



# PN-V601 Installation Guidelines

**<Rev1.4>**

**2010/09/30**

Business Solutions Equipment Division  
Business Solutions Dept.  
SHARP Corporation



# About the handling of this material / Contents

## Handling this material

- This document is made to explain the installation know-how of large size displays for our business partners. Therefore, please handle this material very carefully.
- This document describes basic notes to install and use the display for long term reliable service.

## [Warning]

**This document is to explain the installation know-how to our business partners. Please be careful not to distribute this document or its contents to other companies, or divert (use) it towards competitors' models.**

**In addition, please be reminded that values and expressions on this document are subject to change without notice.**

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# Procedures of Installation

(Please thoroughly observe these recommendations)

We recommend that the following procedures are entrusted to Sharp sales subsidiaries or dealers/contractors trained by Sharp.

1

**Check worker's clothes and their belongings.**

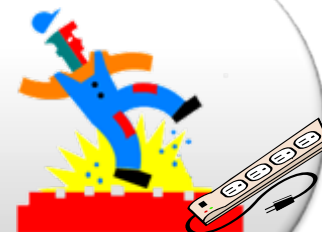
Wear simple clothes and do NOT put their mobile phone and/or pen in a pocket.



2

**Make enough space before starting the job.**

Check power cable and/or floor levelness.



3

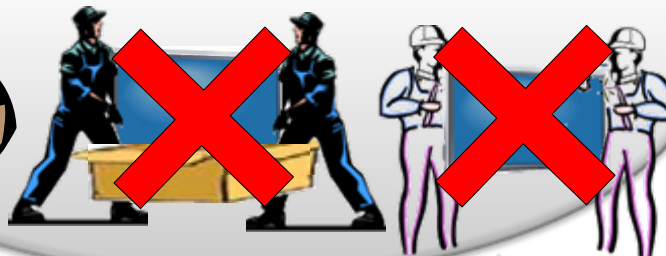
**The person responsible of installation directly explains to the workers how to handle the display securely and shows them examples. Then, start the job.**



Prior Explanation

Attention to bezel handling

Do Not touch LCD surface



- How to open the box for display.
- How to take the display from the box.
- How to hold the display and the holding position(s) for workers [Attachment precaution 2]
- How to temporarily store the display after taking it from the box.  
We recommend temporarily storing the display on a temporary stand. If you inevitably put the surface of LCD monitor on the ground when there is no temporary stand, check whether there is dust and/or projection, and place on a clean board larger than the display.
- How to check and/or store the accessories of display.

4

**Installation with stand and wall-mounting bracket**

Unlike Sharp "PN-E" standard models, the PN-V601 requires close attention to handling due to its thin bezel. Even dealers or workers familiar with the conventional models must confirm precautions beforehand. Please study the installation guide of the PN-V601 and recommended stands as much as possible, and please entrust the installation work to Sharp sales subsidiaries or dealers /contractors trained by Sharp.



■ Precautions for fan



■ Precautions for adjacent positioning



# Procedures of Installation

(Please thoroughly observe these recommendations)

**We recommend that the following procedures are entrusted to Sharp sales subsidiaries or dealers/contractors trained by Sharp.**

1. Check worker's clothes and their belongings. Wear simple clothes and do NOT put their mobile phone and/or pen in a pocket.
2. Make enough space before starting the job. Check power cable and/or floor for levelness.
3. The person responsible for the installation directly explains to the workers how to handle the display securely and shows them examples. Then, start the job.

## ■How-tos for PN-V601 installation

■ How to open the box for display.

■ How to take the display from the box.

■ How to hold the display and the holding position(s) for worker [Attachment precaution 2]

■ How to temporarily store the display after taking it from the box.

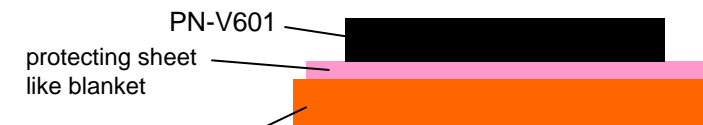
**We recommend temporarily storing the display on a temporary stand. If you inevitably put the surface of LCD monitor on the ground when there is no temporary stand, check whether there is dust and/or projection, and place on a clean board larger than the display.**



- Do not set the PN-V601 on a setting board smaller than itself to avoid the contact with corner of the board.
- Use a protecting sheet like blanket



- Do not add force from the above.
- Do not drag only the PN-V601



Setting board larger than PN-V601

Please set the PN-V601 in the centre of the setting board/protecting sheet and be careful to avoid the contact with corner of the board.

■ How to check and/or store the accessories of display.

## 4. Installation with Wall-mounting Bracket and Stand

- Unlike Sharp "PN-E" standard models, the PN-V601 requires close attention for handling due to its thin bezel.
- Even the dealers or worker familiar with the conventional models must confirm precautions beforehand.

Please study the installation of the Sharp recommended stand as much as possible, and please entrust the installation work to Sharp sales subsidiaries or dealers /contractors trained by Sharp.



# Overall precautions



## Precautions for Usage, Installation

- Do not use the information display under following conditions ;
  - 1) Usage beyond its capability, feature/function, accuracy/precision
  - 2) Usage that could develop into injury or life-threatening situation under product breakdown
  - 3) Usage that could lead to major monetary damage

We will not take any responsibility if the product was used under above conditions.

<Example>

Control of all types of safety related usage of transportation equipment (air plane, train, car, etc.), aerospace equipment, communication equipment, nuclear control equipment, medical equipment, disaster-prevention/security equipment, all types of safety equipment, etc.

- We will not take any responsibility for any failure, damage, loss, etc. which arise from particular installation (high-ceiling mounting etc.) and/or installation by non-Sharp related parties. Prior to the installation, please examine the potential problems by the installation location and installation method, and only operate within the appropriate environment.

In case of product failure, regardless of warranty period, removal and installation expenses incurred will be the customer's responsibility.

Repairing may take a certain time period. For that reason, arranging of a back-up is recommended.

- Installation environment of the information display differs by individual cases. Please make appropriate installation by referring to this material. If you have any difficulty in making judgment about installation or have any comments/questions about the contents of this material, please ask SHARP Business Solution factory via your local Sharp sales window.



# Precautions for temperature and clearance space 1



**Temperature inside the display will heat up if the air clearance space is not enough.**

## **The thermal influence**

- If the temperature is too high → Electronic components and the fan's life time will be shortened or breakdown.
- If the heat gets trapped inside the display, the temperature will rise. Hence, the brightness of back-light will be lowered and the screen will be darkened

Moreover, if the temperature gets too high, the power of LCD display will be turned off and the display will be set to the standby mode.

## **The heat impact on LCD surface**

The effect of high temperature → Monitors will break down or uniformity issue will occur



# Precautions for temperature and clearance space 2



## Temperature control and clearance space conditions

PN-V601(Main unit), PN-ZR01(Remote-control signal receiving kit) temperature condition requirement

- Usable temperature range

**0 degree C to 40 degree C \***

\*: Maximum temperature when multi-display system is operating

- Clearance space

- 1)Space should be taken between front/ back/ above/ below/right/left side of the display
- 2) Due to configurations of multi-display and clearance space at the back side, surrounding temperature must be carefully controlled.

- Temperature of LCD surface

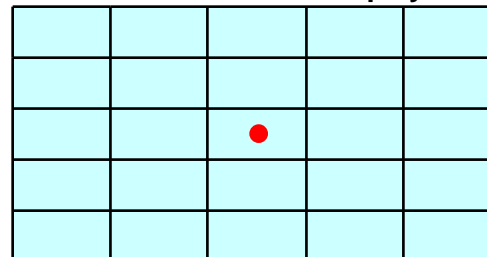
**Under 60 degree C**

Please follow these requirements when setting multi- display. Refer to the measures and install the display according to its requirements. (Same with peripheral devices, please follow the specifications )

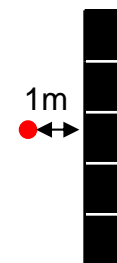
## A point for measuring temperature

Please measure the temperature at 1m away from the centre of LCD surface.

Surface of LCD multi-display



Side view



## Space requirement 1

Securing space at the Top/ Bottom/ Left/ Right/ Behind / Surface of display is necessary regardless of wall-hanging or stand type installation.

Top	20 cm
Bottom	10 cm
Left/ Right	10 cm
Behind	Clearance space and surrounding temperature should be maintained (refer to next page)
Surface	Consult us separately

Note: However, please separately inquire in following cases:

- 1)when you install with outer casing, 2)When using protection panel, or 3) Closed installation like In-wall installation, etc. that surroundings are not opened.

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# Precautions for temperature and clearance space 3



## Space requirement 2

### 1.Relationship between the rear clearance space and operating temperature

For case of 3 x 3 multi-screen displays

(Unit: degree celsius)

"Fan rotation speed" Setting	Clearance space at the back side							
	3.5cm or more	10cm or more	20cm or more	30cm or more	40cm or more	50cm or more	60cm or more	70cm or more
Auto (Variable: default setting)	Use at Setting 1.*1			30.5	32	32.5	36	38
Setting 1 (Rotation speed: 50%)	29	30	30	30.5	30.5	31	32	33

For case of 5 x 5 multi-screen displays

"Fan rotation speed" Setting	Clearance space at the back side							
	3.5cm or more	10cm or more	20cm or more	30cm or more	40cm or more	50cm or more	60cm or more	70cm or more
Auto (Variable: default setting)	Use at Setting 1.*1				30	31	31.5	34
Setting 1 (Rotation speed: 50%)	21.5	27.5	29	29.5	29.5	30	30	30.5

The timing of fan replacement (\*2) is 5 years in the above condition of clearance space and operating temperature.

\*1 In the case of clearance space at the back side, Use “Setting 1” without using “Auto” at the “Fan rotation speed”.

When the clearance space of back side is small, if the fan works at the setting 4, the heat release effect becomes worse than that at Setting 2. Because heat accumulates between LCD monitor and wall.

\*2 The timing of fan replacement is used as a guideline.

The actual life may vary depending the operating time, change of ambient temperature, environment such as amount of dust, or regular maintenance.

