setting] is clicked, the same characteristics as the default settings of the monitor will be configured as the target value.

## [5]-8. How to use the sensor

About how to use the sensor, please be sure to make a note of the following points:

- (1) Before starting the calibration tool, please connect the sensor.

Please install the driver of the sensor in advance.

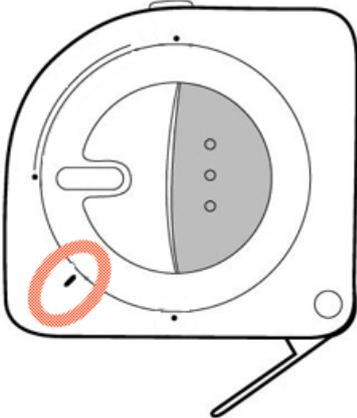
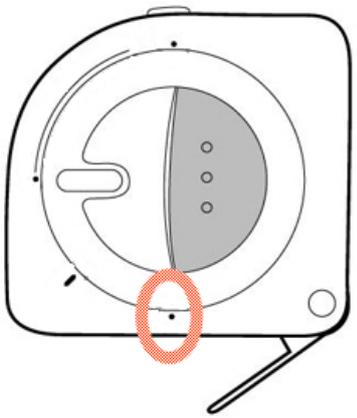
If the sensor is connected after starting the application, it will not be recognized.

- (2) When performing the calibration of the same multiple display, basically please do not use the multiple sensors.

Even if you set the same target value, the color may be deviated due to the individual variability for each sensor.

If the multiple sensors must be used by any means, please check the margin of error from the measurement and visually check the calibration result enough by measuring the target monitor.

- (3) When installing Spyder3 PRO that is the sensor, please do not strongly push LCD side. It may be the cause of the trouble.
- (4) When installing the sensor at high place, please be careful enough not to fall down.  
 If the length of the cable is insufficient, please extend it with the repeater cable of USB etc.  
 The operation check has been completed for the following USB repeater cables:  
 \* Sanwa Supply KB-USB-R205  
 \* BUFFALO KIKUYU SUPPLY AUR-09-WH
- (5) If the application, ColorMunki, manufactured by X-rite is installed, the "X-Rite Device Service" will occupy the device, and then the calibration tool may not operate correctly.  
 When using the calibration tool, please uninstall other ColorMunki application(s) or uncheck the checkbox of ColorMunki for the "X-Rite Device Service" on the Control Panel.
- (6) With the ColorMunki that is the sensor manufactured by X-rite, 4 types of the modes can be switched by turning the dial but the calibration tool supports the following 2 modes.

Calibration mode of Colormunki device	Measurement mode of Colormunki device
	
<p>This is the mode when formatting the sensor on the [Sensor setting] tab of the Calibration Tool.</p>	<p>This is the mode when performing the calibration/measurement from the [Calibration] or the [Measurement] tab of the Calibration Tool.</p>

[5]-9. Notes when using the "Pattern in this PC"

It is recommended to use not "Pattern in this PC" but "Pattern in this display" when

performing the calibration. When using the "Pattern in this PC" such as the calibration with 32-level grayscale etc, please note the following points:

The restrictions when using the "Pattern in this PC" are also described in "[5]-15 Operating environment". Please check this chapter as well.

(1) Turn OFF the settings that displays the pop-up windows such as Windows Update etc except the calibration tool.

(2) The calibration cannot be done properly unless the level of the input signal is set to the full range (0-255).

At the PC HDMI input, the level of the input signal may be set to the limited range (16-235) depending on the video card.

When changing the gamma of the image setting on the video card side, the adjustment may not be done properly.

Please correct the input signal to the appropriate value or use the "Pattern in this display".

(3) Since the PC D-SUB/RGB signal is an analogue signal, the signal level is unstable, and the calibration may fail.

When it fails, please use the "Pattern in this display".

