

# USER MANUAL

## Creative Video Wall Controller HDTV-VPX104



# Safety Reminder

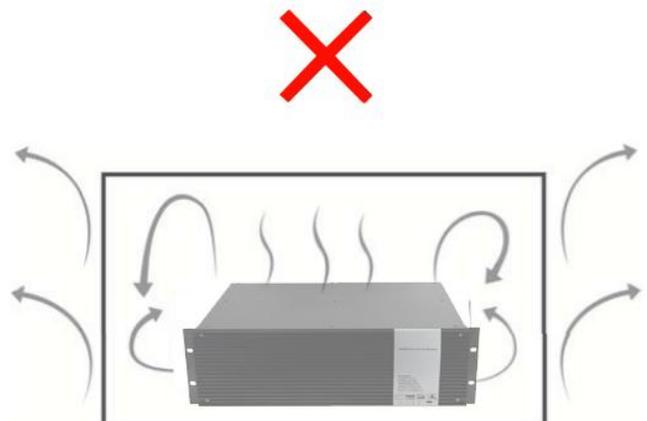
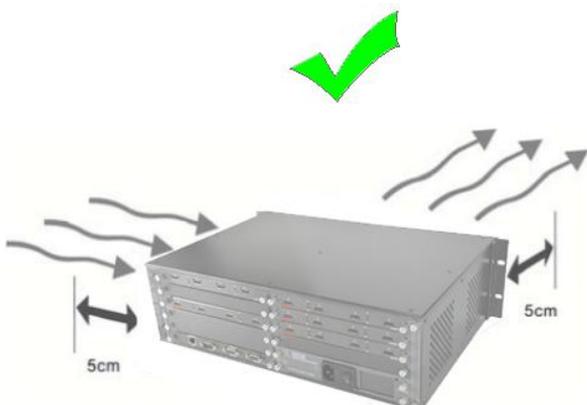
To protect the device and operating personnel from electrostatic discharge, you need to check and ensure that the device is grounding well before the device is powered on. Please observe the following when you install, use, maintain this equipment.

## Disposal Instruction (US)

For better protection of our earth, please don't throw this electronic device into municipal trash bin when discarding. To minimize pollution and ensure utmost protection of the global environment, please recycle the product. For more information about the collection and recycling of Waste Electrical and Electronic Equipment (WEEE), please contact your local dealers.

## Safety Instructions

1. Please read these safety instructions carefully.
2. Please keep this User Manual for later reference.
3. Please disconnect this equipment from connector before cleaning. Don't use liquid or sprayed detergent for cleaning. Use moisture sheet or cloth for cleaning.
4. Make sure the equipment is connected to the power source with the correct voltage, frequency, and ampere.
5. All cautions and warnings on the equipment should be noted.
6. Never pour any liquid into opening, this could cause fire or electrical shock.
7. Never open the equipment. For safety reason, the equipment should only be opened by qualified service personnel.
8. If one of the following situations arises, get the equipment checked by a service personnel :
  - a. Liquid has penetrated into the equipment.
  - b. The equipment has been exposed to moisture.
  - c. The equipment has not work well or you can not get it work according to user's manual.
  - d. The equipment has dropped and damaged.
  - e. If the equipment has obvious sign of breakage.
9. Ambient operation temperature: 0 ~ 45 degrees.
10. Risk of overheating! Don't put operating/installing equipment inside too closed space, be sure the installation space at least 1 to 2 inches or 2 to 5 cm of space for ventilation. To ensure that other objects do not cover the equipment.



**Notice: Peripheral devices**

Only peripherals (input/output devices, terminals, player, etc.) certified to comply with Class B limits may be attached to this equipment. Operation with non-certified peripherals is likely to result in interference to radio and TV reception.

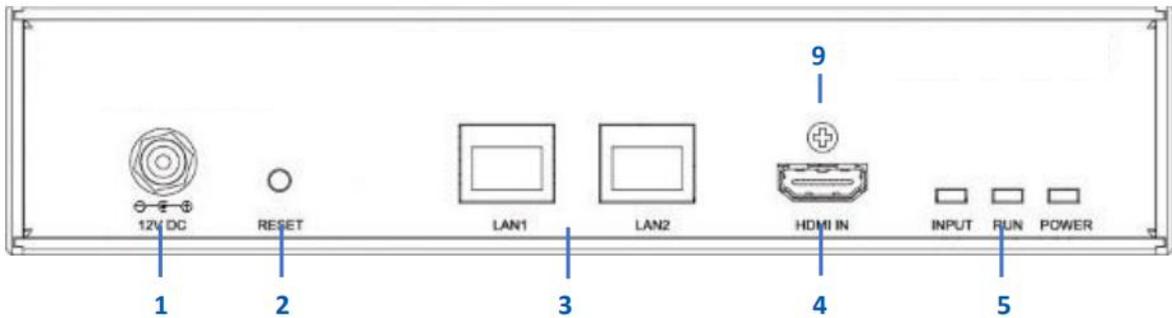
**Caution**

Changes or modifications not expressly approved by the manufacturer could void the user's authority, which is granted by the Federal Communications Commission, to operate this equipment.