Even if a fan on the LCD monitor has trouble, the neighbor fan supplements its operation. Therefore, the LCD monitor correctly works. Above life is described as rough guide and it shall not warrant the life. Even within the warranty period, the replacement of fan caused by failure is charged. The warranty does not include pre-mature fan failure.

Remarks: The following shows the fan rotation speed. Setting 1: 50 %, Setting 2: 60%, Setting 3: 70%, Setting 4: 100%

Note: The necessary clearance space is set when the front side (front cover) is opened.





# Precautions for temperature and clearance space 4



## Space requirement 3

### 2.The case of reducing clearance space and operating temperature

The timing of fan replacement (\*2) becomes shorter to 2.5 years in the following condition of clearance space and operating temperature.

For case of 3 x 3 multi-screen displays

(Unit: degree celsius )

"Fan rotation speed" Setting	Clearance space at the back side				
	3.5cm or more	10cm or more	20cm or more	30cm or more	40cm or more
Auto (Variable: default setting)	33	26	38	39	40

For case of 5 x 5 multi-screen displays

"Fan rotation speed" Setting	Clearance space at the back side						
	3.5cm or more	10cm or more	20cm or more	30cm or more	40cm or more	50cm or more	60cm or more
Auto (Variable: default setting)	24.5	30.5	33	35	37.5	39	40

\*2 The timing of fan replacement is used as a guideline.

The actual life may vary depending the operating time, change of ambient temperature, environment such as amount of dust, or regular maintenance.

Even if a fan on the LCD monitor has trouble, the neighbor fan supplements its operation. Therefore, the LCD monitor correctly works. Above life is described as rough guide and it shall not warrant the life. Even within the warranty period, the replacement of fan caused by failure is charged. The warranty does not include pre-mature fan failure.



# Precautions for temperature and clearance space 4

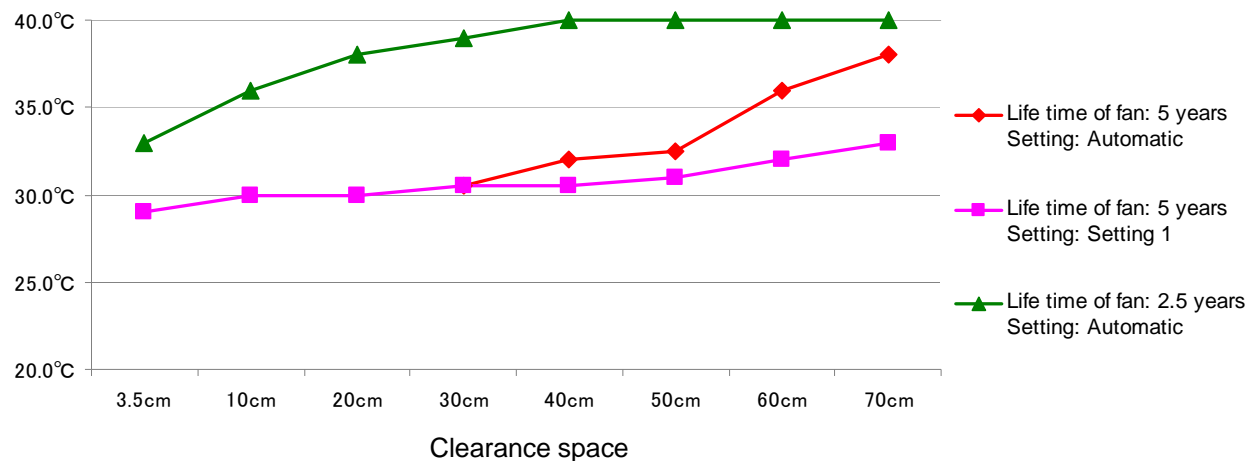


## Space requirement at the back-side

Note : Space requirements for this displays is reported under the condition where there is open space in front of the surface.

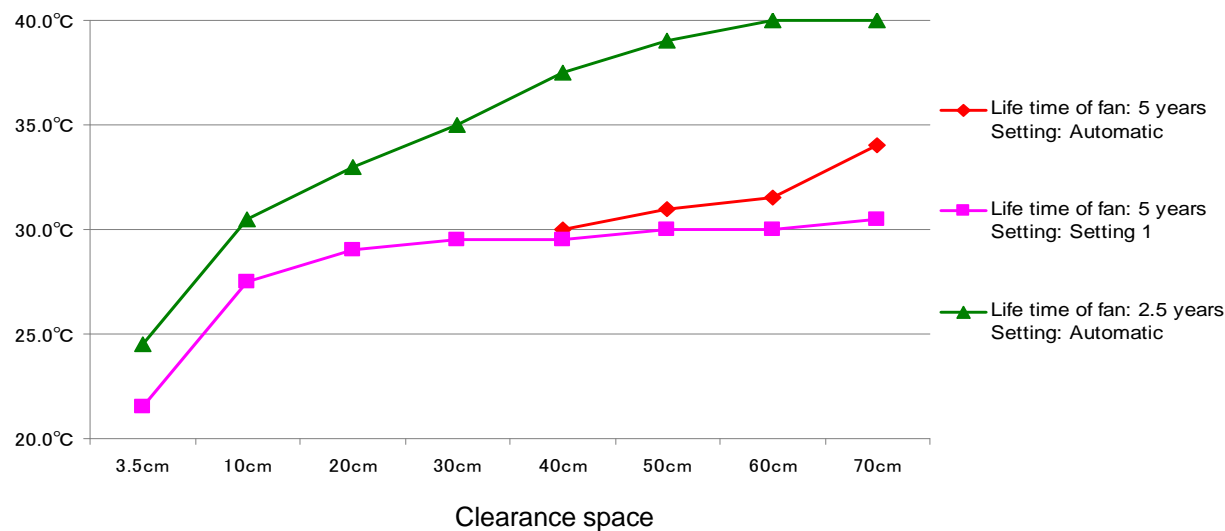
3X3 multi-display  
Temperature under operation  
VS. Clearance space

Temperature



5X5 multi-display  
Temperature under operation  
VS. Clearance space

Temperature





# Precautions for temperature and clearance space 5

## Countermeasure for lack of clearance space

- Adding a cooling fan
- Improve the ventilation by widening its space
- Using an air-conditioner or fan
- Lowering the brightness of display

\*The effectiveness of each measure differs depending on the environment. Please choose the best measure for respective environment.

- If the display is placed inside a case or at the condition where surrounding temperature goes beyond the 0 degree C to 40 degree C range, please set the air-conditioner or take some measures to control the surrounding temperature around 0 degree C to 40 degree C.



Example of fan installation



Heat prevention unit  
(Apiste co.)



# Precautions for the sunlight

This monitor is indoor use only. Please set this monitor to avoid the direct sunlight, wind, or rain. These conditions may cause failure and/or deterioration.

## About sunlight

The product must not be exposed to the direct sunlight

Please keep the product away from direct sunlight. Please install the product in shaded areas especially when using in an outdoor or semi-outdoor environment.

## The effect of direct sunlight

If the product is being used under direct sunlight

- The effect of brightness

--> Display would look much darker than the normal use

- The effect of ultraviolet rays

--> LCD or color filter will deteriorate

- The effect of the heat

(Even though the environmental temperature is fairly low, the temperature of the area under direct sunlight could be high)

--> Monitor will break down or uniformity issue will occur.

## Countermeasure

- Set a sun-shade above the monitor
- Utilize the shade of the building
- Place the monitor where there is no direct sunlight
- Change the direction of the monitor to avoid sunlight
- Using some object which can block out the direct sunlight  
(You should pay attention to strong winds like hurricanes.)



A shade above the product



Utilizin the shade of the building



Setting the monitor back to the place where there is no direct sunlight



# Precautions for Dust



It is necessary to take measures against dust such as regular cleaning of fan and vent in a dusty area.

## About dust

Fundamentally, LCD monitor is designed for indoor usage.

When it is being used outdoor, or at dusty places, such as railway station or close to the traffic, the solutions against dust must be considered.

## The effect of dust

If the anti-dust solutions are not being considered -->

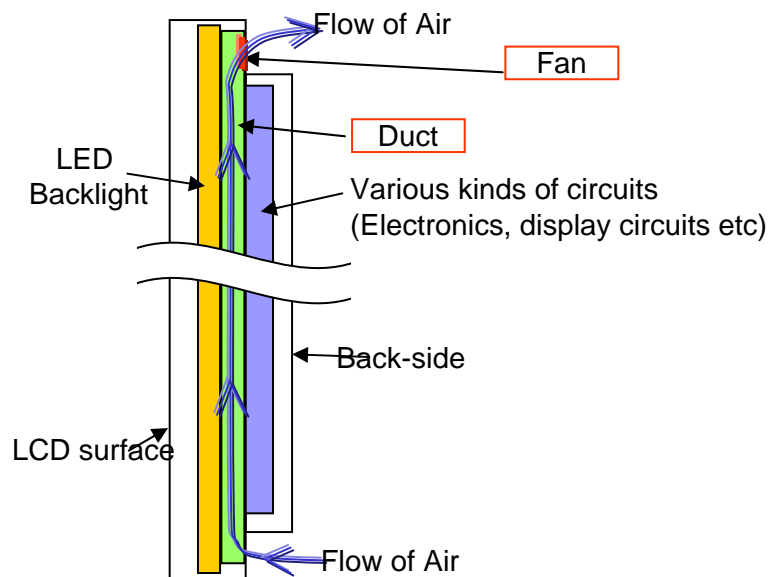
The dust will enter into the LCD panel through the gaps and will cause the distorted image (see example below), and will break down in the end.



