



Flexible Video Wall Scaler

User Manual

English



No. 38161

lindy.com



Tested to Comply with
FCC Standards
For Commercial use only!

Introduction

Thank you for purchasing the Lindy Flexible Video Wall Scaler. This product has been designed to provide trouble free, reliable operation. It benefits from both a Lindy 2 year warranty and free lifetime technical support. To ensure correct use, please read this manual carefully and retain it for future reference.

The Lindy Flexible Video Wall Scaler takes irregular, creative video wall production to a new level. Combining pre-defined playback modes, cascade and friendly OSD operation; it can create many configurations for regular, portrait and irregular video walls. With flexible bezel correction even conventional TV's and monitors can be used to create a video wall.

This flexible feature rich product has been designed to be used in installations which require a high level of visual impact, such as Retail, Advertising and Hospitality. With multiple regular and irregular video wall presets, and 5 infinitely adjustable user modes the Video Wall Scaler can deliver stunning displays to make your content come to life. The Video Wall Scaler can be combined with Lindy's range of high quality Extenders for HDMI, DisplayPort and DVI signals to give the installation maximum flexibility.

Package Contents

- Flexible Video Wall Scaler
- IR Remote Control with 2 x AAA batteries
- USB to Serial Converter
- IR Receiver, 1.7m
- 12VDC 3.3A Power Supply with 5.5/2.5mm Screw type DC connector
- IEC C13 power cable, 2m
- Lindy Quick Install Guide

Features

- 36 pre-defined playback modes
- 5 user defined profiles, each with up to 10 user defined video wall modes
- Supports regular, portrait and irregular video walls with different size, resolution and bezel.
- Flexible aspect ratio control across the entire video wall. This function allows you to use any signal content and still keep required aspect ratios without distortion.
- Ability to shift the entire video wall image without changing aspect ratio.
- HDMI loop out port for monitoring or daisy chain connection.
- Programmable EDID to optimize video quality.
- Auto image shift to prevent LCD burn-in.
- Multi-content function supports PIP (picture in picture) and POP (side by side)
- Up to 10 units can be cascaded to build a large-scale high resolution video wall (40 panels maximum)
- Comprehensive PC tool for easy video wall configuration.
- Power on/off control via auto signal detection.

Specification

Input & Output

- Video Input Ports: 1x DisplayPort, 1x HDMI, 1x DVI-I (DVI-D, VGA, HDMI)
- Video Output: 4x HDMI
- HDMI loop out port for monitoring or daisy chaining
- Audio Output: HDMI audio
- Maximum Resolution: 3840x2160@30Hz 4:4:4 8bit
- Frame Lock for system synchronisation
- Selective EDID for optimised video quality
- HDCP 1.4 compliant

Video wall Features

- Input source can be split and assigned to multiple units to build one true 4k video wall
- Each display unit location can be adjusted up to ± 900 pixels in all directions for image mapping
- Custom display modes with LCD at any position and angle
- Looping playback for custom modes
- Image shifting for LCD burn-in protection

Image rotation

- Image 90°/270° flip and rotation for portrait display
- Horizontal, Vertical, and Horizontal + Vertical Mirror modes

PIP (Picture in Picture) and POP (side by side)

- PIP up to 1080p at selectable locations using any input source
- POP to show two images in one video wall, full screen or original aspect ratio in landscape & portrait directions
- High end 3D motion adaptive de-interlace in PIP/POP windows

Video processing

- 8 bits 4:4:4 full bandwidth sampling with 3D de-interlace, smooth edge algorithm and 3:2/2:2 film mode processing
- High quality video and graphics scaling
- Colour adjustment for each LCD (Hue, saturation, sharpness, contrast, brightness, preset modes, discrete RGB)
– Please note that features are dependent on colour space used from source signal.

System control

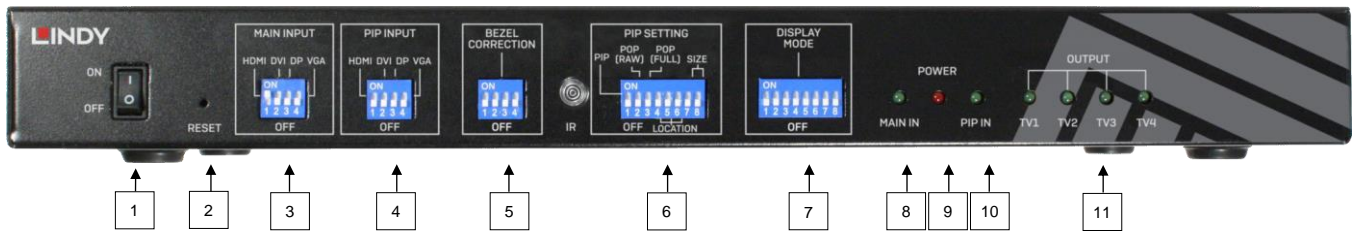
- IR Remote controller
- Cabled IR Receiver Extender
- RS-232 using GAlign PC tool

Installation tips

- OSD Lock / Unlock: Press and hold the MENU key on the IR Remote Controller for 5 seconds; the OSD function will be locked to prevent changes to the settings. Press MENU key for 5 seconds again and it will unlock the OSD so that you can manipulate the OSD again.
- Using the Box ID function allows user to control different Scaler's at the same time without interference.
- The Image Setup menu will not be activated if the input source is not from a VGA device.
- We recommend using high quality shielded cables with this Scaler, to achieve longer distances please use an extender from Lindy's AV extender range.
- If the video wall aspect ratio is not the same as the signal source, it will create an abnormal aspect ratio. Please select the correct EDID. For manual display modes, you can adjust the H&V aspect ratio in the range of 0.25x to 2.0x. Applying different **[Overlap]** values under the **[Video wall]** menu or **[Ratio]** under the **[Manual Mode]** menu can also solve aspect ratio issues.
- If changing any dip switch options on the unit, then a reboot needs to be performed for the new settings to apply.

Unit Overview

Front

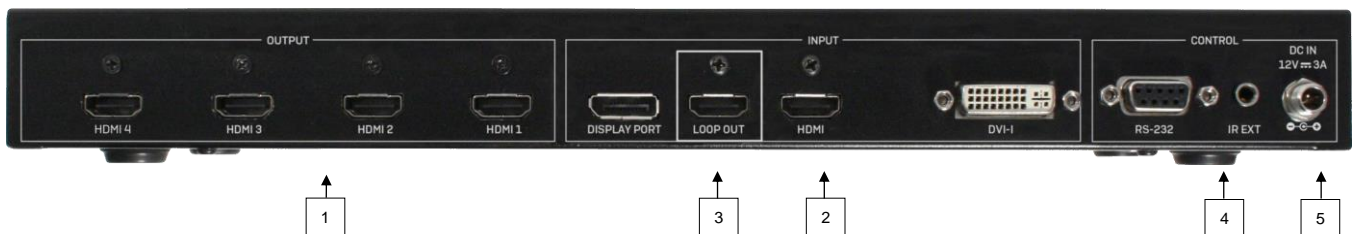


1. **Power Switch:** Power the Scaler on/off
2. **Reset:** Recessed button to return the Scaler to factory defaults
3. **Main Input:** Dip-switches to allow the selection of the primary video source, only a single selection may be made at any time
4. **PiP Input:** Dip-switches to allow the selection of the secondary video source when using the PiP function, only a single PiP selection may be made at any time
5. **Bezel Correction:** Use dip-switch 1 to turn bezel correction on/off
6. **PiP Setting:** Dip-switches to activate and configure the PiP and PoP features
7. **Display Mode:** Dip-switches to determine which of the preset display modes is used (only switches 1-6 are active)
8. **Main In:** Illuminates to show an active signal is being received from the primary input
9. **Power:** Illuminates when the unit is powered
10. **PiP In:** Illuminates to show an active signal is being received from the secondary input
11. **Output:** Illuminates to show an active display is connected to the ports TV 1-4

Dip Switch Settings:

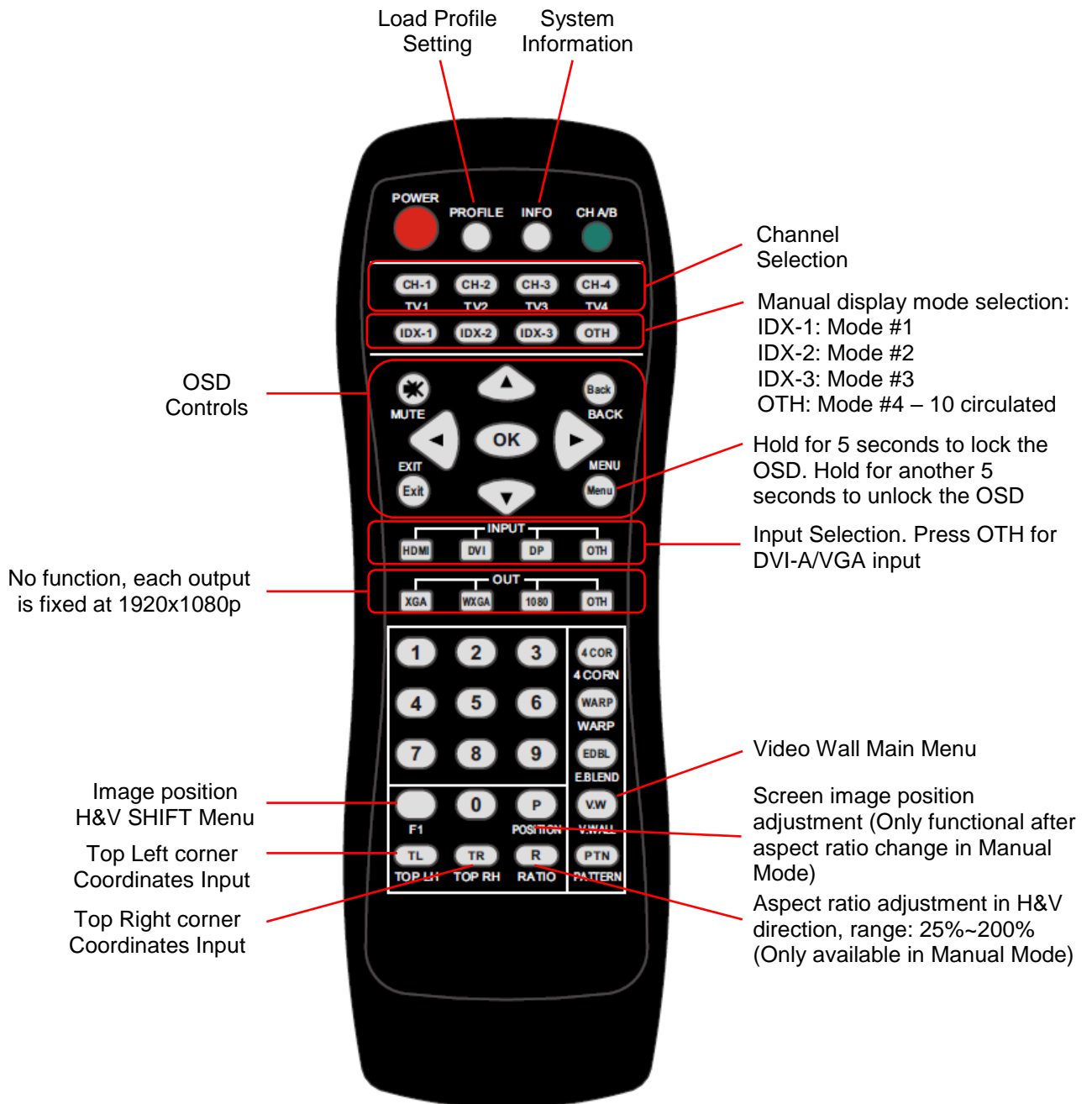
- **Main Input:** Select input type, for example, Dip Switch 4 for VGA to the ON position
- **PiP Input:** Select input type, for example, Dip Switch 1 for HDMI to the ON position
- **Bezel Correction:** Please see the custom video wall configurations section
- **PiP Setting:** PiP ON – 1 ON, PoP Raw – 2 ON, PoP Full – 3 ON, Location see below:
 Centre – all set off, Top left – 4 ON, Top Right – 5 ON, Bottom Left – 6 on, Bottom Right – 4 & 5 ON, Centre Up – 4 & 6 ON, Centre Down – 5 & 6 ON
- **Display Mode:** Please see the custom video wall configurations section

Back



1. **Output:** Connect 4 HDMI displays
2. **Input:** Connect DisplayPort, HDMI, DVI or VGA (using a VGA/DVI cable) sources
3. **Loop/cascading port:** For cascading of further scalers or local full screen monitoring
4. **Control:** RS-232 serial and IR Ext ports to allow remote operation of the unit
5. **DC Power:** Connect this to the included PSU and lock using the thumb screw barrel

Remote Control



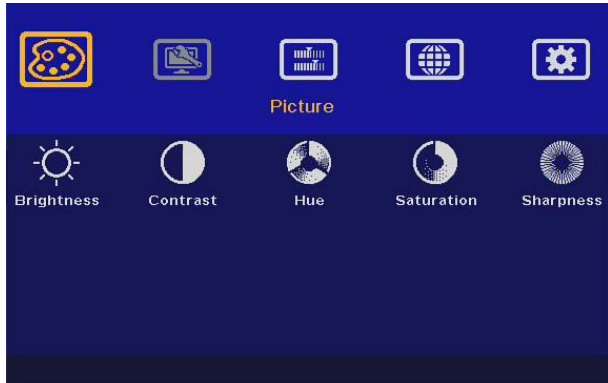
Please Note: CH A/B, 4 COR, WARP, EDBL and PTN keys have no function

OSD Menu and functions

Important notice:

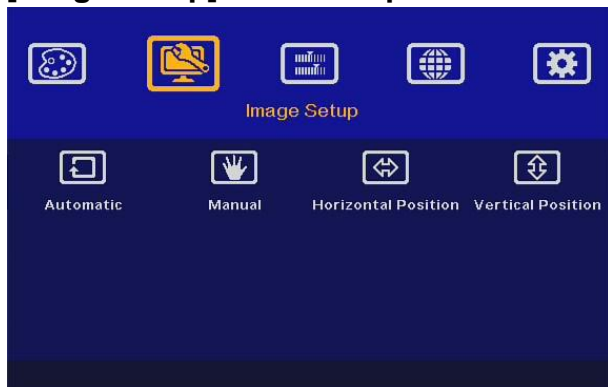
- Please set all Dip switches on [Main Input] at OFF position to assign control to the OSD menu so that OSD settings will be executed when the system is powered ON.
- If any Dip switches [Main Input] are not at the OFF position, when the system is Powered ON, the system will check the Dip switch settings first, this will take precedence over any OSD settings
- After finishing any changes on the OSD, please save the settings into Profile [Index 1-5] for long term storage. This will be described later in the manual.

[Picture] Colour Adjustment



The **[Picture]** menu is used to adjust the colour properties for the entire video wall. It is not possible to have individual colour adjustment for each LCD. When the input signal is in the YUV domain, all the items under menu are free to be accessed. If the input signal is in the RGB domain, only **[Brightness]** and **[Contrast]** can be adjusted. It is possible to do further separate RGB individual colour adjustments under the **[Image Properties]** menu.

[Image Setup] for VGA input



The **[Image Setup]** menu can only be activated when the video input is from the DVI-I input port with analogue VGA input signal.

[Automatic]: This will adjust the phase and clock to match your Display.

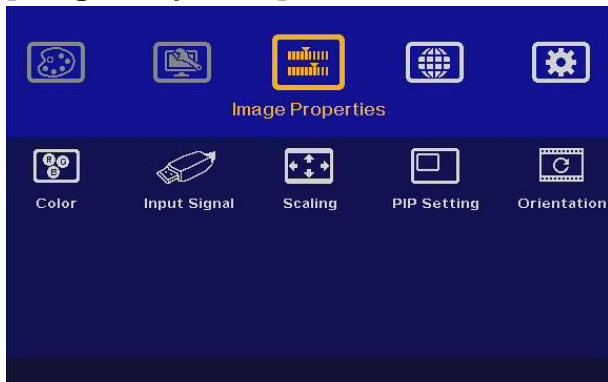
[Manual]: The manual setting for the signal Phase and Clock eliminates image noise in the analogue input.