#### [5]-10. Calibration of AV input

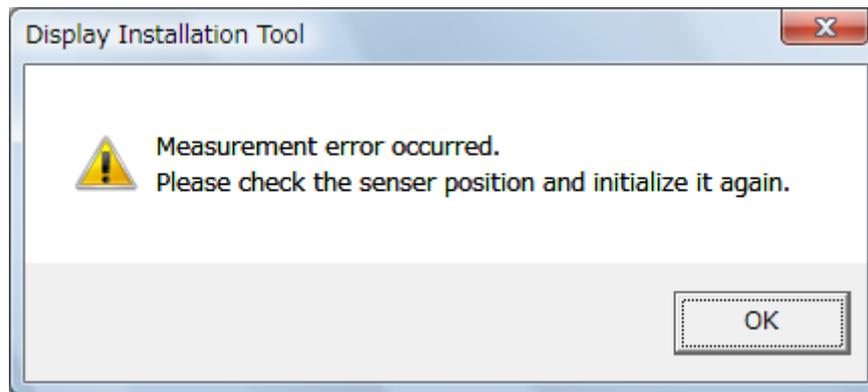
Calibration could not be performed with the AV input on PN-V601 but it is possible to perform the calibration with both AV/PC input on PN-V602.

#### [5]-11. Remedy for when the calibration fails due to the error occurrence

If the error occurs while the calibration or the measurement is performed though the communication with the monitor is working correctly with the [Operation] function, please try the procedure below:

##### [5]-11-1. If the measurement error occurs:

If the trouble occurs during the measurement from the [Measurement] tab is or the measurement for checkup at the final phase when performing the calibration, the following dialogue is displayed.



- (1) Check if the measuring device is connected properly.
- (2) Execute the "Format Sensor" in the [Sensor setting] tab.
- (3) If the strong sunlight comes from the outside, please shield the light.
- (4) When measuring, the patterns are displayed in order of Red->Green->Blue->White ->Gray -> Black. If the display color of the monitor is not appropriate, the error occurs, so please visually check if the right color is displayed. If the color is abnormal when conducting the visual check, please try the following procedure:
  - (4)-(1) Execute the "Factory Reset" for the target monitor in the [Write data] tab.
  - (4)-(2) If the measurement is carried out with the "Pattern in this display", change the Input Mode to PC D-SUB, and turn OFF/ON the main power switch without the signal input.
- (5) To check if the sensor is not breakdown, make the measurement with another sensor.

[5]-11-2. If the calibration error occurs:

After the calibration, if any of the following values is deviated from the target value (brightness: 15cd/m<sup>2</sup> or more, chromaticity: 0.003 or more, gamma: 0.1 or more), the error message will be displayed after the completion of the calibration.

In this case, please try the following procedure.

- (1) If the time of back light's power on is not sufficient (about an hour is required), the brightness will not be stabilized. If the time of back light's power on has been done less than an hour, please wait over an hour, and then make the adjustment again.
- (2) Please perform the calibration again. Depending on the combination of the target values, the adjustment may not be done properly and the error occurs as the result. If you find the color is not matched by the visual check even though

the calibration has been performed again, please manually adjust it based on "[5]-3 Manual adjustment for gamma value".

[5]-11-3. If the error occurs during the calibration:

- (1) Perform the calibration with the "Pattern in this display". If the range of the input signal from PC is incorrect, the calibration will fail. Please correct the input signal to the right value or use the "Pattern in this display".
- (2) Set up the Setting target value with the [Back to the previous setting] button, and then perform the calibration with the "Pattern in this display".  
Depending on the combination of the target values, the adjustment may not be possible when the gamma setting is dark or the value of the chromaticity setting is big. Please consider if the target value can be changed.
- (3) Check if the LCD MONITOR that will be the target for the adjustment is correct.

[5]-12. BRIGHT settings

For PN-V602, the BRIGHT is set to 31 as the factory default. When using with the maximum brightness, please set the BRIGHT to 31 that is the maximum before the calibration.