## Counter-Measure against dust in the PN-V601

In general, a fan causes dust to enter inside, which eventually will cause the unit to breakdown. This monitor, however, reduces dust to entering inside by allowing air to flow through a duct. This remedies the disadvantages of fan operation (such as clogging of dust in the display)

### PN-V601's Cooling Structure (Cross-section drawing)



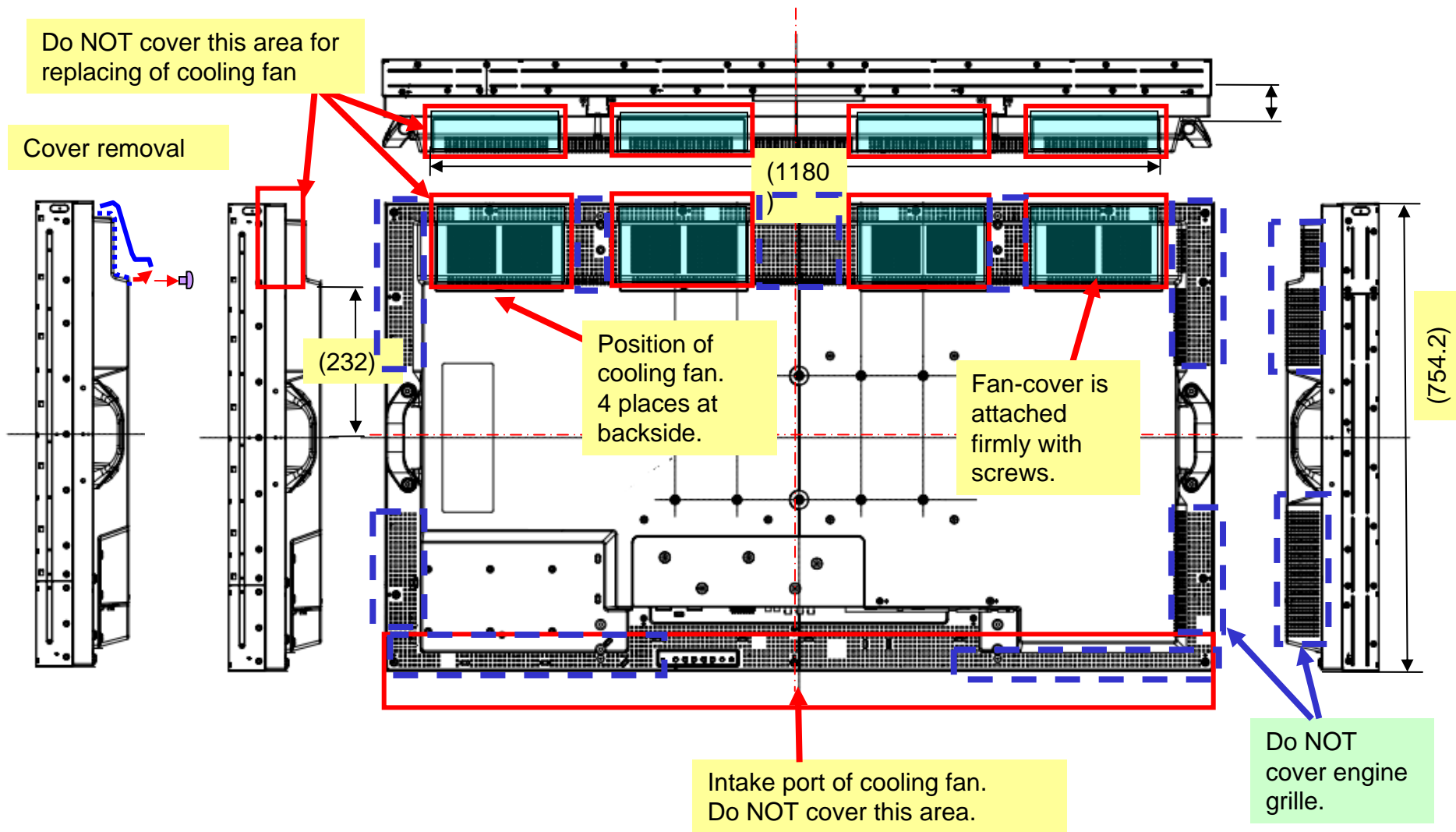


# Position of exhaust fan and intake-port

Do NOT cover vent hole and intake-port. If the temperature of the inside of the monitor is rising, it may cause the failure of the monitor.

Do NOT cover this area for replacing of cooling fan

Cover removal





# Precautions for dew condensation, water drops, and salt damage



## Precautions for dew condensation, water drops, and salt damage

- Humidity condition for IDP  
Range of humidity condition for IDP: From 20% to 80% **(no condensation)**
- This monitor is indoor use only. Please set this monitor to avoid the direct sunlight, wind, or rain. These may cause failure and/or deterioration.
- Dew condensation and/ or liquid drops will cause the breakdown of the circuit and/or LCD panel.  
Please install LCD away from condensation and liquid drops.
- The environment which has high possibility of condensation  
The place where temperature is generally low but has frequent warm air flow.  
(Example: the place in front of the vents of radiators. When the radiator is turn on in a cold winter morning, condensation occurs.)  
Near near the sea or lakes, where there is high humidity.
- The environment which has high possibility of liquid drops  
“Semi-outdoor” place where strong winded-rain (typhoon) could potentially reach the monitor.  
The place which is below the pipes inside the ceiling. When the pipes have leaking problems, there is a possibility for water drops to enter the monitor through the vents.  
(When installing in these places, countermeasures should be taken to avoid water drops to reach the monitors. For example, covering the LCD monitor with box. In such a case, consideration should be given for direction of vent.)
- Damage from wind such as typhoon  
Do NOT set the monitor in the place where may be affected by wind.
- Damage from salt water/ salty breezes  
When installing close to sea, consult us for potentiality of damage from salt water.
- Damage from sulfur  
Do NOT set the monitor in the place where may be affected by sulfur such as the place near hot spring or volcano.
- Damage of organic gas or flammable gas  
Do NOT set the monitor in the place where may be affected by organic gas or flammable gas.





# Precautions for inclination and power supply and voltage

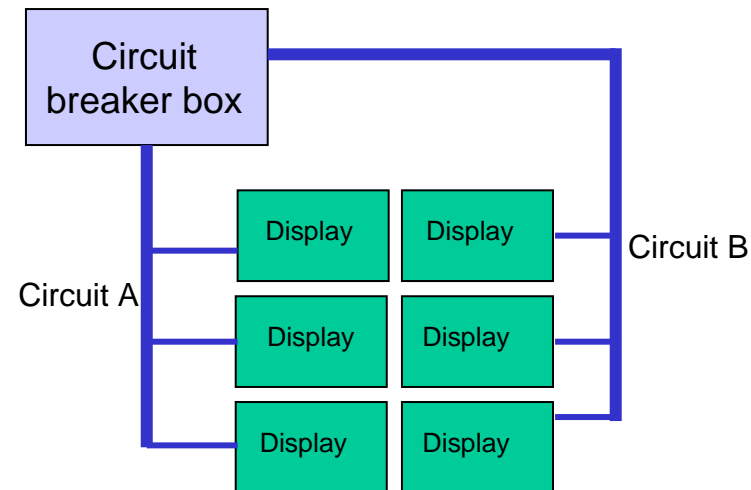
## About orientation

- When aligning multiple displays, only vertical installation is recommended.
- The limitation of the inclination angle is between 0 to 20 degrees downward. Even within 20 degrees range, please consult individually when installing with inclination.
- Please consult for facing up installation.

## About power supply and voltage

- PN-V601 is designed to be used under commercial 100V - 240V power supply.\* When aligning multiple screens, shortage of power supply may occur. Consideration should be taken to collect several circuits and supply power evenly.
- Avoid over power consumption such as by delaying the wake-up time using power-on delay function.

\* Attached electronic plug for Japan and US models are for 100V and 120V.  
For 200V level, provided as service parts (with charge)





# Precautions for vibration and residual images

## About vibration

- This information display is not designed for the usage in any places which have strong vibrations, such as inside motor vehicles.
- If the monitors will be used in the place which has the possibility of even small vibration like railway station's platform, shock absorber must be considered.

## About residual images

- When a still image is being displayed for a long period, image retention might occur.
- Image retention can be removed by displaying motion images or turning off the monitor. However, the longer the still image is being displayed, the harder to remove the image retention, therefore, the solutions mentioned above should be taken periodically.



# Operation checking before installation



## Operation check before installation

- Please confirm if each set of the PN-V601 can operate properly prior to the multi-screen positioning.  
If trouble is found after the installation, the labor for time detaching is required. In that context, **we strongly recommend the operation check before installation.**
- When using interface expansion board, PN-ZB02, confirm its input/output signal.
- Please confirm if the installation tools (e.g. bezel sheet) are set correctly before installation.

Ref.: You can check the PN-V601's panel status (color, brightness, damage, or existence or nonexistence of bright point/black point in accordance with the following procedure.

Note that you can't check all the features of PN-V601 with the following procedure.

### When using remote controller

1. Press the "SIZE" key (over 5 sec.) and "F" is displayed at the upper left of screen.
2. Press in turn the keys ▼ ▲ ▼ ▲
3. The screen display changes in following sequence, with every pressing of the key ►  
Black, Dark blue, Dark green, Dark red,  
Blue, Green, Red, White, Gray1, Gray2.
4. Turn off the power after confirming the above.

### When using key on the rear pane

1. Pres the "MENU" and "INPUT" keys (over 5 sec.) and "F" is displayed at the upper left of screen
2. Press the [VOL(-)] , [VOL(+)], [VOL(-)], [VOL(+)] key.
3. The screen display changes in following sequence, with every pressing of the [BRIGHT(+)] key.  
Black, Dark blue, Dark green, Dark red,  
Blue, Green, Red, White, Gray1, Gray2.
4. Turn off the power after confirming the above.