[Horizontal Position]: Manually adjusts the images horizontal position.

[Vertical Position]: Manually adjusts the images vertical position.

When the source is a VGA signal, please connect the signal to the scaler, and then turn on for auto image position alignment. After this process, unless you apply another VGA input signal, the scaler will not perform an auto alignment again to avoid image shifting.

[Image Properties]



[Image properties] Used to select image colour temperature, adjust independent RGB colours, select input ports, set display aspect ratios, set PiP settings and image flip/rotation.

[Colour]: Colour temperature selection and RGB independent adjustment.

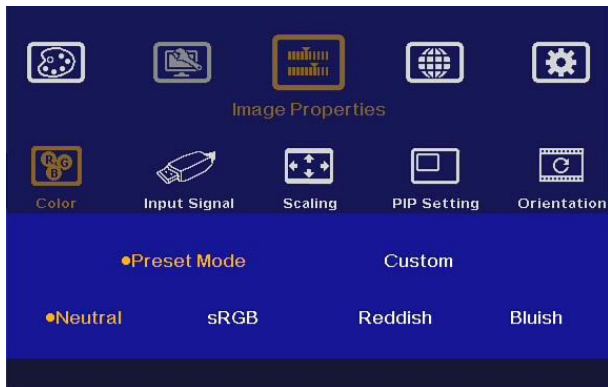
[Input Signal]: Selects the input port.

[Scaling]: Sets the display aspect ratio, including PoP display mode.

[PiP Setting]: PiP settings.

[Orientation]: Image flip and rotation settings.

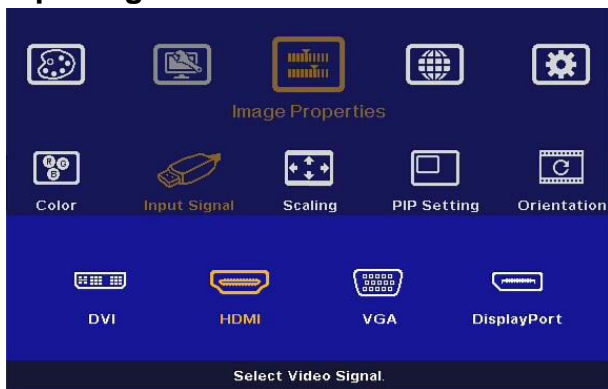
Colour



[Colour]: Menu: 4 Preset modes for colour temperature selection.

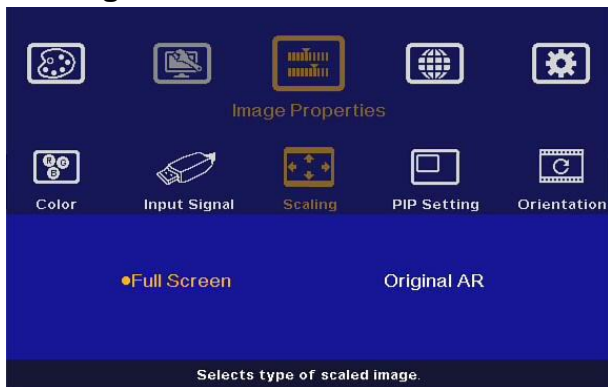
[Custom]: Independent RGB colour adjustment.

Input Signal



[Input Signal]: Switch between DVI, HDMI, VGA and DisplayPort video input signals.

Scaling

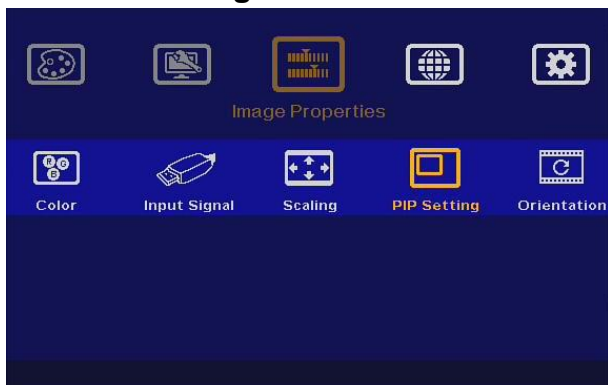


[Full Screen]: To fit the source image for full screen display

[Original AR]: Maintain source image aspect ratio

This setting will also affect POP image display with full screen or original aspect ratio.

PIP/POP Setting

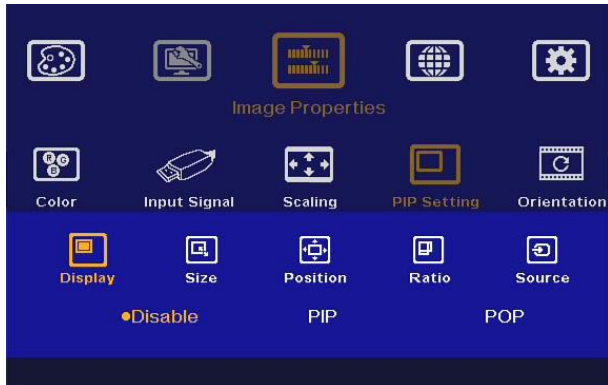


If you want to keep the PiP setting while the system is powered on, you need to set all **[Main Input]** Dip Switches to the OFF position and select the input signal via the OSD menu.

- The Dip Switch PiP/PoP setting has only preset image sizes and positions.
- PoP image aspect ratios should be determined from the **[Scaling]** menu.

The Picture in Picture (PiP) function is used to display (2) images from one scaler. The maximum size of the sub-image (PiP) is 1080p. The input source for the PiP is selectable and can be from any input port. The location of the PiP image can be controlled by the OSD menu at any location inside the main image. The size of the PiP image is also flexible and can be controlled by the OSD menu. Both the main and PiP image will go through high end 3D motion de-interlacing.

PIP Setting



- **Display:** Enables the PiP or PoP.
- **Size:** Sets the PiP size.
- **Position:** Sets the PiP position.
- **Ratio:** Sets the PiP display aspect ratio.
- **Source:** Select the input source for the PiP/PoP.

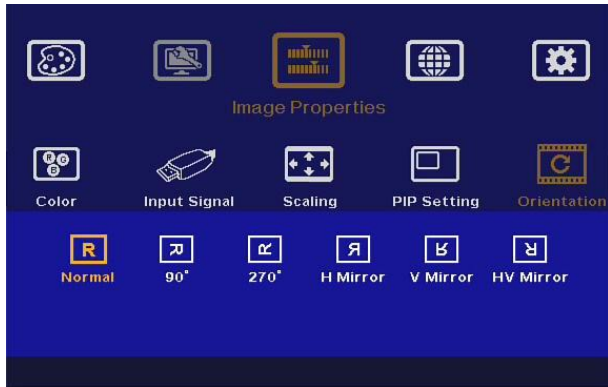
- **Display:** Contains the following options.
 - Disable: to Disable PIP or POP function
 - PIP: to select PIP display function
 - POP: to select POP (side by side) display mode. You can select to maintain original image aspect ratio or full screen mode through the **[Scaling]** OSD menu under **[Image properties]**.

PIP (Picture in Picture) mode (“**POP**” original aspect ratio) (“**POP**” full screen mode)



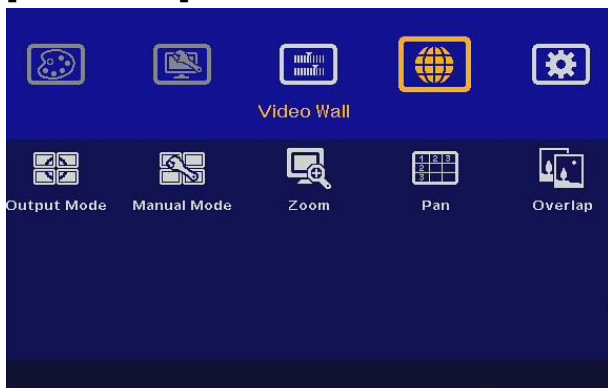
- **Size:** (Only applies to PIP function)
 - The size of the PIP image can be adjusted though the **[Size]** OSD menu.
 - The maximum size of PIP image is 1080p.
- **Position:** (only apply to PIP function)
 - The position of PIP image can be adjusted through Position OSD menu
 - The PIP image will be maintained inside the main image and cannot be outside the main image.
- **Ratio:** Aspect Ratio of the display image. (Only apply to PIP function)
 - Full Screen: the same aspect ratio as main image
 - Original AR: the same aspect ratio as PIP input source.
 - POP image aspect ratio can be adjusted through **[Scaling]** under the **[Image Properties]** OSD menu.
- **Source:** You can select the input source for the PIP/POP image from all input ports. By selecting different input ports for the Main & PIP/POP images, you can have different sources display at the same time on the video wall. You can save different settings into **[Profile]** under the **[Option]** menu and recall them at any time.

Image Orientation



This image orientation function will be applied to all outputs. Its main purpose is to create more Display modes based on Pre-defined Display Modes whilst providing more flexibility in multiple cascade applications

[Video Wall]



Video Wall Settings are used to select output mode, custom mode creation and the cascading multiple scalers to become one video wall display. It consists of the below functions:

[Output Mode]: To show preset display modes on the OSD for easy display mode selection.

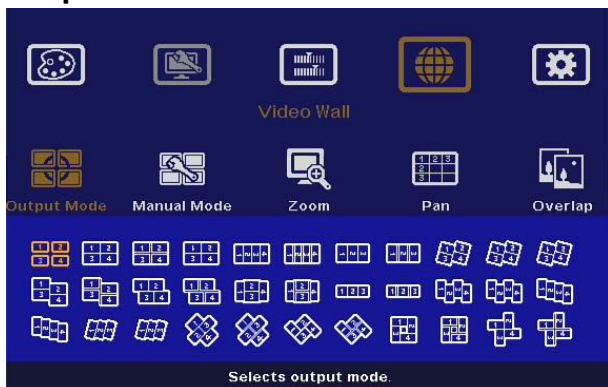
[Manual Mode]: To create any type of display modes using the 10 mode slots available.

[Zoom]: To split the source image into different sections for each cascaded scaler.

[Pan]: To assign each image section to each scaler at the right location.

[Overlap]: To adjust each image section at the right location in the cascade application to become a large video wall display.

Output Mode



Once selected you will be presented with a choice of available pre-set display modes.

Manual Mode

This [Manual Mode] is used to allow the creation of any type of display mode.

Here is the structure and concept:

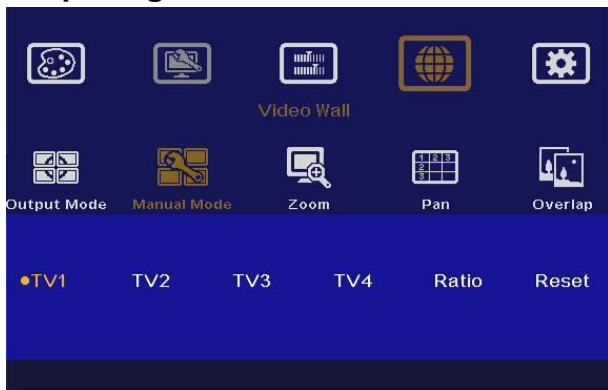
- You can create (10) different display configurations and save them in [Mode 1-10].
- Each Mode consists of up to (4) LCD's [TV1]~[TV4].
- Input (2) parameters (Top Left and Top Right corner coordinates) to get the display location for each TV (LCD).
- You can also execute looping playback of display modes by selecting the Modes you wish to use and the time interval through the **[Loop]** menu.
- Adjust Horizontal and Vertical aspect ratios through the **[Ratio]** menu.
- Shift the image location inside the video wall horizontally and vertically through the **[Shift]** menu.

Select the custom display mode store location.

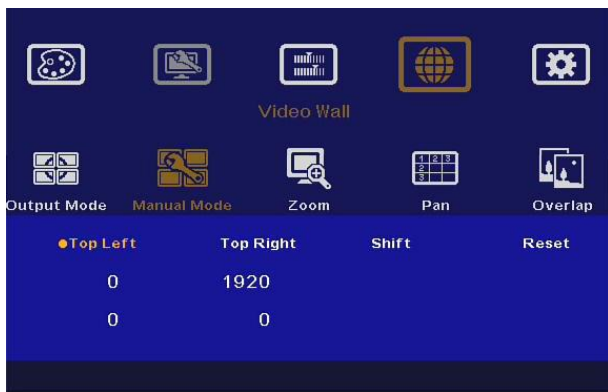


- Under **[Manual Mode]**, there are 10 **[Mode]** options and **[Loop]**.
- Each **[Mode]** represents one display configuration.
- Different input sources and resolutions can be chosen without affecting other display configuration settings.

Crop image for each LCD.



- Each **[Mode]** has 4 LCD (TV1 ~TV4) menus to assign image locations.
- **[Ratio]** is for further adjustment in aspect ratio and position shift in entire display (Video wall) at the same time.
- **[Reset]** is to reset all the settings in [TV1] ~ [TV4].



- Inside each **[TV]**, input coordinates of the **[Top Left]** and **[Top Right]** corners to decide the image location.
- Total of (8) coordinates required for one complete video wall with (4) LCD's.
- **[Shift]** allows further adjustment in the H & V position of the image in each LCD without affecting the original size and display angle settings.
- **[Reset]** will reset the coordinates to the default settings in the current **[TV]** setting.
- You can manually input the coordinates for the **[Top Left]** and **[Top Right]** corners through the OSD menu direction keys.



- The GAlign PC tool is also available to input the coordinates for 4 LCDs (TV1~TV4).
- Please see more details in **[GAlign PC Tool]** section.

To adjust custom mode aspect ratio and position



Five sub menus under [Manual Mode] > Mode #:

- [Ratio]
- [Position]
- [Zoom]
- [Pan]
- [Overlap]

Note: It is also possible to adjust image aspect ratio for the entire video wall in [Overlap] settings.

Horizontal and Vertical [Ratio] adjustment



- This function zooms in & out to change the aspect ratio in the Horizontal & Vertical direction.
- The aspect ratio adjustment range is from 50% to 200%.
- This will apply to the entire video wall. The percentage of adjustment available depends on the pixel size configured for each LCD.

Horizontal and Vertical [Position] adjustment



- This function moves the image in the Horizontal & Vertical direction.
- Adjustment range will depend on the change in the [Ratio] setting.
- No image shift is possible if Horizontal or Vertical [Ratio] doesn't change.
- This function will apply to the entire video wall.

Note: By combining aspect ratio changes and position shifting, it's possible to remove black borders or select special regions of the image to highlight specific content to attract audiences.

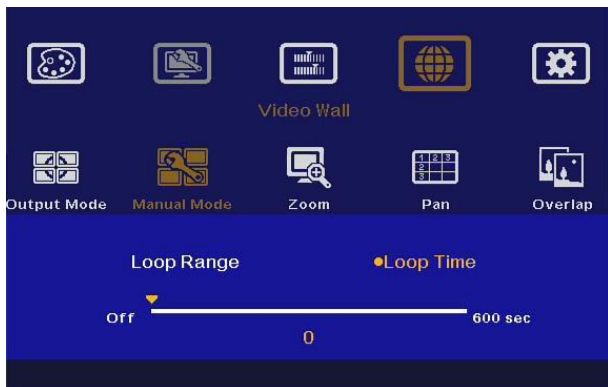
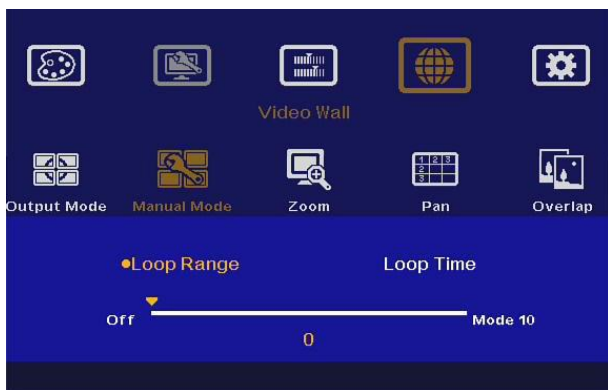
[Reset]: will reset the settings in [Ratio] and [Position] settings to defaults.

