

# User Guide

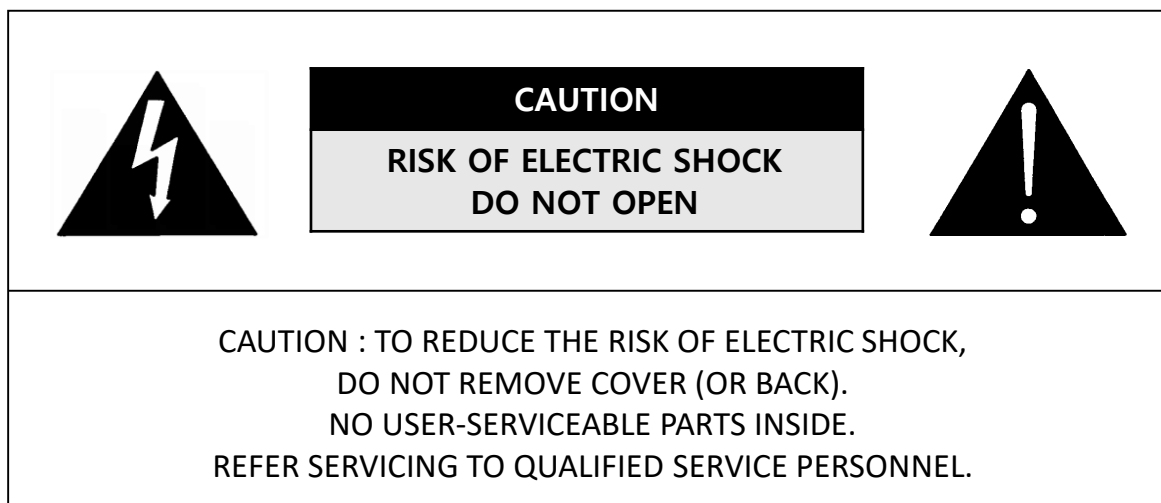
V2.0



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## Notice

1. When disconnecting the display from an electrical outlet, the plug must be pulled out from the socket. Do not remove power cord from outlet by pulling from the cord. Pull from the plug head.
2. WARNING – To reduce the risk of fire or electric shock, do not expose this appliance to rain or other forms of moisture.
3. Display must not be exposed to liquids via dripping or splashing. Please do not place liquid –filled items such as vases near the display.
4. Use only a properly grounded plug and receptacle.
5. CAUTION – These instructions are for use by qualified service personnel only. To reduce the risk of electric shock, do not perform any service other than that contained in the operating instructions unless you are qualified to do so.



This symbol is intended to alert the user to the presence of insulated “dangerous voltage” within the product’s enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.



This symbol is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the product.

## Important Safety Instructions

1. Read these instructions.
2. Keep these instructions.
3. Heed all warnings.
4. Follow all instructions.
5. Do not use this product near water.
6. Clean only with dry microfiber cloth.
7. Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.
8. Do not install near any heat sources such as radiators, heat registers, stoves, or other display (including amplifiers) that produce heat.
9. Do not remove ground prong from three-pronged plugs. If your outlet will not accept three-pronged plugs, consult an electrician for replacement.
10. Protect the power cord from being walked on or pinched, particularly at plugs, convenience receptacles, and the point where they exit from the display.
11. Only use attachments/accessories specified by the manufacturer.
12. Use only with the cart, stand, tripod, bracket, or table specified by the manufacturer, or sold with the display. When a cart is used, exercise caution when moving the cart/display combination to avoid injury from tip-over.
13. Unplug this display during lightning storms or when unused for long periods of time.
14. Refer all servicing to qualified service personnel. Servicing is required when the display has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the display, the display has been exposed to rain or moisture, does not operate normally, or has been dropped.
15. Do not expose this display to dripping or splashing and ensure that no objects filled with liquids, such as vases, are placed on the display.
16. To completely disconnect this display from the wall outlet, disconnect the power supply cord plug from the AC receptacle./wall socket
17. The mains plug of the power supply cord shall remain readily operable.
18. An display with CLASS I construction shall be connected to a wall socket outlet with a protective grounding connection.
19. Note: Prolonged use of headphones at a high volume may cause damage your ears.
20. **Notice to users : This is a Class A digital device**
21. This device is designed for commercial use and features safety certificates for electromagnetic interference (EMI). Users should be mindful of EMI issues.



## Thank You for Purchasing a GPO Display NSV-Series Video Wall

This manual describes how to use the product and provides safety guidelines and best practices. Please read the manual carefully before installing or using the product.

After reading this manual, please retain for future reference.

If you have any questions or a problem occurs, please contact either the company you purchased this product from or an authorized service center.

- ✓ **Displaying static images for an extended period of time may cause a “burn-in” effect.**
- ✓ **“Burn-in” effect and the faults in brightness and picture elements caused by extended display of static images are not subject to warranty coverage.**

## Multivision Features

- ✓ Wide flat screen with unparalleled display quality and dependability
- ✓ Easy to install and move due to its thin design.
- ✓ True commercial-grade reliability

## Accessories



User Guide Disc



Remote Controller



Batteries (AAA x 2)



DVI Cable



VGA Cable



RS232C Cable



Power Cable

# Product Description



Type:	LCD Display	Screen Surface:	Anti-Reflective and Hard Coating	
Model	Dimension (WxHxD, inch)	Weight	Power Consumption(W)	BTU's (BTU/hour)
SV(EN)46MSS	40.3x22.8x5.5	58lbs	150	511.8
SV(EN)46HSS	40.3x22.8x5.5	61lbs	190	648.3
SV(EN)46MSU	40.2x22.7x4.28	55lbs	150	511.8
SV(EN)46HSU	40.2x22.7x4.28	55lbs	190	648.3
SV(EN)55MSS	47.8x27.0x5.6	76lbs	190	648.3
SV(EN)55HSS	47.8x27.0x5.6	76lbs	250	853.0
SV(EN)55MLU	47.8x27x4.5	77lbs	170	580.0
SV(EN)55HLU	47.8x27x4.5	77lbs	250	853.0
NSV46MSU	40.3x22.8x5.5	58lbs	150	511.8
NSV46HSU	40.3x22.8x5.5	58lbs	190	648.3
NSV49MLU	42.4x23.9x3.21	69lbs	160	545.9
NSV55MLU	47.8x26.94x3.4	87lbs	170	580.0
NSV55HLU	47.8x26.94x3.4	87lbs	250	853.0
ZEN46MSU	40.22x22.7x3.22	58lbs	150	511.8
ZEN55MSU	47.8x26.94x3.02	85lbs	190	648.3

Type		GPO Display Wall Mount	
Model	Dimension (WxHxD, inch)	Weight	
SBL46	40.3 x 22.8 x 3.1	15lbs	
SLB55	47.8 x 27.0 x 3.1	21lbs	
SLM46	40.2x22.7x2.5	20lbs	
SLM55	47.8 x 26.94 x 2.36	25lbs	
ZLM46	40.2x22.7x1.57	23lbs	
ZLM49	42.4x23.9x1.57	24lbs	
ZLM55	47.8 x 26.94 x 1.57	28lbs	
ZSM46	40.2x22.7x0.98	21lbs	
ZSM55	47.8 x 26.94 x 0.98	25lbs	
POM4655-L	19.3 x 24.5 x 3.39	16lbs	
POM4655-P	19.3 x 24.5 x 3.39	16lbs	
SWO46	40.3 x 22.8 x 4.0	33lbs	

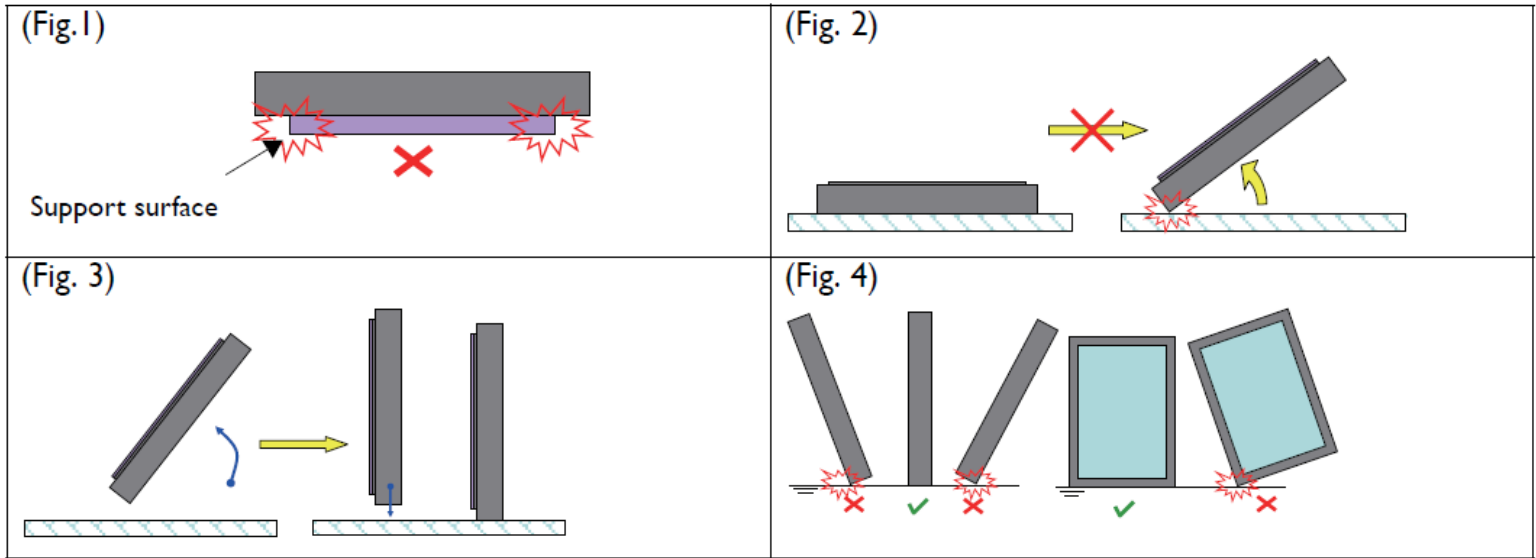
To ensure safety, please read this manual carefully before installation and follow the instructions herein. Store this installation guide in a secure place for future reference.

- The video wall must be installed on a flat and level surface which is strong enough to bear its weight.
- Make sure mounting brackets are tightened and secured on the wall
- The Liquid Crystal Display (LCD) panel of the display has a very thin protective layer of coating which is susceptible to marking or scratching, and cracking if struck or pressured. Please cover and protect the displays if there is construction or other work being conducted at the installation site.
- Transport and handle displays by holding the handles on the back of the display. Do not touch the LCD panel surface directly to avoid possible scratches and backlight leakage
- *Leave a slight (>0.5mm) gap between displays in order to protect your LCD screens from the damage through the direct transfer of weight. See Checking the safe distance between displays on page 6 for details.*

## Notes on handling/transporting displays:

LCD video wall monitors have limited mechanical strength. To prevent the display from performance failure caused by line defects, front bezel bending, glass scratch/broken, light leakage, etc, it must be handled with care.

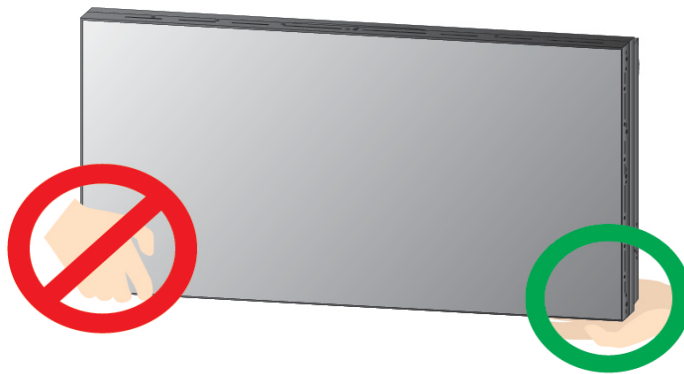
- Always move the display by at least two (2) adults.
- Retain the original shipping box and packaging in storage for use in the future, when you may need to transport the product.
- When placing the display face (panel side) down:
  - Prepare a flat, level, horizontal surface that is larger than the display and spread a thick protective sheet/foam on it. (Fig. 1) – Lay the display down gently and horizontally.
- When you want to place the display in an upright position:
  - Lift the display up horizontally by holding the two (2) handles at the top/rear with one hand per person and supporting the bottom bezel with the remaining hand. **Do not allow the display to rest/put weight on bezel edges and corners**
  - Be careful not to scratch any parts of the display when placing the display upright. (Fig. 3)
  - Stand the display vertically to make sure its weight spread evenly throughout the bottom bezel. Do not rest on corners or lean forward/back. (Fig.4)



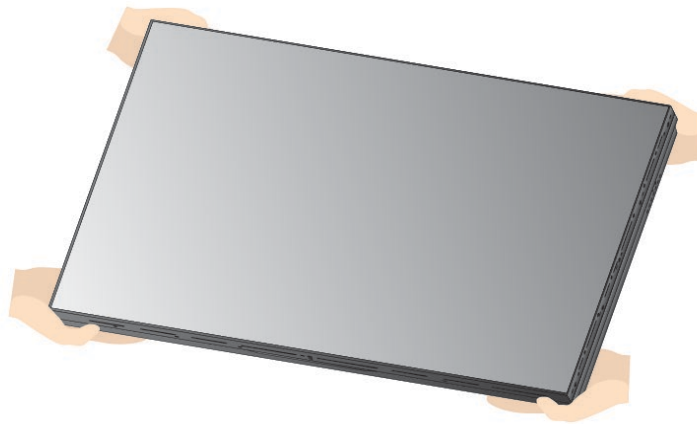
Position	Diagram/Photo	Precaution	Possible Damage
		DO NOT APPLY PRESSURE TO THESE AREAS	IC damage and COF Lead Crack
		DO NOT APPLY PRESSURE TO THESE AREAS	IC damage and COF Lead Crack
		DO NOT BEND/APPLY PRESSURE	Backlight leakage, deformation of bezel
		DO NOT BEND/APPLY PRESSURE	Backlight leakage, deformation of bezel

## How to carry the product

- ✓ At least two people are required to carry the display. When carrying the product upright, please hold the handles on the rear as well as the bottom of the display simultaneously for stability.



- ✓ When carrying the product with the panel positioned upwards as shown below, please hold as shown in the diagram.



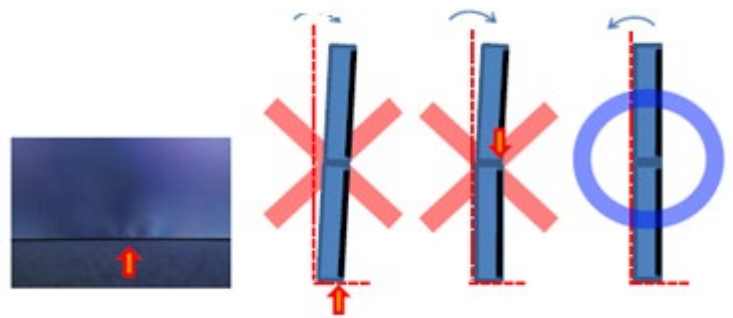
- A minor gap between monitors is strongly recommended

-High temperatures can cause slight expansion of panels. If there is no space between panels, damage may occur as a result of pressure resulting from the expansion of adjacent panels into one another.

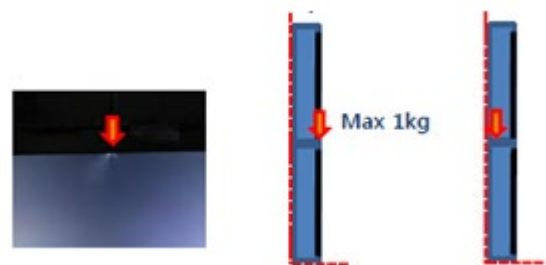


\* Recommended gap between displays:  
0.5mm - 1.3mm

- Do not tilt displays in a manner that would result in pressure on the panel edges. If backlight leakage (as shown below) is evident, this is a sign of excessive pressure and adjustment to the alignment of the array must take place



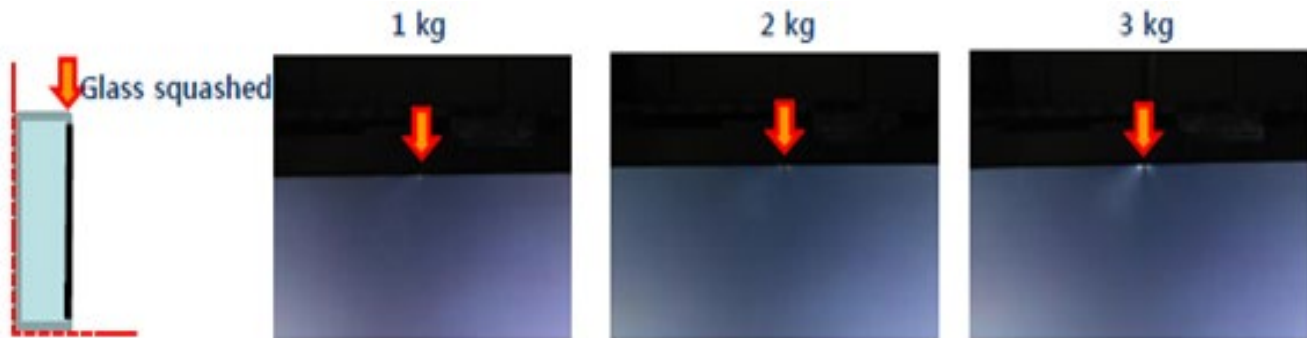
- If more than 1kg of weight is applied to the top bezel of a panel (as illustrated to the right), backlight leakage will result. This is a sign that the panel alignment/angle must be adjusted or other countermeasures must be applied.



- Bottom of product: When resting panel on any surface (padded table, floor), do not tilt panel forwards as shown in the diagram below. The weight of the display applied in an uneven manner can result in damage.



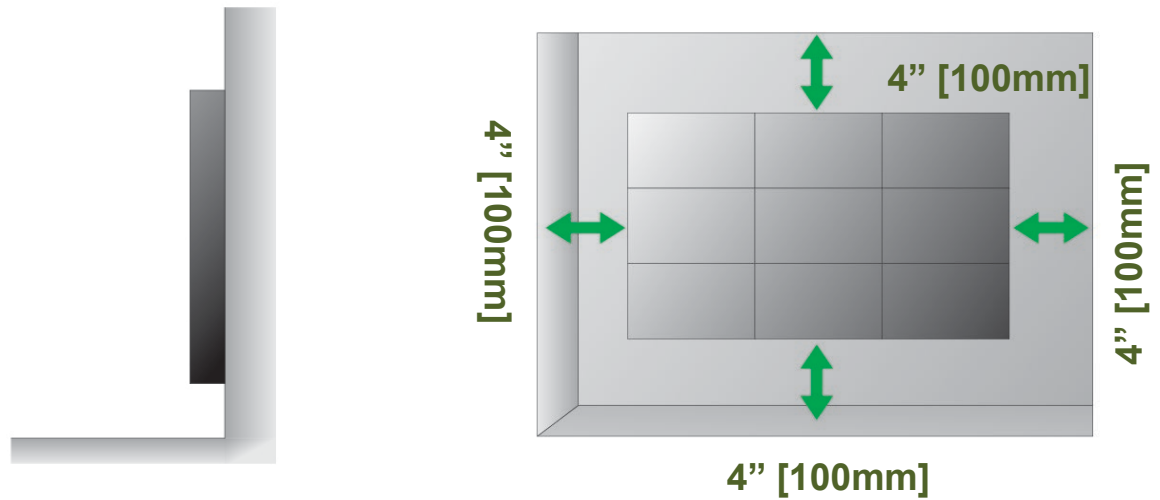
- **Top of product:** Even partial pressurization of the top bezel can result in light leakage (as shown below). Be careful not to apply pressure to the top of the product during installation and handling.