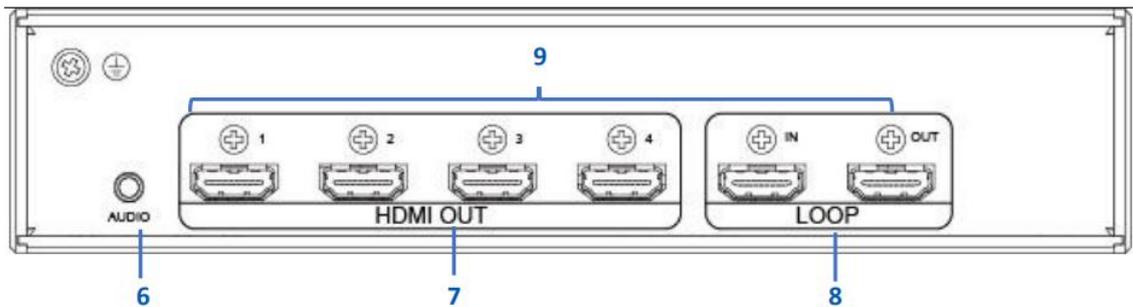
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## 1. Hardware Overview



1. Lockable Power Supply
2. Reset Button
  - Back to Factory Settings
  - Press+hold for 3 seconds
3. RJ45 Ethernet Ports
4. HDMI Input Port
5. Status Lights



6. Audio Output Port
7. HDMI Output Ports
8. Daisy Chain HDMI Ports
  - To Other Processors
9. Screw holes for Lockable HDMI cables  
Please take the cover screws out before use

## 1. Software installation on control PC

Insert the Software CD into your control PC's CD-ROM drive to begin the installation. Double click the HDTV-VPX104 management software in software folder to start the installation.

Click the drop down menu to choose the language for the software.

The default language is English.

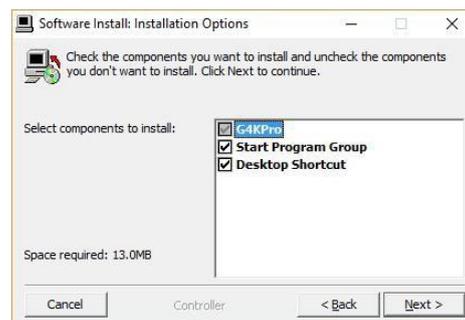
After choosing the language, click **OK** to continue



Click **I Agree** to accept the License Agreement

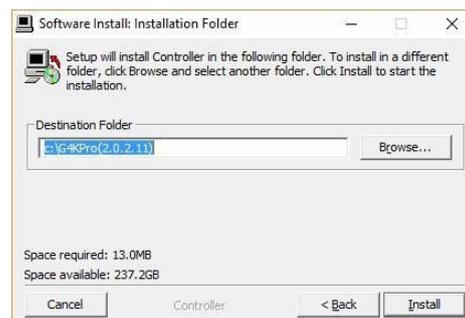


Check and uncheck the items for installation.  
And then click **Next**.

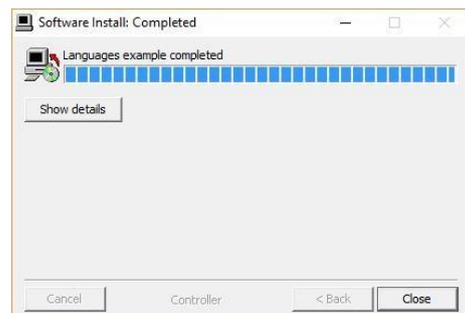


Choose the path for installation as you wish and then click **Install** to start the installation process.