[Loop]: Looping playback.

- You can create up to 10 different playback modes and loop playback with preset time intervals. This function can be used to highlight different areas from the same image content without PC control. For instance, if one image consists of (4) products you can display all products in Mode one, then highlight product A in Mode 2, product B in Mode 3, product C in Mode 4 and product D in Mode 5. After setting the loop playback, the end user will see advertisements for the complete image, and then highlight each product on a specific LCD in sequential order.
- It is possible to input the same Mode to double the display interval.
- Please start the looping display modes from Mode 1. You can only select the total number of looping playback modes starting from 1. If "3" is selected, then only Mode 1-3 will be looped in.

LCD burn-in mark protection.

You can create different display modes at a slight position shift and apply the looping playback function to prevent a burn-in mark on the LCD to extend its life. This is important for a display with still images in the content.



- Select the Modes for looping playback in **[Loop Range]**.

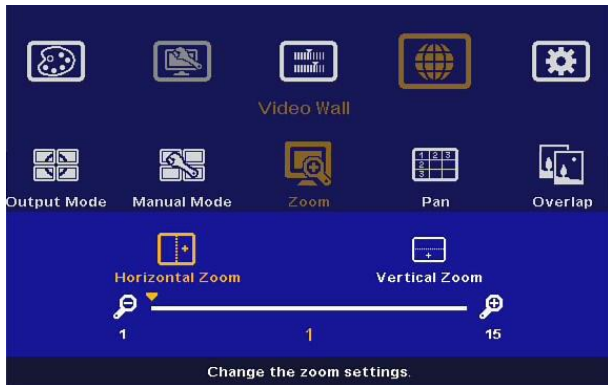
- If you select “3”, then only Mode 1, Mode 2 and Mode 3 will be selected for looping playback.

- The time interval to switch among different Modes can be set by **[Loop Time]**.

- The max looping time interval is 10 minutes (600 seconds)

Zoom

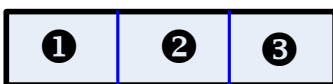
Split image for each scaler in a cascade application



- You can set both Horizontal and Vertical Zoom values based on the array of the Display Units.

- In the below example, each number refers to one Display Unit (4 LCDs) and also one scaler setup. The settings below are for each scaler.

Example A:

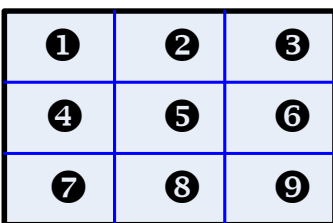


3x1 horizontal cascade:

--Horizontal Zoom=3

--Vertical zoom=1

Example B:



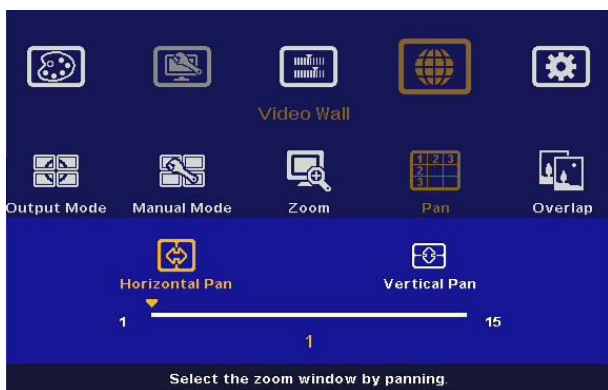
3x3 cascade:

--Horizontal Zoom=3

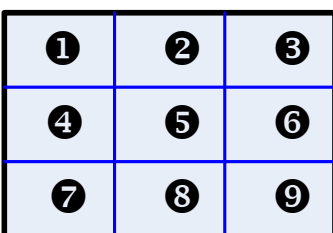
--Vertical Zoom=3

Pan

Assign image location to each scaler setup in cascade applications



- [Pan]** is to assign the split image location for each Display Unit.
- Horizontal value is calculated from LH to RH direction and Vertical value is calculated from top to bottom.
- You need to set H & V **[Pan]** value to assign the image location for each scaler setup to build a large video wall display.



In a 3x3 scaler cascade application:

For No. ③ scaler:

Horizontal Pan = 3

Vertical Pan = 1

For No. ⑥ scaler:

Horizontal Pan = 3

Vertical Pan = 2

Overlap

Bezel compensation and position shift



- **[Overlap]** is to align the location of each scaler unit
- You can adjust the image location in both H&V position up to ± 900 pixels.
- Through **[Overlap]** adjustment, you can align each scaler into the correct position in the video wall using cascading.
- Depending on the video wall layout, excessive overlap values may cause video distortion.

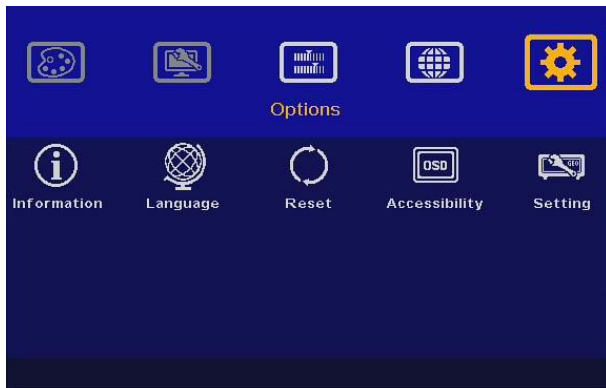
Note: The **[Overlap]** value will change the image capture area and scaling factor. In multiple scaler cascade applications, the **[Overlap]** value in each scaler should be the same so that all images have the same scaling factor. You can also use **[Overlap]** adjustment to change the entire aspect ratio in the video wall image.

Cascading Example:

Overlapping pixels for the Zone A (Scaler 1) & B (Scaler 2) should be the same. First set the **[Zoom]** & **[Pan]**, then open the **[Overlap]** menu and select the **[Right Edge]** for Zone A & **[Left Edge]** for Zone B, then increase the **[Overlap]** value gradually in both Zone A & Zone B. You will see two images from both the scalers coming closer until the image edges match together.



Miscellaneous OSD Functions



Five sub menus under [Options]:

- [Information]
- [Language]
- [Reset]
- [Accessibility]
- [Setting]

Information



[Information] menu shows the following information from the Scaler, such as Input mode, output mode, Network status, Model name and Firmware version.

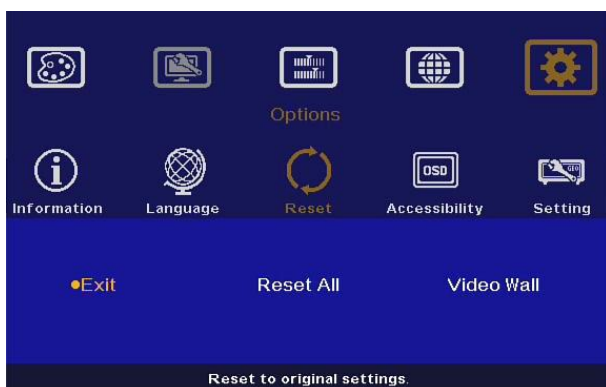
Language



Three OSD menu languages can be selected:

- English
- Simplified Chinese
- Traditional Chinese

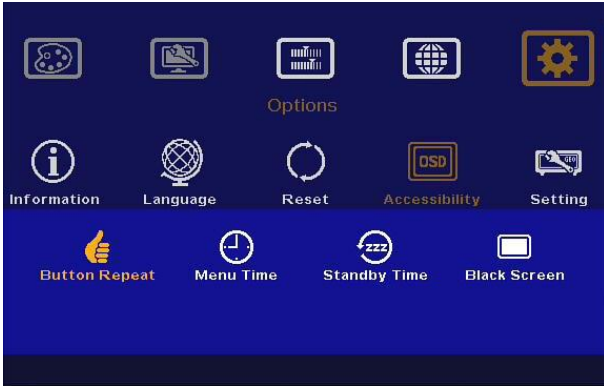
Reset



Two types of Reset can be performed: Reset All & Reset Video Wall.

- [Reset All] will reset all user settings apart from the settings stored in [Modes] under [Manual Mode] and [Indexes] under [Profile].
- Reset [Video Wall] will reset the settings in the Video Wall function to factory default, but doesn't change any other settings.

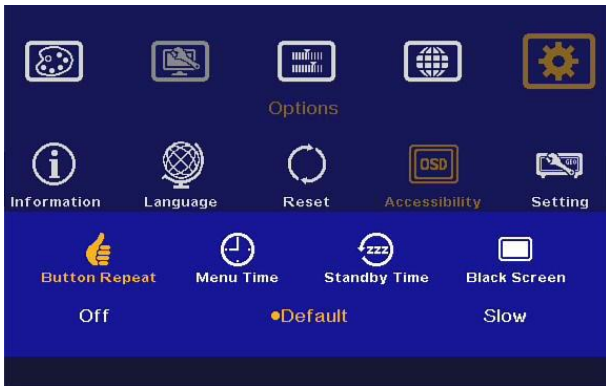
Accessibility



Four sub menus under **[Accessibility]**:

- OSD **[Button Repeat Rate]**
- OSD **[Menu Time out]**
- No signal input **[Standby time out]**
- OSD **[Black Screen]**

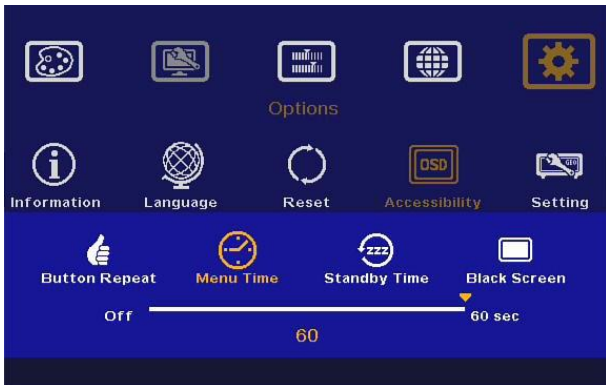
Button Repeat Rate



OSD **[Button Repeat Rate]**:

This controls the OSD button response speed while pressing a button continuously.

Menu Time Out

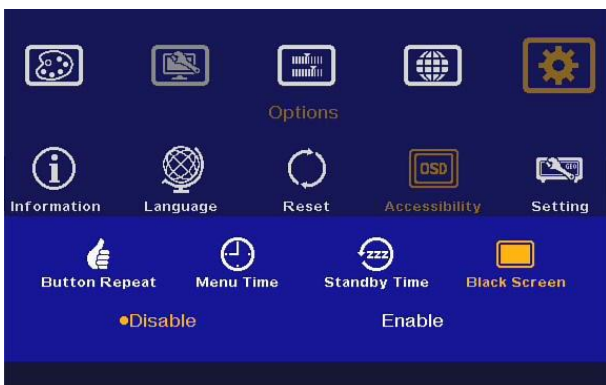


OSD **[Menu Time Out]**

- The OSD menu will close based on this time setting.
- The default time is 30 seconds.

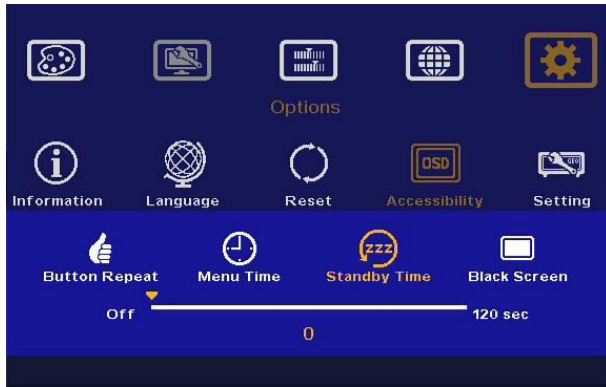
When **[Off]** is selected, the OSD menu will remain in the screen until you perform another OSD function or an input/output mode change.

Black Screen



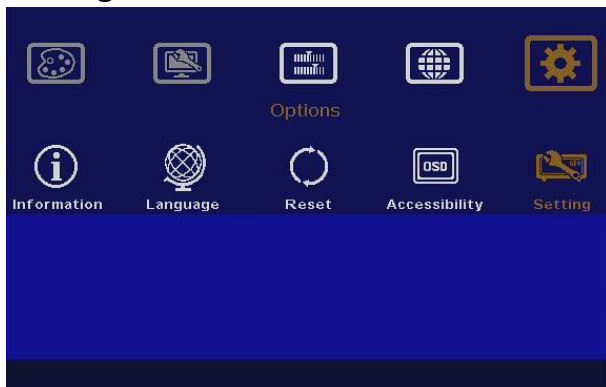
- When the scaler is powered down this option suppresses the OSD showing "Power Saving Mode"

Standby Time Out



The default setting for **[Standby Time Out]** is “0” seconds. If the time is set to “60”, then the scaler will turn off the output signal after 60 seconds when no input signal is detected. This feature is ideal if your LCDs also have a similar power down feature, as you can simply remove power from your source device, then the scaler and LCDs will automatically power down.

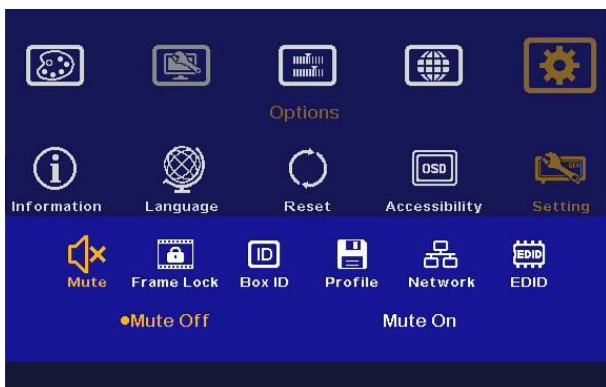
Setting



Five sub menus under the **[Setting]** menu:

- **[Mute]** Audio mute or enable
- **[Frame Lock]**: system synchronization
- **[Box ID]**: Set control ID 0-99
- **[Profile]**: Save profile settings 1-5
- **[Network]**: N/A
- **[EDID]**: Manually set EDID values

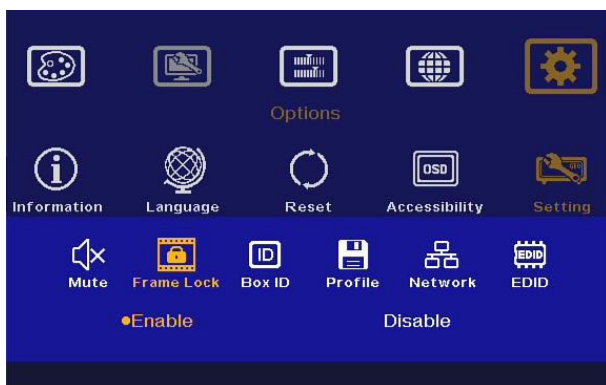
Audio Mute



Audio Mute:

- **[Mute Off]** will enable audio output.
- **[Mute On]** will disable audio output.
- **[Mute]** hot key in remote controller is available

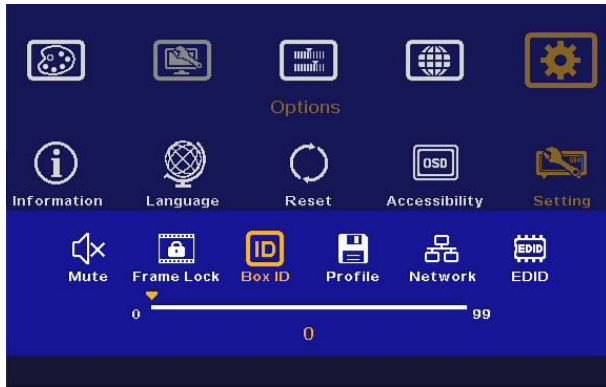
Frame Lock and Free Run Mode



[Frame Lock] will ensure the input and output frame rates synchronize together. This is mainly for multiple scaler applications. If **[Frame Lock]** is disabled, the system will be in **[Free Run]** mode and will keep continuous output timing. This will provide quicker input source or input timing changes for the following conditions:

- Input signals should have the same refresh rate (i.e. 60Hz)
- No HDCP compliant signal.
- It is possible to see frame tearing if **[Frame lock]** is turned off.