# Precautions for display dimensions



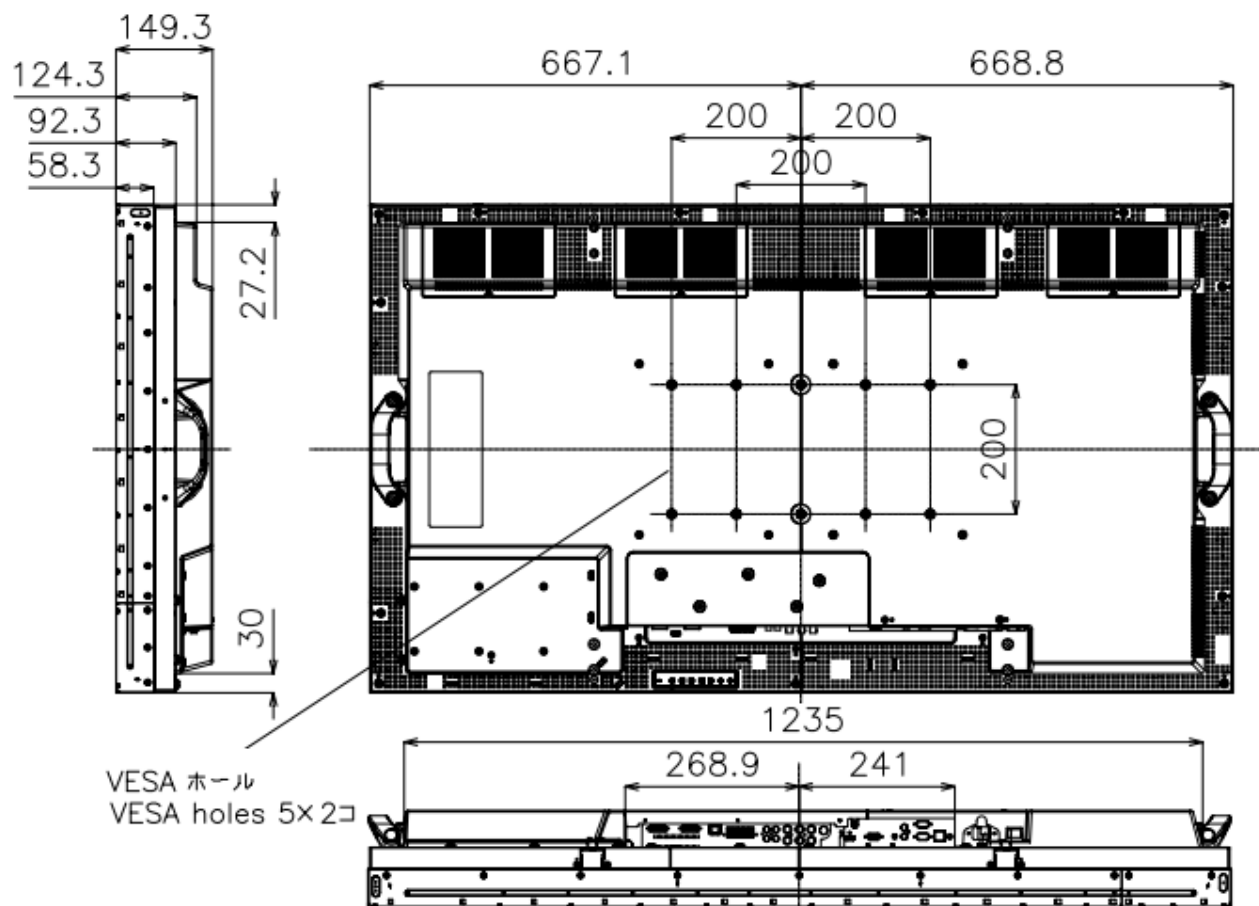
## About dimensions

PN-V601's outer dimension shown below.

Long-side outer dimension 1335.9 mm, short-side outer dimension 754.2 mm  
long-side/short-side tolerance is +2.0 mm/-0.5 mm (table on the right)

Considering display allowance (+2.0 mm/-0.5 mm), please leave space beforehand for adjustment when installing.

	Planned outer dimension (mm)	Outer tolerance (mm)
Long-side	1335.9	+2.0/-0.5
Short-side	754.2	+2.0/-0.5



<Weight>  
PN-V601 approx. 44kg  
PN-ZB02 approx. 0.5kg



# Precautions for space between displays

## About expansion

- Considering thermal expansion, please reserve enough space when installing.

Requirement for minimum space can be calculated as follows:

Space for long-side length = (Maximum surrounding temperature under operation - surrounding temperature when installed

+20) x 0.016 (mm) or more

Space for short-side length = (Maximum surrounding temperature under operation - surrounding temperature when installed + 20)

x 0.009 (mm) or more

For example, when installing at environmental temperature at 20 degrees, and its maximum peripheral temperature goes up to 40 degrees, space required for long-side length is 0.64 mm or more and short-side, 0.36 mm or more.

- Space installment device (For 1mm) is provided as option, thus please utilize this if necessary. When aligning displays together, please install this spacer device between the displays and take this out after displays are set firmly.

Note: If the space between displays is small, the monitor can't clearly display images. Because the weight is loaded to LCD panel by heat expansion, it may cause a white spot.

## Hiding the gap between the bezels

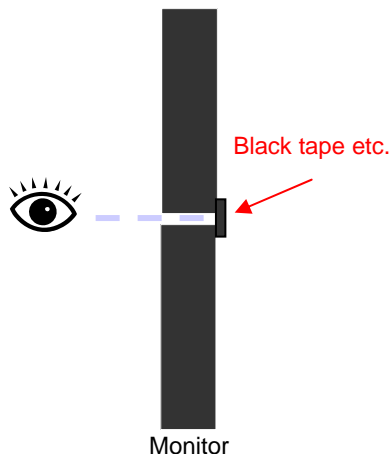
If the gap between displays spoils the appearance (e.g. back of the display can be seen through), please hide it by affixing black tape at the rear.

Note: Do NOT seal the "exhalation fan and intake-nozzle" by black tape.

Recommended width of the tape is 16mm. If you use the tape whose width is 19mm, please do not cover engine grille.

Please attach the tape before connecting cables.

It is necessary to check the tape periodically to make sure that the tape isn't detached from the display as time goes by.



Spacing installation device





# Precautions for space between displays

~ How to use spacing installation device (1)~



Procedure		Image
1	<ul style="list-style-type: none"><li>• Set displays at the bottom.</li></ul> <p>(In this procedure, fine adjustment of the space between displays at the bottom has not been completed yet.)</p>	
2	<ul style="list-style-type: none"><li>• Insert spacing installation device into the displays.</li><li>• Align the position and then fix the monitors.</li></ul>	
3	<ul style="list-style-type: none"><li>• Extract the spacing installation device.</li></ul>	



# Precautions for space between displays

~ How to use space installment device (2)~



Procedure		Image
4	<ul style="list-style-type: none"><li>•Set displays at the second line from the bottom.</li></ul> <p>(In this procedure, fine adjustment of the space between displays at the second line from the bottom has not been completed yet.)</p>	
5	<ul style="list-style-type: none"><li>• Insert the spacing installation device between the display at the bottom and the display at the second line from the bottom.</li><li>•Align the position and then fix the monitors.</li></ul>	





# Precautions for space between displays

~ How to use space installment device (3)~



Procedure		Image
6	<ul style="list-style-type: none"><li>•Set displays at the third line from the bottom.</li></ul> <p>(In this procedure, fine adjustment of the space between displays at the third line from the bottom has not been completed yet.)</p>	<p>Spacing installation device</p>
7	<ul style="list-style-type: none"><li>• Extract the spacing installation device inserted between the displays at the bottom line and the displays at the second line from the bottom.</li><li>• Insert the spacing installation device between the displays at the second line and the displays at the third line from the bottom.</li><li>•Align the position and then fix the displays.</li></ul>	<p>Spacing installation device</p>



# Precautions for space between displays

~ How to use space installment device (4)~



Procedure		Image
8	•Extract the spacing installation device.	



# Precautions on stand installation

## Concern about surrounding spaces

### Securing space at rear-side

It is necessary to secure enough clearance for the intake of the fan. If the space is small, there is a possibility that heat will rise because upper the displays absorb the exhausted heat from lower displays.

Please refer to “Precautions for temperature and clearance space” (P3 – P7) to study details.

In addition, maintenance (cleaning / replacing of the fan) will be done from the rear. Thus, securing space of 70cm at the rear is recommended. In case of not being able to secure the enough space at the rear, please make it possible to move the display toward front easily for maintenance.

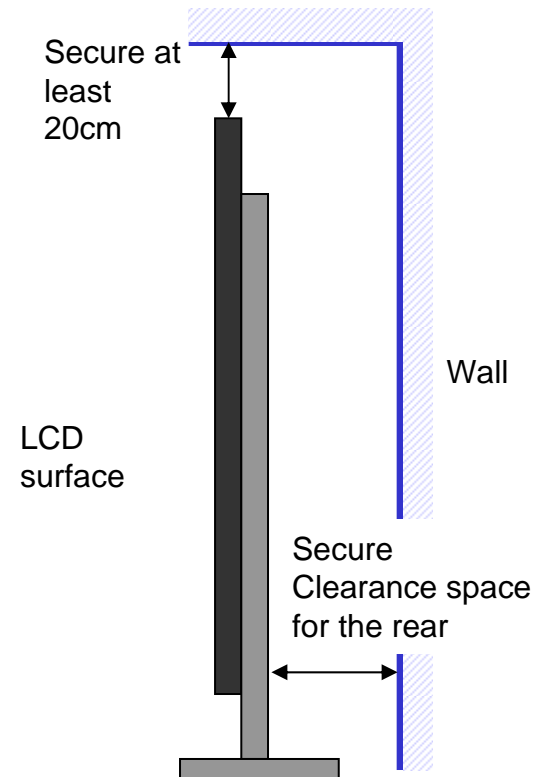
Please mount the displays to the stand after it is confirmed that replacing fan cover is possible.

### Securing space at upper-side (above)

To release the heat, there must be space to exhaust air. When taking off a display, the display must be lifted up, thus please leave approx. 20cm apart at upper-side . Also, a countermeasure for temperature at surface and lower area should be considered referring “Precautions for temperature and clearance space” (P3 – P7) .

## Concern about securing stand

For safety, please give measures for preventing fall of monitors in case of earthquake etc. - Secure firmly displays with wire or anchor etc.