Note: The installation may take several minutes to finish

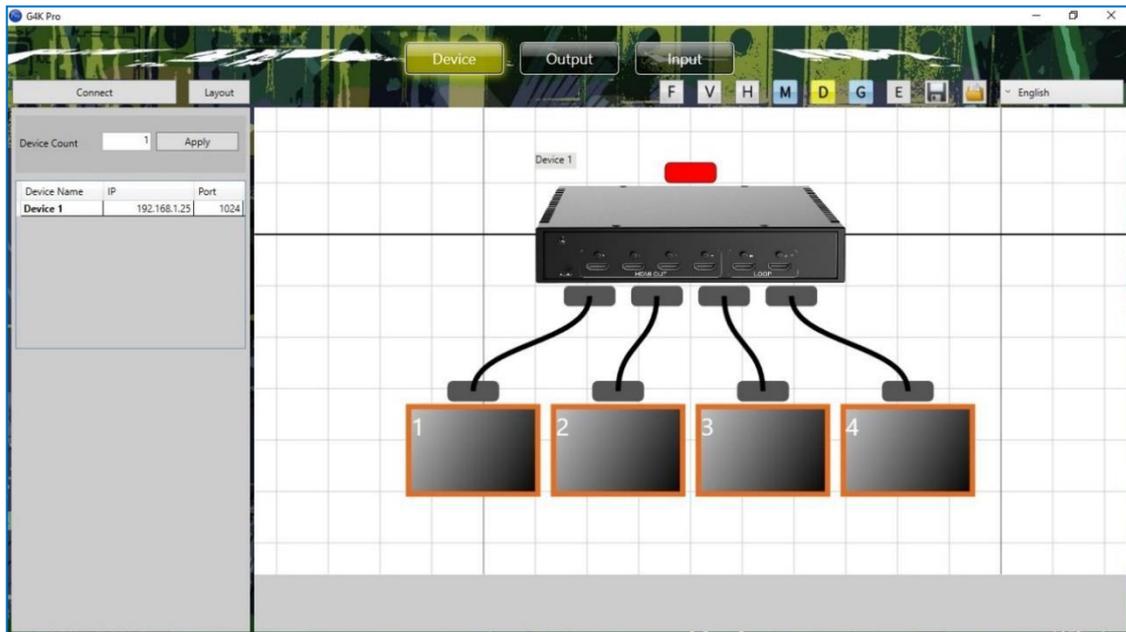


Click **Close** to complete the installation



## 2. Management software

There are three main groups of tools in this software to help users design a creative video wall layout. Device, Output and Input



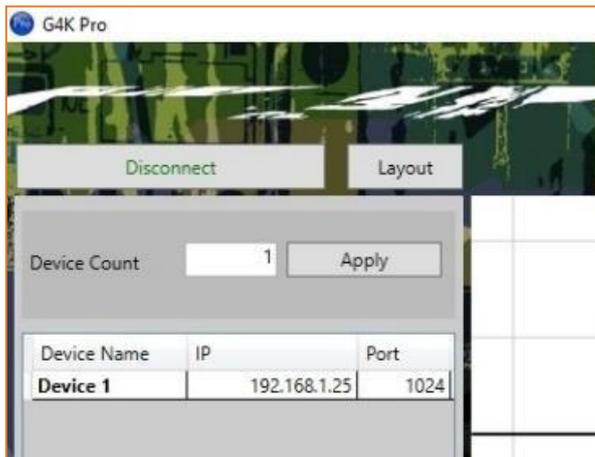
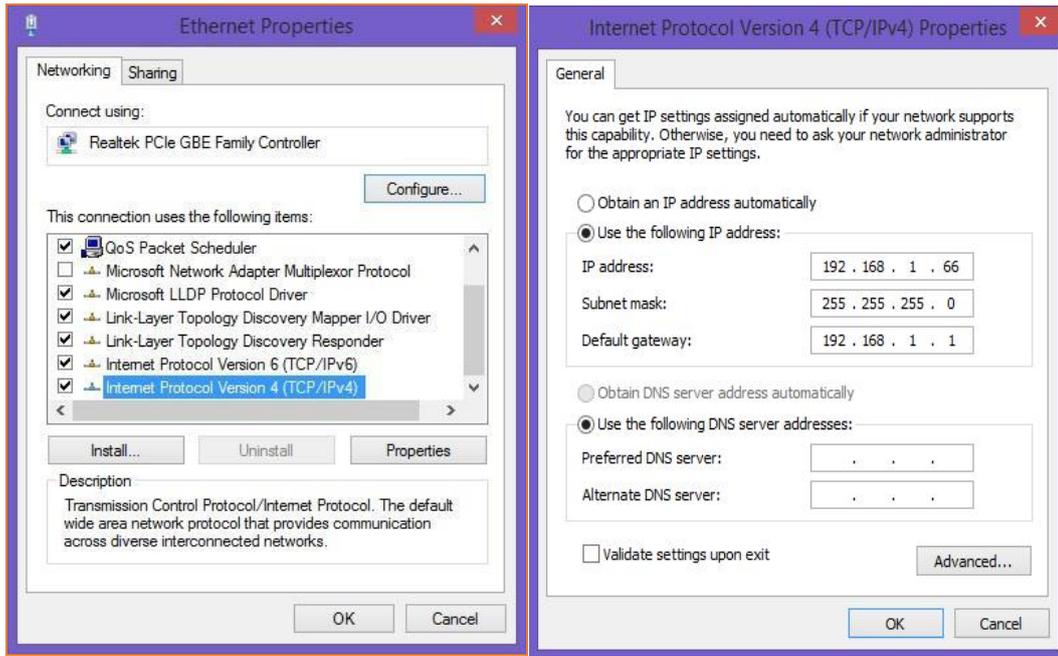
### 2.1. Device