## Best practices for maintaining long-term quality

1. Keep panel usage under 20 hours per day in order to extend the stability and performance of the panel to longer than what is shown on the product specification table.
2. Avoid displaying static images for prolonged periods of time.
3. Avoid content with significant brightness differences.
4. Prevent dust collection inside the panel by covering unused holes on the rear of the display (if any) with tape.





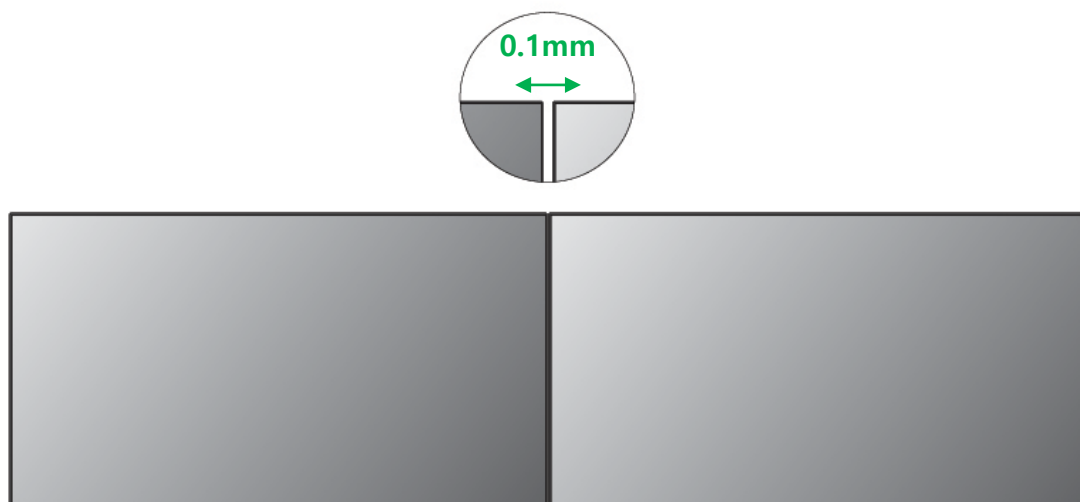
## Mounting on a wall surface

Please secure minimum clearance as shown in the picture for adequate ventilation and technical service.

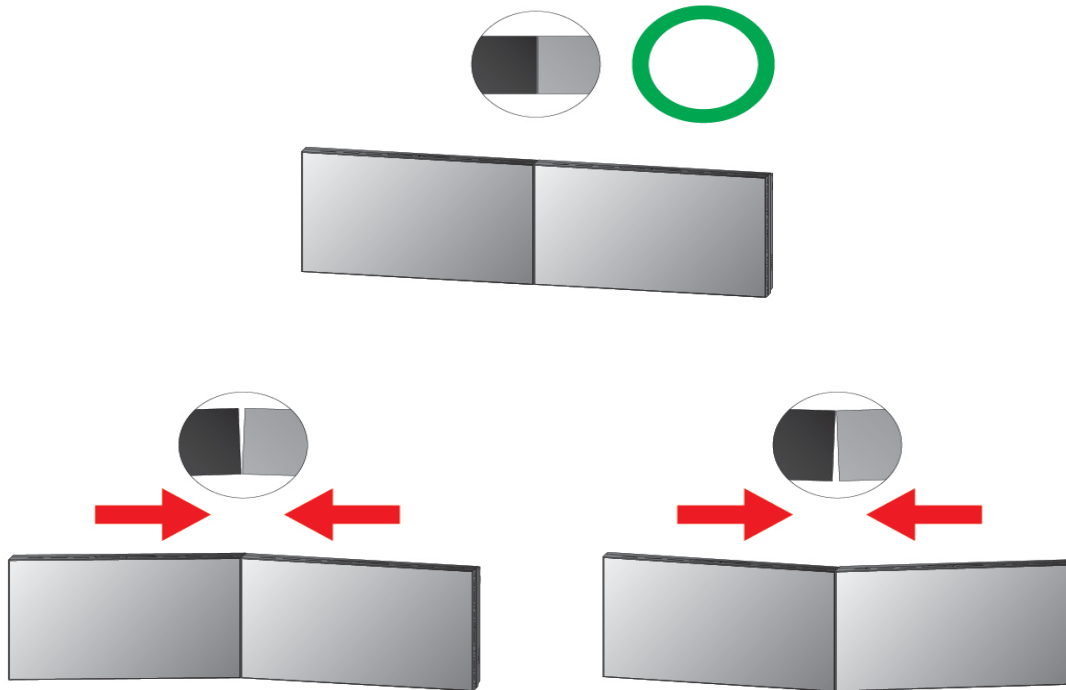
**Ventilation space in front of NSV-Series displays must be furnished for heat dispersion. If the area in front of NSV-Series displays must be sealed, there must be consideration for the heat dispersion on the rear side of NSV-Series to compensate.**

## Precautions for installation

During installation, do not apply pressure to any surface of the panel. Damage to the panel may result from external pressure or even minor impact to the panel. Physical and cosmetic damage to displays is not covered under warranty.



Please ensure alignment on the Z-axis for a level plane across adjacent panels (as shown in the diagram below). If precautions are not heeded, GPO US will not accept responsibility for any Failure due to such installation errors.



- ❖ **Do not apply excessive external pressure to panels during installation.**
- ❖ **There is no warranty coverage for any damage arising from external pressure/impact.**

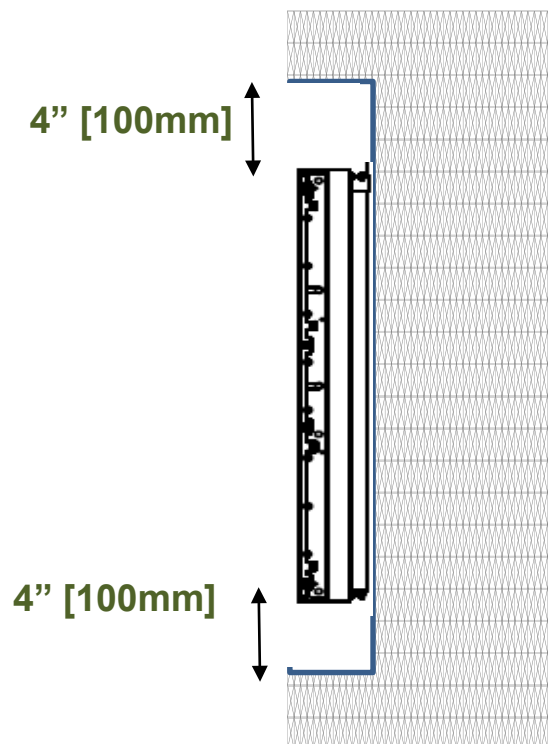
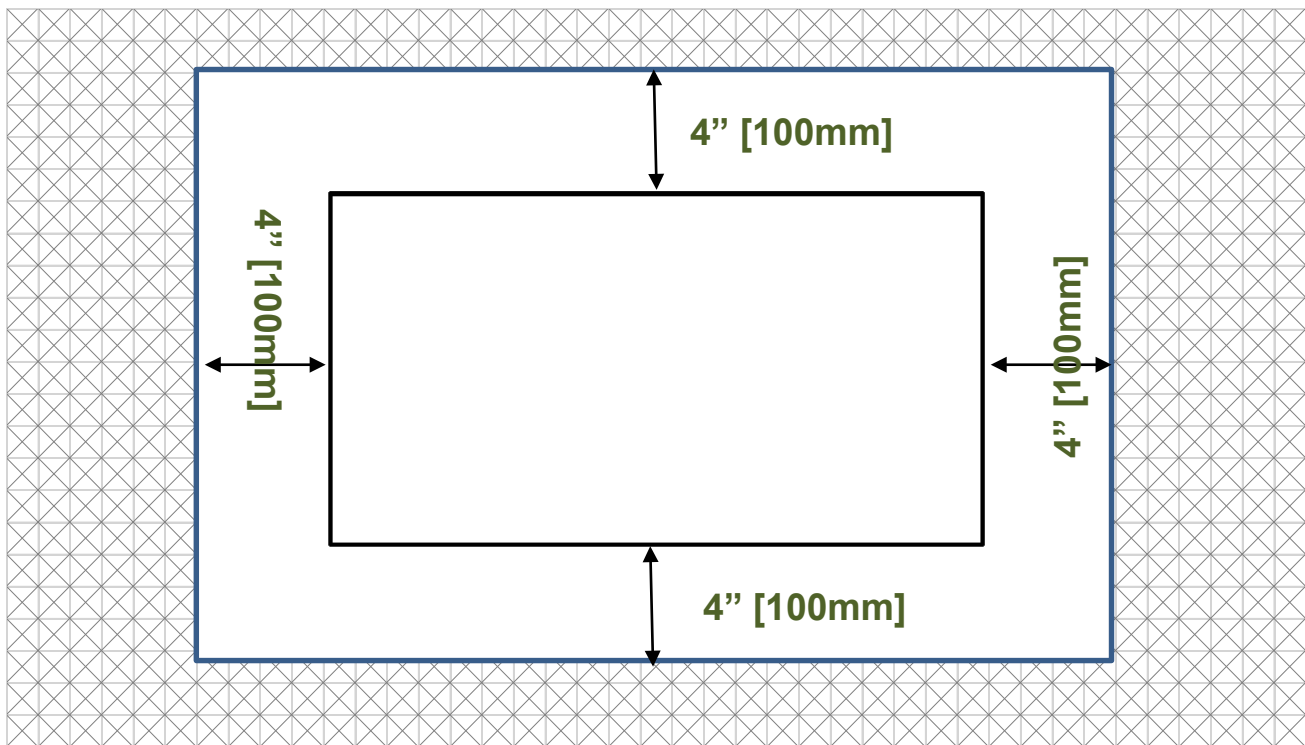
## Do not cover fan ventilation holes

Carefully install NSV-Series not to cover the fan air holes with any structural object.

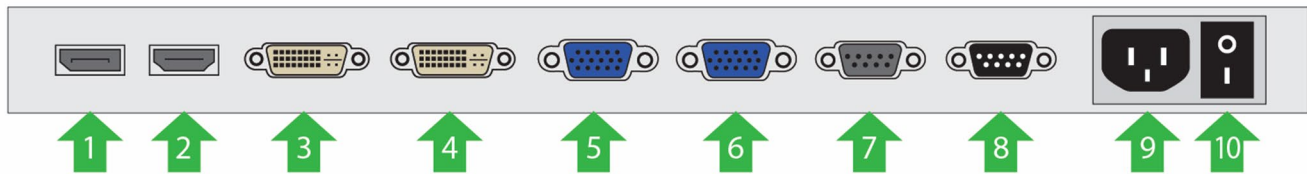
If the holes are covered with anything, the inner temperature can be raised rapidly and it can cause malfunction.

## Dimensions below are minimum required for proper ventilation

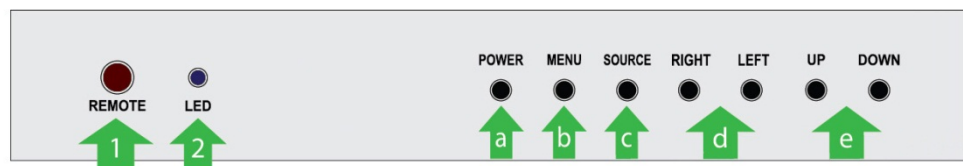
Ventilation Requirements: 41~104F (Landscape & Portrait )



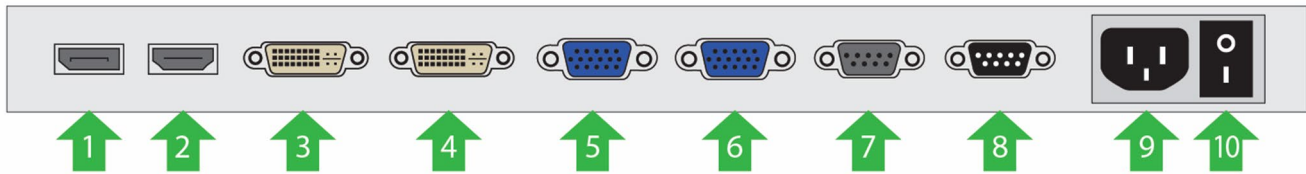
Note:  
Ventilation space must not be covered or closed off at the front of the opening. If for some reason the opening needs to be covered, other means of ventilation will need to be incorporated into the design. Contact GPO Display for design review and recommendations.



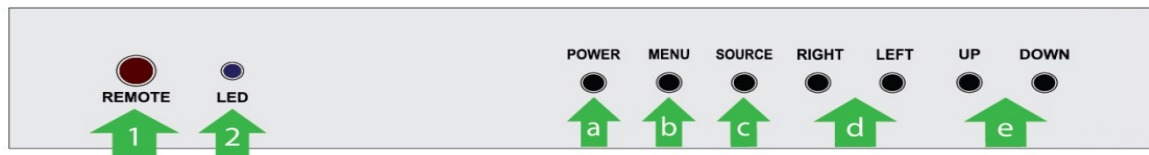
1. DisplayPort Input
2. HDMI Input
3. DVI Input
4. DVI Output (DisplayPort, HDMI Output)
5. D-Sub Input
6. D-Sub Output
7. RS232 Input
8. RS 232 Output
9. AC Power In (100V ~ 240V)
10. AC Power Switch



1. IR Receiver  
Aim the remote controller towards this spot on the LCD Display.
2. LED indicator  
Indicates LCD Power Status (On : BLUE / Off : RED)
3. OSD KEY Input (Power / Menu / Source / Left / Right / Up / Down)
  - a) Power : Turns the LCD Display On/ Off.
  - b) Menu : Displays the main On-Screen menu.
  - c) Source : Select Input Source
  - d) Left / Right : Moves from one menu item to another horizontally or adjusts selected menu values.
  - e) Up/Down : Moves from one menu item to another vertically or adjusts selected menu values.



- |                                 |                    |
|---------------------------------|--------------------|
| 1. DP Input.                    | 6. D-Sub Output.   |
| 2. HDMI Input.                  | 7. RS232 Input.    |
| 3. DVI Input.                   | 8. RS 232 Output.  |
| 4. DVI Output.(DP, HDMI Output) | 9. AC Power Inlet. |
| 5. D-Sub Input.                 | 10. AC Power S/W.  |



Status	Color	Operation
Power Off	Red	On
Normal	Blue	On
Not Connected (No signal)	Blue	Blinking
DPMS	Red	Blinking

## IR

Aim the remote control towards this spot on the LCD Display.

## OSD KEY Input(Power / Menu / Source / Left / Right / Up / Down)

- Power : Turns the LCD Display On/ Off.
- Menu : Displays the main On-Screen menu.
- Source : Select Input Source
- Left / Right : Moves from one menu item to another horizontally or adjusts selected menu values.
- Up/Down : Moves from one menu item to another vertically or adjusts selected menu values.

GPO Display's video wall displays have a built-in video wall processor that allows for virtually any matrix size of LCD video wall. In this manual, instructions for a 2x2 configuration will be used as an example.

## 1. Installation

To install NSV Series displays in video wall configuration, please read the installation directions carefully before installation is performed. These monitors can be installed for single display/"standalone" operation, in a single row, or in multiple rows. The highest Display Sequence number is 99. Contact GPO Display for arrays comprised of more than 99 displays.

## 2. Installation Requirement

### 2.1 Structure for the installation

The structure design and construction for the display installation is the customer's or its installer's responsibility. GPO Display does not take any responsibility on design or construction of installations. The minimum requirements for space, strength of the structure, electronic, heat dissipation and environmental condition is described in the following. If any further information or support is needed from GPO Display, please contact us in advance to ensure ample time for support. We will be glad to help with any recommendations or information. Call 510-659-9855 or e-mail [support@gpodisplay.com](mailto:support@gpodisplay.com).

### 2.2 Power Requirements

Please refer to the specifications for power consumption of displays to be installed

Do not plug more than two units into a given receptacle (example: all displays in 2x2 should not be plugged into quad receptacle)

Using more than 70% of current on the AC circuit is strongly discouraged.

Clean AC power is required for "noiseless" screen images. Avoid damages inflicted by power glitches or surges- either a power conditioner or surge protector is recommended. Contact your electric power specialist for consultation.

## 3. Heat Dissipation

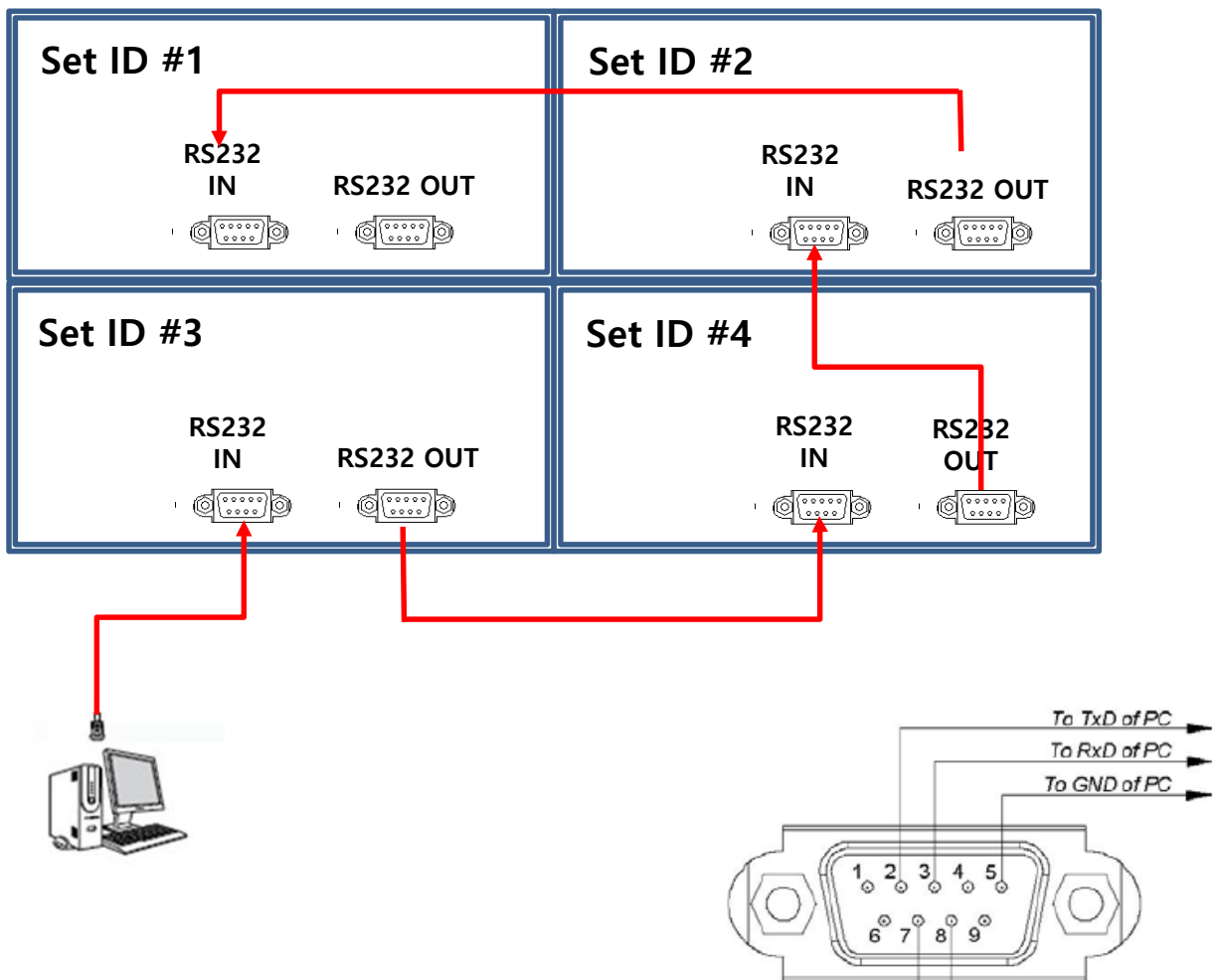
The Standard LCD operational conditions are;

- Temperature: 32°F -104°F Humidity : 20-80%

## Connect RS232 Cables

### Daisy-Chain Connection for Video Walls

1. While mounting display, insert any cables used for Power, video inputs or outputs into the set.
2. Prior to insertion of the next set into neighboring Wall Unit, insert cables (including RS-232) from the outputs of the first set into the inputs of the second set.
3. Repeat steps 1-2 for next set, if necessary.
4. The RS-232 daisy chain limitation is listed as 16 displays, although theoretically more units can be accommodated. 25 displays was the maximum number of units tested during production. While GPO Display can make no guarantees, RS-232 daisy-chaining should be able to take place on up to 25 displays.
5. Daisy-chaining can be initiated from any unit but **it is strongly recommended that you start with a display on the bottom row** for ease of access. There is no terminator at the end of the unit. It is always recommended to record/make note of the chaining diagram as it is crucial to determining issues with communication.