**Installation example for stand installation**

## Installation mode setting on \*OSD (portrait or landscape)

\* OSD – On Screen Display

Please set installation orientation on OSD  
OSD setting procedure: [Screen setting] – [installation]  
Portrait mode: [portrait]  
Landscape mode: [landscape] (Default setting)



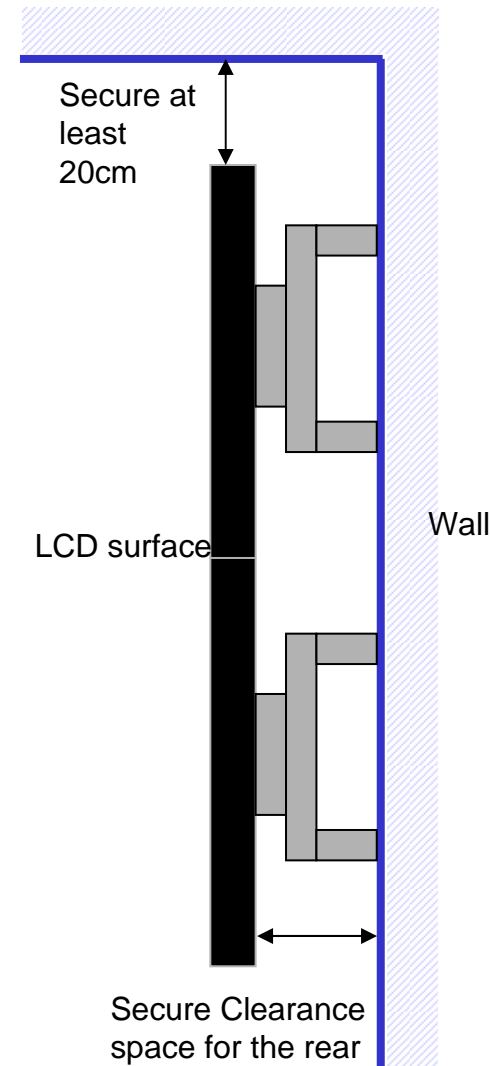
# Precautions of mounting on the wall

## Precautions of mounting on the wall

- When mounting on the wall, it is necessary to check very carefully that the wall is strong enough to support. Please use H beams or reinforce the wall when wall is not strong enough.
- It is assumed that it is difficult for securing clearance space of the rear so that it is necessary to use mounting bracket suitable for maintenance from the front or make an effort to move the display toward front easily for maintenance. Or please secure clearance space at the rear by using decorative wall.
- It is necessary to secure enough clearance space at the rear for the cooling fans. If the space is small, there is a possibility that heat will rise because upper displays absorb the exhausting heat from lower displays.

Please refer to "Precautions for temperature and clearance space" (P3 – P7) to study details.

- Please use the mounting bracket which can support 4 times weight of a display. It is necessary that the wall on which displays are mounted must support 4 times total weight of displays and mounting brackets (etc. concrete wall / concrete pillar).
- Please don't cover engine grilles, intake port of cooling fans and cooling fans.



## Installation mode setting on OSD (portrait or landscape)

Please set installation orientation on OSD

OSD setting procedure: [Screen setting] – [installation]

Portrait mode: [portrait]

Landscape mode: [landscape] (Default setting)

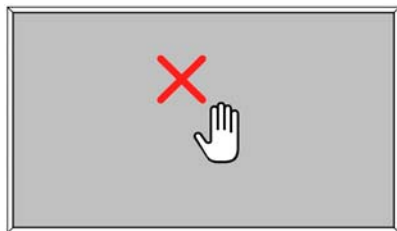


# Precautions in installing and handling 1

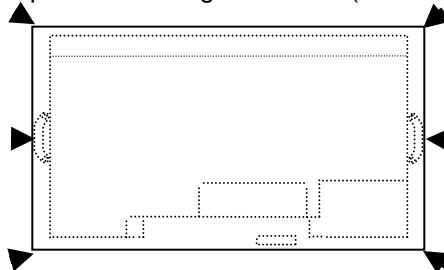


## Precautions in installing and moving

Display surface

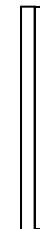


Perspective drawing of the rear (from the front)



► Grip points

side view



The display surface is made of glass. Please use rear handgrip or handle by the edge of the display while installing and moving. It is possible to cause damage and malfunction of display. Please don't apply physical pressure to the bezel such as bending or pulling on the bezel.

Prior to installing the PN-V601, please refer to following items carefully in order to use PN-V601 for long term reliable service.

Please use rear handgrip or handle by the edge of the display in installing and moving. Please don't handle any other part of the display. The PN-V601 is high – density product so that please pay attention NOT to let the edge of PV-V601 support the entire weight load. Please take extra caution to make sure that weight load each display is supported only by the mounting system and not a neighboring display when building a multi-screen wall.

### Method of interim storage of the display after taking it out from the box

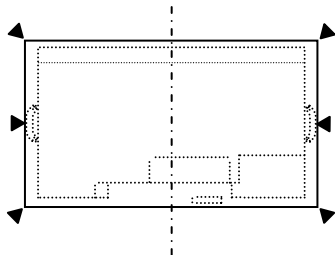
- Interim storage using the temporary stand is recommended.
- When you must keep the LCD surface side down without temporary stand, please prepare a protection board larger than the display, and put a protecting sheet like blanket on it, and confirm enough there are neither debris nor a projection within the range where the LCD surface side comes in contact directly. Please execute the work only after the greatest care is taken so that the LCD surface should not hit the edge of the protection board underneath.



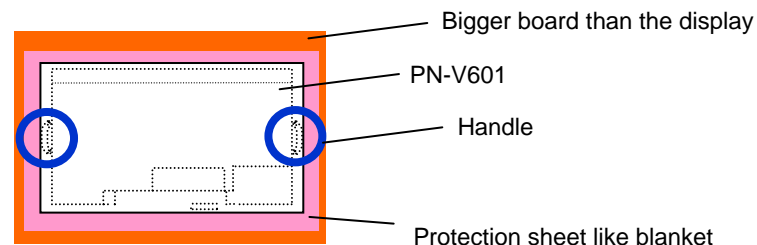
# Precautions in installing and handling 2

## Precautions to prevent the strain of display

1. Please support the display symmetrically in moving (e.g. when changing installation direction from portrait to landscape) while rotating the display to prevent the strain of the display.



Apply the pressure symmetrically to the display which is standing vertically with handle, installation tools etc.



Please grip **both handles** when the display is laid on the screen.

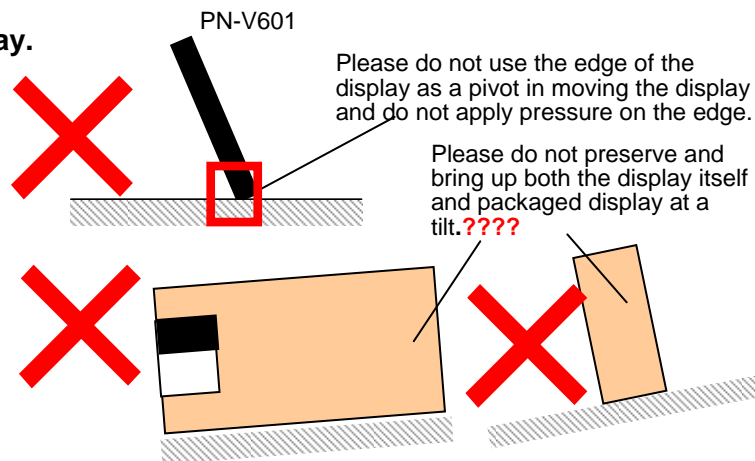
- For example, it is possible to cause the strain of the display when lifting up a display that was resting on a screen by gripping a single handle or a single corner of the display.
- Please support the display symmetrically by gripping both handles or both corners of the display in order to distribute the pressure equally on the display..

2. Please do not apply pressure on the edge and/or corners of the display.

For example, failure can be caused by standing up the display resting on a screen by using the edge of the display as pivot.

Please carefully stand up the display before moving the display.

3. Please be sure not to preserve and bring up both the display itself and packaged display at a tilt. Please be sure to preserve and bringing it vertically. **??????**



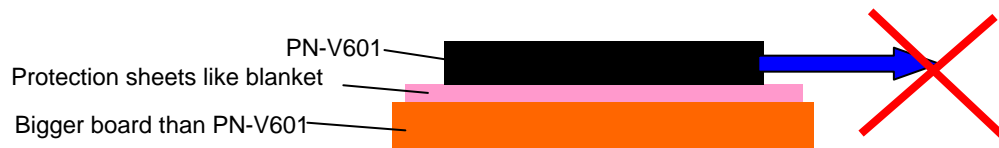


# Precautions in installing and handling 3

## Precautions for preventing strain and damage to the parts of the display

### 1. Please do not drag the display

If the display is dragged, strain and damage to the parts of the display can be caused even if a protection sheet like a blanket is underneath on the floor. Especially when the display is laid on the screen, the risk of the strain and damage of the parts increase. Please be sure not to drag the display.







# Attachment precaution 1

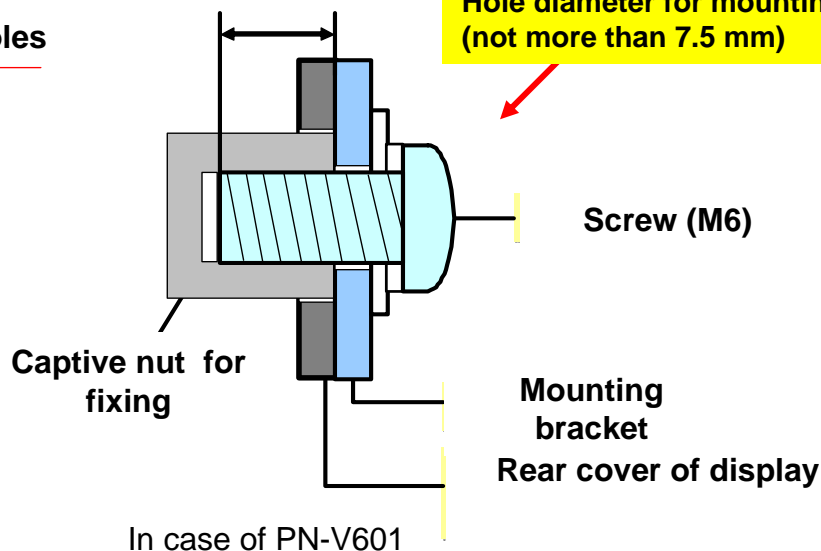
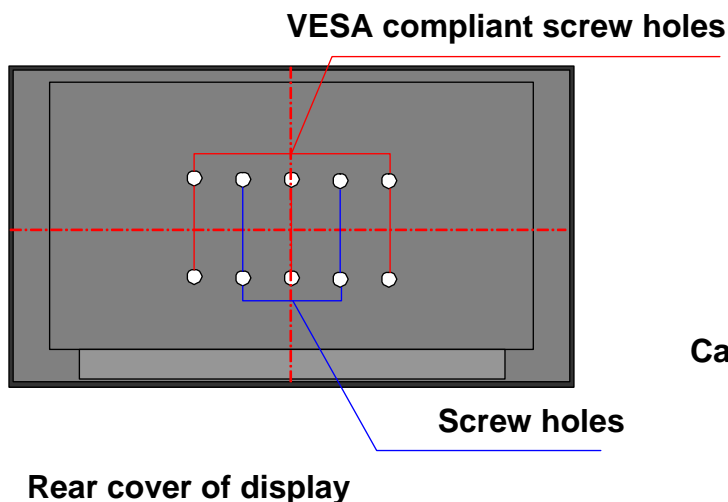
## VESA compliant Mounting bracket for display (M6 screw)

-Please take attention to following items for using screw holes behind IDP.