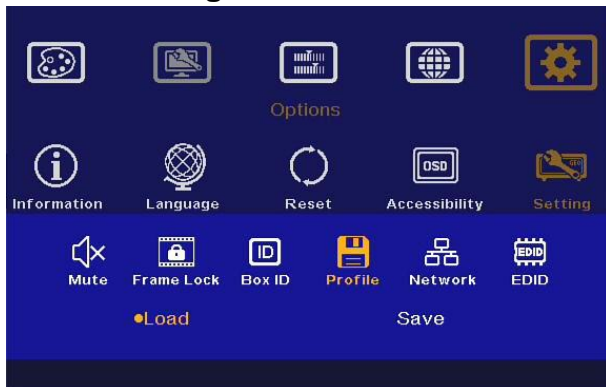
Box ID



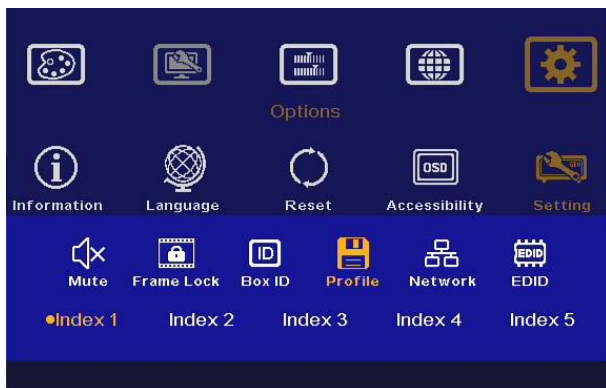
[Box ID] is an identification # in each scaler for individual RS232 or IR remote controls.

- ID No is from 0-99
- After setting Box ID, you can control each scaler individually via IR Remote or RS232
- IR control ID # is from 0-9 only.

Profile Setting



[Profile] is to save and load user settings



Five Indexes can be chosen to save to the scalers internal memory and recalled by using the IR remote controller or over RS232 through the **[Load]** menu under **[Profile]**

These are different to saving the video wall modes, Profile saves also include global scaler options.

Creating Custom Video Walls

Collecting coordinates from a digital drawing

- First convert your design drawings into 1920x1080 resolution with a 16:9 aspect ratio and pick up the coordinates at the Top Left and Top Right corners in each active LCD display region, then input these in to the scaler via the OSD or PC tool (GAlign). The original point for the coordinate system is set at the Top Left corner as (0, 0).

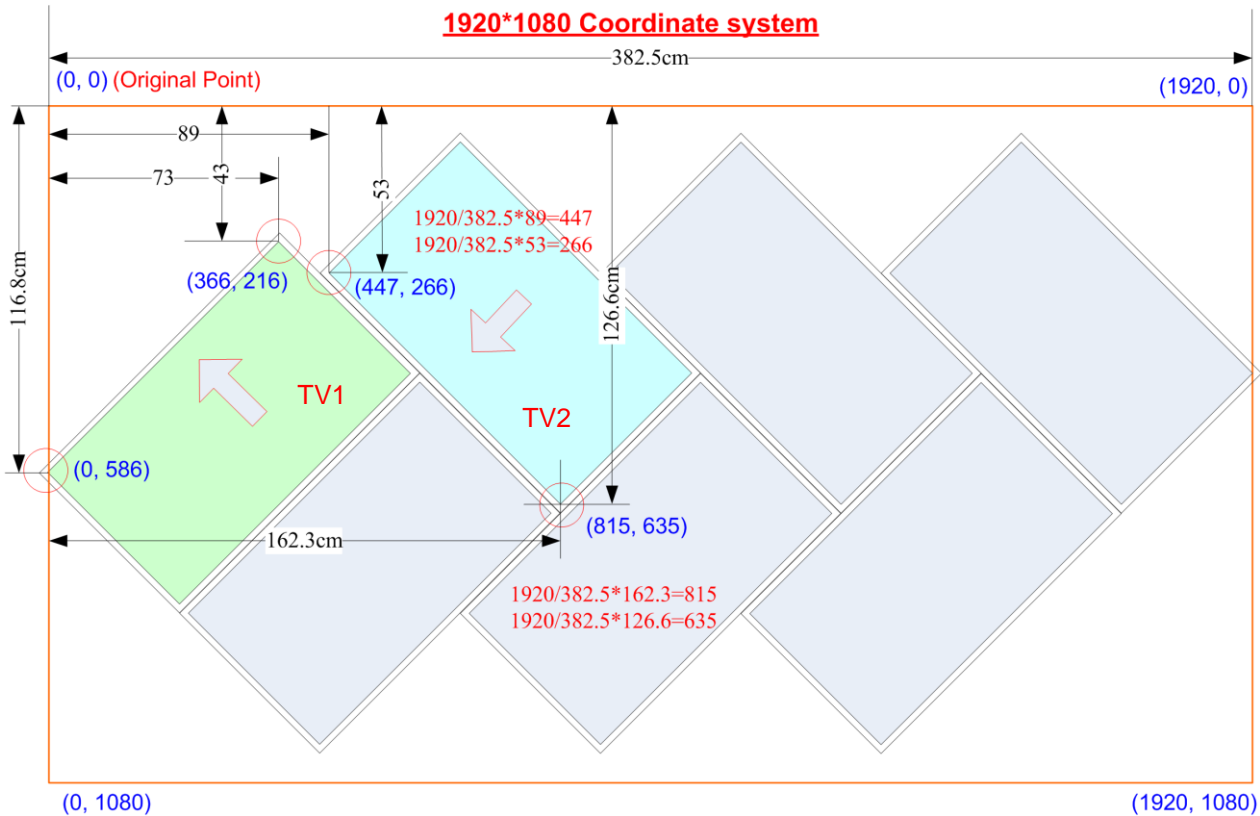


Figure A

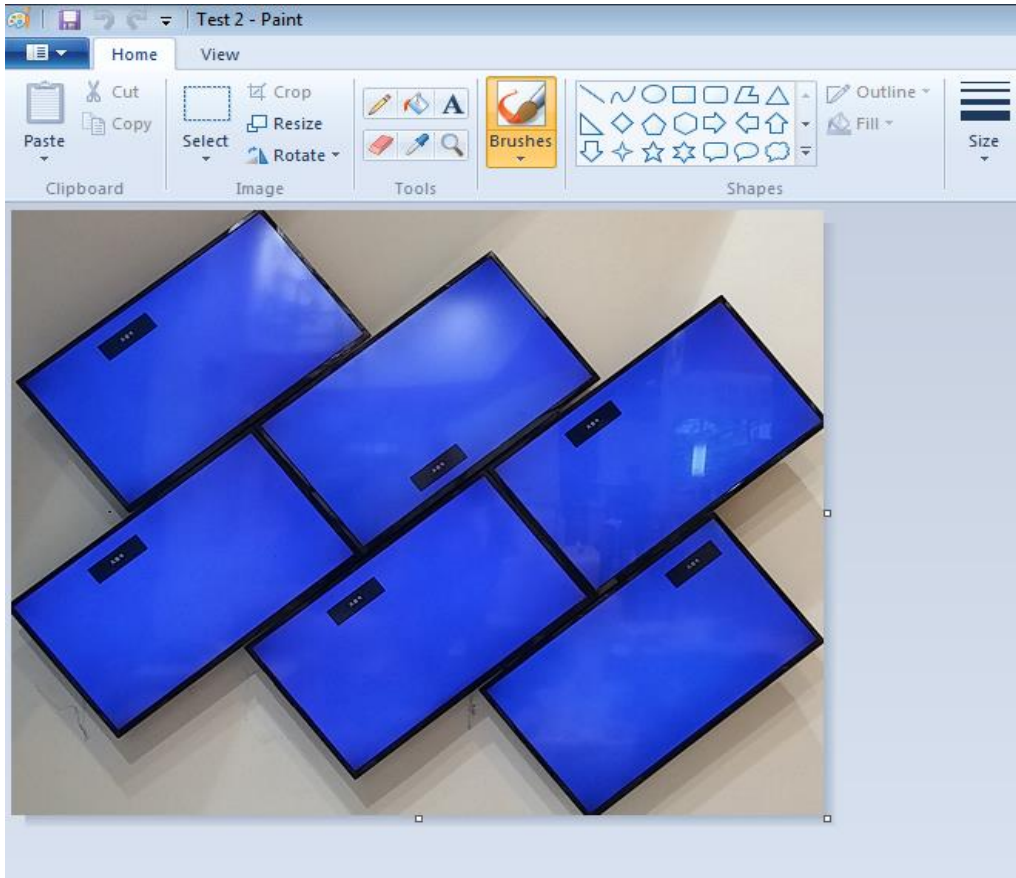
- Please note that the coordinate system (16:9) in the H&V directions should have the same scaling ratio. In above drawing, the coordinates for TV1 and TV2 are as follows:
- TV1 coordinate for Top Left corner=(0, 586) · Top Right corner=(366, 216)
- TV2 coordinate for Top Left corner=(815, 635) · Top Right corner=(447, 286)
- Please pay attention to the display direction of the TV

Collect coordinates from photo

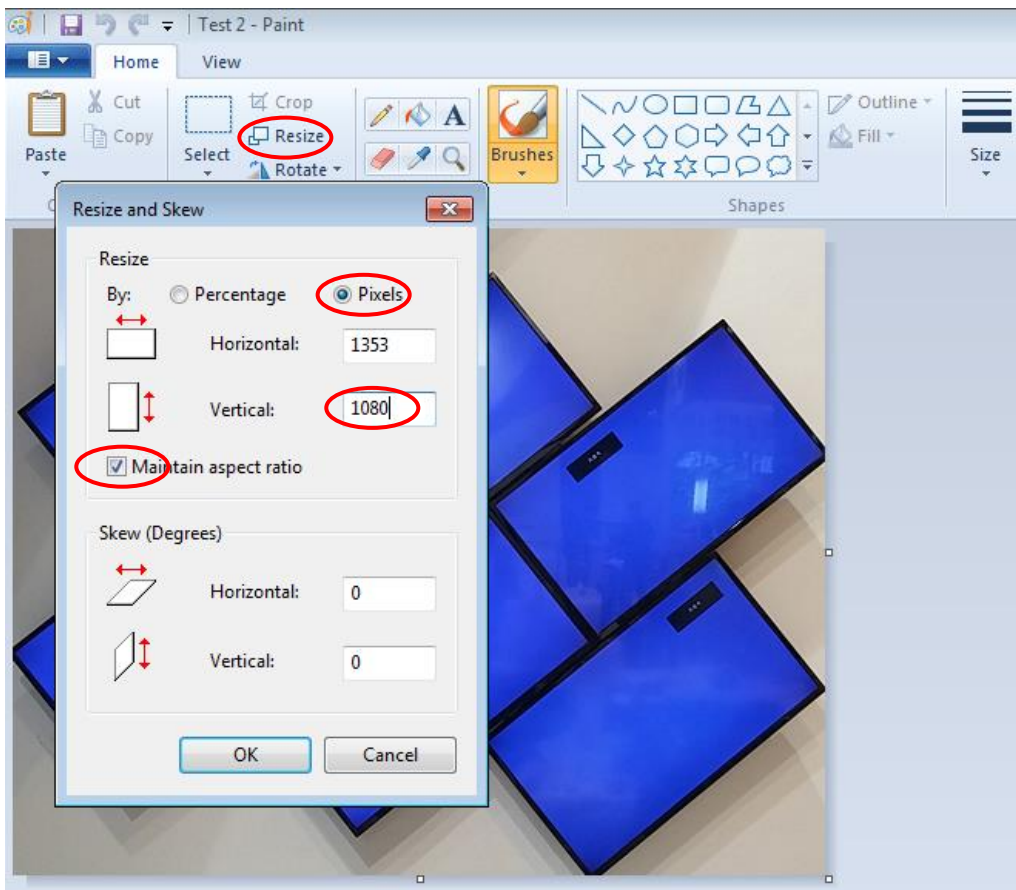
- You can also take a picture of the LCD array and resize this photo into a 1920x1080 resolution to locate the 8 points of the 4x LCDs, then input these into the scaler using the following process
- Trim the edge of the display area so that the edge of the LCD screen (not including bezel) is touching the edge of your image.
- Resize to 1920x1080 image resolution in JPG or PNG format.
- You can view this photo in Microsoft "Paint" and can use the mouse to capture the coordinates by using the select tool.

Example: 6x LCD video wall with two scalers.