## **Connect Video Cables**

- DVI is the recommended signal type. We recommend using a DVI converter for PC (RGBHV), component to DVI.
  
- Most analog signals can be daisy-chained through as many as four (4) units depending on the signal condition. The same applies to DVI (and on certain models, HDMI and DisplayPort), for which the signal is also capable of daisy-chaining through as many as four (4) units, depending on the environment and conditions. If more than the recommended number of units needs to be connected, distribution amplifiers should be installed. See installation instructions for more detailed directions in this case. The number of units in a group can be adjusted depending on the image quality required onscreen.
  
- Some installation sites have a high level of Electric Noise which may appear onscreen, especially with DVI.
  
- Digital noise may appear due to poor quality DVI cabling. If the video signal needs be delivered from a distance, electric noise must be accounted for. If the distance is great or there is a serious noise issue, an optical fiber extender system is recommend over CAT-5/6 extension.
  
- Daisy-chaining can be initiated from any unit. There is no terminator at the end of the unit. It is strongly recommended that installers/customers record the chaining diagram as it is crucial for diagnosis of issues, should they arise.
  
- DVI, HDMI and DisplayPort are HDCP-compliant.
  
- **Signal-looping specifications**  
Video signals should be boosted by using a distribution amplifier when more than four (4) units are connected. Here are the numbers of limitation for each video type:



## **Connect Video Cables**

### **Daisy-Chain Connection for Video Walls (For smaller walls- 4 units or less)**

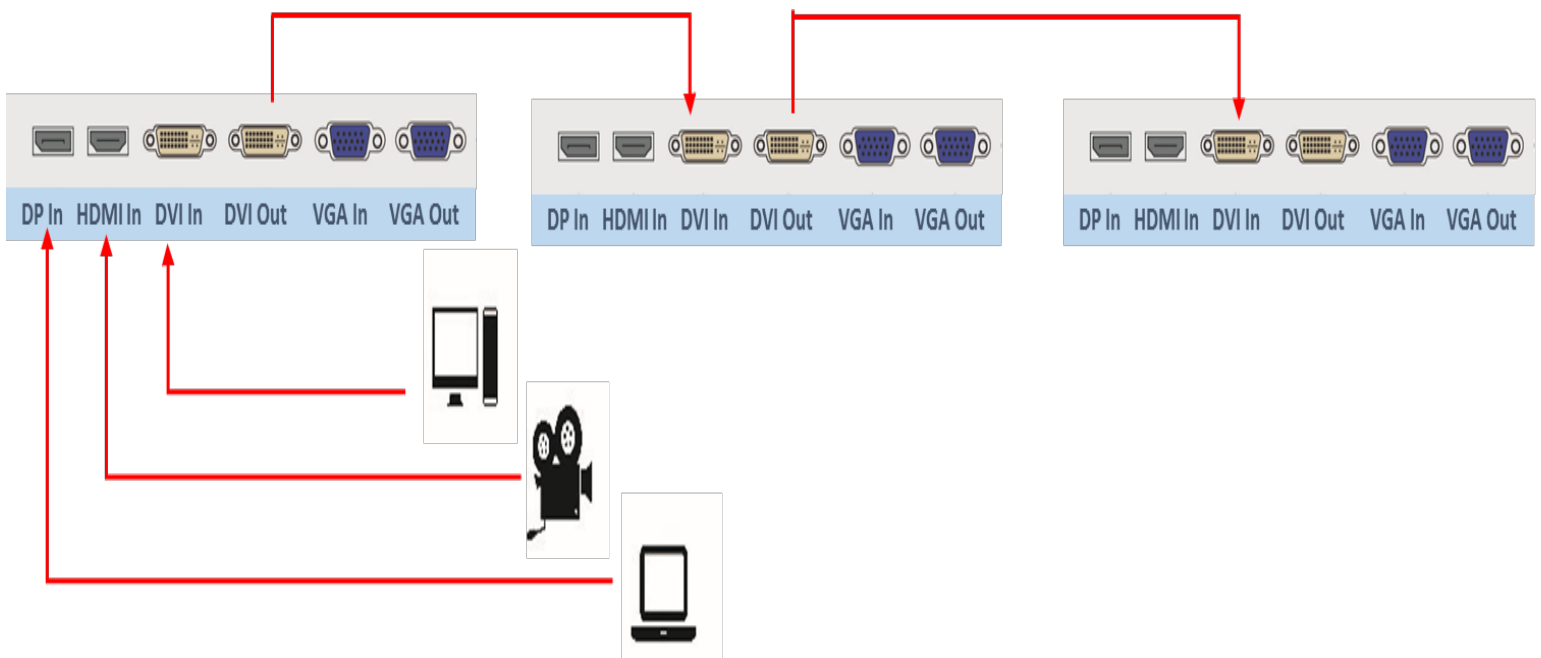
1. After mounting display, insert any cables used for Power, inputs or outputs into the set.
2. Prior to insertion of the next set into neighboring mount, insert cables from the outputs of the first set into the inputs of the second set.
3. Insert any cables which are to be connected to the third set into the outputs of the second set. Connect these cables into the inputs of the third set.
4. Repeat steps 1-3 for fourth set, if necessary.

### **Daisy-Chain Connection using DVI Signal Distributor (see fig#1) ( more than 4 units)**

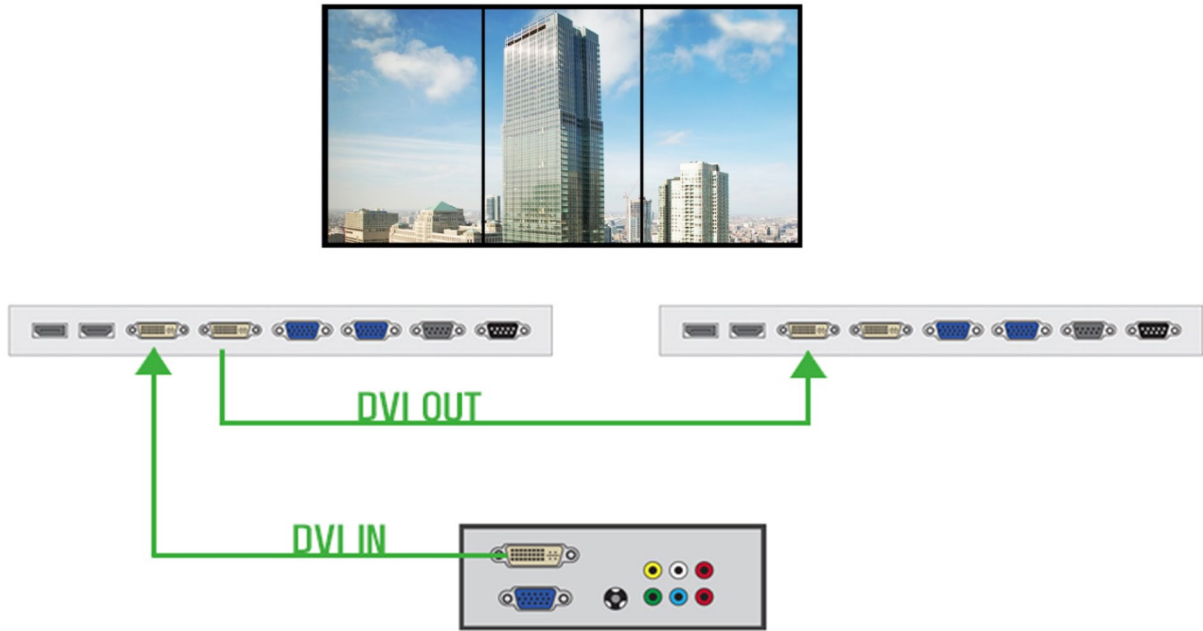
1. When installing larger video walls, a DVI Signal Distributor may be required to prevent data loss.
2. Insert RS-232C cable into bottom left display, bypassing the Signal Distributor (as in the case of smaller video walls).
3. Insert DVI cable into Signal Distributor
4. Prior to inserting individual sets into Units, connect Signal Distributor to the bottom set in each vertical row using DVI cables.
5. Connect individual sets in order from bottom to top using DVI cables as shown p. 31.

## Connect Video Cables (NSV, ZEN & G2T-Series Video Walls )

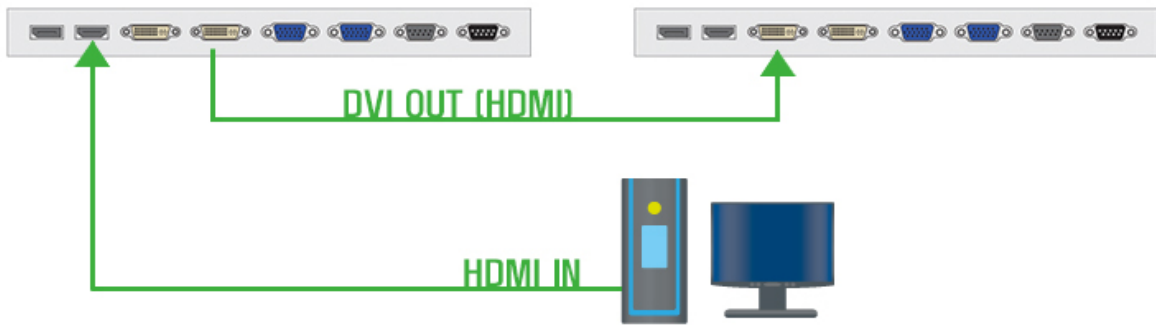
NSV, ZEN & G2T-Series video wall models support the daisy-chaining of signals from DisplayPort, DVI and HDMI inputs through a single DVI output for easy cable management. This allows for the connection of multiple devices to a video wall with a single cable for daisy-chaining. When an input source is selected on the first display in the daisy-chain, this input source will be displayed on the subsequent displays in the DVI daisy-chain (if subsequent displays are set to DVI input).



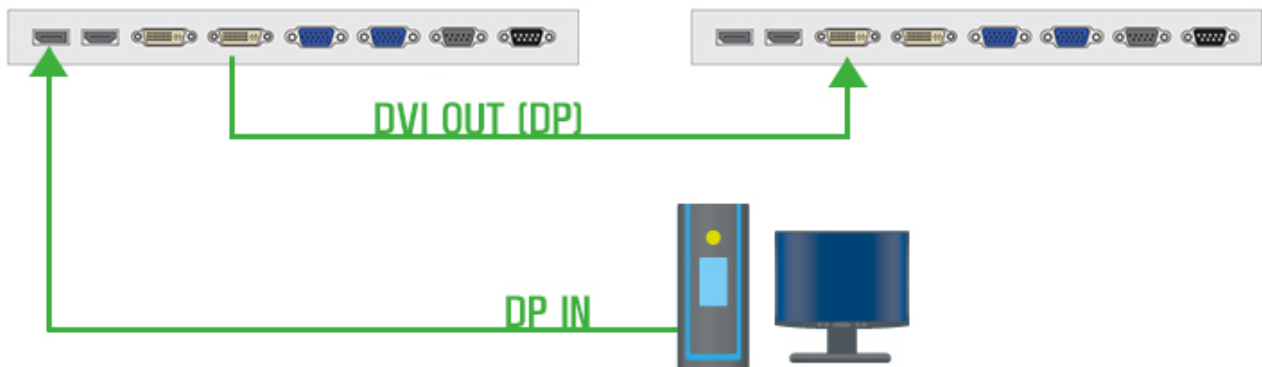
## ✓ Cable Connections (DVI)



## ✓ Cable Connections (HDMI)

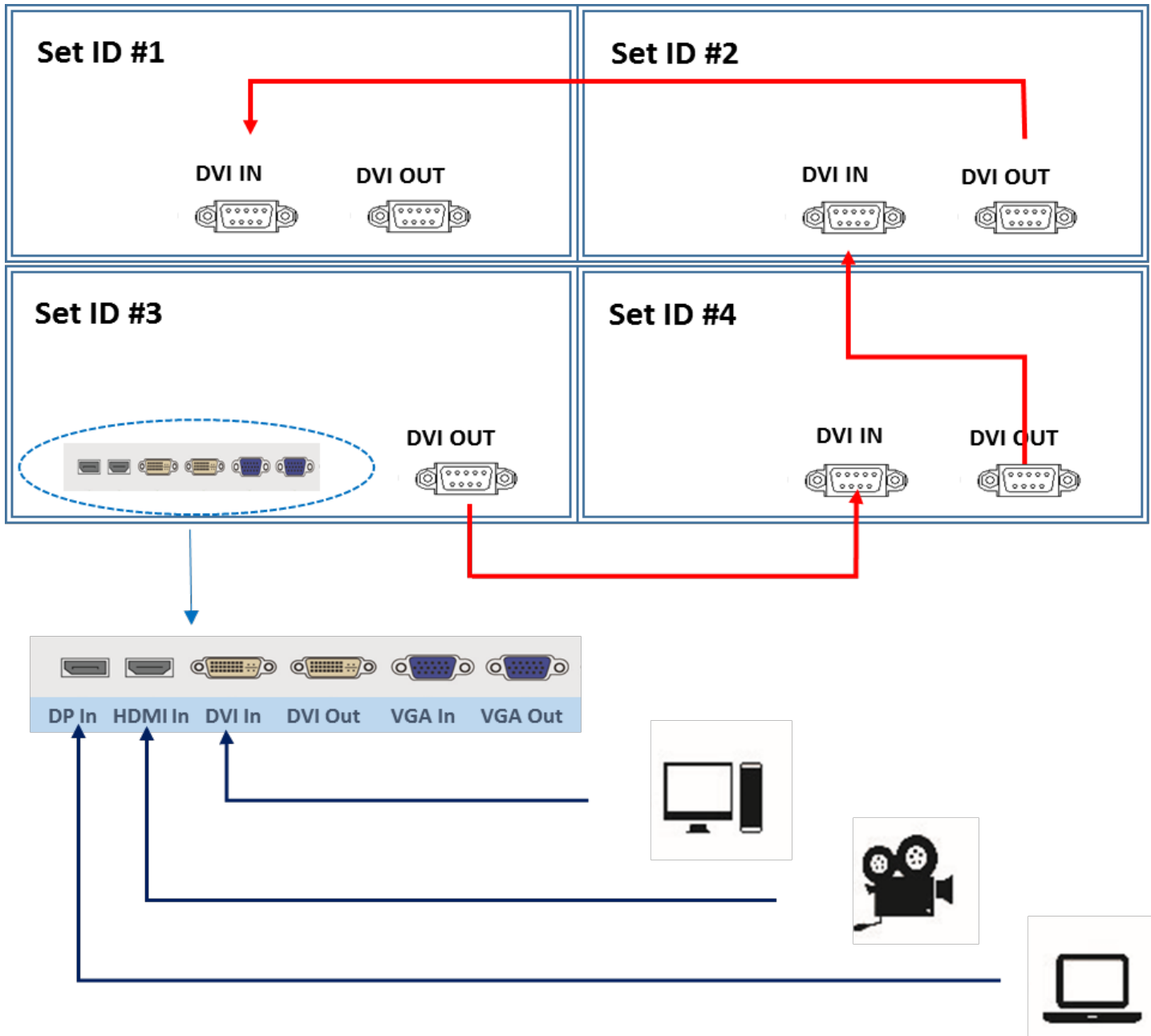


## ✓ Cable Connections (DisplayPort)



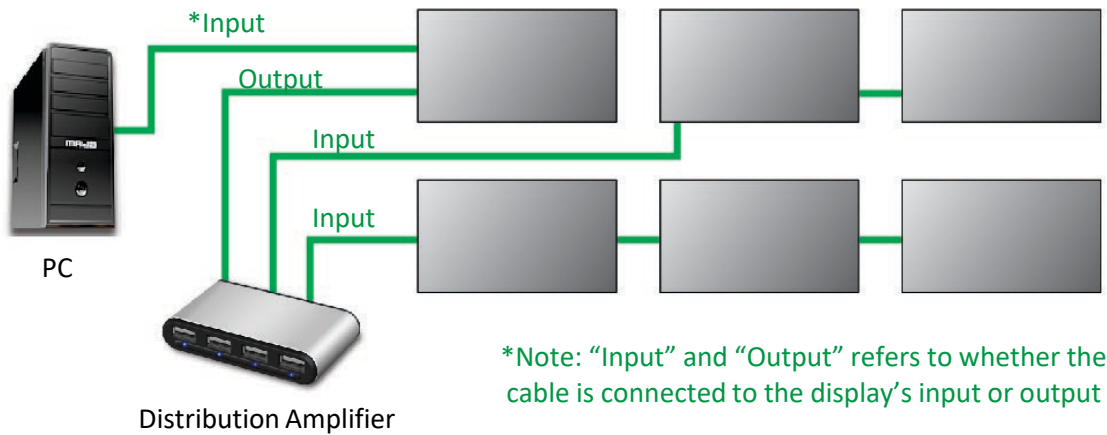
## Connect Video Cables (NSV, ZEN & G2T-Series)

Daisy-Chain Connection for Video Walls (For smaller walls- 4 units or less)



## DVI and HDMI distributor instructions

In the event that a DVI or HDMI signal distributor/distribution amplifier does not support EDID, first connect the cables to the input of the master set (monitor) and then connect the cable from the output of the master (monitor) to the distributor/splitter to the input of the slave set (Monitors) as shown below and see the PG#25



•For use HDMI signal, use an HDMI-to-DVI cable between HDMI signal source and master set.