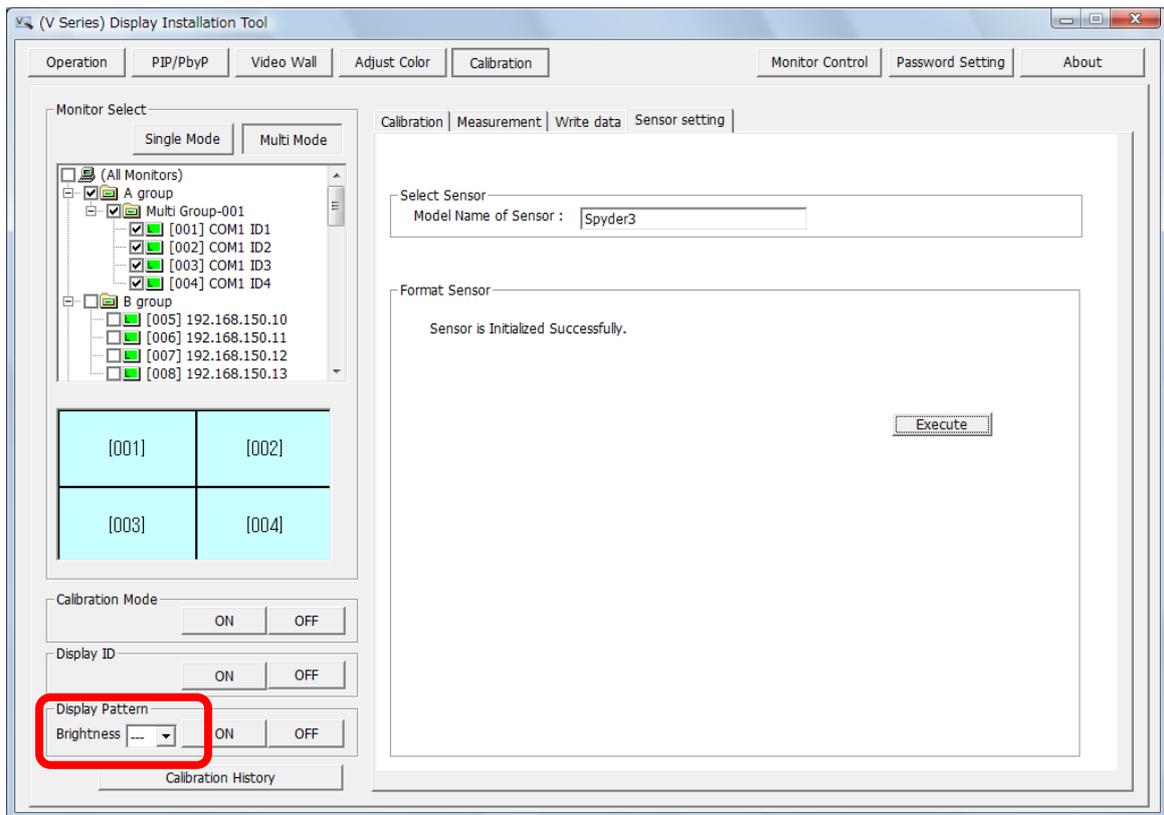
Since the brightness settings memorize the settings for each input mode independently, the brightness setting is necessary for each of the input mode that will perform the calibration and the input mode that will use the calibration result.

If you perform the calibration with not the maximum brightness but with the changed "BRIGHT", (adjust to 400cd/m<sup>2</sup> for example), manually adjust the "BRIGHT" setting of the monitor as the target for the adjustment, and then make the measurement.

After setting the same "BRIGHT" value as the value manually adjusted to all monitors as the target for the adjustment, perform the calibration with the measurement result of the target monitor as the target value.

<Tips>

"Brightness" setting is possible by changing the value while selecting the target monitor in the [Multi Mode] like below:



### [5]-13. Factory Reset

If you would like to void the calibration result and return to the factory default, please select the target monitor in the [Write data] tab, and then execute the [Factory Reset]. The following settings from the Input mode that is currently selected will be initialized.

- \* All setting items in PICTURE menu (WHITE BALANCE, GAMMA...)
- \* Data of the calibration result saved in the "USER" setting in the "GAMMA"
- \* Brightness adjustment value of the backlight for the calibration
- \* BRIGHT setting in CONTROL menu

### [5]-14. Note when using Spyder3

Please do not install the software comes with Spyder3 PRO that is the recommended sensor. The sensor may not correctly operate. If it is already installed, please uninstall this software.

### [5]-15. System Requirement of PC

For the operation environment of PC that will use the calibration tool, please be aware of the following points:

- <1> Full-color display with the resolution 1024x768 dots or more is required for the PC that will use the calibration tool. As the spec, the calibration tool cannot be used in the

environment where there is no monitor for PC-only besides the target display for the calibration and measurement. If the "Display Pattern" is set to [ON] in the environment of no PC monitor, the screen of the calibration tool will be unable to be displayed. If the "Display Pattern" is unable to set to [OFF], the "Display Pattern" can be cancelled by turning OFF/ON the monitor power supply.