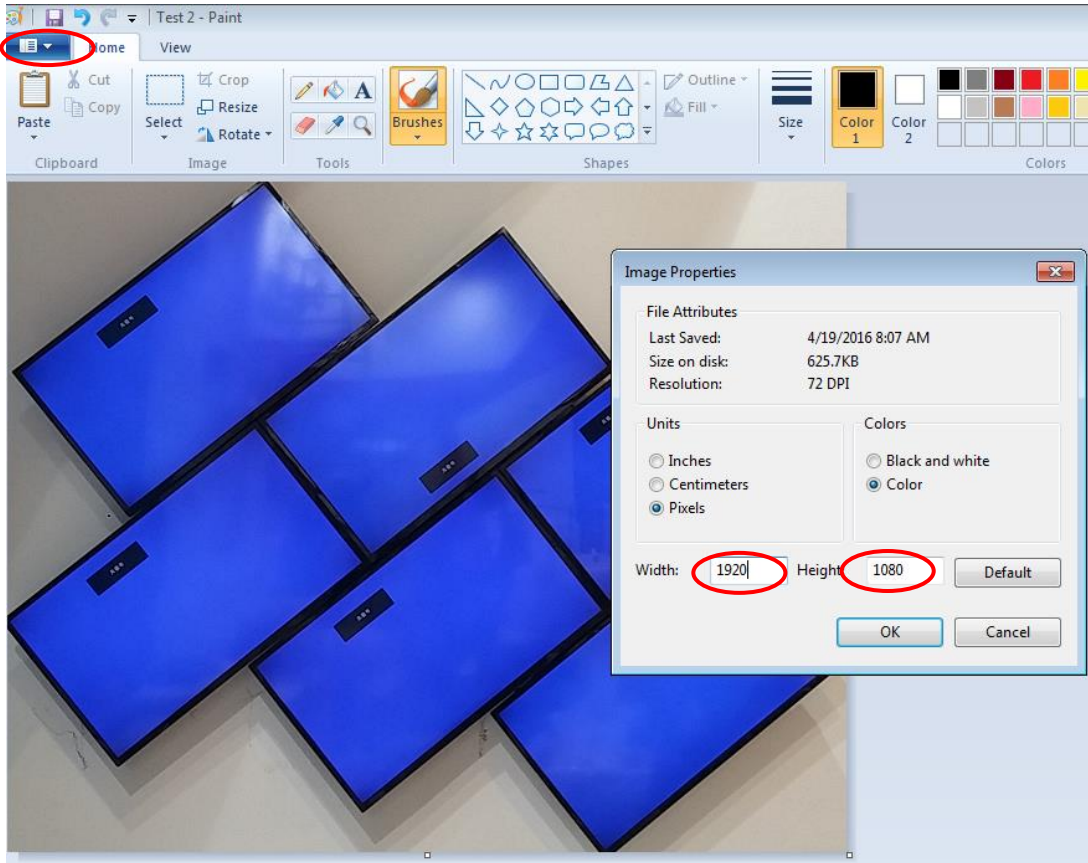
1. Open the photo in Paint



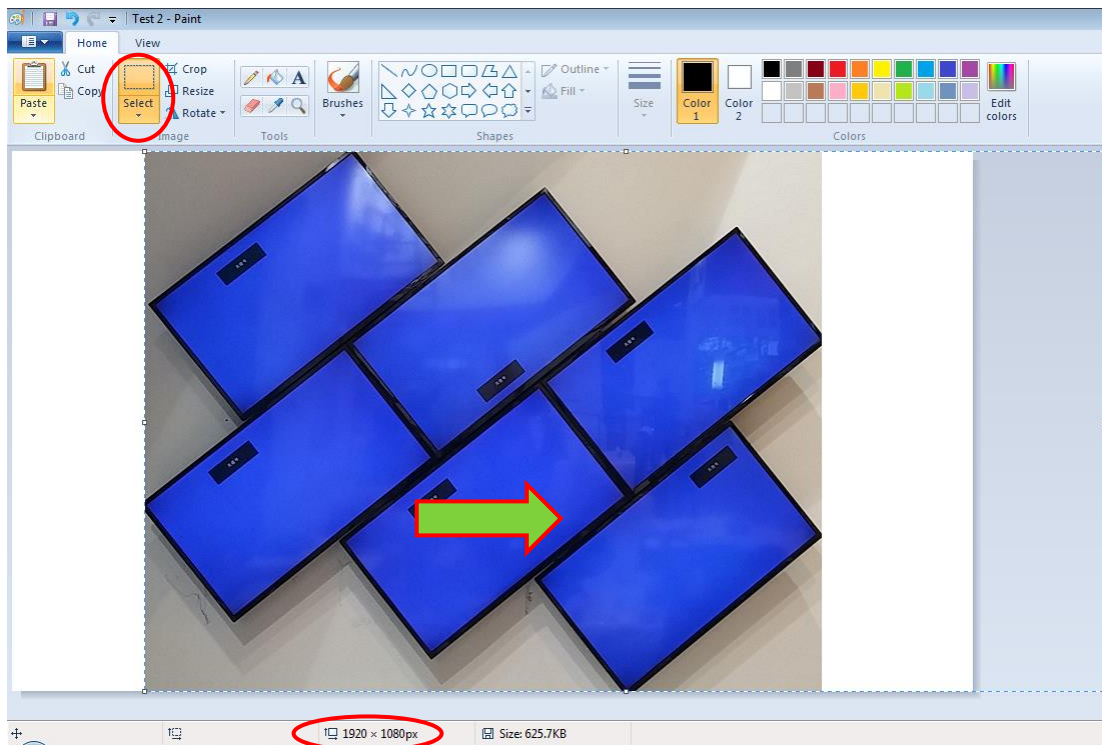
2. Resize the image to 1080 pixel height or 1920 pixel width and maintain aspect ratio



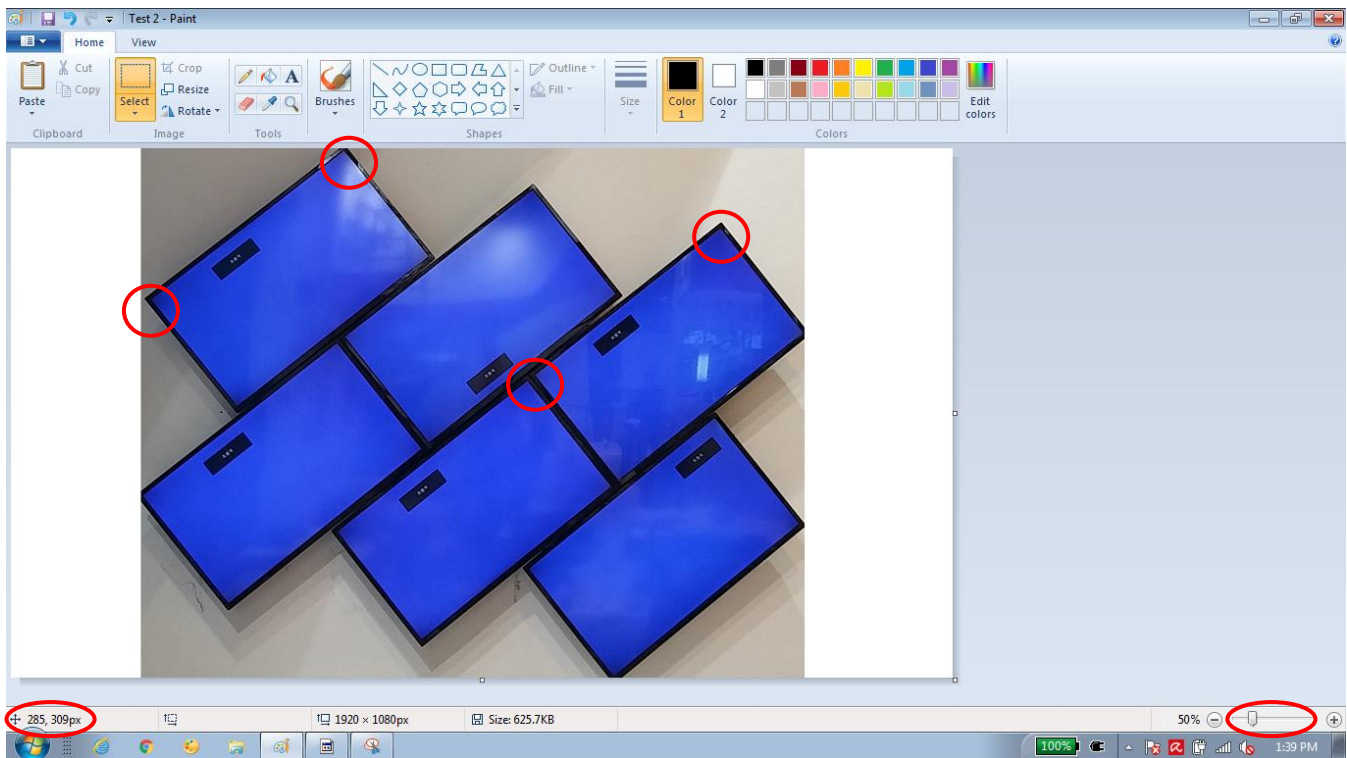
3. Open File → Properties and resize the image to 1920x1080 resolution



4. Select [All], then move the image to the center of the 1920x1080 coordinates



5. Click the Top Left and Top Right corner for each LCD to collect the coordinates for each LCD. You can zoom the canvas to get a more accurate result.



- 6. Use the GAlign PC tool or the OSD to input coordinates for each scaler
- 7. Fine tune if necessary.

Uploading coordinates via the remote control

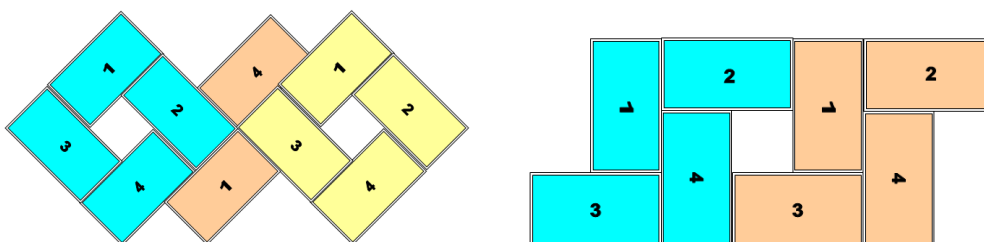
- After collecting the coordinates for all LCD's, you can upload the coordinates into the scaler though the OSD.
- Example: Storing custom mode in Mode 2:
- **[Video wall]→[Manual Mode]→[Mode 2]**
- Select **[TV1]→ Select [Top Left/Top Right]→ Slide bar to input Coordinates→ TV1 Done.**
- Back to select **[TV2]→ Select [Top Left/Top Right]→ Slide bar to input Coordinates→ TV2 Done.**
- The next step is to execute the same procedures for TV3 & TV4.
- You may have some difficulty seeing the OSD to set Coordinates. The GAlign tool can simplify this process

Upload coordinates into the scaler via the [GAlign] PC tool

- Please see the GAlign PC Tool section for details on this procedure

Create custom modes with multiple units cascaded

- First take a picture or make drawing similar to [Figure A] as shown above. Assign 4 LCDs to one scaler and then 4 LCDs to the next scaler and repeat as necessary. Follow the same procedures as described in previous section. You will need to do further **[Video Wall]** settings using **[Zoom]**, **[Pan]** and **[Overlap]**. You can find further information about these settings above.



Below is a picture to show a video wall designed with 4x scalers together with 15x 55" LCDs. You can take pictures after the LCD installation, then to collect two coordinates for each LCD and input the data in to each scaler by using the GAlign PC tool. You may need to do some fine tuning of the position through adjusting the coordinates due to some distortion of the picture.



Create custom modes in portrait display

Portrait modes are very similar to above, however when taking pictures you need to keep in mind the aspect ratio, ideally you would take the picture at -90 to the below so that after the coordinates are entered you can rotate the video wall using in the settings. This gives a higher quality configuration.

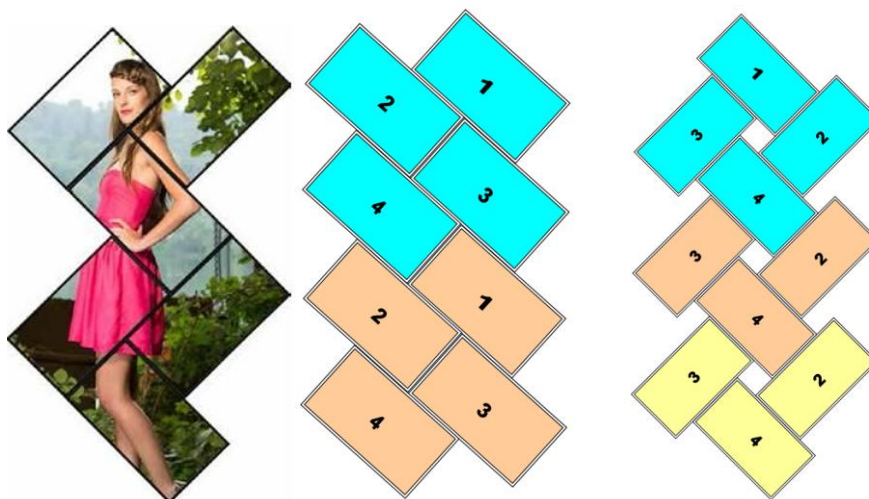


Image position fine-tune

For a simple video wall array, you can use the OSD to change Top Left and Top Right coordinates to fine tune the position.

For a large video wall or irregular array, you may not see the OSD. It will be more convenient and easier to use the GAlign PC tool for fine tuning. Please use the **[Real Time]** mode in the GAlign tool so that you can see the real time position for easy alignment.

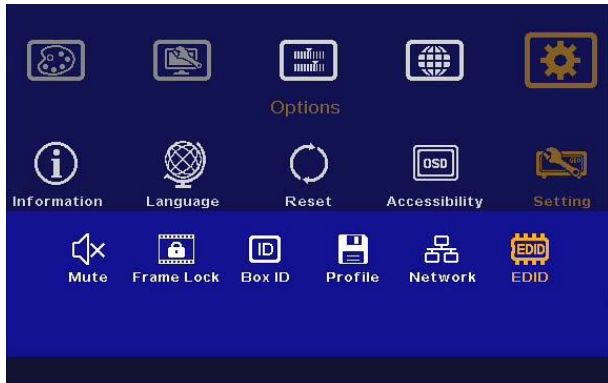
You can also use the **[Position]** feature in the OSD to adjust the image position for each LCD without changing the rotation angle and size of the image.

Don't forget to save the settings into **[Option]→ [Settings]→ [Profile]→ [Save]→ [Index]**.

EDID Setup

Selective EDID settings are available on the scaler.

The scaler can support a large range of input signal timings—from SVGA up to 4K. In order to get the best video performance, the correct EDID information needs to be configured; the aspect ratio in particular needs to be taken in to account. In a common setup an aspect ratio of 16:9 is used.

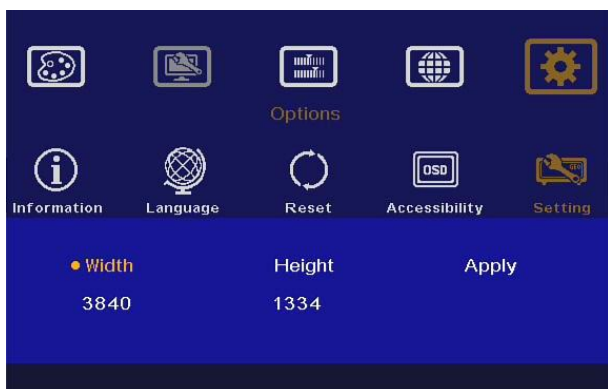


- Activate the EDID Setting Menu: **[Options]→[Setting]→[EDID]**
- Use the IR remote control to select the desired EDID.
- After selecting the EDID, the PC or media player will automatically change its output timing settings.
- Press the **[INFO]** key to check if the input timing is set correctly.

You can also select the EDID manually. The range will be from 800x600 60Hz to 3840x2160 30Hz. Based on the VESA standards the Horizontal resolution is in a step of (8) pixels and the vertical resolution in (2) pixels. After creating the EDID, the PC or laptop may still not be able to output the required timings due to hardware limitations or driver issues. In some cases, you may also need to do a manual selection of the output resolution in the source display output settings.



- In very rare cases, some PCs may not follow the same EDID settings from the scaler and show different results. If this happens, please open the PC resolution settings window and select the desired output resolution from the PC.
- You can choose the PC output resolution up to the maximum resolution set by the EDID on the scaler.
- If you want to create custom output resolution on the PC, please select Reduced Blanking timing in the high resolution output to reduce the output clock.
- After you create a custom output resolution on the PC, go back to the Resolution Selection Window on the PC to select the desired output timing.



Bezel Correction for Preset Display Modes

Bezel Correction

The Scaler features four preset bezel correction settings; Off, 3.5mm, 4.9mm and 1.5%, whilst there is also the option to create a custom bezel via the custom display mode option.

- 3.5mm is based on popular 47" LCD displays
- 4.9mm is based on popular 55" LCD displays
- 1.5% is based on the use of a conventional TV display

The following table gives an approximate guide for the likely amount of correction based on using the above settings with different sizes of display; the actual amount of correction required will vary depending upon the size, brand and model of display used.

Bezel correction mode	Horizontal correction	Vertical correction	Estimated "Active to Active" bezel correction value (mm) in H&V							
			32" LCD	40" LCD	42" LCD	47" LCD	50" LCD	55" LCD	60" LCD	65" LCD
3.5mm	0.289280%	0.514177%	2.35	2.86	2.99	3.31	3.50	3.81	4.14	4.46
4.9mm	0.471163%	0.837464%	3.64	4.47	4.68	5.20	5.51	6.03	6.56	7.08
1.50%	1.496090%	2.552533%	10.68	13.28	13.93	15.55	16.52	18.14	19.77	21.39

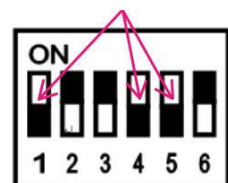
In the Bezel Setting section on the front of the unit set dip switch 1 to ON (up) and then power cycle the unit to apply the setting, this will apply 3.5mm of bezel correction.

If you require 4.9mm set switch 2 to ON (up) and leave all others to OFF (down) and then power cycle the unit. If you require 1.5% then set switch 1 and 2 to ON (up) and the others to OFF (down) and power cycle.

Another option possible with the 2x2 feature is the ability to invert the top two displays, this is useful if you have a large bezel at the bottom of your display. To use this, set switch 3 to ON (up) and leave others OFF (down), this will also provide a 1.5% bezel correction.

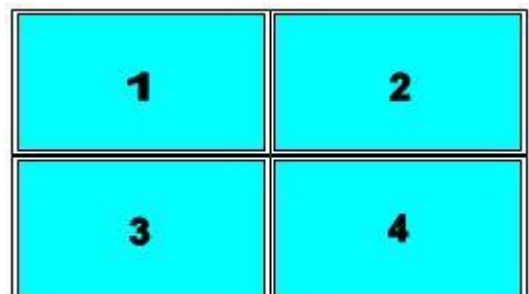
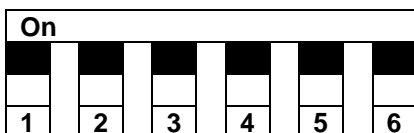
Preset Video Wall Configurations

To use one of the preset video walls please set the Dip Switches in the order as defined in the following diagrams according to your desired configuration. Only the first 6 dip switches are used, dip switches 7 and 8 may be ignored. Here is an example of how the dip switches are set for Mode 145 with the white squares denoting that the switched in positions 1, 4 and 5 in the ON (up) position, with 2, 3 and 6 in the OFF (down) position.