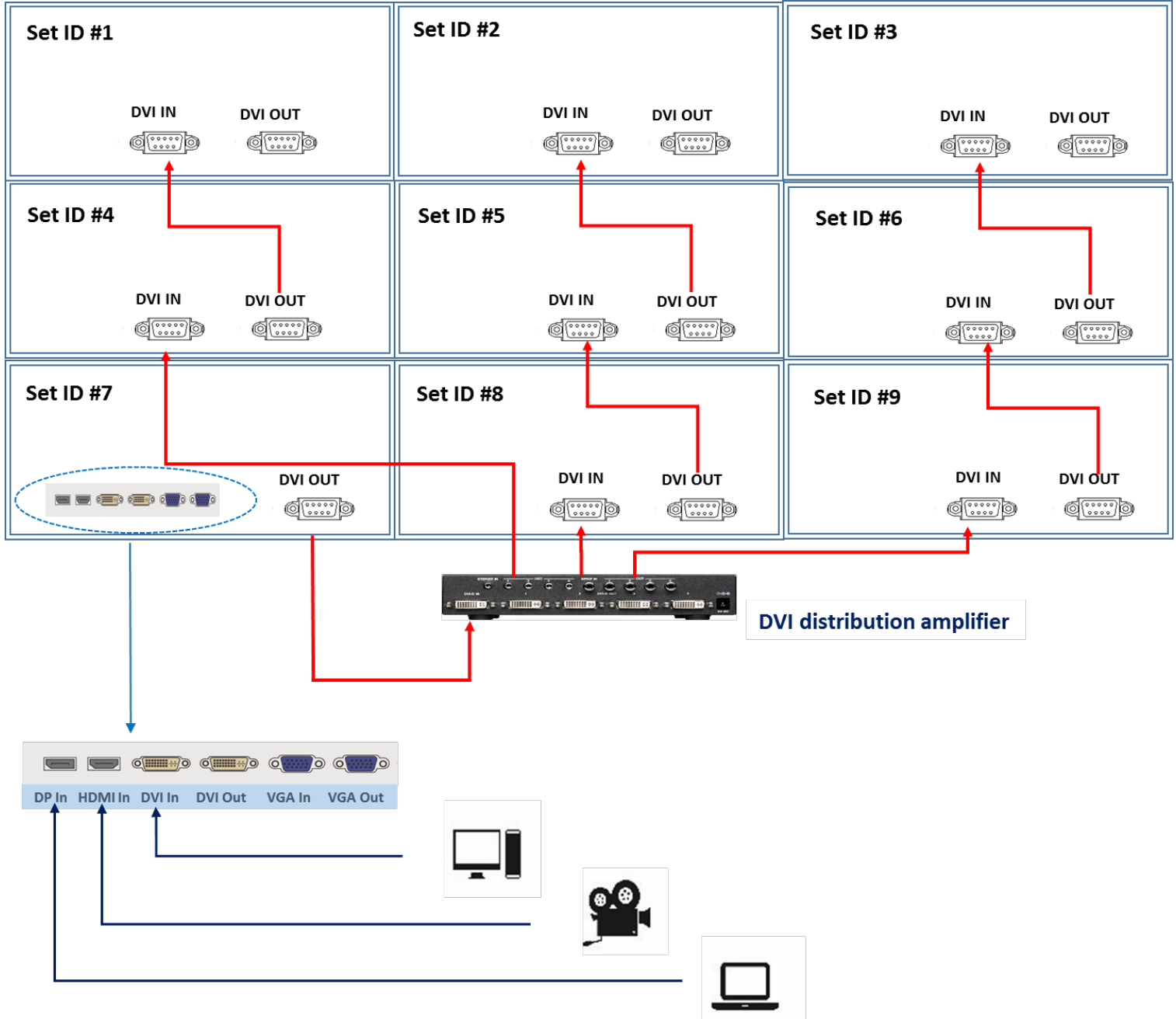
## Daisy Chain Connection Limit

Input	Max Timing	Daisy Chain
DVI	1920 X 1080	4 Displays
VGA	1920 X 1080	4 Displays
RS-232	N/A	16 Displays

•Image quality cannot be guaranteed when daisy chain connection limit is exceeded.

## Connect Video Cables (NSV, ZEN & G2T-Series)

Daisy Chain Connection using DVI Signal Distributor ( more than 4 units)



## Matrix Configuration

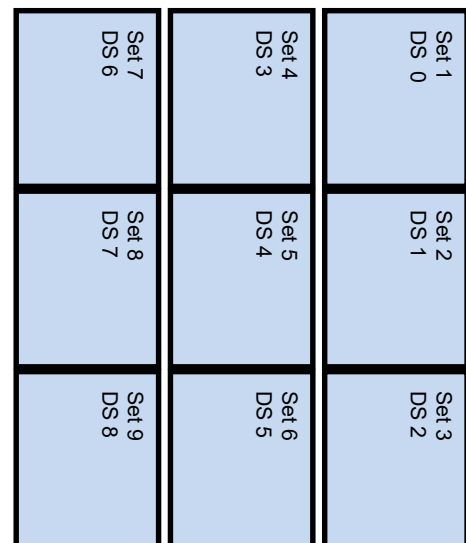
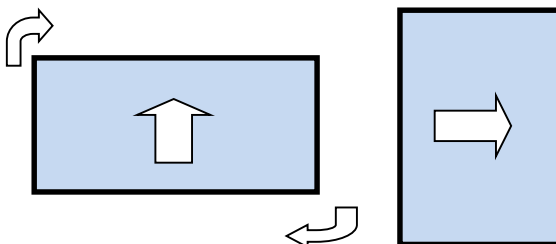
### Landscape

1. This is most common configuration, as it retains the native HD aspect ratio of 16:9, The number of units in rows and columns should be the same to maintain aspect ratio.
2. If the number of units in rows and columns are different (ex: 2X5), the content must be arranged to match the screen format accordingly. Images will be stretched according to the number of Horizontal & Vertical Set counts if content from a particular input is shown on the entire wall.

### Portrait

1. Rotate units 90° clockwise to install in portrait mode.
2. The Display Sequence (DS) number should be set as if it is configured in landscape mode.
3. The Horiz. Set Count is number of rows and Vert. Set Count is number of columns in this configuration,
4. The input image should be rotated clockwise 90°.

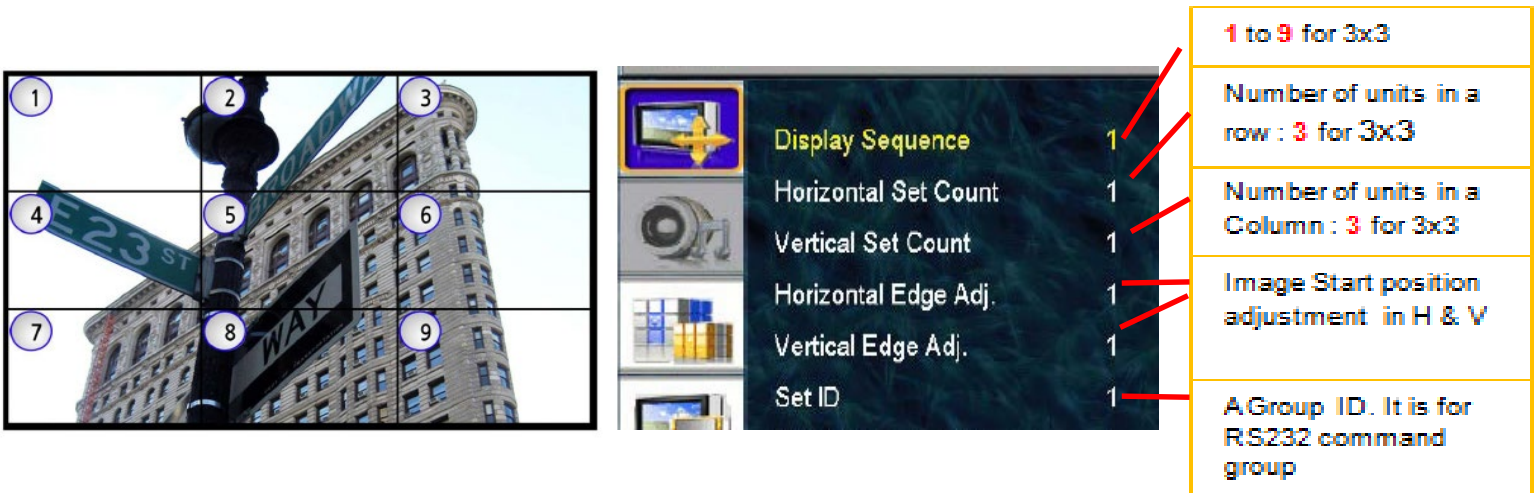
\*GPO Display provides landscape and portrait wall mount system separately.  
Before order, please be sure which orientation is compatible with your system.



Note: If an external video processor is employed, please refer to your video processor's manual.

## Configuration of units for video wall display

1. Make sure the main power switch on each display is ON (The main power switch is located on the back of the display where the power cord connects)
2. Power on the 3x3 display by turning power on to each display individually  
**Important – You should now see the exact same image on all 9 displays**
3. Set up individual Display Multivision Function (Refer to Video wall user guide for more detail)  
=> Enter menu mode by pressing the MENU button on the IR controller
4. Set the Display Sequence, Horizontal Set Count and Vertical Set count for all of the units as shown in the table below:



The diagram shows a 3x3 grid of video wall units, numbered 1 through 9. To the right is a screenshot of the configuration menu for a unit, with red arrows pointing from a yellow callout box to specific values in the menu.

1 to 9 for 3x3
Number of units in a row : 3 for 3x3
Number of units in a Column : 3 for 3x3
Image Start position adjustment in H & V
A Group ID. It is for RS232 command group

	Set 1	Set 2	Set 3	Set 4	Set 5	Set 6	Set 7	Set 8	Set 9
Display Sequence (DS)	1	2	3	4	5	6	7	8	9
Horizontal Set Count	3	3	3	3	3	3	3	3	3
Vertical Set Count	3	3	3	3	3	3	3	3	3
Horizontal Edge Adj.	7	7	7	7	7	7	7	7	7
Vertical Edge Adj.	14	14	14	14	14	14	14	14	14
Set ID	1	2	3	4	5	6	7	8	9

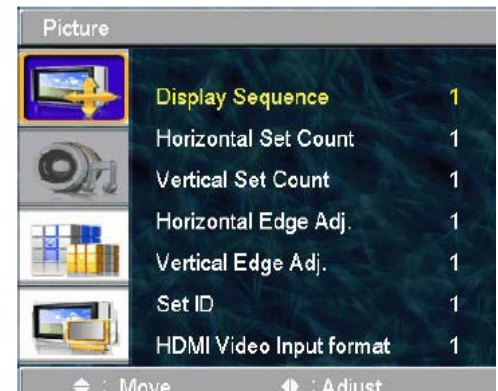
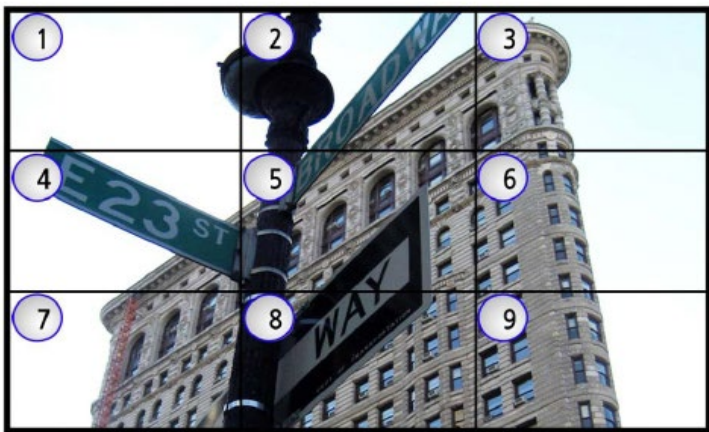


## Tips:

1. Do not change the default edge adjustment values [Horizontal Edge Adj (7). & Vertical Edge Adj (14)] without consulting with GPO Display.
2. Set ID : Assign prior to installation
3. SICP software is recommended for changing the values below
4. HDMI Video Input format: Default value is "0". If using a video signal with "YPbPr444" or "YPbPr422" color space, change the HDMI Video Input Format to "1" or "2", respectively. If you are unsure as to the color space associated with your source device, look for unusually-tinted displays in daisy-chain setups following the first display (usually magenta-tinted). This is a symptom of color space issues.

## \*Display Sequence

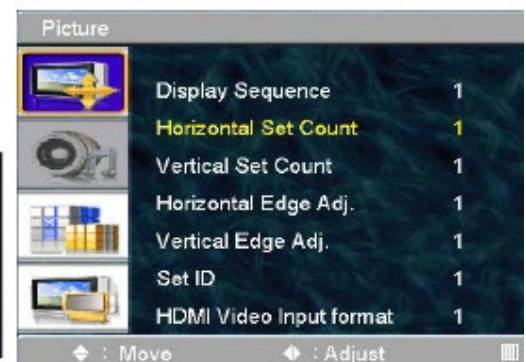
Set the panels to display the contents (1-99)



## \*Horizontal Set count

Assign horizontal set count

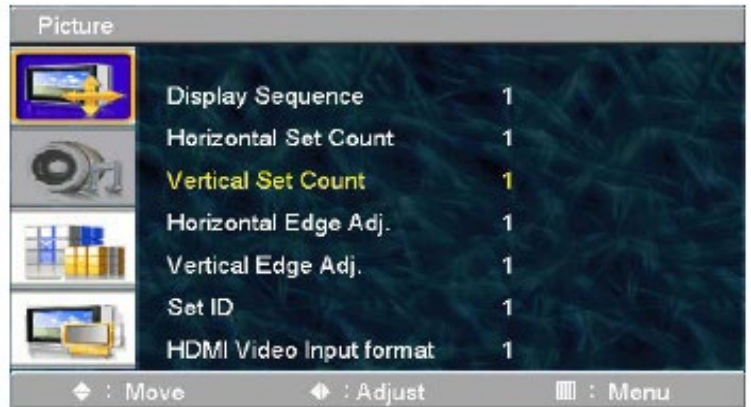
Example: horizontal set count below: 3



## \* Vertical Set count

Assign Vertical Set Count

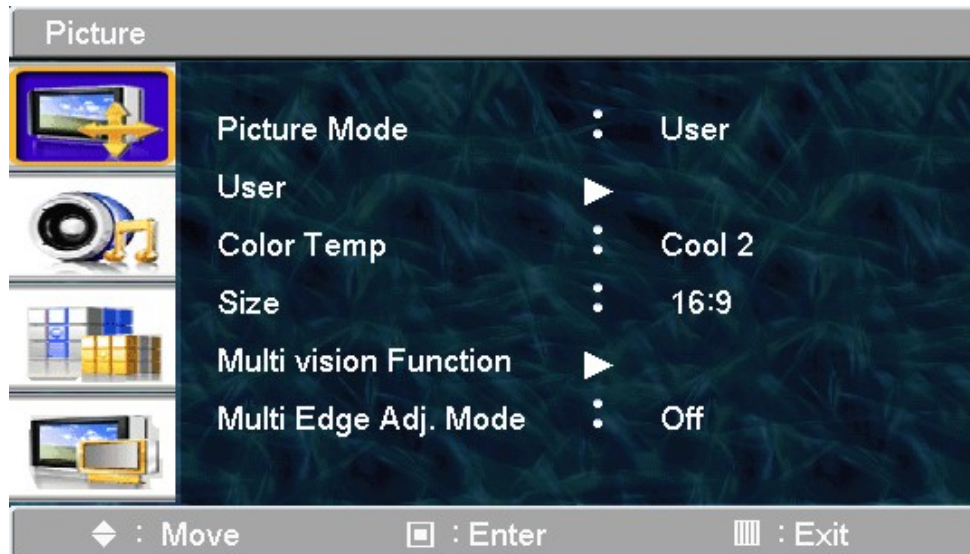
Example: Horizontal set count below: 3





1. SOURCE : Selects Input Source
2. POWER : Turns the LCD Display On and Off
3. UP : Controls the UP cursor in the menu
4. LEFT : Controls the LEFT cursor in the menu
5. RIGHT : Controls the RIGHT cursor in the menu
6. ENTER : Controls the ENTER cursor in the menu
7. DOWN : Controls the DOWN cursor in the menu
8. MENU : Displays the main On-Screen menu
9. EXIT : Exit the On-Screen menu

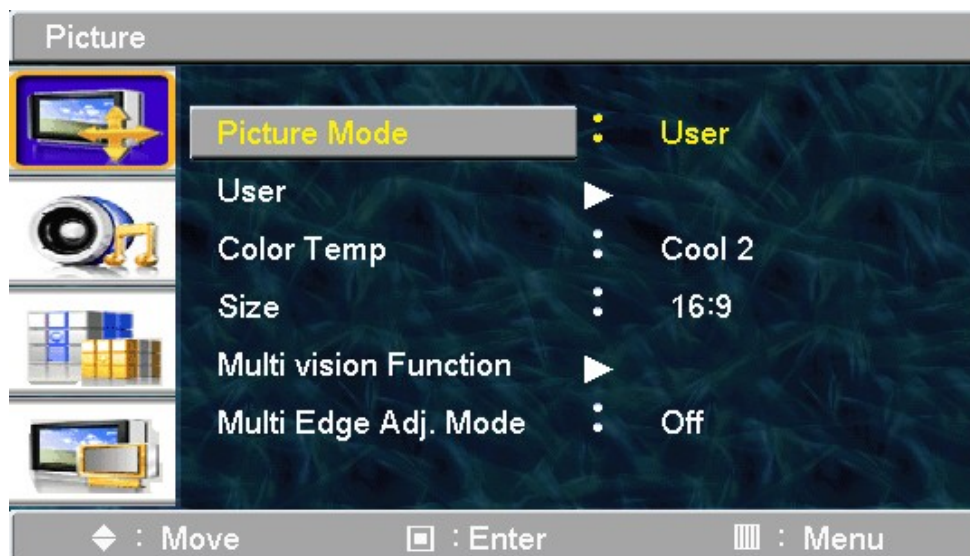
## ◆ Viewing the Menus



Press the MENU button.

The OSD menu is then displayed on the screen. Left side has five icons: **Picture**, **Sound**, **Setup** and **PIP**.

## Changing the Picture Standard

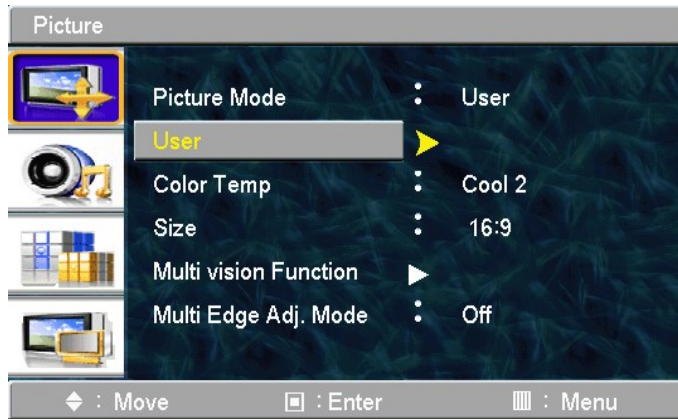


1. Press the **MENU** button to display the menu.
2. Press the **▲** or **▼** button to select **Picture**, then press the **ENTER** button.
3. Press the **ENTER** button twice.
4. Select the desired mode by pressing the **▲** or **▼** button, then press the **ENTER** button.
  - The settings values may vary depending on the input source. [Ex: DVI, VGA(PC)]
5. Press the **EXIT** button to exit.



## Customizing the Picture Settings

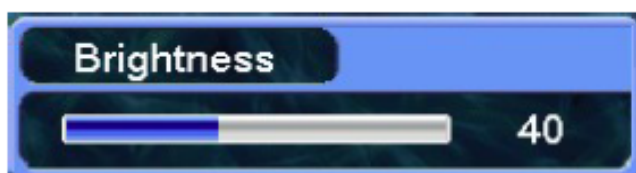
Displays feature several setting options that allow you to control the picture quality.