<2> When the LCD MONITOR is installed in the Portrait mode, the screen size of the calibration tool will be bigger than the width of the LCD MONITOR and extended off the screen. Please perform with the "Pattern in this display" or when using the "Pattern in this PC", change the orientation of the picture to the landscape by setting the resolution of the PC to 1024x768 dots etc, and then perform the calibration.

<3> When more than two monitors are configured to be displayed on the display settings of one PC, and if the target LCD MONITOR for the calibration and adjustment is set as the secondary screen, it will be only displayed on the primary screen, when the calibration is performed with the "Pattern in this PC" selected, and therefore the calibration cannot be done on the secondary screen. In this case, please change the video settings of PC to the Clone setting or perform the calibration with the "Pattern in this display".

<4> When the PC video output is displayed dividedly into the multiple monitors, the calibration/measurement with the "Pattern in this PC" cannot be performed. The pattern size that is displayed with the "Display Pattern" on PC is fixed as 1200x1920dots.

This is because if the resolution is set to the size more than 1200x1920dots and the picture is dividedly displayed, the pattern may not be displayed on the monitor.

#### [5]-16. Relationship between the color temperature and brightness

LCD MONITOR is designed to be the maximum brightness at about 9000K.

When changing the target color temperature, the adjustable maximum brightness will change. For this account, depending on the combination of the target color temperature and brightness, the error may appear if the brightness is deviated over 15cd/m<sup>2</sup> after the calibration, but there will be no problem.

As the guideline, the factory default of the maximum brightness for each color temperature setting of PN-V602 are listed below.

Please refer to this list when deciding the target brightness.

## [PN-V602 color temperature and brightness]

color temperature [K]	x	y	brightness [cd/m2]
3000	0.436	0.402	740
3200	0.422	0.398	781
3500	0.405	0.390	850
4000	0.380	0.375	929
4500	0.361	0.365	1028
5000	0.345	0.353	1107
5500	0.333	0.341	1157
5600	0.330	0.339	1174
6000	0.322	0.333	1240
6500	0.313	0.329	1326
7000	0.306	0.316	1317
7500	0.301	0.310	1370
8000	0.295	0.305	1422
8500	0.291	0.300	1457
9000	0.287	0.295	1500
9300	0.285	0.293	1483
9500	0.284	0.291	1462
10000	0.281	0.288	1422

## [5]-17. Brightness Sensor

Please set the BRIGHTNESS SENSOR setting to [OFF].

If the calibration is performed with the BRIGHTNESS SENSOR setting to be [ON], the error may occur and it does not work properly.

## [5]-18. Calibration History

On the [Calibration History] screen, you can check the latest adjustment result/measurement result.

This data is displayed by acquiring the data from the calibration data file automatically stored. Below are the explanation about the auto-save timing of the calibration data, the storage location, items that are indicated on the Calibration History screen, the deletion method, and the notes.

## [5]-18-1. Calibration data auto generation timing

Calibration data is automatically generated in the following cases:

Calibration data auto generation timing		
A	When the calibration is completed:	When the calibration is completed by pressing the [Run Calibration] button in the [Calibration] tab
B	When the measurement is completed:	When the measurement is completed by pressing the [Run Measurement] button in the [Measurement] tab
C	When the Previous Calibration Data is completed to be sent:	When reading the Previous Calibration Data, and executing the [Send] in the [Write data] tab
D	When the manual gamma adjustment data is sent:	When executing the [Send] on the [Manual Adjustment for gamma value] in the [Write data] tab
E	When using the new monitor:	When firstly performing any of the operations from (A) ~ (D) above on the monitor (when using for the first time) (The data will not be generated from the second time.)

## [5]-18-2. Calibration data filename / storage location

Calibration data is automatically generated with the following paths and filenames.