- 1) Please use more than 4 mounting screws to fix the display.
- 2) Please use symmetrical screw holes across the centre line.  
\*It can cause malfunction or deformation of the display to use screw holes asymmetrically.
- 3) Please use a mounting bracket having not more than 7.5mm hole diameter.  
\*Oversize of hole diameter can cause unfastening of the captive nut by the mounting screw.
- 4) Please use screws being correct length written in operation material of display.  
\*Over length of screw can cause unfastening of the captive nut by the mounting screw.
- 5) Please take measures by all means to prevent the screws loosening.  
(For example : using screws with washer)
- 6) Please tighten screws hard with not more than 3N\*m strength.  
(Tightening torque: 3N\*m )

Length of screw : 8mm-10mm

Hole diameter for mounting bracket  
(not more than 7.5 mm)



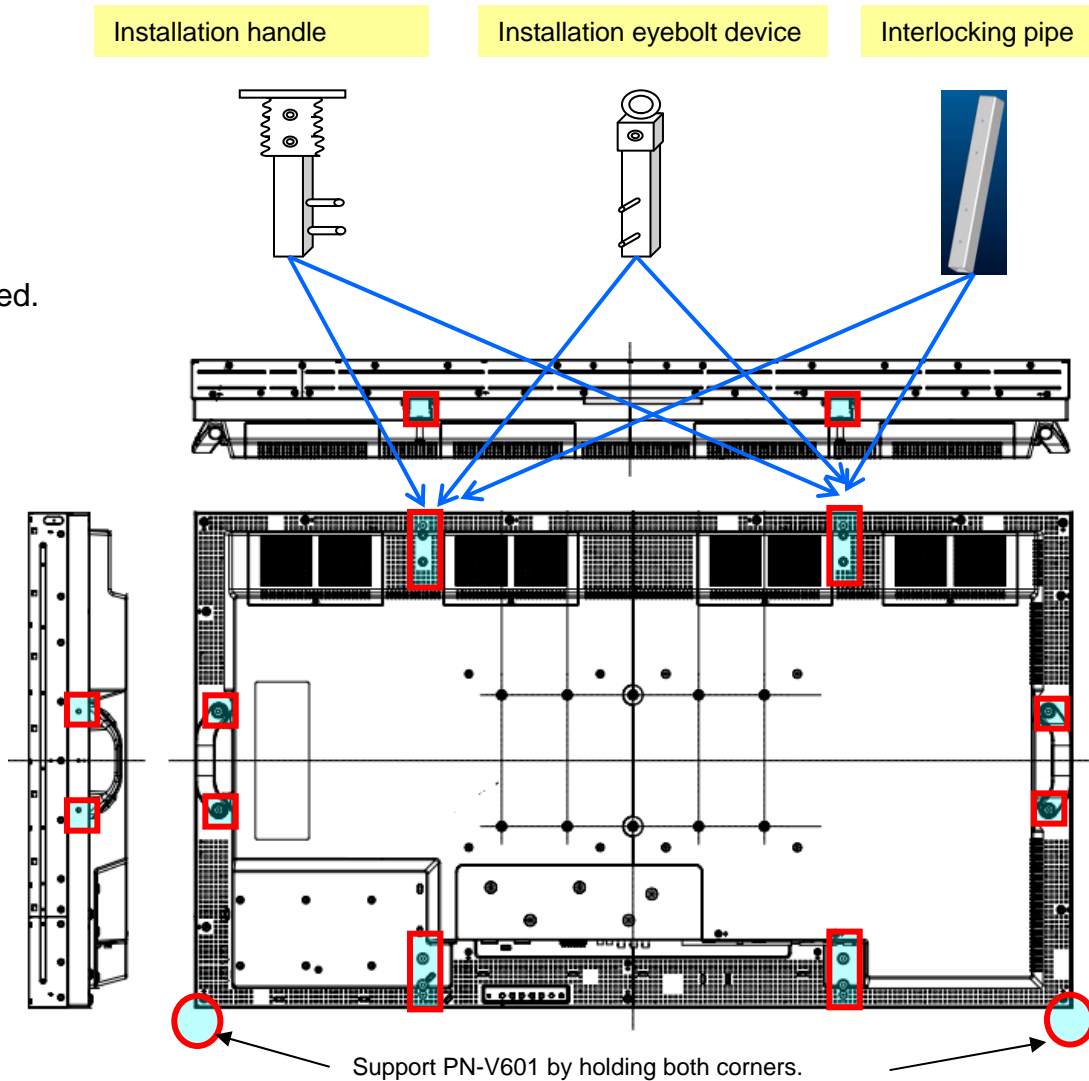


# Attachment precaution 2

## Installation tools for attachment and moving to installation location

Please take care not to add pressure to parts other than the ones marked with a heavy line in the diagram during installation and maintenance.

If pressure is added to other parts, the display itself may be distorted or damaged.

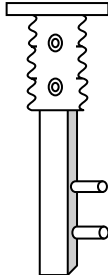
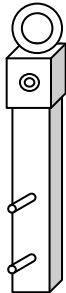





# Installation tool 1



We will provide following service parts for installation (they are subject to fees)

Name (temporary)	Use	Image
<b>Installation handle (UKOG1005MPZZ)</b>	<p><b>- For lifting the PN-V601 up to a high location</b></p> <p>This device is inserted into holes on top of PN-V601 and enable lifting the PN-V601 up to a high location during installation.</p> <p>2 pieces of this device are necessary per one PN-V601.</p> <p>This installation handle is for improving efficiency of installation. Please use it if necessary.</p>	
<b>Installation eyebolt device (UKOG1006MPZZ)</b>	<p><b>- For a crane to lift the PN-V601 up to a high location.</b></p> <p>This device is inserted into holes on top of PN-V601 and enable lifting the PN-V601 up by crane.</p> <p>2 pieces of this device are necessary per one PN-V601.</p> <p>This installation eyebolt device is for improving the efficiency of installation. Please use it if necessary.</p>	
<b>Interlocking pipe (UKOG-1007MPZZ)</b>	<p>-For making it easy to install PN-V601</p> <p>It can reduce gap between the top-to-bottom of the PN-V601 and interlock each panel from both on the top and bottom of the PN-V601 when installing with a stand etc.</p> <p>This pipe can prevent PN-V601 from having excessive weight load from above and underneath.</p> <p>Please use this interlocking pipe for improving the accuracy when adjusting the vertical position of displays if necessary. It is not required for installation.</p> <p>2 pieces of this pipe are necessary per one PN-V601.</p>	

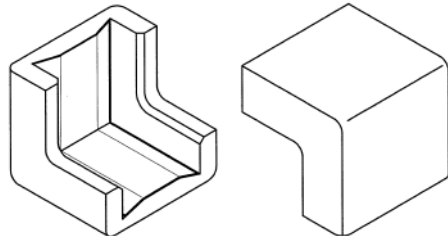
\* if you need above tools, please contact delivery agent or our sales reps.



## Installation tool 2



We will provide following service parts for installation (they are subject to fees)

Name (temporary)	Use	Image
<b>Protection cover for the corner of display (UKOG1008MPZZ)</b>	<ul style="list-style-type: none"><li>- Reduce shock while moving and installing</li></ul> <p>These covers are attached on the two bottom corners of PN-V601 to protect PN-V601 from shock.</p> <p>It is easy to remove the cover. It is not required for installation.</p> <ul style="list-style-type: none"><li>- 2 units of this cover are necessary per one PN-V601.</li></ul>	

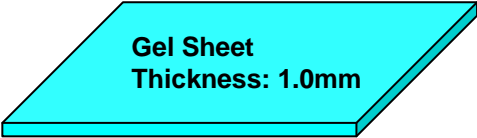
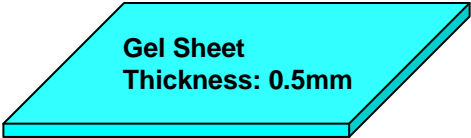
\* if you need above tools, please contact delivery agent or our sales reps.



# Installation tool 3



We will provide following service parts for installation (they are subject to fees)

Name (temporary)	Use	Image
<b>Protection spacer (for landscape) (UKOG1009MPZZ)</b>	<ul style="list-style-type: none"><li>- Protection of display</li></ul> <p>Insert this spacer between the PN-V601 while installing the neighboring PN-V601s. (thickness: 1 mm)</p> <p>This tool is used to avoid damage of the bezel at the time of installation and the position adjustment of the display. (This is not a required tool. )</p> <p>-Please take care that the sheet does not extend out of display side.</p>	
<b>Protection spacer (for Portrait) (UKOG1010MPZZ)</b>	<ul style="list-style-type: none"><li>- Protection of display</li></ul> <p>Insert this spacer between the PN-V601 while installing neighboring PN-V601's. (thickness: 0.5 mm)</p> <p>This tool is used to avoid damage of the bezel at the installation and the position adjustment of the display. (This is not a required tool. )</p> <p>-Please take care that the sheet does not extend out of the display side</p>	

\* if you need above tools, please contact delivery agent or our sales reps.