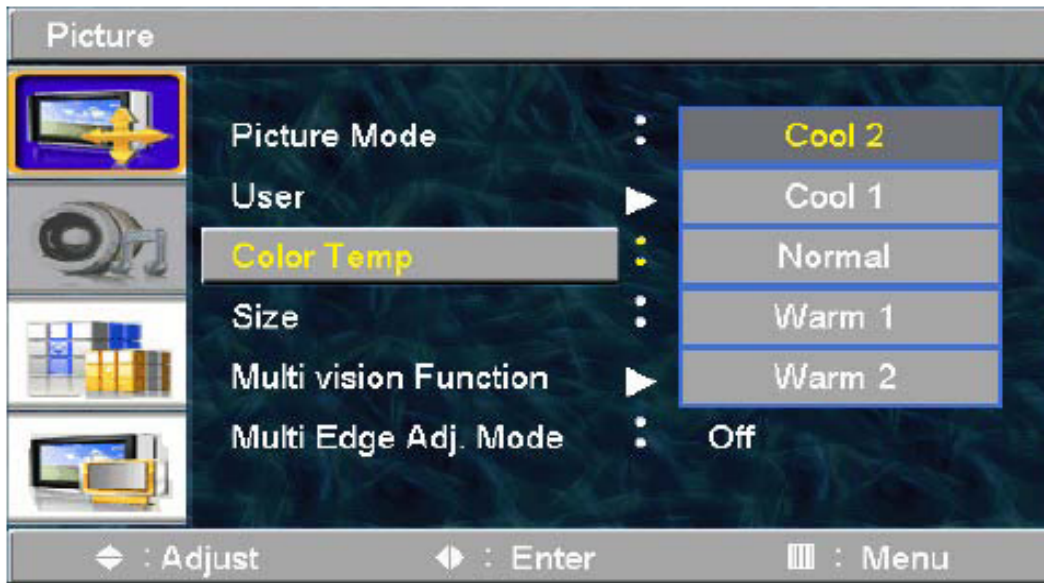
1. Press the **MENU** button to display the menu.
2. Press the **ENTER** button.
3. Press the **▲** or **▼** button to select **Custom**, then press the **ENTER** button.
4. Select the desired mode by pressing the **▲** or **▼** button, then press the **ENTER** button.
5. Select the desired option by pressing the **▲** or **▼** button, then press the **ENTER** button.
6. When you are satisfied with the settings, press the **ENTER** button.
7. Press the **EXIT** button to exit.

-**Brightness – Contrast– Color – Tint –Sharpness (Tint NTSC only)**

Press the **◀** or **▶** button until the desired setting is reached



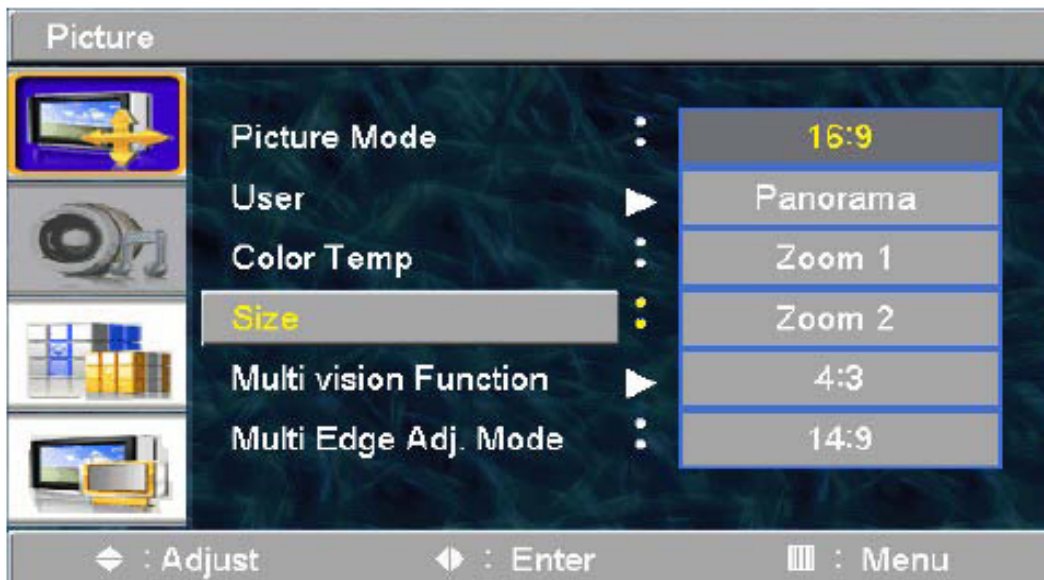
- ◆ **Brightness:** It adjusts the brightness of the image.
- ◆ **Contrast:** It adjusts the contrast of image.
- ◆ **Color:** It adjusts the intensity of the color.
- ◆ **Tint:** It adjusts the natural tint of the image.
- ◆ **Sharpness:** It adjusts the clarity of the image.
- ◆ **Color Tone:** Cool2/Cool1/Normal/Warm1/Warm2



- ◆ Cool 1: This results in a blue tone.
- ◆ Cool 2: This results in a more blue tone.
- ◆ Normal: This is standard color setting.
- ◆ Warm1: This results in a reddish tone.
- ◆ Warm2: This results in a more reddish tone.

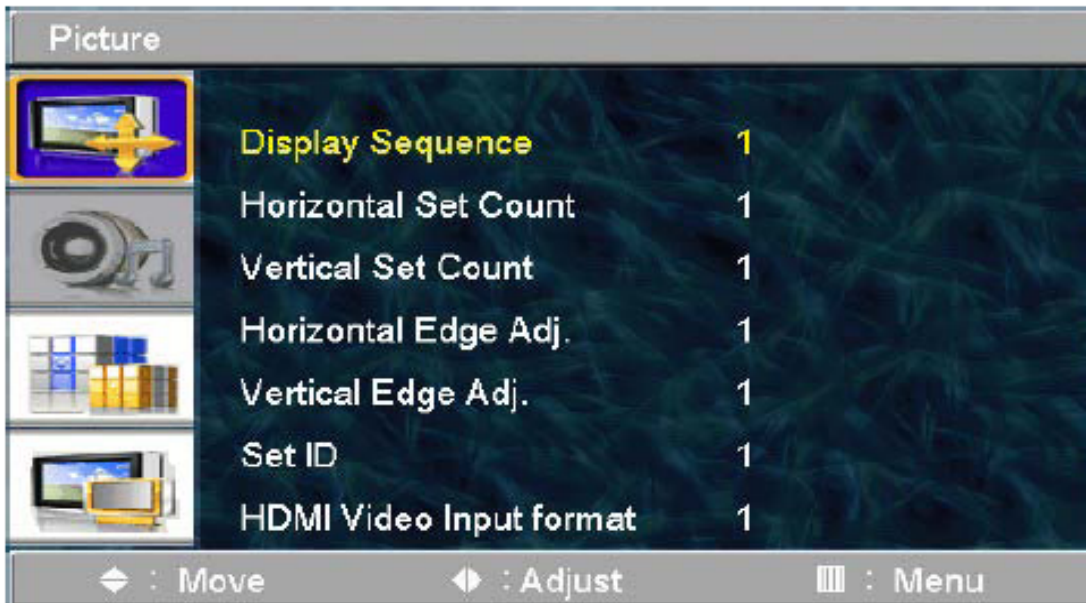
## Selecting the Picture Size.

You can select the picture size which best corresponds to your viewing requirements.



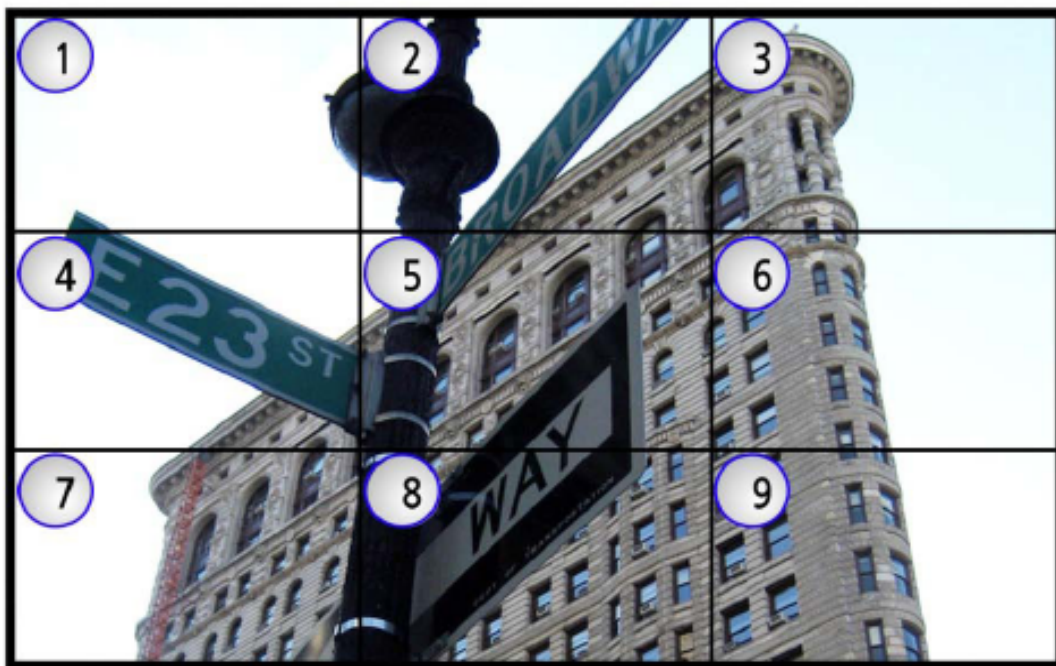
1. Press the MENU button to display the menu.
2. Press the ENTER button.
3. Press the ▲ or ▼ button to select Size, then press the ENTER button.
4. Select the required option by pressing the ▲ or ▼ button, then press the ENTER button.
5. Press the EXIT button to exit.

## Multi Vision Function.

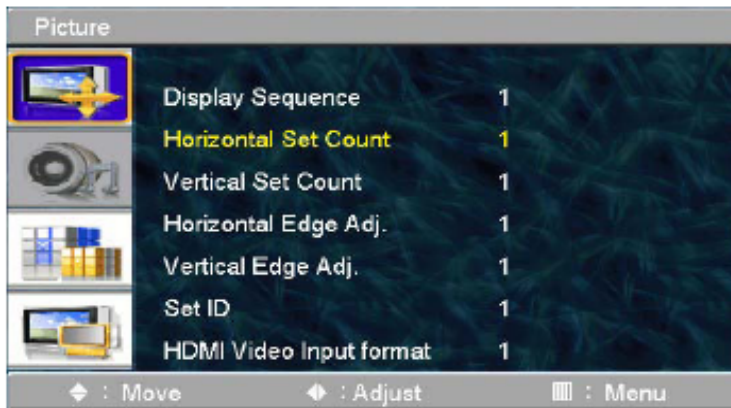


1. Press the MENU button to display the menu.
2. Press the ENTER button.
3. Press the ▲ or ▼ button to select Multi vision Function, then press the ENTER button.
4. Press the ▲ or ▼ button to select Display Sequence, then press the ENTER button.
5. Press the ◀ or ▶ button until you reach the optimal setting.
6. Press the EXIT button to exit.

- Display Sequence : Set the panels to display the contents.(1~100)

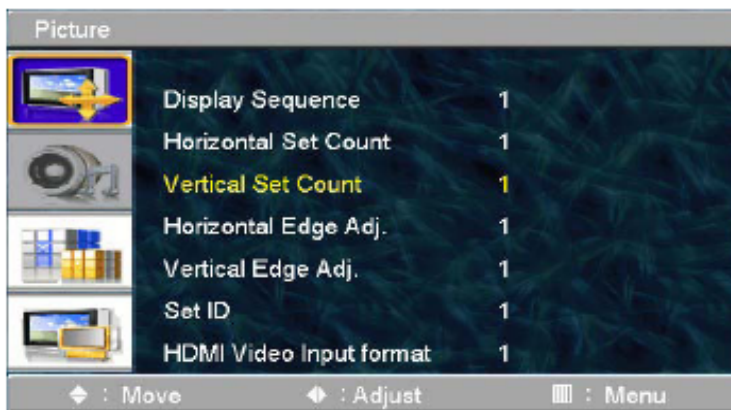






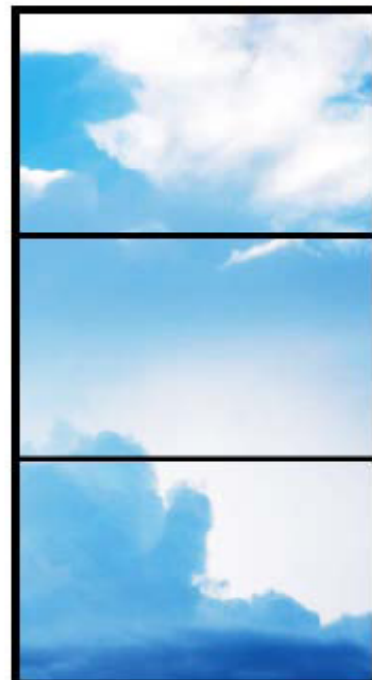
1. Press the MENU button to display the menu.
2. Press the ENTER button.
3. Press the ▲ or ▼ button to select Multi vision Function, then press the ENTER button.
4. Press the ▲ or ▼ button to select Horizontal Set Count, then press the ENTER button.
5. Press the ◀ or ▶ button until you reach the optimal setting.
6. Press the EXIT button to exit.

- H-Set Count (Horizontal Set Count) : Set the horizontal size of the Multivision (1~10)  
E.g. If set as above, H-Set Count : 3

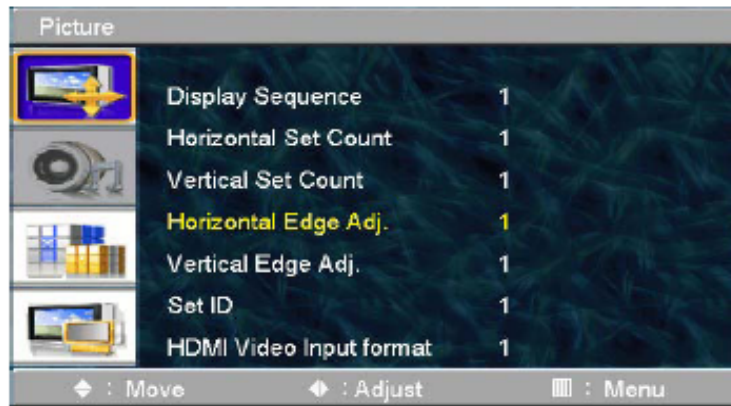


1. Press the MENU button to display the menu.
2. Press the ENTER button.
3. Press the ▲ or ▼ button to select Multi vision Function, then press the ENTER button.
4. Press the ▲ or ▼ button to select Vertical Set Count, then press the ENTER button.
5. Press the ◀ or ▶ button until you reach the optimal setting.
6. Press the EXIT button to exit.

- V-Set Count (Vertical Set Count) : Set the vertical size of the Multivision (1~10)  
E.g. If set as above, V-Set Count : 3

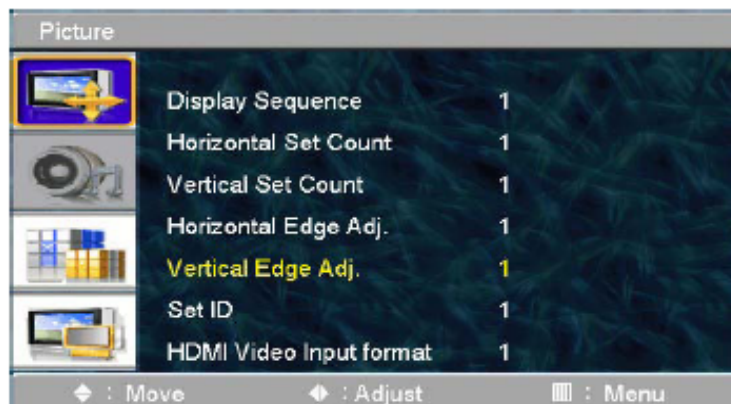
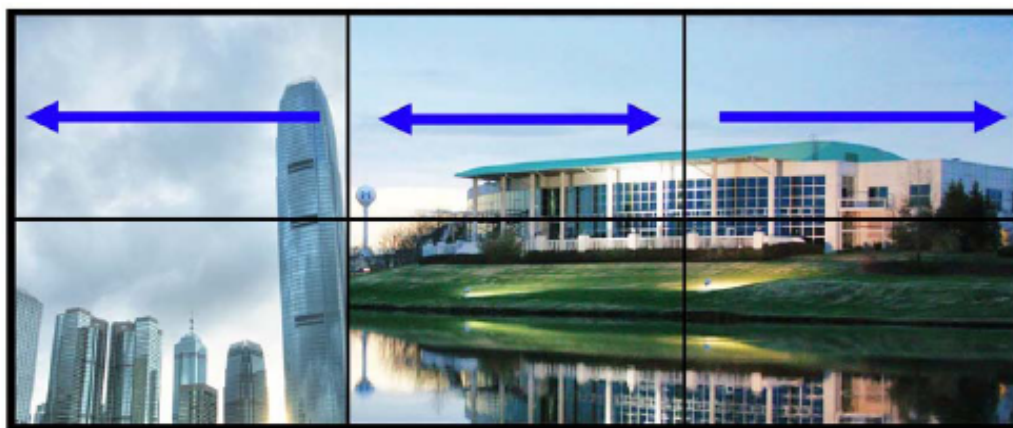






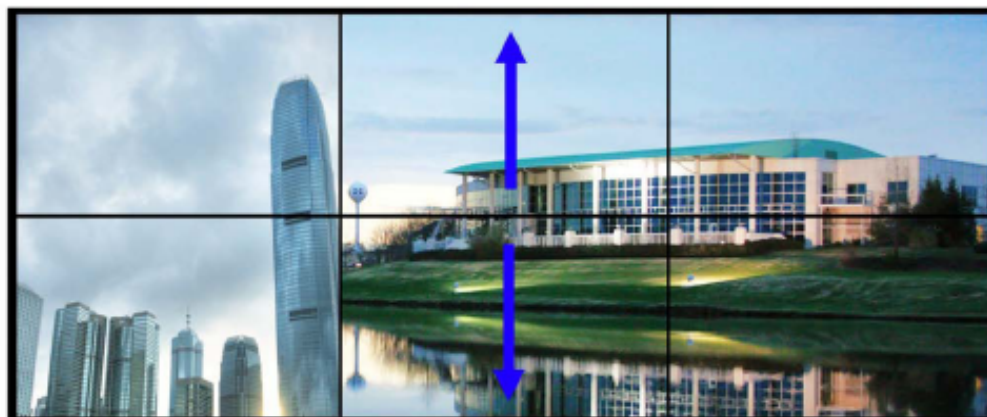
1. Press the **MENU** button to display the menu.
2. Press the **ENTER** button.
3. Press the **▲** or **▼** button to select **Multi vision Function**, then press the **ENTER** button.
4. Press the **▲** or **▼** button to select **Horizontal Edge Adj**, then press the **ENTER** button.
5. Press the **◀** or **▶** button until you reach the optimal setting.
6. Press the **EXIT** button to exit.