Users are able to configure devices and connect the devices to control PC in this section.

#### 2.1.1. Connect

The default IP address is **192.168.1.25**. Users need to change the IP address of control PC to the same IP group of this processor.

- Open the 'Ethernet Properties' windows on Control PC
- Highlight the TCP/IPv4 in Networking and click the Properties button to open the TCP/IPv4 Properties window
- Change the 'Obtain an IP address automatically' to 'Use the following IP address to set up a static IP address'
  - IP address: any address between **192.168.1.1** and **192.168.1.255** except the address which has been taken by the processor
  - Subnet mask: **255.255.255.0**
  - Default Gateway: **192.168.1.1**



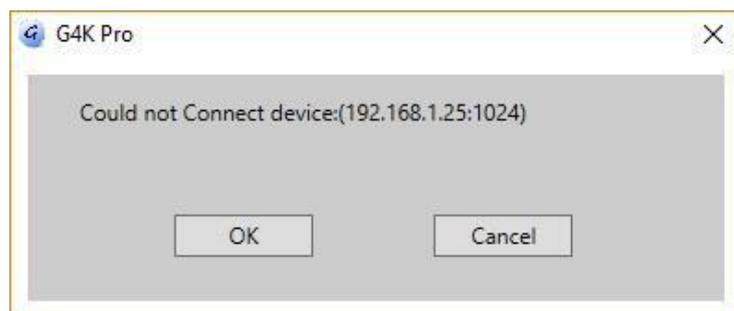
- Once the control PC IP address having been set up, press the **Connect** button to connect the Processor.

- The Connect button changes to **Disconnect** button indicating the connection has been set up successfully.

- If a dialog window as below comes up, the connection was failed.

- Please check if control PC IP address is correctly set up

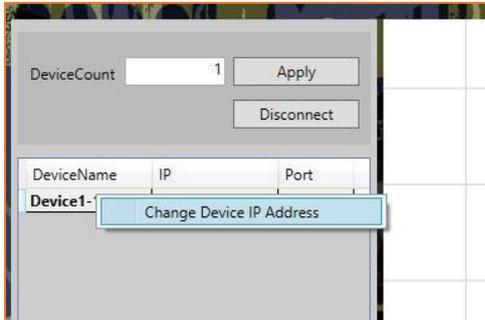
- Please check the network cable connection between PC and G4K Pro.



## 2.1.2. Connect multiple Processors as daisy chain

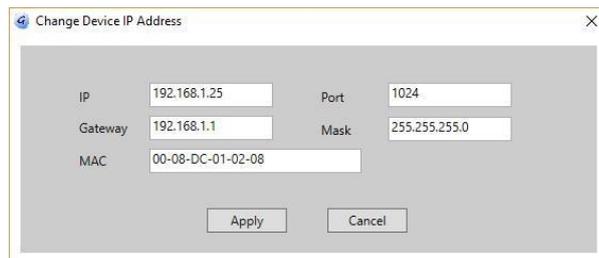
### 2.1.2.1. Set Up unique IP address for each processor

Since the default IP address of each processor is the same, users need to change the IP addresses of these devices to avoid IP conflict.



1) Users need to connect the one by one using default IP address: **192.168.1.25** to set up the connection between device and control PC.

2) Make sure the device has been connected and then right click the **Device Name** and then choose **Change Device IP Address** to open the 'Change Device IP Address' dialog window.