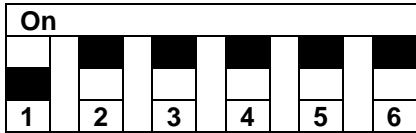


Mode 00 - Duplicate Mode

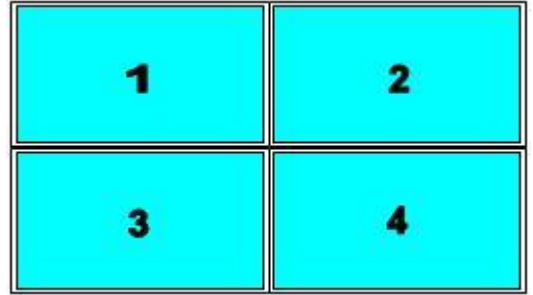
4 displays show the same full screen content as a video source.



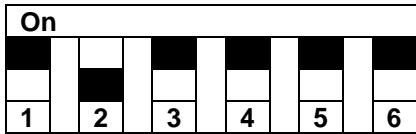
Mode 01 – 2x2 (Ratio 16:9)



Bezel off: no correction
Bezel on: 3.5mm bezel to bezel

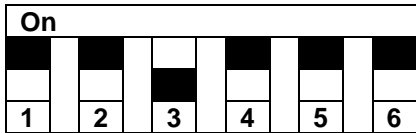


Mode 02 – 2x2 (Ratio 16:9)

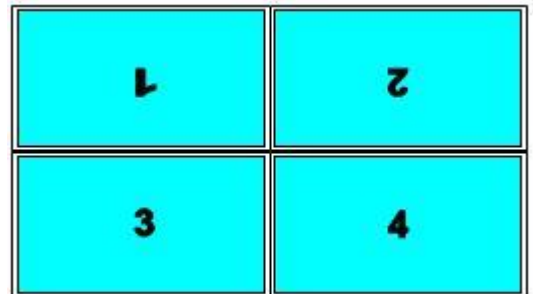


Bezel off: 4.9mm bezel to bezel
Bezel on: 1.5% bezel correction

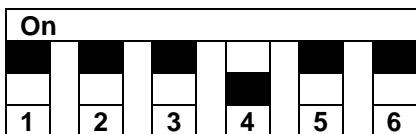
Mode 03 – 2x2 with top TV upside down (Ratio 16:9)



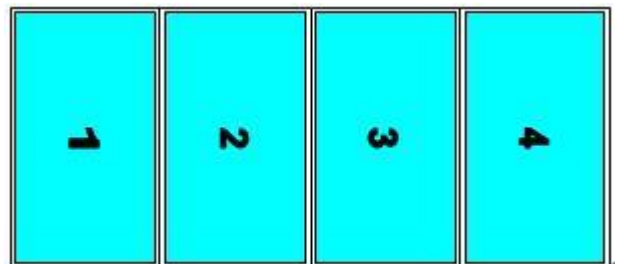
Bezel off: no bezel correction
Bezel on: 1.5% bezel correction



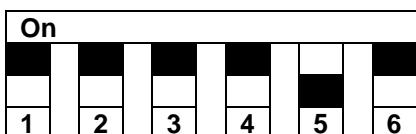
Mode 04– 4x1 (Ratio 2.25)



Bezel off: no bezel correction
Bezel on: 3.5mm bezel to bezel



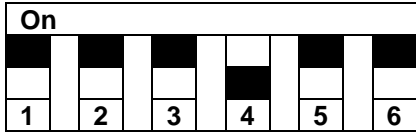
Mode 05 – 4x1 (Ratio 2.25)



Bezel off: 4.9mm bezel to bezel
Bezel on: 1.5% bezel correction

Mode 04A – 1x4

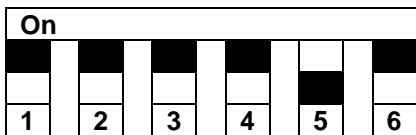
Please apply 90° adjustment to the signal source or rotate image 90° to get the correct viewing angle.



Bezel off: no bezel correction
Bezel on: 3.5mm bezel to bezel

Mode 05A – 4x1 (Ratio 2.25)

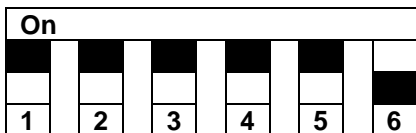
Please apply 90° adjustment to the signal source or rotate image 90° to get the correct viewing angle.



Bezel off: 4.9mm bezel to bezel
Bezel on: 1.5% bezel correction

Mode 06 – 3x1 (Ratio 1.69)

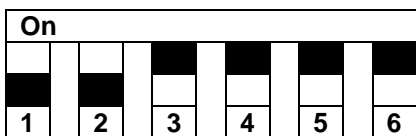
Display 4 will operate separately as a full screen in this configuration.



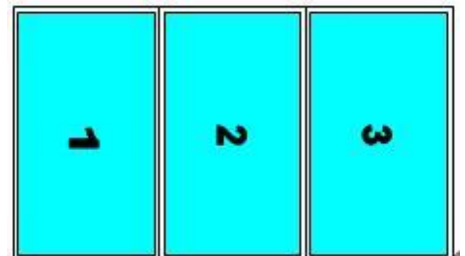
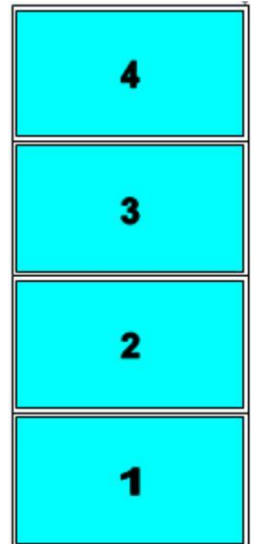
Bezel off: no bezel correction
Bezel on: 3.5mm bezel to bezel

Mode 12 – 3x1 (Ratio 1.69)

Display 4 will operate separately as a full screen in this configuration.



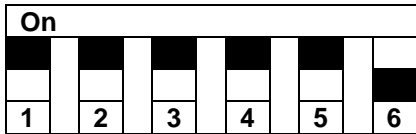
Bezel off: 4.9mm bezel to bezel
Bezel on: 1.5% bezel correction



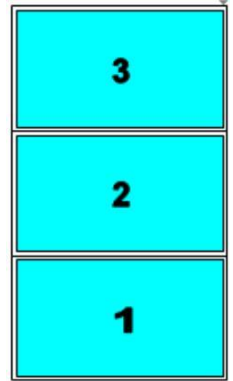
Mode 06A – 3x1 (Ratio 1.69)

Display 4 will operate separately as a full screen in this configuration.

Please apply 90° adjustment to the signal source or rotate image 90° to get the correct viewing angle.



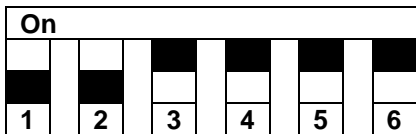
Bezel off: no bezel correction
Bezel on: 3.5mm bezel to bezel



Mode 12A – 3x1 (Ratio 1.69)

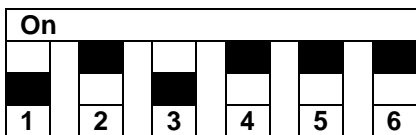
Display 4 will operate separately as a full screen in this configuration.

Please apply 90° adjustment to the signal source or rotate image 90° to get the correct viewing angle.

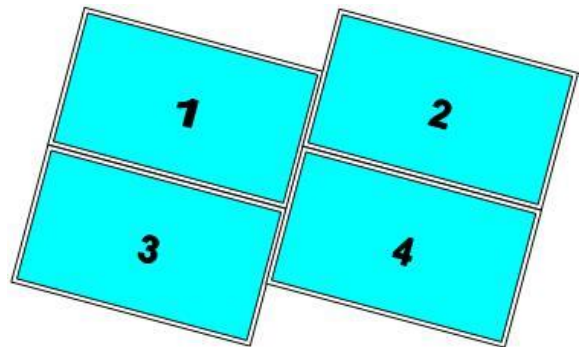


Bezel off: 4.9mm bezel to bezel
Bezel on: 1.5% bezel correction

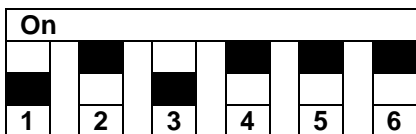
Mode 13 – 2x2 with clockwise 15° rotation (Ratio 1.7)



Bezel off: no bezel correction
Bezel on: 3.5mm bezel to bezel

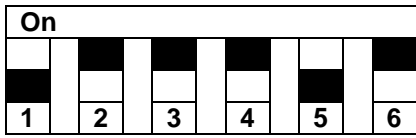


Mode 14 – 2x2 with clockwise 15° rotation (Ratio 1.7)

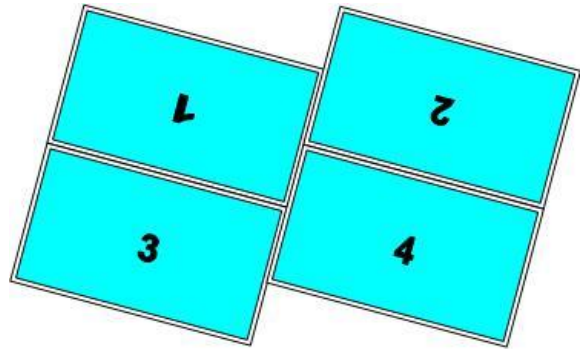


Bezel off: 4.9mm bezel to bezel
Bezel on: 1.5% bezel correction

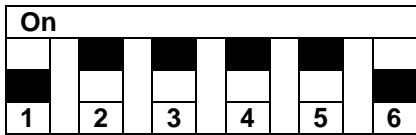
Mode 15 – 2x2 with clockwise 15° rotation and TV1 & TV2 at upside down position (Ratio 1.7)



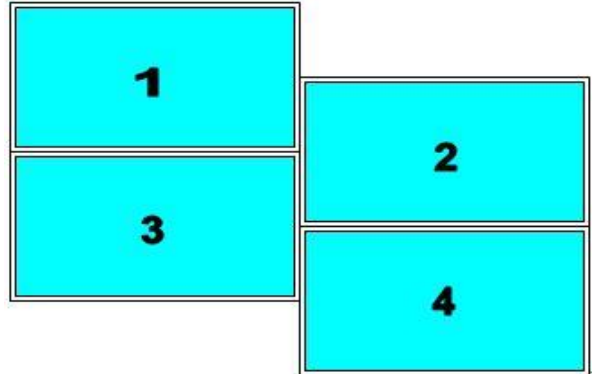
Bezel off: no correction
Bezel on: 1.5% bezel correction



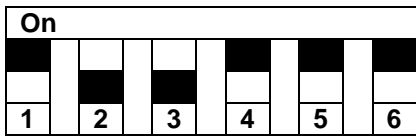
Mode 16 – 2x2 with TV2 & TV4 shift down 1/2 panel height (Ratio 1.42)



Bezel off: no correction
Bezel on: 3.5mm bezel to bezel

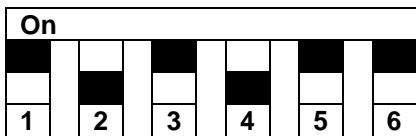


Mode 23 – 2x2 with TV2 & TV4 shift down 1/2 panel height (Ratio 1.42)

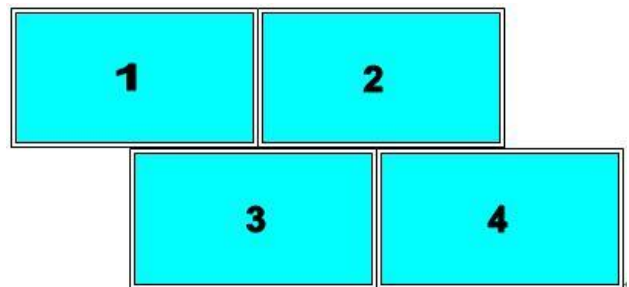


Bezel off: 4.9mm bezel to bezel
Bezel on: 1.5% bezel correction

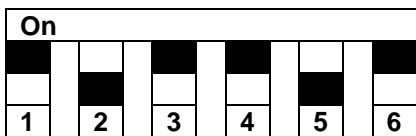
Mode 24 – 2x2 with TV3 & TV4 Right shift 1/2 panel width (Ratio 2.22)



Bezel off: no correction
Bezel on: 3.5mm bezel to bezel

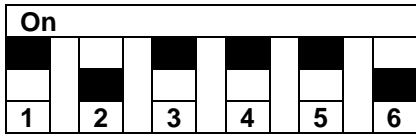


Mode 25 – 2x2 with TV3 & TV4 Right shift 1/2 panel width (Ratio 2.22)



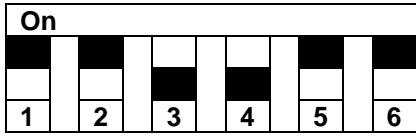
Bezel off: 4.9mm bezel to bezel
Bezel on: 1.5% bezel correction

Mode 26 – (Ratio 1.89)



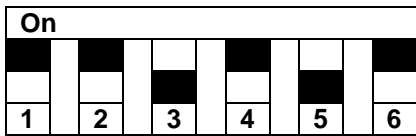
Bezel off: no correction
Bezel on: 3.5mm bezel to bezel

Mode 34 – (Ratio 1.89)



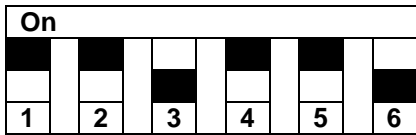
Bezel off: 4.9mm bezel to bezel
Bezel on: 1.5% bezel correction

Mode 35 – (Ratio 5.33) for 3x3 application



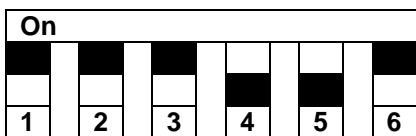
Bezel off: no correction
Bezel on: 3.5mm bezel to bezel

Mode 36 – (Ratio 5.33) for 3x3 application



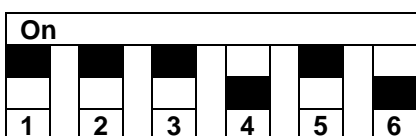
Bezel off: 4.9mm bezel to bezel
Bezel on: 1.5% bezel correction

Mode 45 – TV2 & TV4 Down shift with 1/4 panel height (Ratio 1.8)

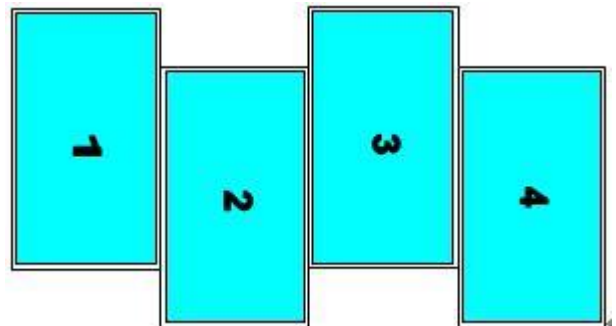
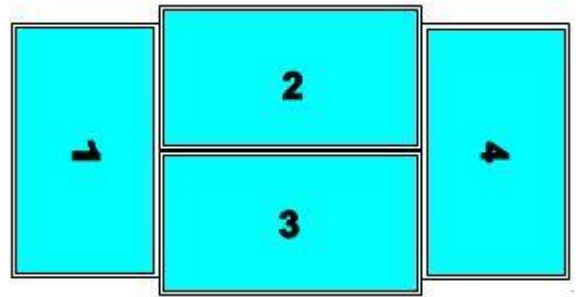


Bezel off: no correction
Bezel on: 3.5mm bezel to bezel

Mode 46 – TV2 & TV4 Down shift with 1/4 panel height (Ratio 1.8)



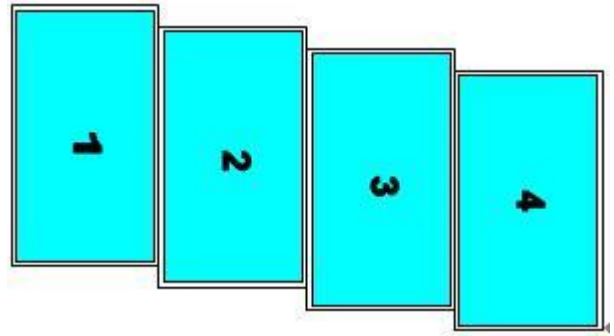
Bezel off: 4.9mm bezel to bezel
Bezel on: 1.5% bezel correction



Mode 56 – TV4 Down shift 1/4 panel height (Ratio 1.8)

On					
█	█	█	█	█	█
█	█	█	█	█	█
1	2	3	4	5	6

Bezel off: no correction
 Bezel on: 3.5mm bezel to bezel



Mode 123 – TV4 Down shift 1/4 panel height (Ratio 1.8)

On					
█	█	█	█	█	█
█	█	█	█	█	█
1	2	3	4	5	6

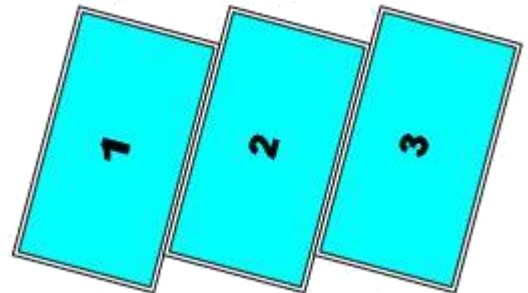
Bezel off: 4.9mm bezel to bezel
 Bezel on: 1.5% bezel correction

Mode 124 – 75° counterclockwise rotation(Ratio 1.77)

Display 4 will operate separately as a full screen in this configuration.