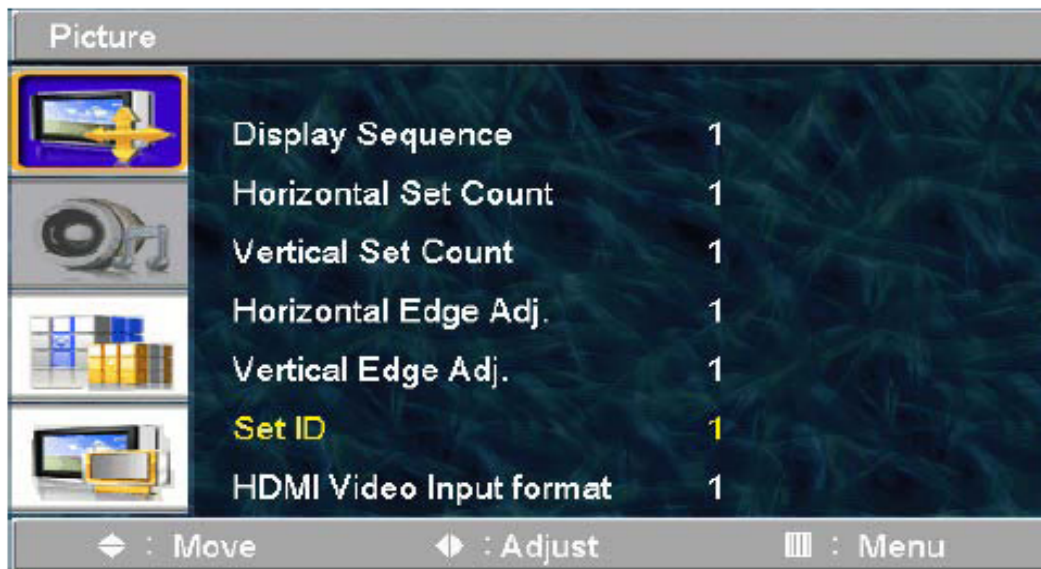
- H-Edge Adj (Horizontal Edge Adjust) : Set the horizontal gap of Multivision (0~200)



1. Press the **MENU** button to display the menu.
2. Press the **ENTER** button.
3. Press the **▲** or **▼** button to select **Multi vision Function**, then press the **ENTER** button.
4. Press the **▲** or **▼** button to select **Vertical Edge Adj**, then press the **ENTER** button.
5. Press the **◀** or **▶** button until you reach the optimal setting.
6. Press the **EXIT** button to exit.

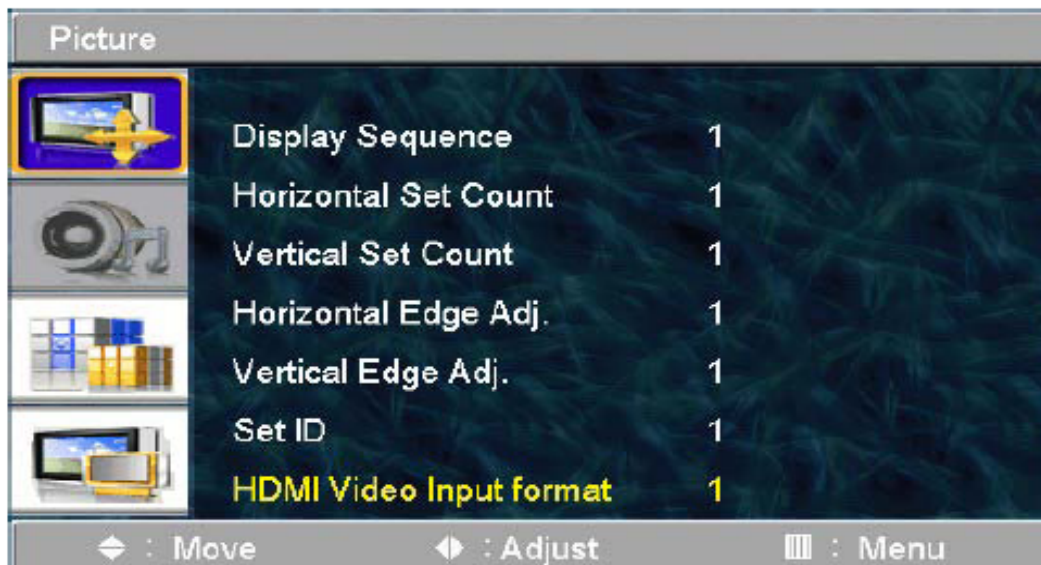
- V-Edge Adj (Vertical Edge Adjust) : Set the vertical gap of Multivision (0~200)





1. Press the **MENU** button to display the menu.
2. Press the **ENTER** button.
3. Press the **▲** or **▼** button to select **Multi vision Function**, then press the **ENTER** button.
4. Press the **▲** or **▼** button to select **Set ID**, then press the **ENTER** button.
5. Press the **◀** or **▶** button until you reach the optimal setting.
6. Press the **EXIT** button to exit.

- Set ID Setting (Set ID Adjust) : Set the Set ID of Multi Vision (1~100)

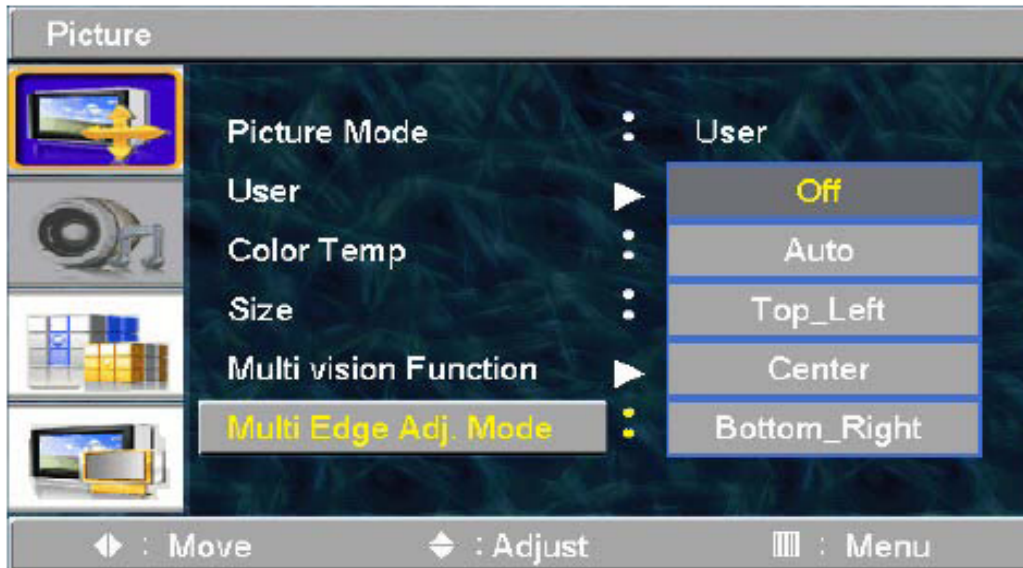


1. Press the **MENU** button to display the menu.
2. Press the **ENTER** button.
3. Press the **▲** or **▼** button to select **Multi vision Function**, then press the **ENTER** button.
4. Press the **▲** or **▼** button to select **HDMI Video Input format**, then press the **ENTER** button.
5. Press the **◀** or **▶** button until you reach the optimal setting.
6. Press the **EXIT** button to exit.

- HDMI Video Input format : Select video format of HDMI input data  
 0 : RGB444  
 1 : YPbPr444  
 2.: YPbPr422



## Selecting the Multi Edge Adj.Mode.



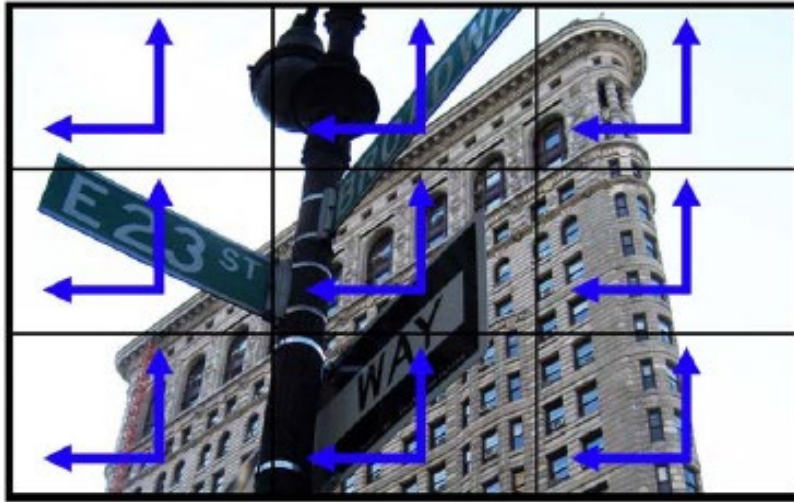
1. Press the **MENU** button to display the menu.
2. Press the **ENTER** button.
3. Press the **▲** or **▼** button to select **Multi Edge Adj.Mode**, then press the **ENTER** button.
4. Select the required option by pressing the **▲** or **▼** button, then press the **ENTER** button.
5. Press the **EXIT** button to exit.

### ※ Adjust Horizontal/ Vertical Edge Gap

- ◆ Off : This Adjust Horizontal/ Vertical Edge Gap Off
- ◆ Auto : This Adjust Horizontal/ Vertical Edge Gap Normal.



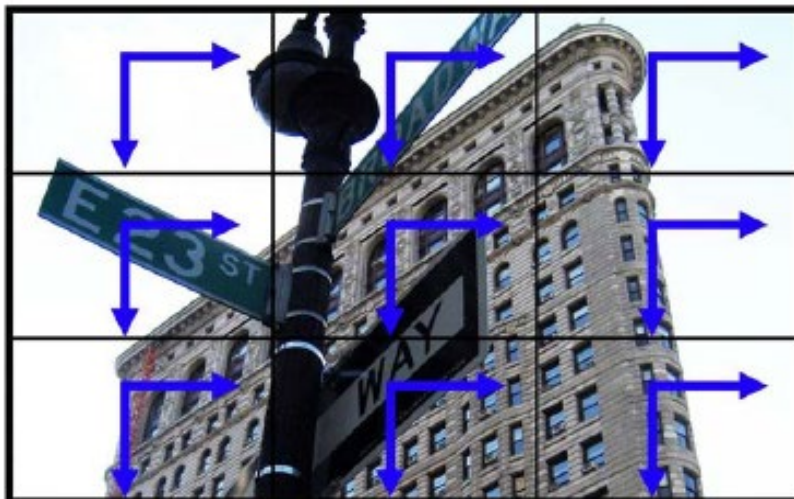
◆ Top Left : This Adjust Horizontal(Left) / Vertical(Top) Edge Gap.



◆ Center : This Adjust Horizontal(Center) / Vertical(Center) Edge Gap.



◆ Bottom Right : This Adjust Horizontal(Right) / Vertical(Bottom) Edge Gap.



## Reset.



1. Press the **MENU** button to display the menu.
2. Press the **▲** or **▼** button to select **Setup**, then press the **ENTER** button.
3. Select the required option by pressing the **▲** or **▼** button, then press the **ENTER** button.
4. When you are satisfied with your setting, press the **ENTER** button.

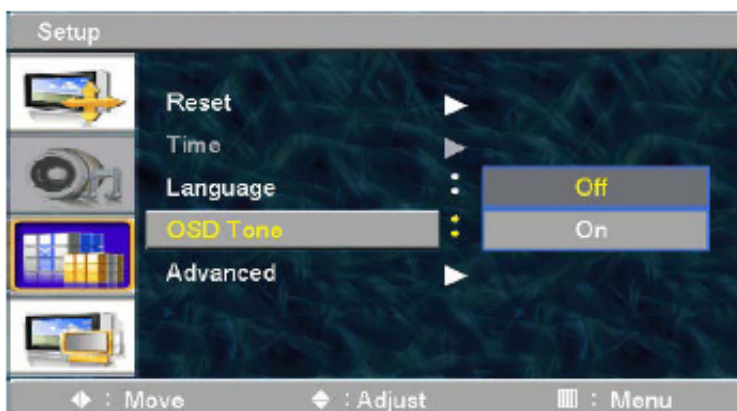
◆ **Reset :**  
You can return to the factory defaults settings.

## Language.



1. Press the **MENU** button to display the menu.
2. Press the **▲** or **▼** button to select **Setup**, then press the **ENTER** button.
3. Select the required option by pressing the **▲** or **▼** button, then press the **ENTER** button.
4. When you are satisfied with your setting, press the **ENTER** button.
5. Press the **EXIT** button to exit.

## OSD Tone.



1. Press the **MENU** button to display the menu.
2. Press the **▲** or **▼** button to select **Setup**, then press the **ENTER** button.
3. Select the required option by pressing the **▲** or **▼** button, then press the **ENTER** button.
4. When you are satisfied with your setting, press the **ENTER** button.
5. Press the **EXIT** button to exit.



## Advanced.



## Heat control.



1. Press the **MENU** button to display the menu.
2. Press the **▲** or **▼** button to select **Setup→Heat Control** then press the **ENTER** button.
3. Select the required option by pressing the **▲** or **▼** button

- Fan Control :
- Off/On/Auto : If you want always fan off then Off or always on then On or Auto control then Auto.
- Fan Active Temperature : Fan turn on point.
- Hysteresis : Fan turn on or off margin value.
- Temperature : Current temperature
4. Press the **EXIT** button to exit.

### \* Fan Functionality (Example)

- Fan Control Mode : Set with 'Auto' Mode.
- Fan Active Temperature : Set with 60 °C.
- Hysteresis: Set with 2 °C.

- ◆ Fan turn On Temperature (Fan Active Temperature + Hysteresis) : 62 °C
- ◆ Fan turn Off Temperature (Fan Active Temperature - Hysteresis) : 58 °C

\* Temperature sensor are embedded to Models without Fan to check internal temperature of the set whilst in operation at the installation site.

## ◆ SICP (Serial Interface Communication Protocol)

This document defines all the command and messages exchanged between the Master (a PC or the other controller) and the Slave (the displays).

It also describes the ways to send or read the commands or the messages.

### 1. Protocol definition

SICP stands for “Serial Interface Communication Protocol”.

The protocol is specifically designed to allow data communication in half duplex multi-point environments, but it can also be used for half duplex point-to-point RS-232C communication.

### 2. Communication characteristics

A half duplex communication is implemented starting from the concept of a master-slave structure, where the display is the slave.

The first action is always taken by the master, which can be either a PC or any controlling device (acting as server) interfaced to the monitor. After sending a command or a request in the appropriate format the master receives from the slave an acknowledgement, which tells the transmitter whether the command is not valid (or not executable, anyway) or it is accepted. In case of a request, the requested information is sent back and it becomes the acknowledgement by itself.

### 3. How to connect a external equipment

Female Pin number	Male Pin number
2 <----->	2
3 <----->	3
5 <----->	5

### 4. Hardware Protocol

Baud rate : 9600 bps

Data bits : 8 bit

Parity bits : None

Stop bits : 1 bit

Handshake : None

## Introduction

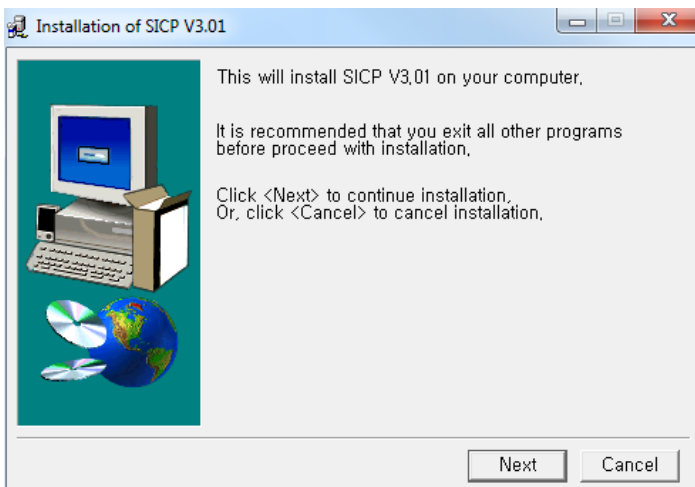
This manual booklet describes how to manage and utilize the product (Video Wall set) through remote control via RS232 protocol. This will introduce SICP V3.01 (Software that enables you to control the Video Wall via serial) and various applications will be possible with this software. As per different way of customizing, the functions and specifications of each product may vary.

**Notice: Please extract VBRunTimesR7.zip and install the program on VISTA, WIN7/8/10 before installing SICP.**

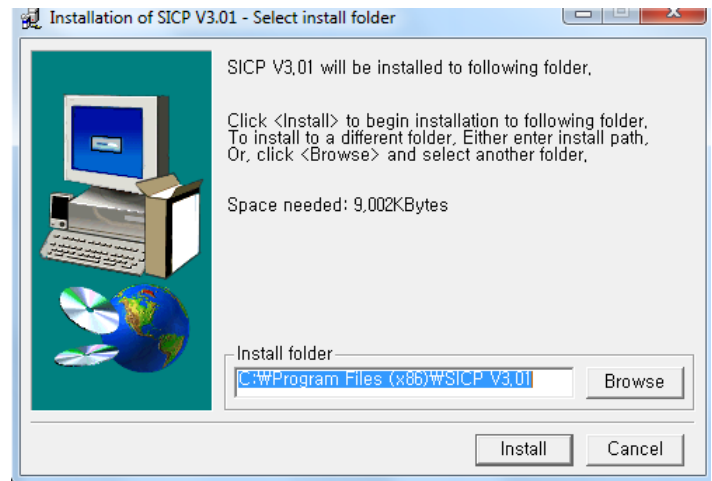
## Installing SICP V3.01

Run the file named **“SICP 301GPOSet up.exe”** and follow the instruction below.

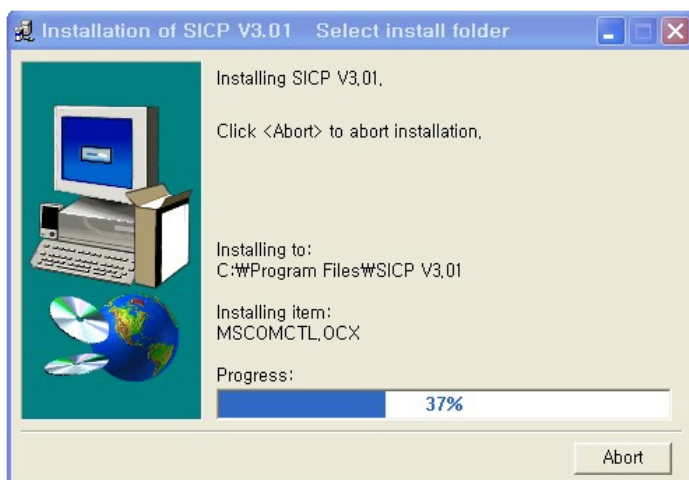
If you have SICP program installed previously, delete the previous one and re-install the new one.



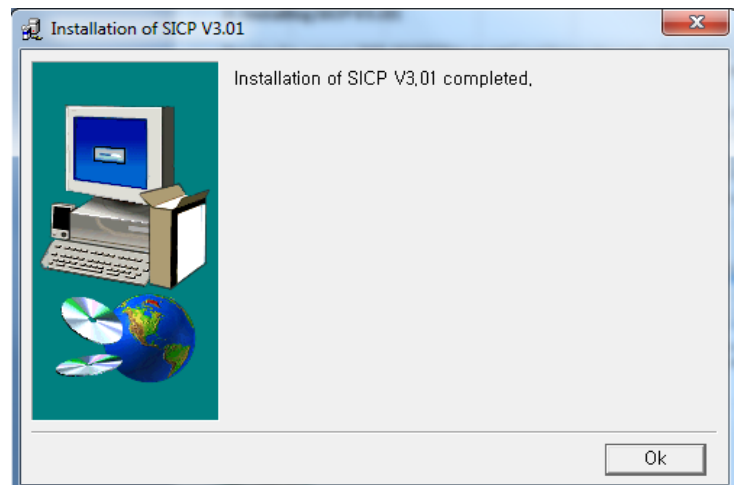
Press “Next”



Select the folder in which you wish to save the file.  
Press “Install” after selecting the desired folder.



Wait until the installation is complete.