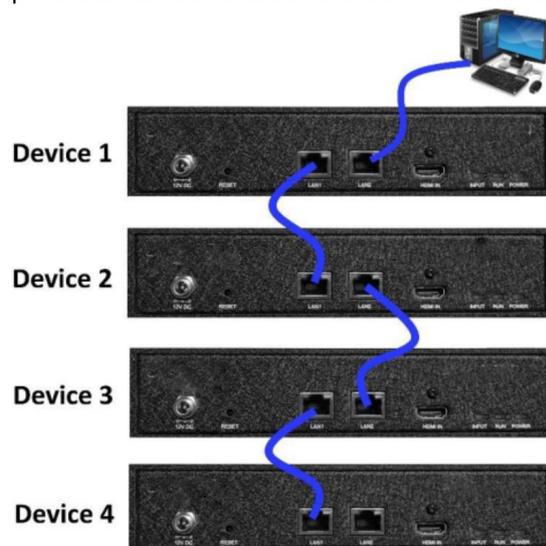
3) Please give a unique IP address for each device in the same system.

e.g.

Device 1	192.168.1.25	Device 3	192.168.1.27
Device 2	192.168.1.26	Device 4	192.168.1.28

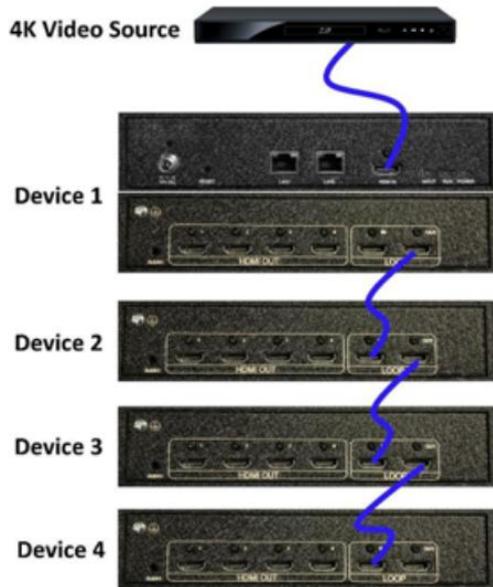
### 2.1.2.2. Daisy chain units with CAT cables

Daisy chain all the units via dual RJ45 ports and connect to the control PC for command and control.



### 2.1.2.3. Daisy chain units with HDMI cables

Daisy chain all the units using 4K compatible HDMI cable (if 4K video source is applied) via **LOOP IN** and **OUT HDMI** ports



**Note:** the daisy chain HDMI ports only takes the ‘processed video source’ + ‘frame lock’ signals from other units. It will not take HDMI video signal from video device directly. Only the main **HDMI IN** port in the front panel is able to take HDMI video signal from video device directly.

This configuration left is an example for setting up a 4 units of processor daisy chain (e.g. for a 4 x 4 video wall) with one video source input to be displayed across the entire video wall.

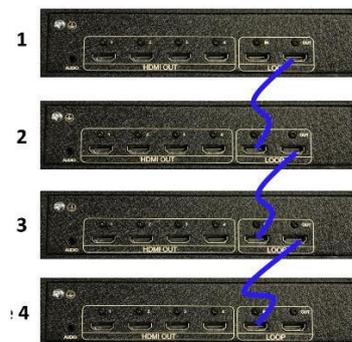
For multi video sources input, please see daisy chain examples below (3.1.2.6)

### 2.1.2.4. Connect devices to screens

Connect all the HDMI ports in ‘HDMI OUT’ to the screens of video wall. **e.g.**, for a 4x4 video wall with one video source, see configuration below

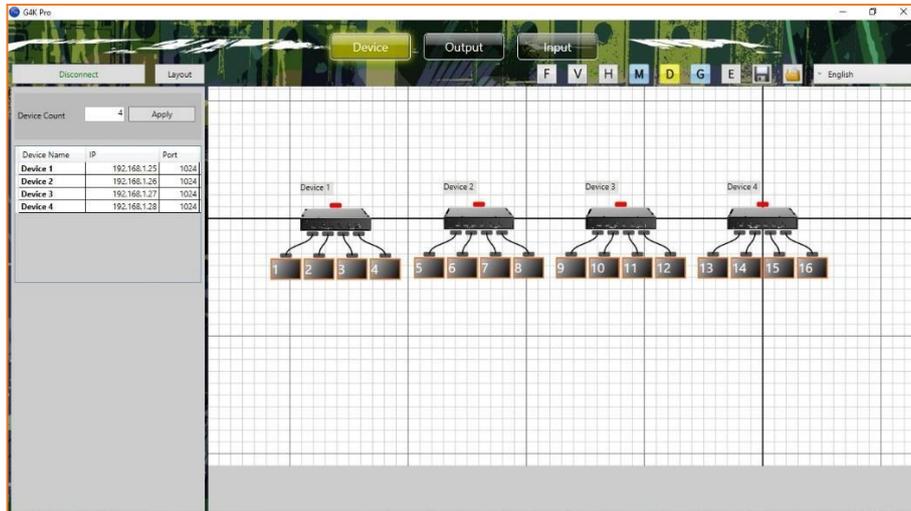


	G4K Pro		Video Wall Displays
1	Output 1	→	1
	Output 2	→	2
	Output 3	→	3
	Output 4	→	4
2	Output 1	→	5
	Output 2	→	6
	Output 3	→	7
	Output 4	→	8
3	Output 1	→	9
	Output 2	→	10
	Output 3	→	11
	Output 4	→	12
4	Output 1	→	13
	Output 2	→	14
	Output 3	→	15
	Output 4	→	16