On					
█	█	█	█	█	█
█	█	█	█	█	█
1	2	3	4	5	6

Bezel off: no correction
 Bezel on: 3.5mm bezel to bezel



Mode 125 – 75° counterclockwise rotation(Ratio 1.77)

Display 4 will operate separately as a full screen in this configuration.

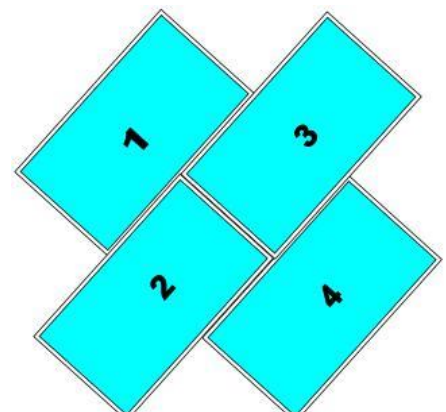
On					
█	█	█	█	█	█
█	█	█	█	█	█
1	2	3	4	5	6

Bezel off: 4.9mm bezel to bezel
 Bezel on: 1.5% bezel correction

Mode 126 – 48.37° counterclockwise rotation (Ratio 1.03)

On					
█	█	█	█	█	█
█	█	█	█	█	█
1	2	3	4	5	6

Bezel off: no correction
 Bezel on: 3.5mm bezel to bezel



Mode 134 – 48.37° counterclockwise rotation (Ratio 1.03)

On					
█	█	█	█	█	█
█	█	█	█	█	█
1	2	3	4	5	6

Bezel off: 4.9mm bezel to bezel

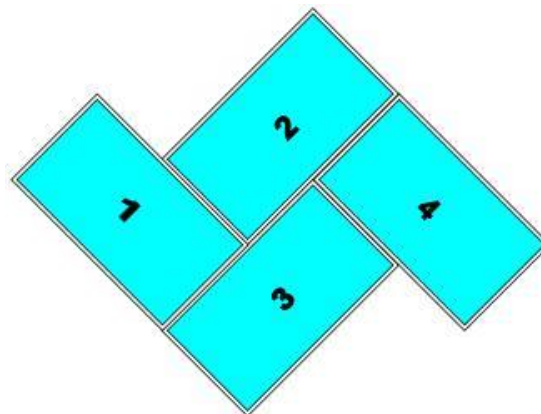
Bezel on: 1.5% bezel correction

Mode 135 – 45° clockwise rotation (Ratio 1.33)

On					
█	█	█	█	█	█
█	█	█	█	█	█
1	2	3	4	5	6

Bezel off: no correction

Bezel on: 3.5mm bezel to bezel



Mode 136 – 45° clockwise rotation (Ratio 1.33)

On					
█	█	█	█	█	█
█	█	█	█	█	█
1	2	3	4	5	6

Bezel off: 4.9mm bezel to bezel

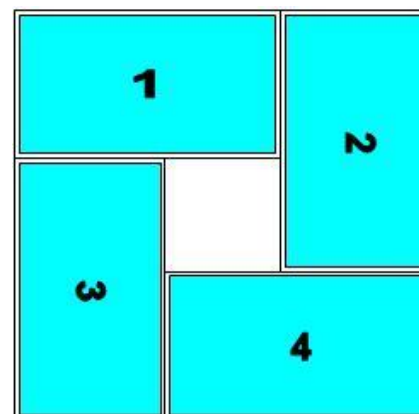
Bezel on: 1.5% bezel correction

Mode 145 – (Ratio 1)

On					
█	█	█	█	█	█
█	█	█	█	█	█
1	2	3	4	5	6

Bezel off: no correction

Bezel on: 3.5mm bezel to bezel



Mode 146 – (Ratio 1)

On					
█	█	█	█	█	█
█	█	█	█	█	█
1	2	3	4	5	6

Bezel off: 4.9mm bezel to bezel

Bezel on: 1.5% bezel correction

Mode 156 (Ratio 1)

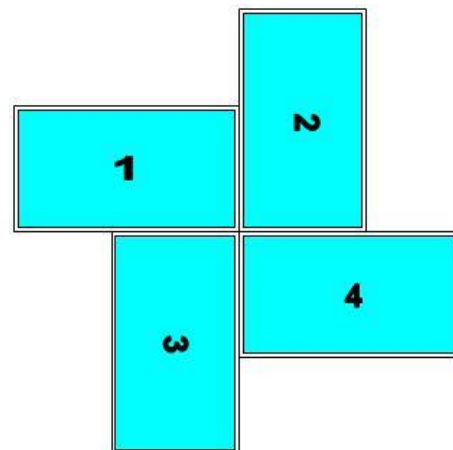
On					
1	2	3	4	5	6

Bezel off: no correction
Bezel on: 3.5mm bezel to bezel

Mode 234 – (Ratio 1)

On					
1	2	3	4	5	6

Bezel off: 4.9mm bezel to bezel
Bezel on: 1.5% bezel correction



Multiple Scaler Cascading

Multiple Scaler units can be cascaded up to a maximum of 15x15. Below are the procedures for creating a cascade:

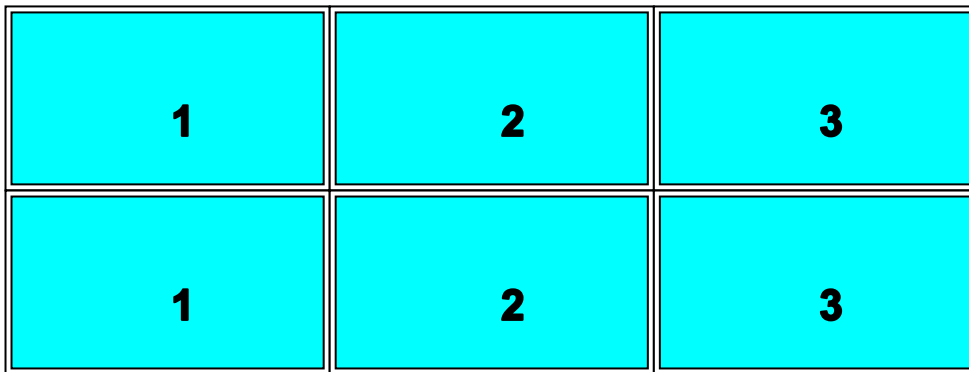
- Connect the source input signal to the first Scaler, then daisy chain via the single HDMI loop out port of the first scaler to the HDMI input port of the next scaler.
- Connect the IR receiver extender if required.
- Use the IR remote control to open the OSD.
- Set the Box ID # under [Options]→ [Settings]→ [Box ID] menu.
- Press “851” on the remote control, the commands will be executed on #1 Scaler only.
- Press “853” on the remote control, the commands will be executed on #3 Scaler only.
- Press “850” on the remote control, the commands can be executed on all Scaler’s simultaneously.

Signal source resolution selection

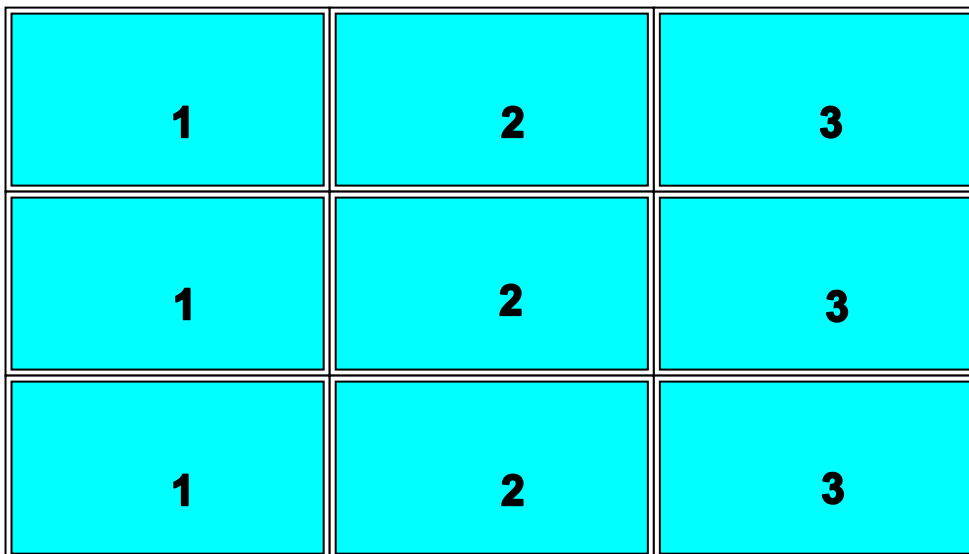
Using the correct signal source resolution setting will optimize final video quality, please try different resolution settings to get the best result. We recommend keeping the correct aspect ratio and also as close as possible to 1:1 pixel mapping. For more complicated cascades, please follow the instructions in the below section.

Examples for cascaded display

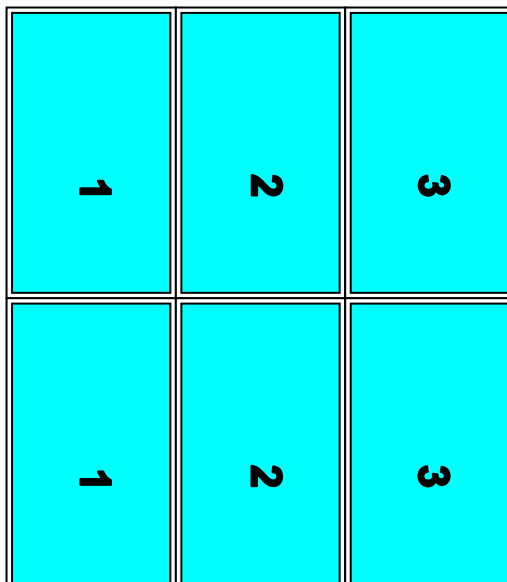
2x Mode 35/36, recommended signal source resolution: 1920x2160



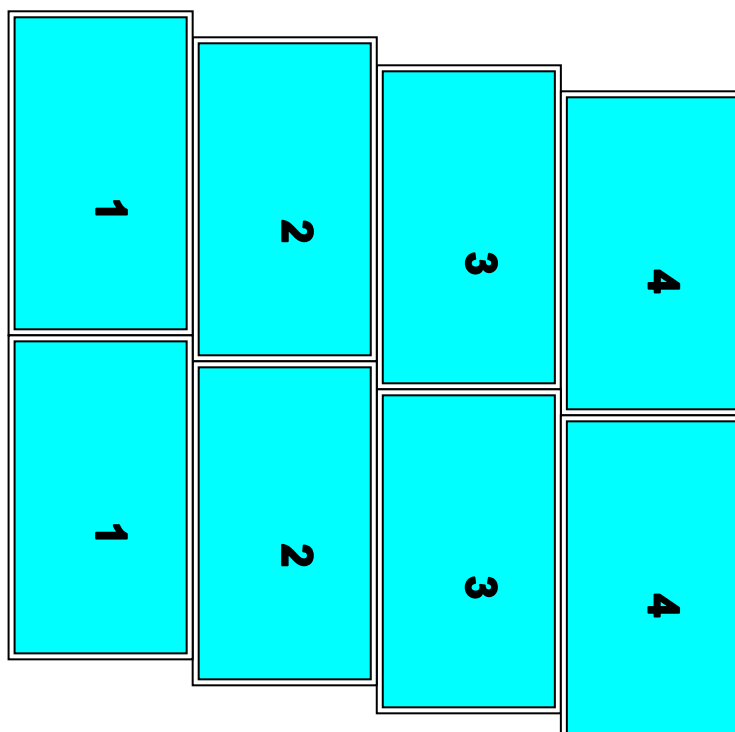
3x Mode 35/36, recommended signal source resolution: 1920x2160



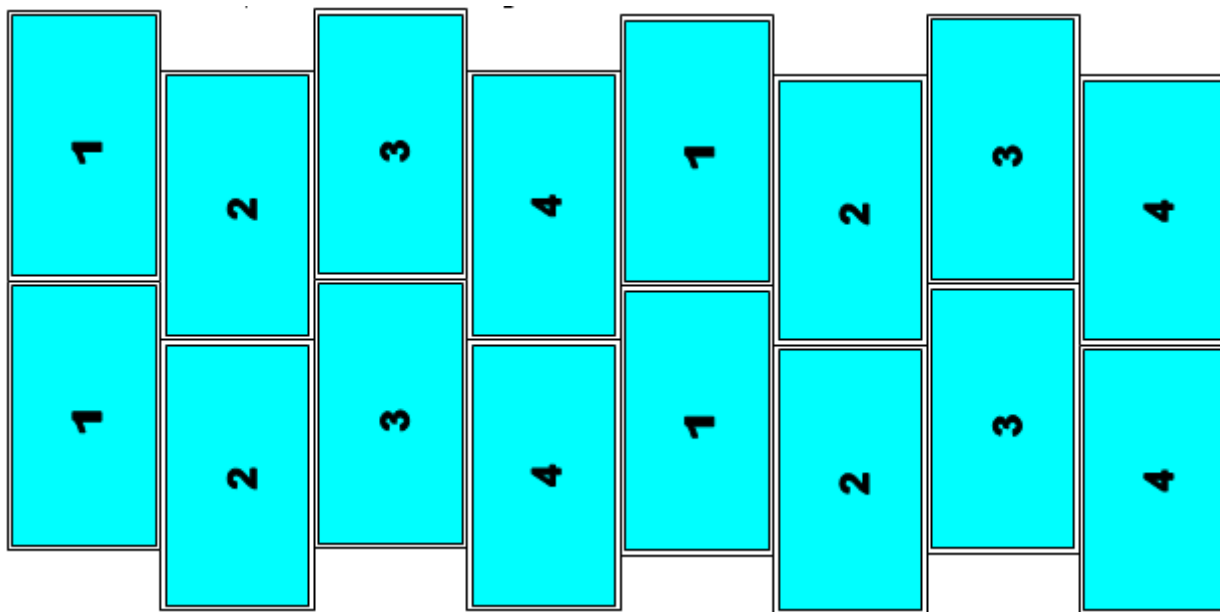
2x Mode 06/12, recommended signal source resolution: 1920x2160