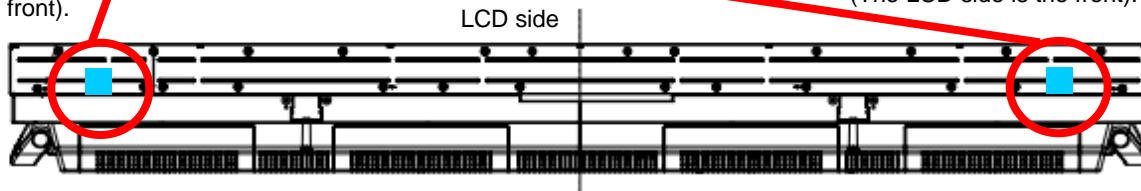
# Installation tool 4

## Pasting position of Protecting spacer

### 2 positions of protecting spacer for horizontal bezels

On the second screw from the left on the back row  
(The LCD side is the front).

On the second screw from the right on the back row  
(The LCD side is the front).

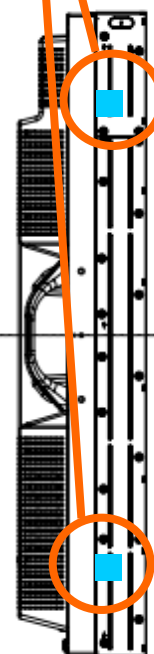


### 2 positions of protecting spacer for vertical bezels

On the second screw from the top on the back row  
(The LCD side is the front).

Rear side

LCD side






On the second screw from the bottom on the back row  
(The LCD side is the front).



# Installation tool 5



We will provide following service parts for installation (they are subject to fees)

Name (temporary)	Use	Image
<b>Installation spacer device</b> <b>(UKOG1011MPZZ)</b>	<ul style="list-style-type: none"><li>- Insert this spacer between the PN-V601 while installing the neighboring PN-V601s so the units do not touch.</li><li>And after installation is finished, remove this spacer device.</li></ul>	
<b>Temporary stand</b> <b>(UKOG1004MPZZ)</b>	<p>Temporary stand</p> <ul style="list-style-type: none"><li>-This stand is for fixing PN-V601 temporarily to check operation and perform settings before installation.</li><li>2 pieces of this stand are necessary per one PN-V601.</li></ul>	
<b>Supply cable for 200 volts</b> <b>(QACCJA104WJPZ)</b>	<p>Supply cable for 200 volts</p> <ul style="list-style-type: none"><li>-Supply cable for 100 (120V) volts is enclosed in PN-V601 for Japan (US) model.</li><li>If PN-V601 is used with with 200 volt environment , power supply cable for 200 volts is necessary.</li></ul>	

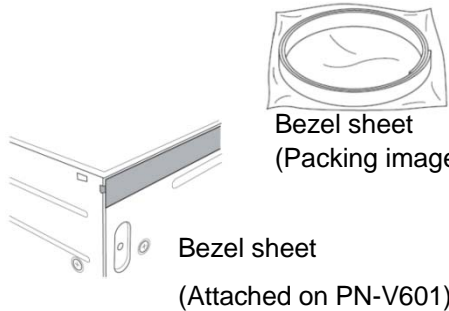
\* if you need above tools, please contact delivery agent or our sales reps.





# Installation tool 6



Tentative name	Use	Figure Image
<b>Bezel sheet</b>	<ul style="list-style-type: none"><li>-Please attach bezel sheets on the 4 sides of the PN-V601 to cover the white areas on the sides of the display.</li><li>-4 bezel sheets is necessary per one PN-V601 (for top / bottom / right / left side).</li><li>-In order to study the detail on how to attach bezel sheet, please refer to the introduction material enclosed in PN-V601 package (one sheet).</li><li>-Please note that this sheet can not be put on after setting up the multi-screen display.</li></ul>	 <p>Bezel sheet (Packing image)</p> <p>Bezel sheet (Attached on PN-V601)</p>

\* Bezel sheet is enclosed in PN-V601 package

\*: About the method of obtaining this software tool, please consult our sales window, or dealers/resellers from which you bought the main unit.



# Precautions on PC installation

## Consideration for PC installation

- Sufficient consideration for the ambient temperature is necessary, when multiple PCs are set up in the same space . Likewise, when one PC is set up together with display in the same space .

Based on the temperature actually measured, please estimate the temperature of each part during the condition that the room temperature is highest, and take necessary countermeasures against heat. For instance, it is effective to install a ventilation fan to reduce the chance of overheating

- We will recommend you to select a wireless mouse and keyboard to assist with PC operation.



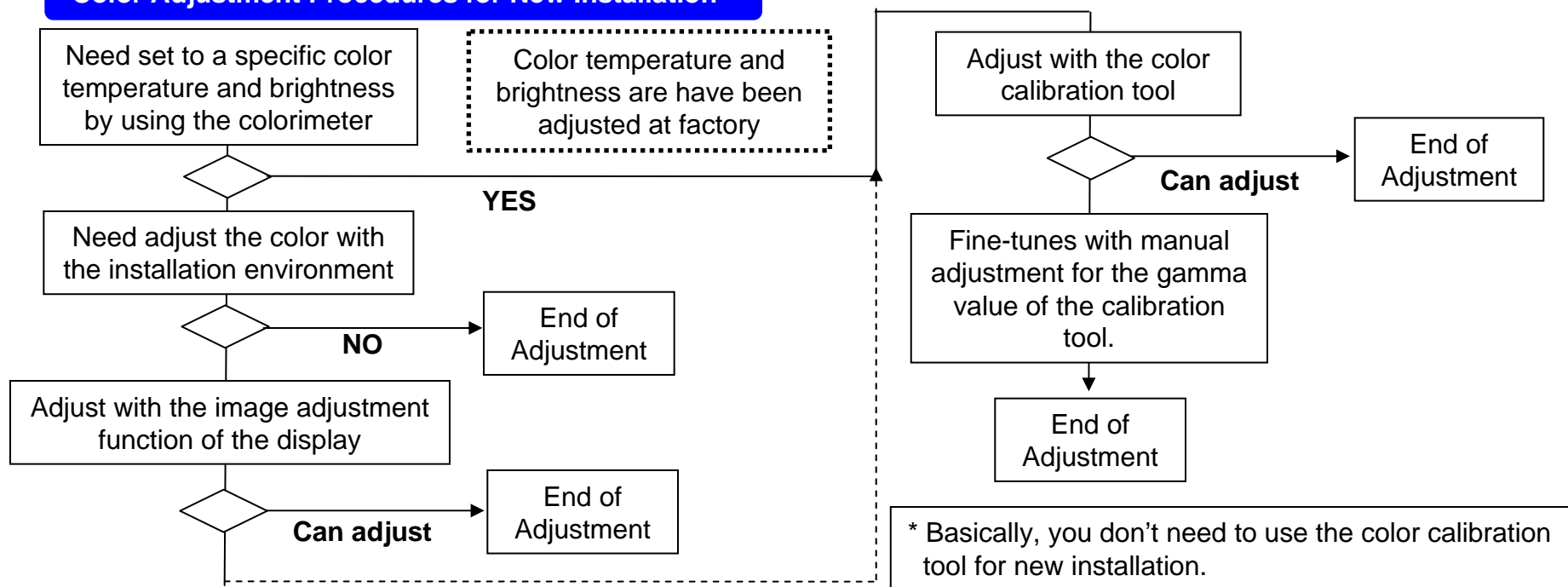
# Colour Adjustment 1



## How to adjust the color

- The color can be adjusted by the image adjustment function of the display by operating remote controller or the control tool offered from our company. (Please refer to software tool, SHARP Monitor Control Software. )
- Also, it can be adjusted with the color calibration tool from our company. (Please refer to software tool, Multi Display Calibration Tool). It is necessary to buy our recommended colorimeter. For the adjustment of one unit, it will take about five minutes with 6-gradation adjustment of (our recommendation), about seven minutes with 16-gradation, and about 10 minutes with 32-gradation.
- As the brightness of display is not steady immediately after the power\*on, please adjust color 60 minutes or more after the backlight is lit.