### 2.1.2.5. Set up daisy chain in management software

- 1) Add the quantity of the processor into **Device Count** and press **Apply** button.
  - a. Give a name for each device if preferred
  - b. Enter the unique IP address for each device (**3.1.2.1**)
  - c. Set the Port to 1024 for all devices
- 2) Press **Connect** button to connect all the processors into one system and users will get the following users interface



- 3) Click on the header of 1<sup>st</sup> device and drag the line to the 2<sup>nd</sup> device to open the ‘**Change Device Mode**’ dialog window to choose the Slave Mode (Daisy Chain mode) for the 2<sup>nd</sup> unit. And then 2<sup>nd</sup> to 3<sup>rd</sup> and 3<sup>rd</sup> to 4<sup>th</sup> unit.

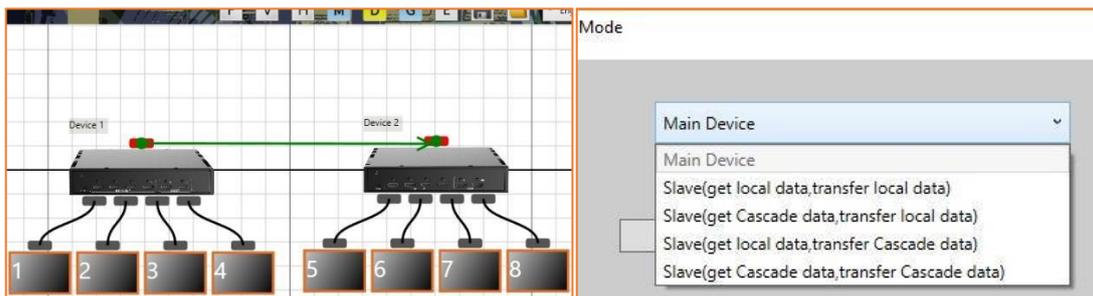
For a 4x4 video wall with only one video to be displayed across the entire video wall, the settings are as follows:

Unit 1 **Main Device**

Unit 2 **Slave (get Cascade data, transfer Cascade data)**

Unit 3 **Slave (get Cascade data, transfer Cascade data)**

Unit 4 **Slave (get Cascade data, transfer Cascade data)**



- 4) Once the daisy chain relationship between each processor has been established, users need to
  - a. set up the layout of the screens according to the video wall in **Output** of management software (see **3.2**)
  - b. set up the video input window for the video wall in ‘**Input**’ of control management software (see **3.3**)

5) Each unit has 5 modes to be used in daisy chain system.



- 1. Main Device** **Show Red Header**   
Under this Mode, it will display the video source from the **Main HDMI input** (also called 'local data) in the front of device.  
This mode will define the device as the master unit in the system. There should be only one master device in one system. Normally the first unit is always used as Main Device.
- 2. Slave(get local data, transfer local data)** **Show Purple Header**   
This mode enables the devices to have frame lock with the master device and output the signal from its own input. It will then transfer its own input source to next device.
- 3. Slave(get Cascade data, transfer local data)** **Show Green Header**   
This mode enables the devices to have frame lock with the master device and output the signal from master device via HDMI daisy chain. However it will transfer the input source from its own input to next device.
- 4. Slave(get local data, transfer Cascade data)** **Show Blue Header**   
This mode enables the devices to have frame lock with the master device, but output the signal from its own input. It will however then transfer the input source from master device.
- 5. Slave(get Cascade data, transfer Cascade data)** **Show Grey Header**   
This mode enables the devices to have frame lock with the master device and output and transfer the signal from the input source of master device.