Path	
%ALLUSERSPROFILE%\SHARP\%(V Series) Display Installation Tool \	
[WindowsXP]	C:\Documents and Settings\All Users\Application Data\SHARP\%(V Series) Display Installation Tool \
[Windows Vista / 7]	C:\ProgramData\SHARP\%(V Series) Display Installation Tool \

Filenames		
CalibrationData\		(Storage folder for the auto-save data)
1	(model name)_(serial No.)_C(n).ini  * n:1,2 or 3 (n=1: latest)	Calibration result file automatically generated when the calibration is performed (described above as A).  The latest 3 rd-generation file is stored in the

		above folder. Ex. PN-V602_0123456789_C1.ini
2	(model name)_(serial No.)_M(n).ini  * n:1,2 or 3 (n=1: latest)	Measurement result file automatically generated when the measurement is performed (described above as B).  The latest 3 rd-generation file is stored in the above folder. Ex.PN- V602_0123456789_M1.ini
3	(model name)_(serial No.)_W(n).ini  * n:1,2 or 3 (n=1: latest)	Write result file automatically generated when the previous calibration data is completed to be sent (described above as C) or when the manual gamma adjustment data is sent (described above as D).  The latest 3 rd-generation file is stored in the above folder. Ex.PN- V602_0123456789_W1.ini
4	(model name)_(serial No.).ini	Data file prior to the calibration automatically generated when using the New monitor (described above as E). The data is stored in the above folder only when using for the first time. It will not be generated from the second time. Ex. PN- V602_0123456789.ini
5	(model name)_(serial No.)_Preset.ini	Internal processing data of this tool. (It is used for the internal processing of the [Calibration Mode] function)) Ex. PN- V602_0123456789_Preset.ini
	CalibrationUserData¥	(Default storage folder that the user arbitrarily saves the data)

### [5]-18-3. Items that are indicated on the Calibration History

The following data that is indicated on the Calibration History are displayed by acquiring the data from the calibration data file described above.

Name of the item	Detail of the indication	Source
Date of last measurement	YYYY/MM/DD hh:mm	Newer value from the “Date” values in the [Calibration result file] (described above as 1) or the [Measurement result file] (described above as 2).
Date of last calibration	YYYY/MM/DD hh:mm	Latest value from the “Date” values in the [Calibration result file] (described above as 1) or the [Write result file] (described above as 3).
Calibration result		Result of the calibration (OK or NG)
Brightness(White)	(cd/m <sup>2</sup> )	“Brightness White” value in the latest file from the [Calibration result file] (described above as 1), the [Measurement result file] (described above as 2) or the [Write result file] (described above as 3).
Color Temp.	(K)	“Color Temp” value in the latest file from the [Calibration result file] (described above as 1), the [Measurement result file] (described above as 2) or the [Write result file] (described above as 3).
CIE chromaticity x (White)		“CIE_WX” value in the latest file from the [Calibration result file] (described above as 1), the [Measurement result file] (described above as 2) or the [Write result file] (described above as 3).
CIE chromaticity y (White)		“CIE_WY” value in the latest file from the [Calibration result file] (described above as 1), the [Measurement result file] (described above as 2) or the [Write result file] (described above as 3).
Gamma		“Gamma” value in the latest file from the [Calibration result file] (described above as 1), the [Measurement result file] (described above as 2) or the [Write result file]

		(described above as 3).
Bright setting		Bright setting value of the monitor (0~31)
Input mode		Input mode when performing the calibration or the measurement

#### [5]-18-4. Deletion of the calibration data

When deleting the registered monitor or changing the monitor configuration, the calibration data can be deleted by editing the following setting files:

Setting File Name	Calibration.ini
Section Name	[AppSection]
Key Name	CalibrationDataRemove=1

You can also delete all calibration data (auto-save data) from all monitors by pressing the [Delete calibration data] button.

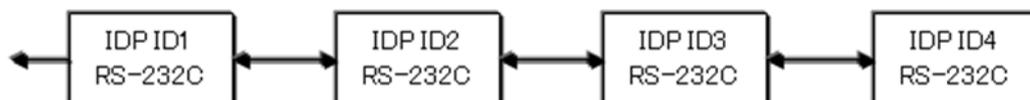
(the calibration data file described in [5]-18-2 above will be deleted.)