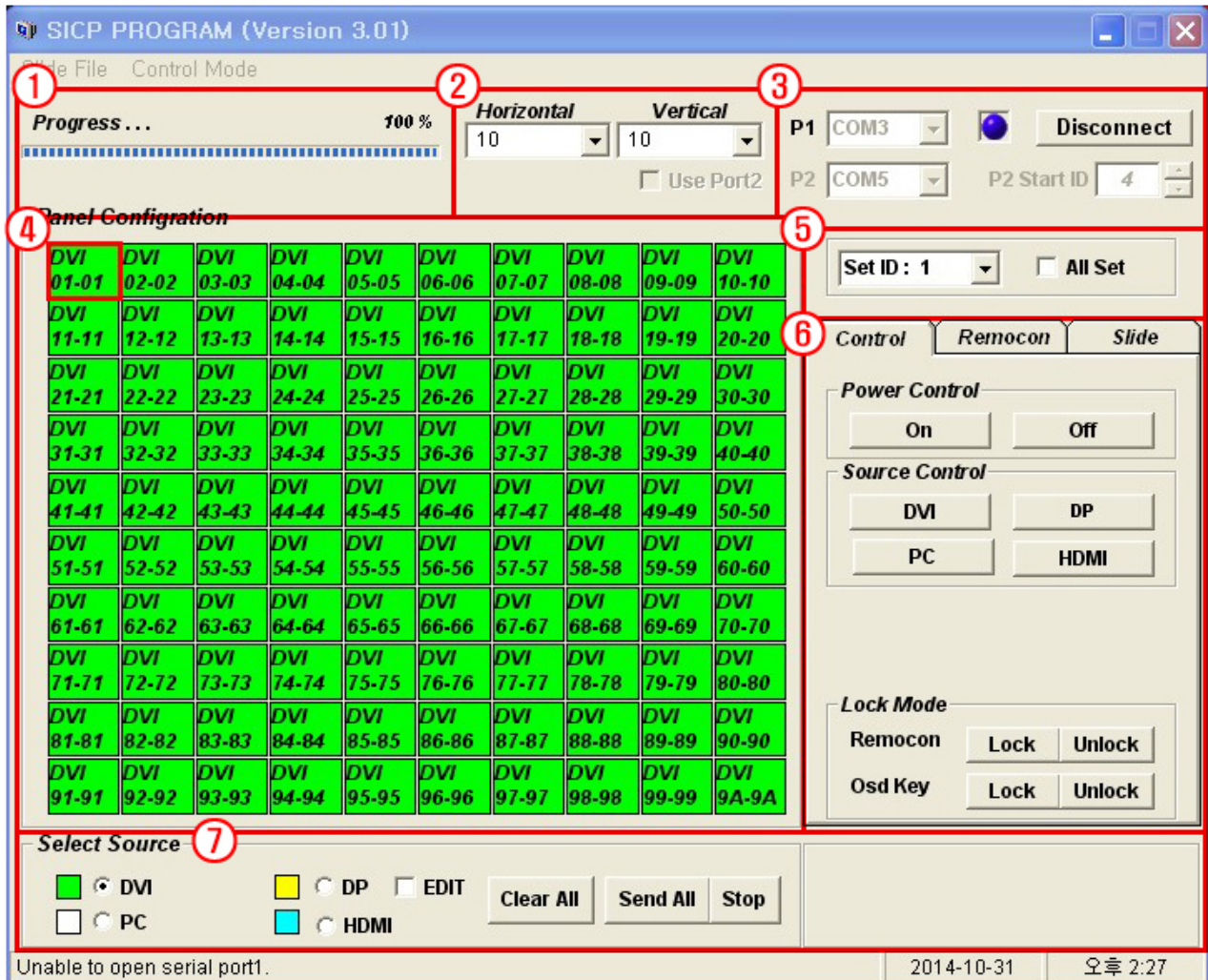


Once installation is complete, go to “Start” Menu -> Programs -> SICP V4.01 to run the program



## Running SICP V3.01 and Structure

Go to “Start” Menu -> Programs -> SICP V3.01 to run the program.



1. Progress Bar: Shows the status of RS-232 communication
2. Horizontal & Vertical: Select Horizontal & Vertical count of sets in array.
3. Communication: Select the COM Port connected to the PC.
4. Panel Configuration: Indicates information such as display configuration, source, Set ID and display sequence number.
5. Set ID: Shows the Set ID selected for control.
6. Control Button: Set of control buttons/functions.
7. Edit tools: Set of editing tools.

## Connect & Disconnect

- Users can connect RS-232 input and control from your PC using an RS232 Cable.
- Select the Port into which PC is connected (refer to ③ in the image on previous page) and click “connect” button.

If connected properly, the indicator in box ④ will turn BLUE (from RED). If not connected properly, one of the following messages will appear:

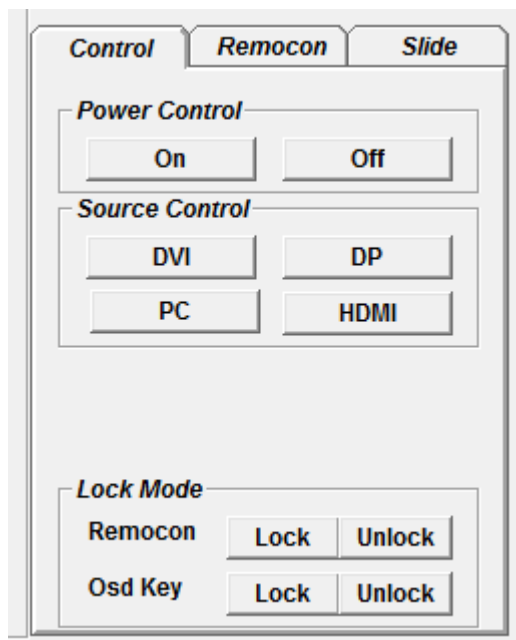
\*“Unable to open serial port”: The port may not be available on your PC, or another program may be running under this port.

\*“Cannot connect with Easy DID System”: RS232 Cable may not be connected properly or Set ID may be incorrect. Re-check on Set ID.

## Multi-vision Control

Users can control each display separately. First, select the display you wish to control by selecting Set ID. You may click on it (Refer to box ④ in the image on the previous page) or select it from the drag-down menu (Refer to ⑤ in the image on the previous page). Users may conduct the following functions on the selected set:

### 1) Basic Control



- Select “Control” Tab as shown to the left

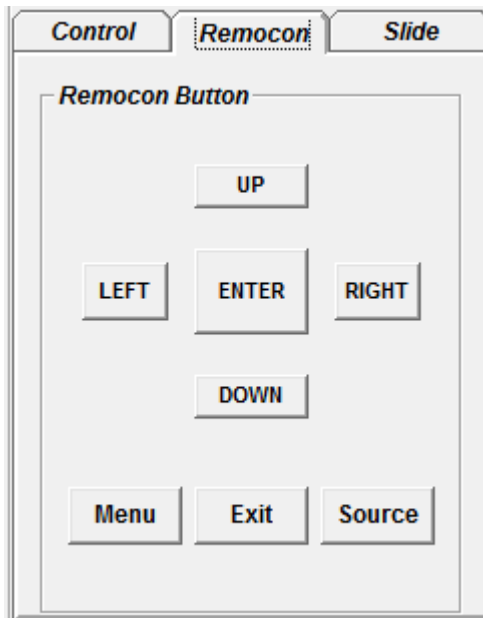
**Power Control:** Powers the Set On/Off

**Source Control:** Selects Source

**Sound Mute:** Turns Mute On/Off

**Lock Mode:** Locks or unlocks the IR/control key.

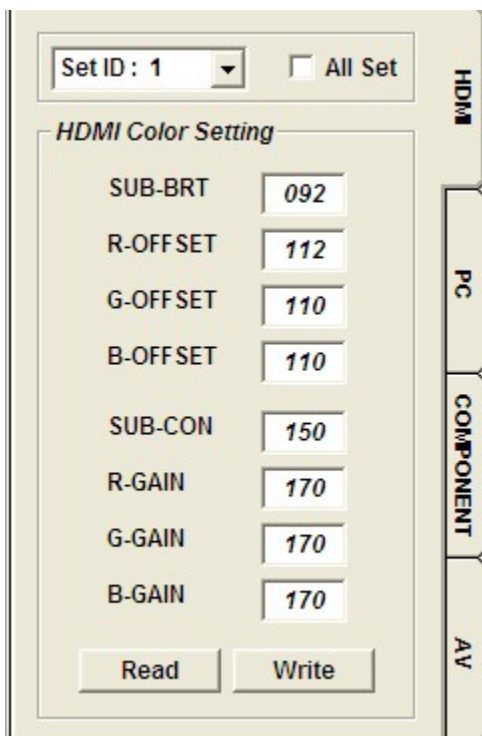
## 2) Virtual Remocon (Remote Controller)



- Select the “Remocon” Tab as shown to the left.
- This virtual remote controller controls sets (displays) via RS-232 in the same manner that a physical remote controller would.

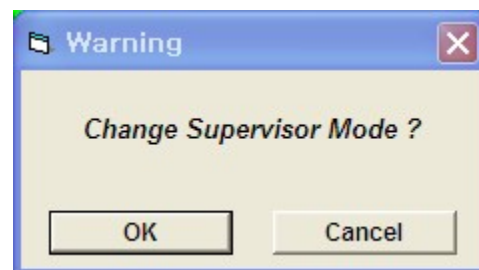
Note: Functions in Slide Tab will be described in “6. Slide Function”

## 3) Color Setting



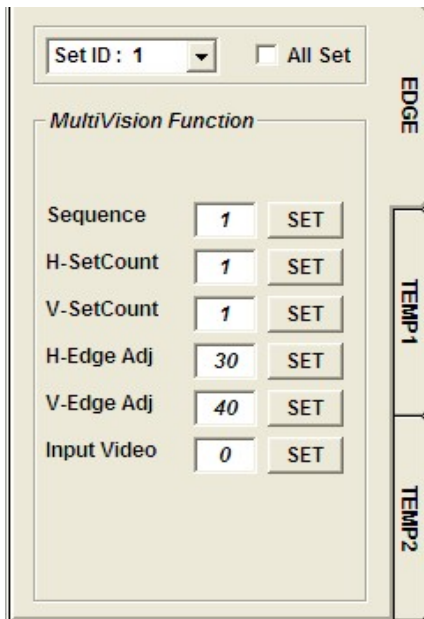
- Users may access the “Color Setting” mode only after entering Supervisor Mode. In order to enter Supervisor mode, go to “Control Mode” in the toolbar (top) and select “Setting Mode”

- Hot key: Ctrl+F2.



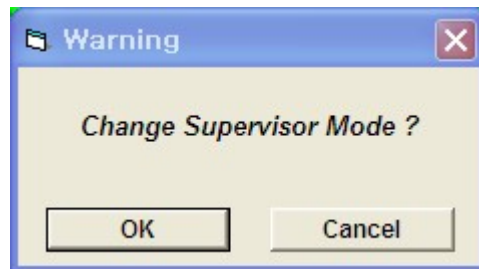
- Click “OK”
- Adjust color values (0~255). The color will be optimized during production & Quality Assurance. Adjusting color values is not recommended without prior consultation with GPO US.

## 4) Edge Setting

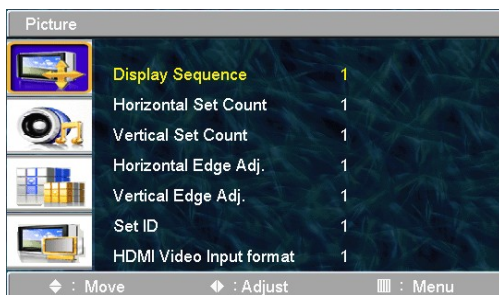


- Users can access “Edge Setting” only if after entering Supervisor Mode. In order to enter Supervisor mode, go to “Control Mode” in the tool bar (top) and select “Setting Mode”

- Hot key: Ctrl+F3.



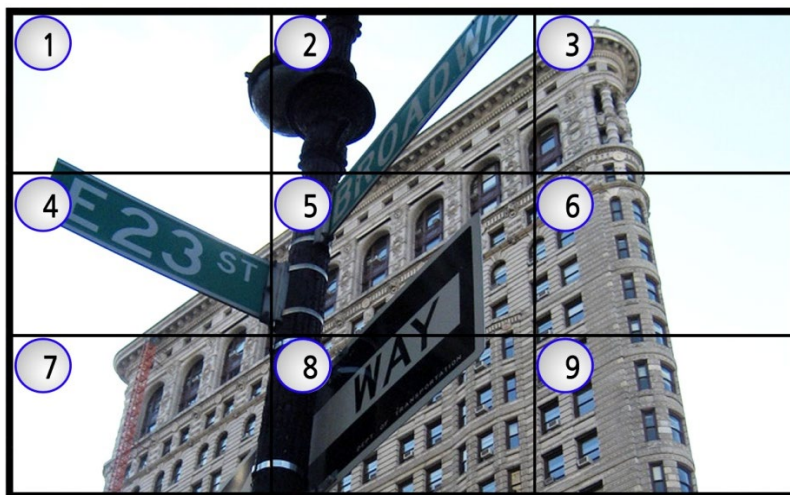
- Click “OK”
- Commands are writable only (not readable).



<OSD Menu>

## < Others >

- **Display Sequence:** position of display within context of the array (example below)

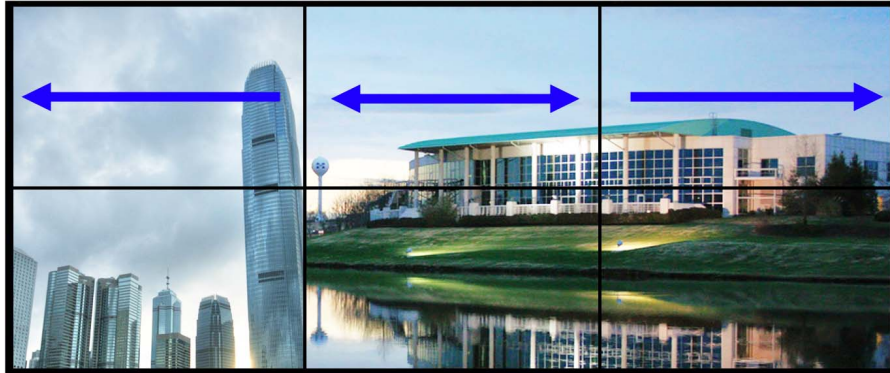




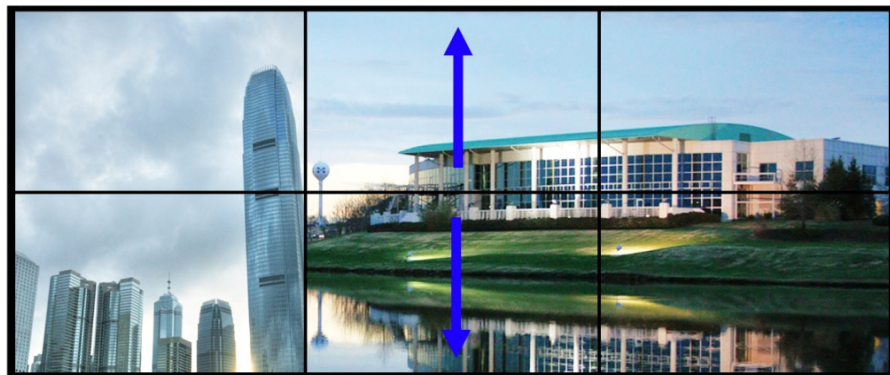
- H-Set Count (Horizontal Set Count): Number of displays in array horizontally (counting left-to-right)  
E.g. Diagram of array on previous page shows H-Set Count of "3"

V-Set Count (Vertical Set Count): ): Number of displays in array vertically (counting top-to-bottom)  
E.g. Diagram of array on previous page shows V-Set Count of "3"

- H-Edge Adj (Horizontal Edge Adjust): Set the horizontal gap between displays in Video Wall (value range: 0~200)



- V-Edge Adj (Vertical Edge Adjust): Set the vertical gap of displays in Video Wall (0~200)



# SICP program

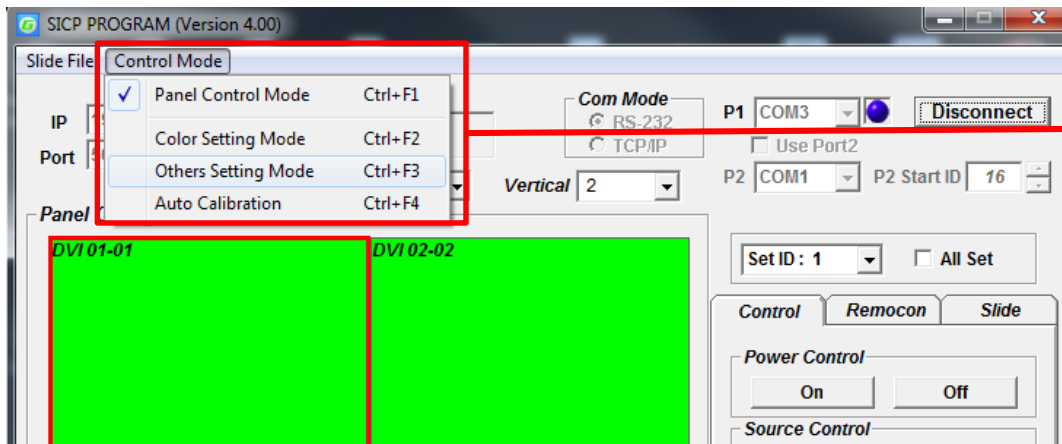
- HDMI Video Input format: Select video format of HDMI input data

0: RGB444

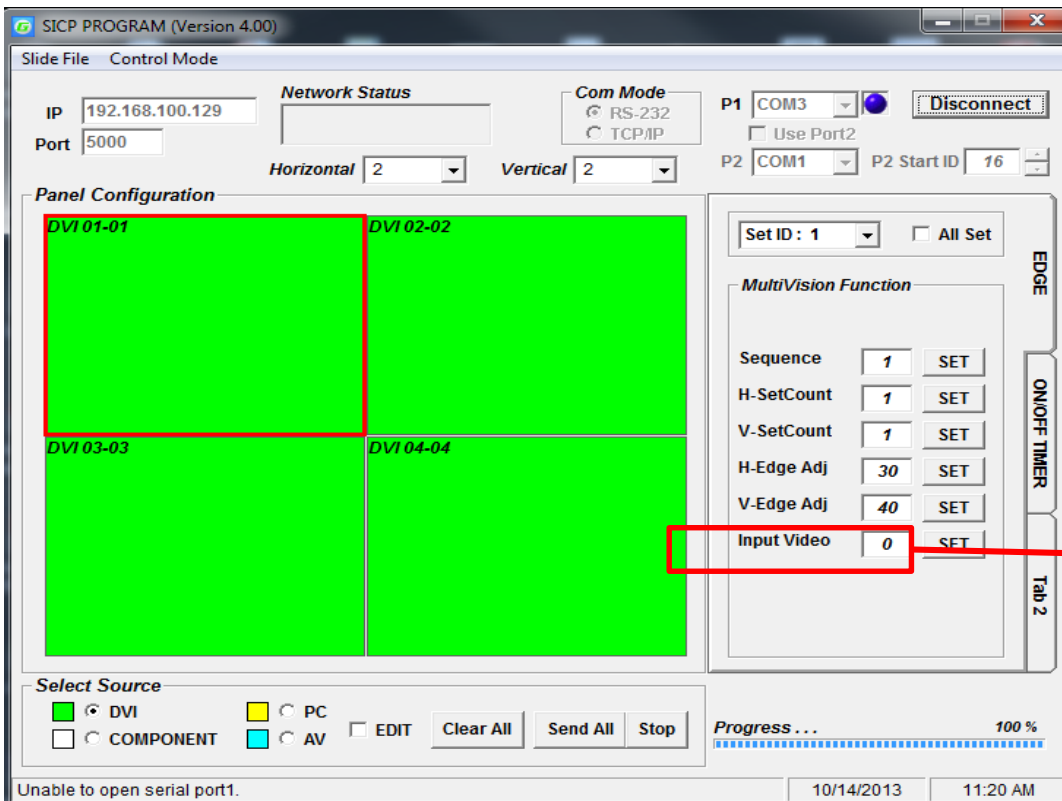
1: YPbPr444

2: YPbPr422

\*HDMI Video Input format issues often manifest themselves in the form of a magenta/pink tint on display panels. If this issue arises, check the type of source being used. If, for example, a Blu-Ray player is being used, the HDMI Input Format on the displays must be set to "1" (default value is "0").