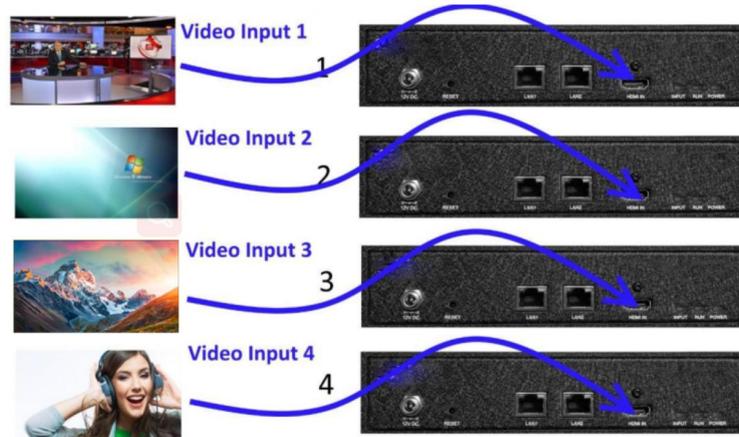
6) Change the unit from Slave mode to Master mode

Double click on the device image in 'Device' of management software to open full '**Change Device Mode**' dialog window and then choose 'Main Device' mode to set the unit back to Master mode.

## 2.1.2.6. Daisy Chain Example

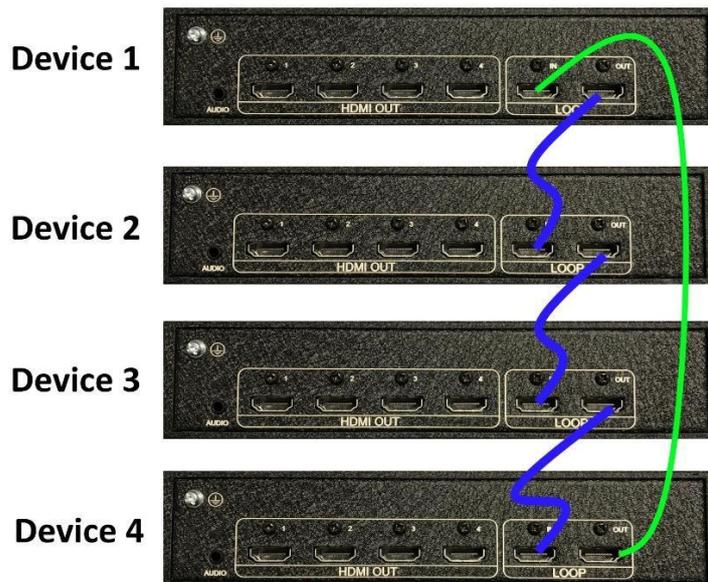
### 1. Multi video inputs

Each processor is able to take a 4K video source either from main HDMI Input (Local Data) or from Daisy Chain input (Cascade Data) from Loop HDMI In port



### 2. Inputs and Daisy Chain connections using HDMI cables.

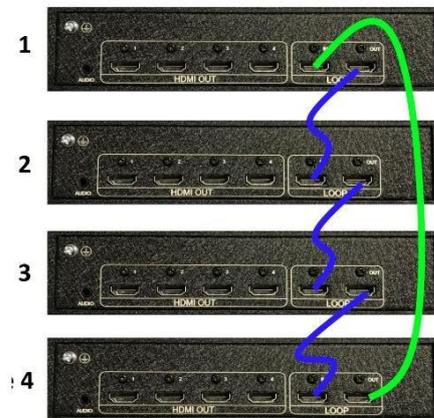
**Note:** The 4<sup>th</sup> HDMI cable is needed if unit 1 would work at Slave Mode



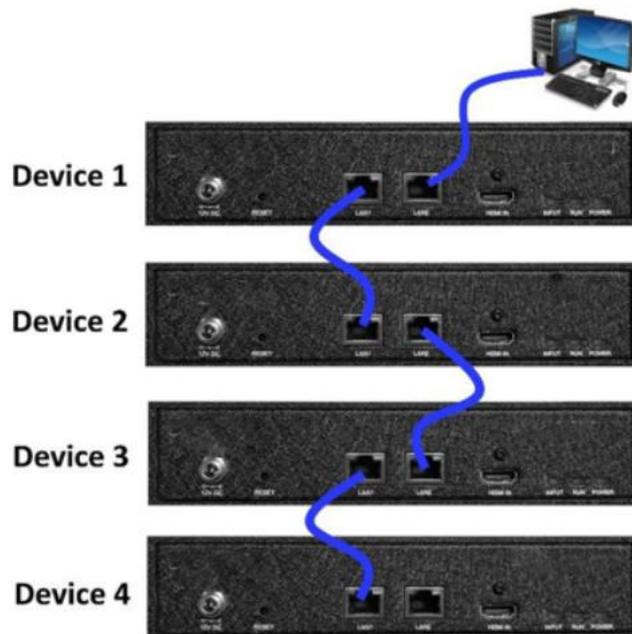
### 3. Physical connections between G4K Pro devices and video wall displays