## Color Adjustment Procedures for New Installation

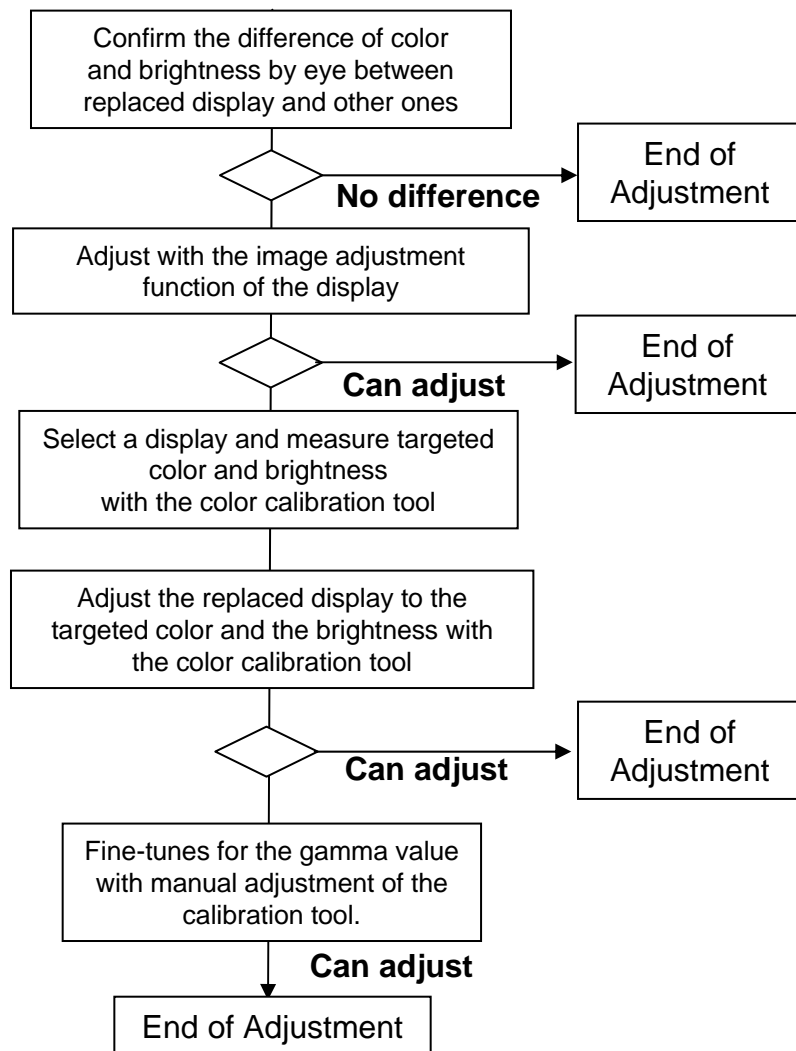




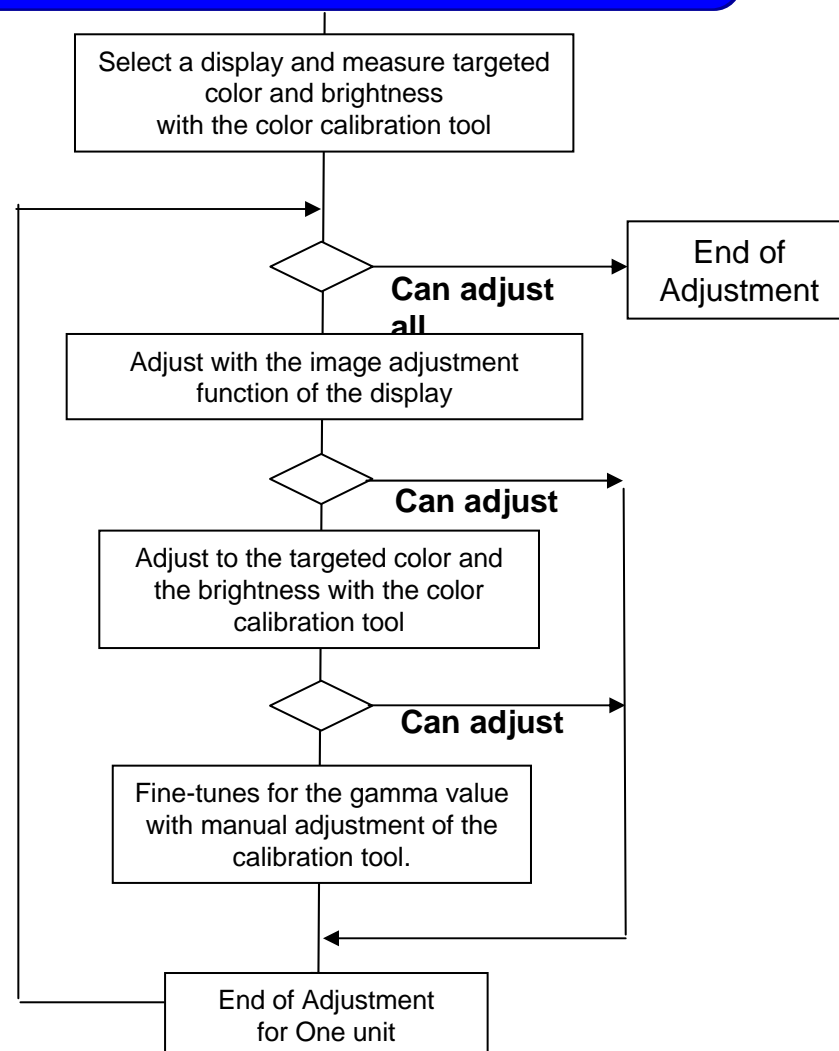
# Colour Adjustment 2



## Color adjustment procedures when display is replaced



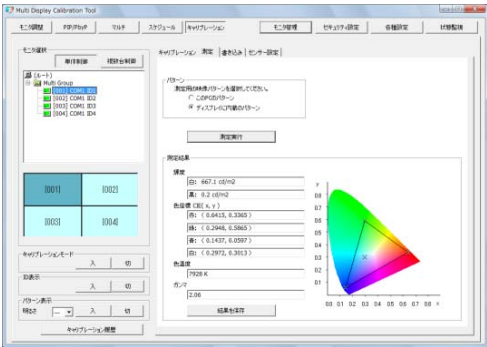
## Color adjustment procedures for difference of the color temperature and brightness between displays due to change over time





# Software Tool – About Multi-Display Colour Calibration Tool



Tentative name	Use	Figure Image
<b>Multi-Display Color Calibration Tool</b>	<ul style="list-style-type: none"><li>• <b>Calibration function</b><ul style="list-style-type: none"><li>- Software to adjust brightness and color matching</li></ul></li><li>* “Spyder3” from Datacolor.Inc. is required (to be purchased).</li></ul> <p><a href="http://spyder.datacolor.com/product-mc-s3pro.php">http://spyder.datacolor.com/product-mc-s3pro.php</a></p> <p>Sharp will provide this software.</p>	

\*: About the method of obtaining this software tool, please consult our sales window, or the dealers/resellers from which you bought the main unit.



# Software Tool -About SHARP Monitor Control Software



Tentative name	Use	Figure Image
<b>SHARP Monitor Control Software</b>	<ul style="list-style-type: none"><li>Control PN-V601 from PC</li><li>- Can turn power on and off, change input signal, change settings etc.</li><li>- Can control multiple displays.</li><li>- Can limit the operation by setting the user level.</li><li>- Can monitor display condition (if by any chance)</li></ul> <p>Sharp will provide this software.</p>	

\*: About the method of obtaining this software tool, please consult our sales window, or the dealers/resellers from which you bought the main unit.



# Software Applications – About SDSS



Tentative name	Use	Figure Image
<b>SDSS (Sharp Digital Signage Software)</b>	<ul style="list-style-type: none"><li>• <b>Stand Alone version (PN-SS01)</b><ul style="list-style-type: none"><li>- PN-SS01 is used to control PN-V601 when connecting it to one PC without LAN network.</li></ul></li><li>• <b>Network version (PN-SS02) / Viewer version (PN-SV01)</b><ul style="list-style-type: none"><li>- PN-SS02 and PN-SV01 are used when distributing contents from the server via LAN network.</li><li>- Network version (PN-SS02) is installed on the server PC, while the Viewer version (PN-SV01) is installed on the client PCs.</li></ul></li><li>• <b>Professional version (PN-SP02) * Marketed in Japan only</b><ul style="list-style-type: none"><li>- Enhanced version of the PN-SS02 (network version) Functions of the contents delivery and management, etc. are strengthened, and clients up to 1,000 are supported. Even complex operation in the large system can be easily used and managed.</li></ul></li></ul>	

\*: About the method of obtaining this software tool, please consult our sales window, or the dealers/resellers from which you bought the main unit.





# Maintenance & Checking Items



## Maintenance & Checking Items

For safety use, both daily and periodical maintenance are necessary.

### 1. Daily maintenance

- 1-1. Cleaning of LCD surface
- 1-2. Monitoring operating conditions

### 2. Periodical maintenance

- 2-1. Checking the installation conditions. Checking the mounting bracket for the main units, for loose mounting bolts and screws, etc.
- 2-2. Cleaning of port of intake fan and its surroundings.
- 2-3. Replacement of the fan with new one
- 2-4. Checking the peeling off of black tape to maintain good looking appearance between panels

## Cleaning of LCD surface

- Please wipe the LCD surface lightly with a soft cloth (lens cleaner and gauze, etc.).

Please ensure that the surface is not damaged with a hard cloth and do not rub strongly .

- Please use a static electricity removal brush (dustproof brush) commercially available when dust attaches to the LCD.
- Please do not wipe with a damp or dusty cloth, in order to protect the LCD.



# Periodical Maintenance

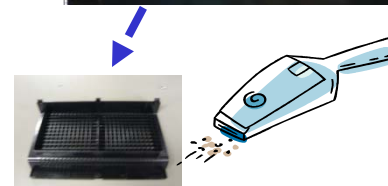
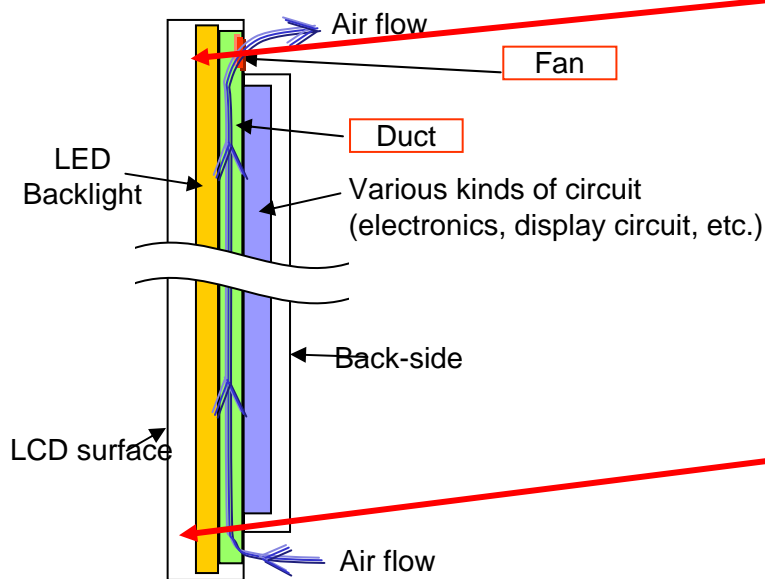
## Cleaning the port of the intake fan and its surroundings.

### Main dust removal area

- 1) There are small holes at the lower part of the cabinet. Dust adheres to the intake holes. Please remove dust in this part.
- 2) Dust adheres to the inside of the fan cover. Please detach fan cover, and remove the dust that attaches internally.
- 3) Dust might adhere to the fan blades. In this case, please clean the fan by detaching it, if necessary

### Cleaning Cycle

It varies according to the environment. In a busy area, cleaning might become necessary more often. Please decide the cleaning cycle depending on the dust build-up.



2 & 3.

- 1) Turn off the power and,
- 2) Detach the fan cover and remove the dust from inside ensuring that the screws do not fall inside.



1) Dust off from outside



# Periodical Maintenance



## Replacement of Fan

The fan must be replaced at the end of its useful life.

As for the replacement parts, please consult the dealers/resellers that sold the main unit or the sales contact of our company.

In addition to the periodical maintenance, we would like you to study Maintenance contract with Sharp sales subsidiaries or dealers/contractors trained by Sharp.

About this, please consult the shop that sold the main unit or the sales contact of our company.

**SHARP**