1. Click "Control Mode"
2. Select "Other setting" mode



3. Change the input video format. (Ex. PC : 0, Blu-Ray player: 1)

## Slide Function

### 1) Edit



**Example**> When users wish to display a 5X5 background from DVI input and display 3X3 (in the center) from VGA input.

- Click on Edit box as described in ① on the image above.
- Select PC as described in ② on the image above.
- Select the area by clicking and dragging as described in ③ of the image above.
- The complete image will appear as the image on the top/right.

# **Send**: Press “Send All” in order to test the settings entered in order to decide if the adjustments are satisfactory.

# **Initialize**: Select the “DVI” bubble in the “Edit” tool and press “Set All” in order to initialize.

## # Add & Delete in Slide Schedule



Slide (Layout) scheduling: Users set intervals/schedules for each “slide”/layout separately.

Users cannot change the sequence of play after initial scheduling is activated, so the schedule must be arranged and finalized prior to clicking “Start”.

“Add” button: Inserts the edits (slides)

- “Remove” button: Removes highlighted slide

- “Remove All” button: Removes the entire slide schedule

## 2) Play

Click the “Start” icon (refer to the image above) to begin schedule and click “Stop” icon if you wish to stop the scheduled cycle of slides/layouts.

- Repeat: Check “Repeat” to loop schedule continuously.

## 3) File Management

Users may save layouts and replay the saved schedules. Users must save after completing scheduling.

- Save a file: Go to “Slide File” (top left of SICP program GUI) and press “File Save” in order to save the file in the folder you wish to select. The file format is \*.sld.

- Open a file: Go to “Slide File” and press “File Open” in order to open the slide you wish to play back.



## Transmission Formats

This is the format that the computer will send to the display to execute commands.

The format for this command transmission is as follows (total 13 byte):

ex) <STX>001PWRWOFF0<ETX> ( Set ID : 1 , Power Off Send )

STX	ID1	ID2	ID3	CM1	CM2	CM3	R/W	DA1	DA2	DA3	IND	ETX
0x0f	0	0	1	P	W	R	W	O	F	F	0	0x0d
Hex	ASCII (capital letter)										Hex	

- STX : Start of Text ( 0x0f )
- ID1 ~ ID3 : Set ID ( 001~100 )
- CM1 ~ CM3 : Command ( PWR, MIN, MUT,RML,KPL..... )
- R/W : Read/Write Only use "Read"(R) or "Write" (W) as set forth in this document
- DA1 ~ DA3 : Data ( Values )
- IND : Index
- ETX : End of Text ( 0x0d )

## OK Acknowledgement

An acknowledgement will be sent by the display to the computer to verify that the command has been successfully received and executed. This format for this acknowledgement is as follows:

ex) <STX>001PWR#OFF#<ETX> ( Set ID : 1 , Power Off Acknowledgement )

STX	ID1	ID2	ID3	CM1	CM2	CM3	R/W	DA1	DA2	DA3	IND	ETX
0x0f	0	0	1	P	W	R	#	O	F	F	#	0x0d
Hex	ASCII (capital letter)										Hex	

## Error Acknowledgement

The Error Values will be sent by the display to the computer to verify that the command has been successfully received and executed.

This format for this Error Values is as follows:

ex) <STX>001PWRERROR<ETX> ( Set ID : 1 , Power Off Error )

STX	ID1	ID2	ID3	CM1	CM2	CM3	R/W	DA1	DA2	DA3	IND	ETX
0x0f	0	0	1	P	W	R	E	R	R	O	R	0x0d
Hex	ASCII (capital letter)										Hex	

## How to choose display ID number

### ◆ Read Set ID Number

\* Attention : “Read Set ID” Function requires serial connection to only one display (1 pc : 1 display)

STX	ID1	ID2	ID3	CM1	CM2	CM3	R/W	DA1	DA2	DA3	IND	ETX
0x0f	F	F	F	S	I	D	R	0	0	0	0	0x0d
Hex	ASCII (capital letter)										Hex	

- ID1 ~ ID3 : “FFF” ( Set ID )

- DA1 ~ DA3 : “000” ( Don’t care )

Ex) <STX>FFFSIDR0000<ETX> ( Read Set ID )

Acknowledgement => <STX>001SID#001#<ETX> ( Set ID : 1 )

### ◆ Write Set ID Number

\* Attention : Write Set ID Function requires serial connection to only one display (1 pc : 1 display)

STX	ID1	ID2	ID3	CM1	CM2	CM3	R/W	DA1	DA2	DA3	IND	ETX
0x0f	F	F	F	S	I	D	W				0	0x0d
Hex	ASCII (capital letter)										Hex	

- ID1 ~ ID3 : “FFF” ( Set ID )

- DA1 ~ DA3 : “001” ( Set ID Number )

Ex) <STX>FFFSIDW0010<ETX> ( Write Set ID : 1 )

Acknowledgement => <STX>001SID#001#<ETX>

## Command List

### ◆ Power On/Off (PWR)

STX	ID1	ID2	ID3	CM1	CM2	CM3	R/W	DA1	DA2	DA3	IND	ETX
0x0f				P	W	R	W				0	0x0d
Hex	ASCII (capital letter)										Hex	

-ID1 ~ ID3 : Set ID (“001” ~ “100”)

-DA1 ~ DA3 : “-ON” : Power On / “OFF” : Power Off

Ex) <STX>001PWRW0FF0<ETX> ( Power Off )

Acknowledgement => <STX>001PWR#OFF#<ETX>

Note: Do not substitute “R” for “W” in the “R/W” column in order to read display power state..

## ◆ Remote Control Lock On/Off (RML)

STX	ID1	ID2	ID3	CM1	CM2	CM3	R/W	DA1	DA2	DA3	IND	ETX
0x0f				<b>R</b>	<b>M</b>	<b>L</b>	W				0	0x0d
Hex	ASCII (capital letter)										Hex	

-ID1 ~ ID3 : Set ID ("001" ~ "100")

-DA1 ~ DA3 : "-ON" : Lock On / "OFF" : Lock Off

Ex) <STX>001RMLW-ON0<ETX> ( Lock On )

Acknowledgement => <STX>001RML#-ON#<ETX>

## ◆ Keypad Control Lock On/Off (KPL)

STX	ID1	ID2	ID3	CM1	CM2	CM3	R/W	DA1	DA2	DA3	IND	ETX
0x0f				<b>K</b>	<b>P</b>	<b>L</b>	W				0	0x0d
Hex	ASCII (capital letter)										Hex	

-ID1 ~ ID3 : Set ID ("001" ~ "100")

-DA1 ~ DA3 : "-ON" : Lock On / "OFF" : Lock Off

Ex) <STX>001KPLW-ON0<ETX> ( Lock ON )

Acknowledgement => <STX>001KPL#-ON#<ETX>

## ◆ Source Change (MIN)

STX	ID1	ID2	ID3	CM1	CM2	CM3	R/W	DA1	DA2	DA3	IND	ETX
0x0f				<b>M</b>	<b>I</b>	<b>N</b>	W				0	0x0d
Hex	ASCII (capital letter)										Hex	

-ID1 ~ ID3 : Set ID ("001" ~ "100")

-DA1 ~ DA3 : "DVI" : DVI / "HDM" HDMI / "-PC" : VGA (D-SUB) / "-DP" : DisplayPort

Ex) <STX>001MINWDVIO<ETX> ( Source DVI )

Acknowledgement => <STX>001MIN#DVI#<ETX>

## ◆ Virtual Remote Control (RMT)

STX	ID1	ID2	ID3	CM1	CM2	CM3	R/W	DA1	DA2	DA3	IND	ETX
0x0f				<b>R</b>	<b>M</b>	<b>T</b>	W				0	0x0d
Hex	ASCII (capital letter)										Hex	

-ID1 ~ ID3 : Set ID ("001" ~ "100")

-DA1 ~ DA3 : "MEN" (Menu) "SOU" (Source) "LEF" (Left & Volume-)  
 "RIG" (Right & Volume+) "ENT" (Enter)  
 "-UP" (Up) "DOW" (Down) "EXI" (Exit)

Ex) <STX>001RMTWSOU0<ETX> ( Remote Source Button)  
 Acknowledgement => <STX>001RMT#SOU#<ETX>

## ◆ Horizontal Set Count (HSC)

STX	ID1	ID2	ID3	CM1	CM2	CM3	R/W	DA1	DA2	DA3	IND	ETX
0x0f				<b>H</b>	<b>S</b>	<b>C</b>	W				0	0x0d
Hex	ASCII (capital letter)										Hex	

- ID1 ~ ID3 : Set ID ("001" ~ "100")  
 - DA1 ~ DA3 : "001" ~ "010"

Ex) <STX>001HSCW0100<ETX> ( H-Set Count 10 )  
 Acknowledgement => <STX>001HSC#010#<ETX>

## ◆ VGA Auto Adjust (AUT)

STX	ID1	ID2	ID3	CM1	CM2	CM3	R/W	DA1	DA2	DA3	IND	ETX
0x0f				<b>A</b>	<b>U</b>	<b>T</b>	W				0	0x0d
Hex	ASCII (capital letter)										Hex	

-ID1 ~ ID3 : Set ID ("001" ~ "100")

-DA1 ~ DA3 : "-PC"

Ex) <STX>001AUTW-PC0<ETX> ( VGA Auto )

Acknowledgement => <STX>001AUT#-PC#<ETX>

## ◆ Vertical Set Count (VSC)

STX	ID1	ID2	ID3	CM1	CM2	CM3	R/W	DA1	DA2	DA3	IND	ETX
0x0f				<b>V</b>	<b>S</b>	<b>C</b>	W				0	0x0d
Hex	ASCII (capital letter)										Hex	

- ID1 ~ ID3 : Set ID ("001" ~ "100")

- DA1 ~ DA3 : "001" ~ "010"

Ex) <STX>001VSCW0100<ETX> ( V-Set Count 10 )

Acknowledgement => <STX>001VSC#010#<ETX>

## ◆ Display Sequence (SDS)

STX	ID1	ID2	ID3	CM1	CM2	CM3	R/W	DA1	DA2	DA3	IND	ETX
0x0f				<b>S</b>	<b>D</b>	<b>S</b>	W				0	0x0d
Hex	ASCII (capital letter)										Hex	

- ID1 ~ ID3 : Set ID ("001" ~ "100")

- DA1 ~ DA3 : "001" ~ "100"

Ex) <STX>001SDSW0010<ETX> ( Display Sequence 1 )

Acknowledgement => <STX>001SDS#001#<ETX>

## ◆ Horizontal Edge Adjust (HEG)

STX	ID1	ID2	ID3	CM1	CM2	CM3	R/W	DA1	DA2	DA3	IND	ETX
0x0f				<b>H</b>	<b>E</b>	<b>G</b>	W				0	0x0d
Hex	ASCII (capital letter)										Hex	

- ID1 ~ ID3 : Set ID ("001" ~ "100")

- DA1 ~ DA3 : "001" ~ "010"

Ex) <STX>001HEGW0300<ETX> ( H-Edge Adjust 30 )

Acknowledgement => <STX>001HEG#030#<ETX>

## ◆ Vertical Edge Adjust (VEG)

STX	ID1	ID2	ID3	CM1	CM2	CM3	R/W	DA1	DA2	DA3	IND	ETX
0x0f				V	E	G	W				0	0x0d
Hex	ASCII (capital letter)										Hex	

- ID1 ~ ID3 : Set ID ("001" ~ "100")
- DA1 ~ DA3 : "000" ~ "200"
- Ex) <STX>001VEGW0400<ETX> ( V-Edge Adjust 40 )
- Acknowledgement => <STX>001VEG#040#<ETX>

## ◆ HDMI Input format (IVF)

STX	ID1	ID2	ID3	CM1	CM2	CM3	R/W	DA1	DA2	DA3	IND	ETX
0x0f				I	V	F	W				0	0x0d
Hex	ASCII (capital letter)										Hex	

- ID1 ~ ID3 : Set ID ("001" ~ "100")
- DA1 ~ DA3 : "R44" : RGB444
- "Y44" : YPbPr444
- "Y22" : YPbPr422
- Ex) <STX>001IVFWR440<ETX> ( HDMI Input format RGB444 )
- Acknowledgement => <STX>001IVF#R44#<ETX>

## ◆ Color Adjust DVI (FCD)

STX	ID1	ID2	ID3	CM1	CM2	CM3	R/W	DA1	DA2	DA3	IND	ETX
0x0f				F	C	D						0x0d
Hex	ASCII (capital letter)										Hex	

- ID1 ~ ID3 : Set ID ("001" ~ "100")
- DA1 ~ DA3 : "000" ~ "255" ( Color Value )
- R/W : "W" (Write)
- "R" (Read)
- IND : "0" ( Sub-Brightness)
- "1" ( R-Offset )
- "2" ( G-Offset )
- "3" ( B-Offset )
- "4" (Sub-Contrast )
- "5" ( R-Gain )
- "6" ( G-Gain )
- "7" ( B-Gain )
- Ex) <STX>001FCDW1004<ETX> ( Write : DVI Sub-Contrast 100 )
- Acknowledgement => <STX>001FCD#1004<ETX>
- Ex) <STX>001FCDR0002<ETX> ( Read : DVI G-Offset )
- Acknowledgement => <STX>001FCD#1102<ETX> ( G-Offset:110 )

## ◆ Color Adjust VGA (D-SUB) (FCP)

STX	ID1	ID2	ID3	CM1	CM2	CM3	R/W	DA1	DA2	DA3	ETX
0x0f				<b>F</b>	<b>C</b>	<b>P</b>					0x0d
Hex	ASCII (capital letter)										Hex

- ID1 ~ ID3 : Set ID ("001" ~ "100")
- DA1 ~ DA3 : "000" ~ "255" ( Color Value )
- R/W : "W" (Write)  
"R" (Read)
- IND : "0" ( Sub-Brightness)  
"1" ( R-Offset )  
"2" ( G-Offset )  
"3" ( B-Offset )  
"4" (Sub-Contrast )  
"5" ( R-Gain )  
"6" ( G-Gain )  
"7" ( B-Gain )

Ex) <STX>001FCAW1004<ETX> ( Write : VGA Sub-Contrast 100 )

Acknowledgement => <STX>001FCA#1004<ETX>

Ex) <STX>001FCAR0002<ETX> ( Read : VGA G-Offset )

Acknowledgement => <STX>001FCA#1102<ETX> ( G-Offset : 110 )

## ◆ Zoom IN/OUT(ZOM)

STX	ID1	ID2	ID3	CM1	CM2	CM3	R/W	DA1	DA2	DA3	IND	ETX
0x0f	0	0	0	<b>Z</b>	<b>O</b>	<b>M</b>	W					0x0d
Hex	ASCII (capital letter)										Hex	

-ID1 ~ ID3 : Set ID ("000")

-DA1 ~ DA2 : "11" ~ "99" ( H- Set Count , V-Set Count )

Ex) 3x3 Multivision => 33

-DA3 : "I" or "O" ( "I" Zoom IN, "O" Zoom OUT )

-R/W : "W" (Write)

-IND : "X" (Don't change Input source) – Recommended for Daisy-Chain connection

"0" (DVI), "1"(VGA), "4" (Display Port), "5" (HDMI) – Recommended for Home-Run connection

Ex) <STX>000ZOMW22IX<ETX> ( 2x2, Zoom IN, No Input source change)

Ex) <STX>000ZOMW33O5<ETX> ( 3x3, Zoom OUT, HDMI)

**Zoom commands toggle video wall array configurations between a single, large image/source across the entire array and the display of one image/source per display. For alternative layouts, ask GPO Display about "Quick Preset" options.**

## ◆ Power On/Off Status (PWS)

STX	ID1	ID2	ID3	CM1	CM2	CM3	R/W	DA1	DA2	DA3	IND	ETX
0x0f				<b>P</b>	<b>W</b>	<b>S</b>	<b>R</b>	0	0	0	0	0x0d
Hex	ASCII (capital letter)											Hex

- ID1 ~ ID3 : Set ID (“001” ~ “100”)

- DA1 ~ DA3 : “-ON” : Power On  
 “OFF” : Power Off

Ex) <STX>001PWSR0000<ETX> ( Set ID: 1 Read Power Status )  
 Acknowledgement => <STX>001PWR#OFF#<ETX>



## Input/Output Port Description

Items		Specifications
<b>Supported Signal Connection</b>	DP (Display Port) DP 1.1a	H Frequency Range : 20 ~ 80 kHz
		V Frequency Range : 55 ~ 75 Hz
		Maximum resolution : 1920x1080 60Hz
		Maximum pixel rate : 162 MHz
		DP 1.1a
	DVI (Digital RGB)	H : 20 ~ 80 kHz
		V : 55 ~ 75 Hz
		Maximum resolution : 1920x1080 60Hz
		Maximum pixel rate : 160 MHz
		HDCP support
	HDMI	H : 20 ~ 80 kHz
		V : 55 ~ 75 Hz
		Maximum resolution : 1920x1080 60Hz
		Maximum pixel rate : 160 MHz
		HDCP support
	VGA(D-SUB)	H : 20 ~82 kHz
		V : 55 ~ 75 Hz
		Maximum resolution :1920x1080 60Hz
		Maximum pixel rate : 162MHz
		Separate / Composite / SOG sync support
<b>Input Connection</b>	DP	1
	DVI	1
	HDMI	1
	D-SUB	1
<b>Output Connection</b>	DVI	1
	D-SUB	1
	COM port (RS232C)	1/ 9 Pin (Male)

## Timing Modes

Display Mode	Horizontal Frequency(KHz)	Vertical Frequency(Hz)	Pixel Clock (MHz)	Sync Polarity (H/V)
IBM, 640 x 480	31.469	59.940	25.175	-/-
IBM, 720 x 400	31.469	70.087	28.322	-/-
VESA, 640 x 480	37.861	72.809	31.500	-/-
VESA, 640 x 480	37.500	75.000	31.500	-/-
VESA, 640 x 480	43.269	85.008	36.000	-/-
VESA, 800 x 600	35.156	56.250	36.000	+/+
VESA, 800 x 600	37.879	60.317	40.000	+/+
VESA, 800 x 600	48.077	72.188	50.000	+/+
VESA, 800 x 600	46.875	75.000	49.500	+/+
VESA, 800 x 600	53.674	85.061	56.250	+/+
VESA, 1024 x 768	48.363	60.004	65.000	-/-
VESA, 1024 x 768	56.476	70.069	75.000	-/-
VESA, 1024 x 768	60.023	75.029	78.750	+/+
VESA, 1152 x 864	67.500	75.000	108.000	+/+
VESA, 1280 x 960	60.000	60.000	108.000	+/+
VESA, 1280 x 1024	63.981	60.020	108.000	+/+
VESA, 1280 x 1024	79.976	75.025	135.000	+/+
1366 x 768	47.712	60.015	85.500	+/+
VESA,1920 x 1080	66.587	59.934	138.500	+/-

➤ Operating Temperature : 32 °F ~ 104 °F.

➤ Specifications are subject to change without prior notification