Once this data is deleted, however, it cannot be restored. Please be careful of this point. [Calibration History] data is controlled with the model name of the monitor and the serial number as the keys. If the monitor is double registered, please pay careful attention not to mistakenly delete the data, especially when canceling the registration of the monitor.

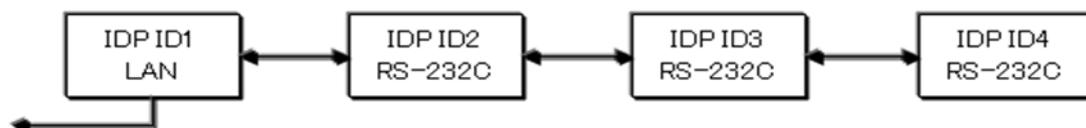
#### [5]-19. Daisy Chain Connection

The connection settings that can control to the monitors connected with the daisy chains are 3 patterns below:

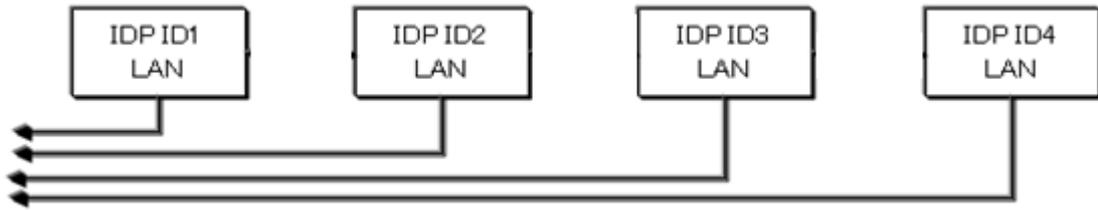
(1) All monitors are set to RS-232C:



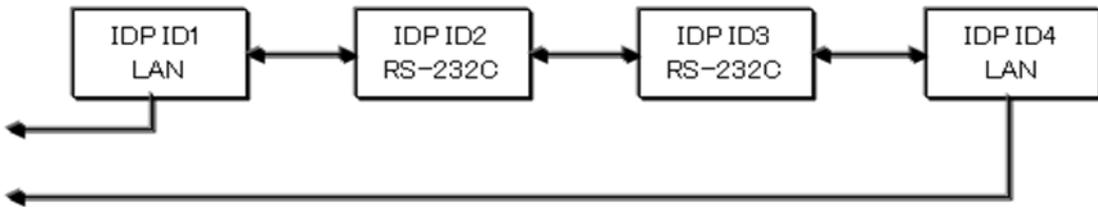
(2) Only one unit at the front is set to LAN, and the rest of the monitors are set to RS-232C:



(3) All monitors are set to LAN:

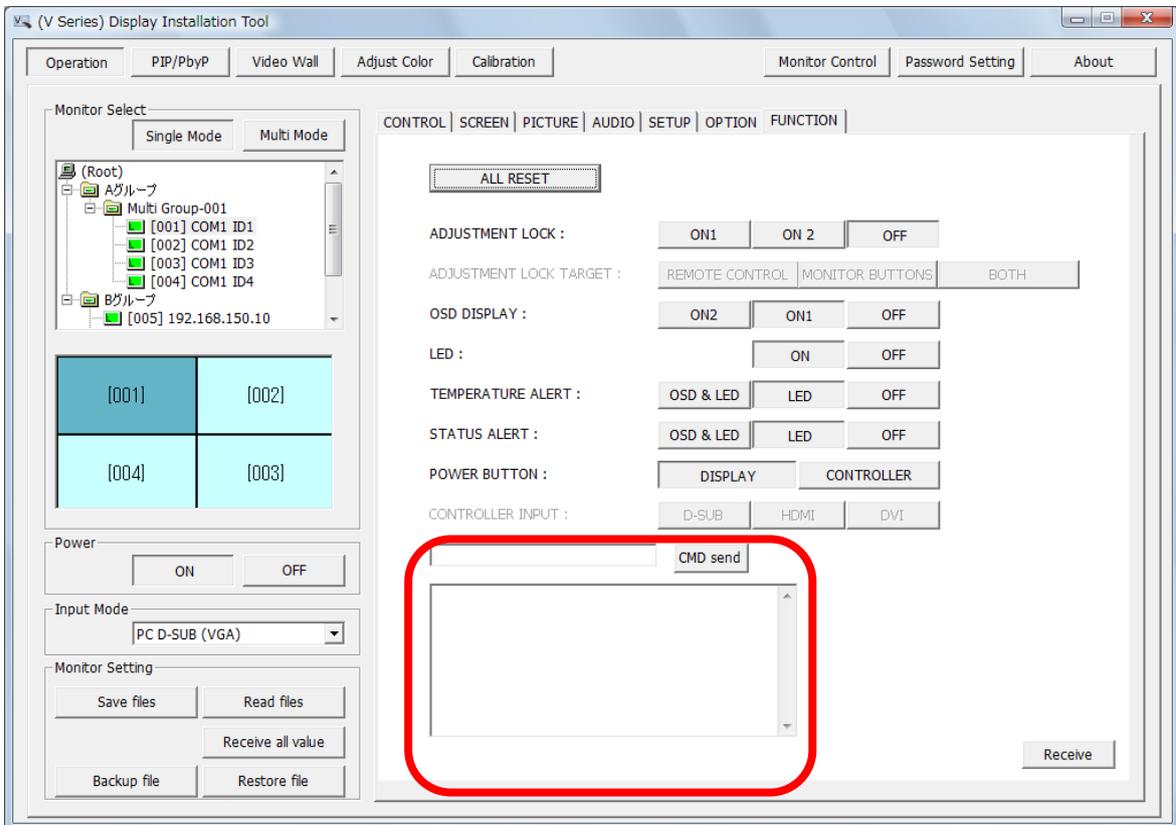


\* Uncontrollable example: since the connection setting differs between IDP3 and IDP4, it cannot be controlled.



[5]-20. Arbitrary command send function <Hidden function>

When clicking the [FUNCTION] tab in the [Operation] screen and then double-clicking the window with the [Ctrl] key being pressed, the CMD send screen like below will appear.



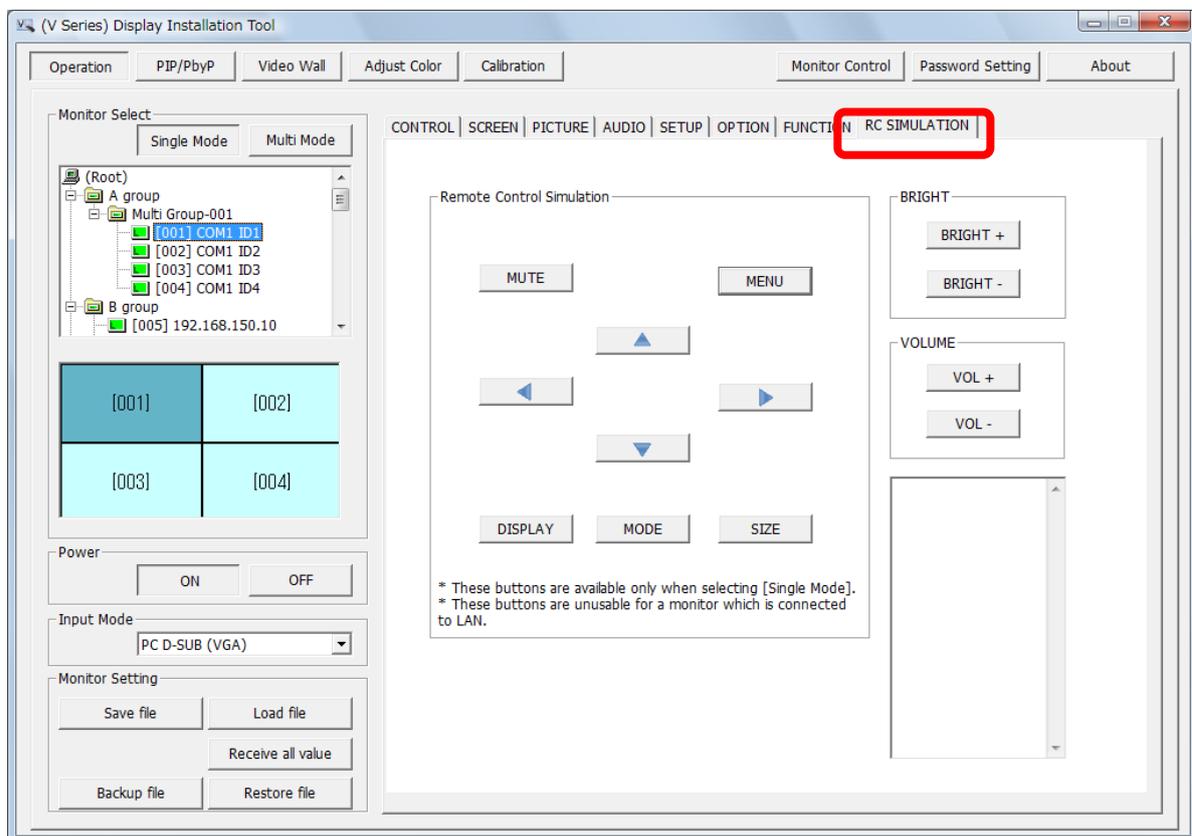
You can send the command directly to the LCD MONITOR using this function. However, the LCD MONITOR may abnormally be operating if it is misused. Please take extra care when using this function.