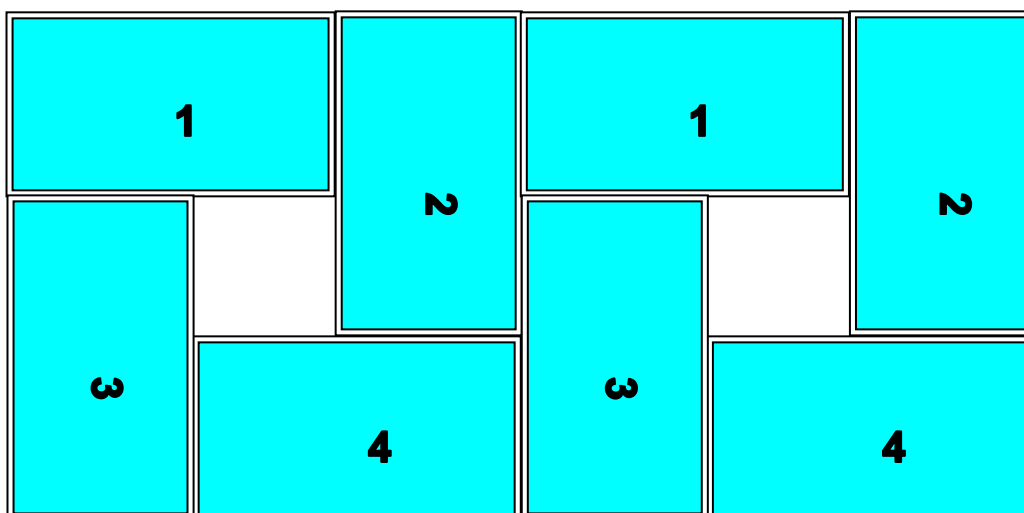
2x Mode 56/123, recommended signal source resolution: 1920x2160



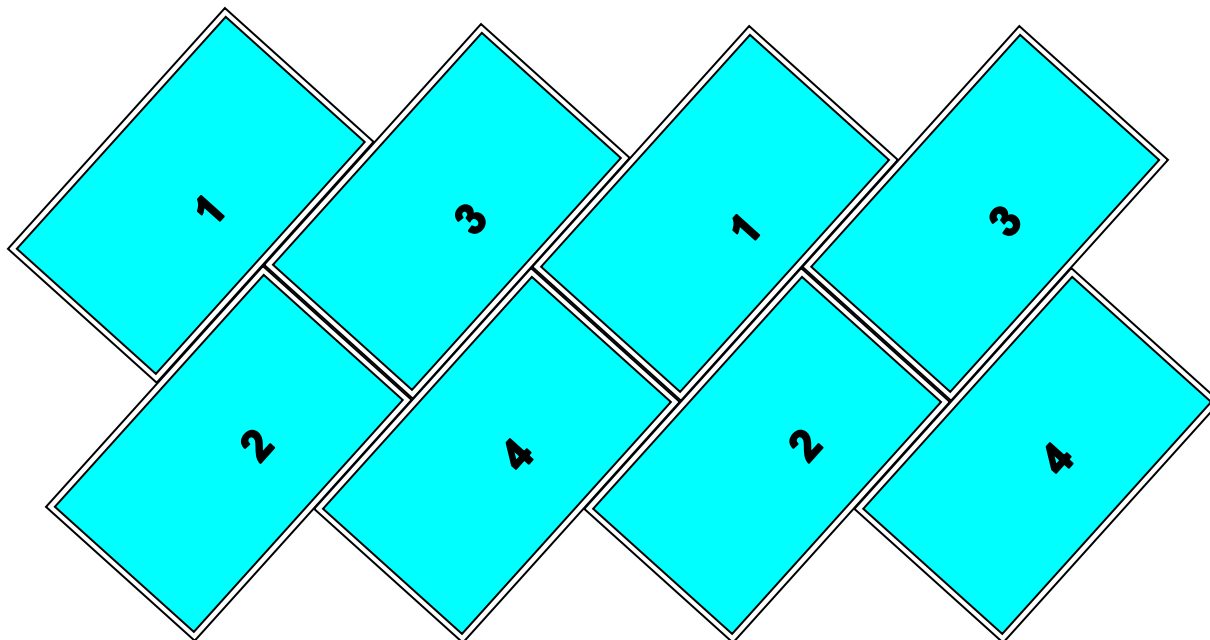
4x Mode 45/46, recommended signal source resolution: 3840x2160



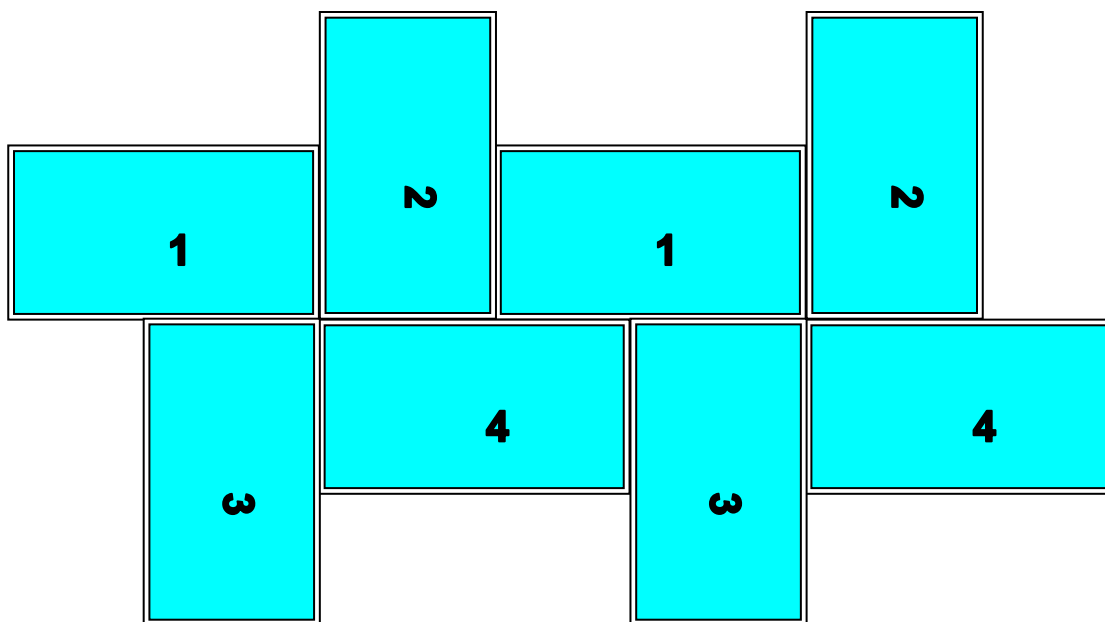
2x Mode 145/146, recommended signal source resolution: 3840x1080



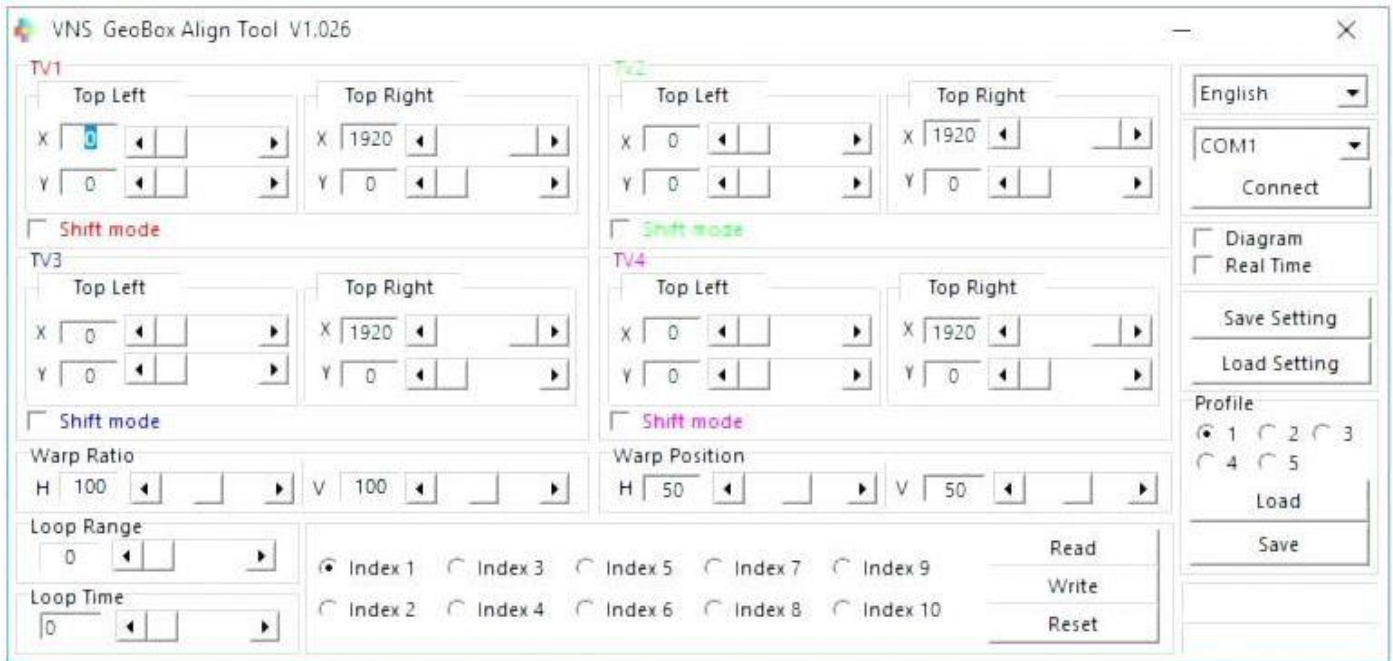
2x Mode 126/134, recommended signal source resolution: 3840*1080



2x Mode 156/234, recommended signal source resolution: 3840x1080



GAlign Tool



1. First connect to the scaler using RS-232 (Serial), this can be done using a direct cable or alternatively using a USB to serial adapter. Once connected please choose the correct COM port and press connect.
2. The software is split in to 4 sections, one for each of the LCDs. Each section is then further split in to four coordinates for each corner of the LCD. These can be found using the technique described earlier in the manual.
3. To confirm the correct information has been input, you can press “Diagram” to show a visual layout of your setup.
4. Looping can also be setup using the GAlign software, the same options as the OSD are available.
5. Once complete and checked you can now save your configuration in one of the Indexes (The OSD references these as **Modes**), to do this click the index you wish to use and then press “Write”. A previously saved configuration can also be recalled using the “Read” button. Each profile can store 10 Indexes (**Modes**)
6. To save all settings you can use the profile feature, this is the same function as explained earlier in the manual under **[Options] > [Setting] > [Profile]**.
7. To externally save all settings you can use “Save Setting”, this can be used to duplicate or store the scalers configuration.

Reset Function

To reset the unit to factory defaults please power down the unit using the power switch making sure it is in the "OFF" position. Press and hold the reset button (as shown in the Overview section at the beginning of this manual) and whilst holding reset turn the power switch to the "ON" position. Wait 2 seconds until the red power LED illuminates on the unit front, then release the reset switch.

CE/FCC Statement

CE Certification

This equipment complies with the requirements relating to Electromagnetic Compatibility Standards. It has been manufactured under the scope of RoHS compliance.

CE Konformitätserklärung

Dieses Produkt entspricht den einschlägigen EMV Richtlinien der EU für IT-Equipment und darf nur zusammen mit abgeschirmten Kabeln verwendet werden.

Diese Geräte wurden unter Berücksichtigung der RoHS Vorgaben hergestellt.

Die formelle Konformitätserklärung können wir Ihnen auf Anforderung zur Verfügung stellen

FCC Certification

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation.

You are cautioned that changes or modification not expressly approved by the party responsible for compliance could void your authority to operate the equipment.

This device complies with part 15 of the FCC Rules.

Operation is subject to the following two conditions:

1. This device may not cause harmful interference, and
2. This device must accept any interference received, including interference that may cause undesired operation.

LINDY Herstellergarantie – Hinweis für Kunden in Deutschland

LINDY gewährt für dieses Produkt über die gesetzliche Regelung in Deutschland hinaus eine zweijährige Herstellergarantie ab Kaufdatum. Die detaillierten Bedingungen dieser Garantie finden Sie auf der LINDY Website aufgelistet bei den AGBs.

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Stockton-on-Tees, TS17 9JY
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Recycling Information



WEEE (Waste of Electrical and Electronic Equipment), Recycling of Electronic Products

Europe, United Kingdom

In 2006 the European Union introduced regulations (WEEE) for the collection and recycling of all waste electrical and electronic equipment. It is no longer allowable to simply throw away electrical and electronic equipment. Instead, these products must enter the recycling process.

Each individual EU member state has implemented the WEEE regulations into national law in slightly different ways. Please follow your national law when you want to dispose of any electrical or electronic products. More details can be obtained from your national WEEE recycling agency.

Battery Remark:

Do not put empty batteries in your domestic waste bin as they will not be recycled. Empty batteries can be returned for recycling at our trade counter or at your local household recycling centre.

The raw materials enclosed in batteries such as Zinc, Iron and Nickel can be reused to a very large proportion. The recycling of batteries and disused/obsolete electronic equipment is one of the most efficient environment protection actions you can easily take.

Germany / Deutschland

Rücknahme Elektroschrott und Batterie-Entsorgung

Die Europäische Union hat mit der WEEE Richtlinie Regelungen für die Verschrottung und das Recycling von Elektro- und Elektronikprodukten geschaffen. Diese wurden im Elektro- und Elektronikgerätegesetz – ElektroG in deutsches Recht umgesetzt. Das Entsorgen von Elektro- und Elektronikgeräten über die Hausmülltonne ist verboten! Diese Geräte müssen den Sammel- und Rückgabesystemen zugeführt werden! Dort werden sie kostenlos entgegen genommen. Die Kosten für den weiteren Recyclingprozess übernehmen die Gerätehersteller.

LINDY bietet deutschen Endverbrauchern ein kostenloses Rücknahmesystem an, beachten Sie bitte, dass Batterien und Akkus den Produkten vor der Rückgabe an das Rücknahmesystem entnommen werden müssen und über die Sammel- und Rückgabesysteme für Batterien separat entsorgt werden müssen. Ausführliche Informationen zu diesen Themen finden Sie stets aktuell auf der LINDY Webseite im Fußbereich.

France

En 2006, l'union Européenne a introduit la nouvelle réglementation (DEEE) pour le recyclage de tout équipement électrique et électronique.

Chaque Etat membre de l' Union Européenne a mis en application la nouvelle réglementation DEEE de manières légèrement différentes. Veuillez suivre le décret d'application correspondant à l'élimination des déchets électriques ou électroniques de votre pays.

Remarque sur les piles et batteries

En tant que consommateur final, vous êtes tenus de restituer toutes les piles et batteries usagées. Il est clairement interdit de les jeter avec les ordures ménagères ! Les piles et batteries contenant des substances nocives sont marquées par le symbole ci-dessus. Vous pouvez déposer gratuitement vos piles ou batteries usagées dans les centres de collecte de votre commune, dans nos succursales ou dans tous les points de vente de piles ou batteries. Vous respecterez ainsi la loi et contribuerez à la protection de l'environnement !

Italy

Nel 2006 l'unione europea ha introdotto regolamentazioni (WEEE) per la raccolta e il riciclo di apparecchi elettrici ed elettronici. Non è più consentito semplicemente gettare queste apparecchiature, devono essere riciclate. Ogni stato membro dell' EU ha tramutato le direttive WEEE in leggi statali in varie misure. Fare riferimento alle leggi del proprio Stato quando si dispone di un apparecchio elettrico o elettronico.

Per ulteriori dettagli fare riferimento alla direttiva WEEE sul riciclaggio del proprio Stato.

No. 38161

1st Edition, January 2018



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