Example of the sending command input: VLMP????

#### [5]-21. Remote control simulation function <Hidden function>

The [RC SIMULATION] tab will be displayed in the [Operation] screen by editing the following setting files.

Setting Filename	IDSCtrlEnv.ini
Section Name	[Environment]
Key Name	RCSimulation=1



Buttons in the [RC SIMULATION] are available only when the [Single Mode] is selected and also LCD MONITORS are connected by only RS-232C. When the OSD is displayed, the arrow buttons here operate as the arrow keys just like the buttons in the remote control but those buttons are handled as UP/DOWN operation of the BRIGHT/VOLUME set value when the OSD is not displayed.

Meanwhile, the buttons in the [BRIGHT] and the [VOLUME] are operable not only with the [Single Mode] but also with the [Multi Mode], and UP/DOWN of the BRIGHT setting value and UP/DOWN of the VOLUME setting value can be done for the multiple monitors (setting can be changed per level from the value currently set). The result of the change for the BRIGHT/VOLUME set value with the buttons here is shown at the lower right screen.

#### [5]-22. How to Change application data folder <Hidden function>

You can select a folder where setup will install program files during installation but application data files as settings, logs and calibration data are stored in the fixed folder.

(Refer to “[5]-18-2. Calibration data filename / storage location”.)

However, you can change application data folder to a folder you specified in program folder by editing the following setting files.

<How to change setting files.>

Add "FolderRelative" and "Folder" key in [Environment] section of IDSCtrlEnv.ini and change value of "FolderRelative" and "Folder" key in [Log] section of InfoDisplayControl.ini.

Default setting right after installation is below:

Setting File Name	IDSCtrlEnv.ini
Section Name	[Environment]
Key Name and value	("FolderRelative" key does not exist)
	("Folder" key does not exist)

Setting File Name	InfoDisplayControl.ini
Section Name	[Log]
Key Name and value	FolderRelative=1
	Folder= (V Series) Sharp¥Display Installation Tool¥InfoDisplayControlLog

Change below if you want to change application data path:

Setting File Name	IDSCtrlEnv.ini
Section Name	[Environment]
Key Name and value	FolderRelative=2
	Folder= ApplicatonData

Setting File Name	InfoDisplayControl.ini
-------------------	------------------------

Section Name	[Log]
Key Name and value	FolderRelative=2
	Folder=ApplicatonData¥InfoDisplayControlLog

You can also execute program with USB flash memory using the above function.

<How to deploy the program to USB flash memory>

- (1) Install software using setup program according to the operation manual.
- (2) Copy the installed program folder (\*1) to USB flash memory.

\*1: Normally C:¥Program Files¥SHARP¥(V Series) Display Installation Tool¥

- (3) Add the following keys to IDSCtrlEnv.ini in USB Flash memory:

FolderRelative=2

Folder= ApplicatonData

- (4) Change the following keys of infoDisplayControl.ini in USB Flash memory:

FolderRelative=2

Folder=ApplicatonData¥InfoDisplayControlLog

- (5) When executing "IDPInstTool\_V.exe" in USB Flash memory, ApplicationData folder will be generated in the execution folder and then settings and logs will be stored in this folder.

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