G4K Pro		Video Wall Displays
1	Output 1	→ 1
	Output 2	→ 2
	Output 3	→ 3
	Output 4	→ 4
2	Output 1	→ 5
	Output 2	→ 6
	Output 3	→ 7
	Output 4	→ 8
3	Output 1	→ 9
	Output 2	→ 10
	Output 3	→ 11
	Output 4	→ 12
4	Output 1	→ 13
	Output 2	→ 14
	Output 3	→ 15
	Output 4	→ 16



### 4. Network daisy chain



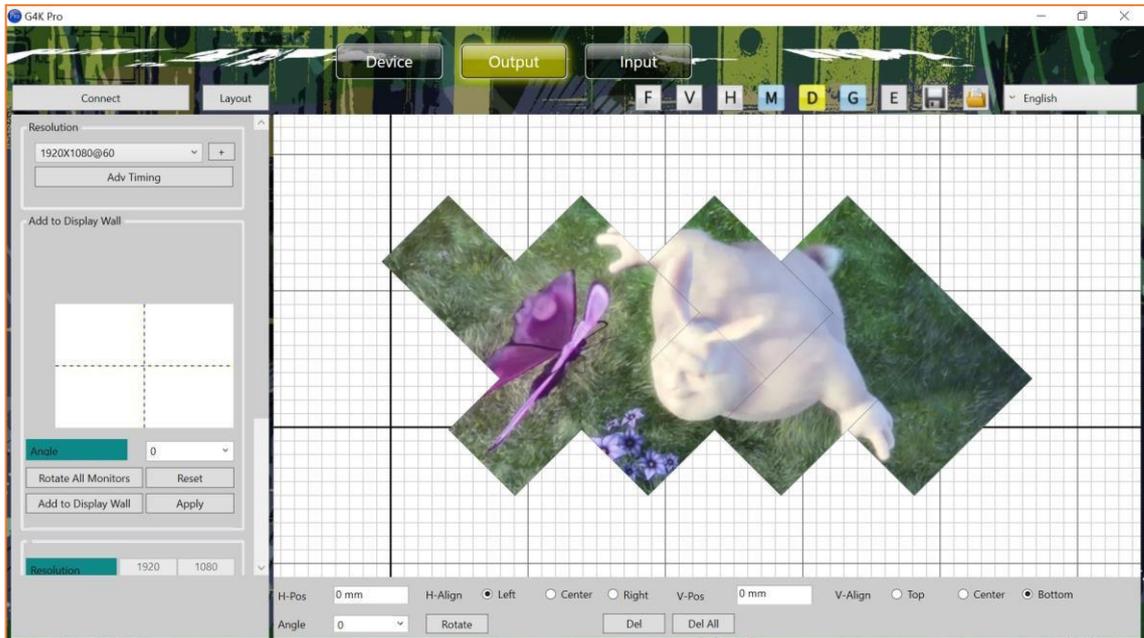
### 5. Modes of this processor VS. Video Wall output result

#	Video Wall Output	Daisy Chain Mode	
1		Unit 1	Main Device
		Unit 2	Slave(get Cascade data, transfer Cascade data)
		Unit 3	Slave(get Cascade data, transfer Cascade data)
		Unit 4	Slave(get Cascade data, transfer Cascade data)
2		Unit 1	Slave(get Cascade data, transfer Cascade data)
		Unit 2	Main Device
		Unit 3	Slave(get Cascade data, transfer Cascade data)
		Unit 4	Slave(get Cascade data, transfer Cascade data)
3		Unit 1	Slave(get Cascade data, transfer Cascade data)
		Unit 2	Slave(get Cascade data, transfer Cascade data)
		Unit 3	Main Device
		Unit 4	Slave(get Cascade data, transfer Cascade data)
4		Unit 1	Slave(get Cascade data, transfer Cascade data)
		Unit 2	Slave(get Cascade data, transfer Cascade data)
		Unit 3	Slave(get Cascade data, transfer Cascade data)
		Unit 4	Main Device

5		Unit 1	Main Device
		Unit 2	Slave(get local data, transfer local data)
		Unit 3	Slave(get local data, transfer local data)
		Unit 4	Slave(get local data, transfer local data)
6		Unit 1	Main Device
		Unit 2	Slave(get local data, transfer local data)
		Unit 3	Slave(get Cascade data, transfer Cascade data)
		Unit 4	Slave(get Cascade data, transfer Cascade data)
7		Unit 1	Main Device
		Unit 2	Slave(get local data, transfer Cascade data)
		Unit 3	Slave(get Cascade data, transfer Cascade data)
		Unit 4	Slave(get Cascade data, transfer Cascade data)
8	And more.....		

## 2.2. Output

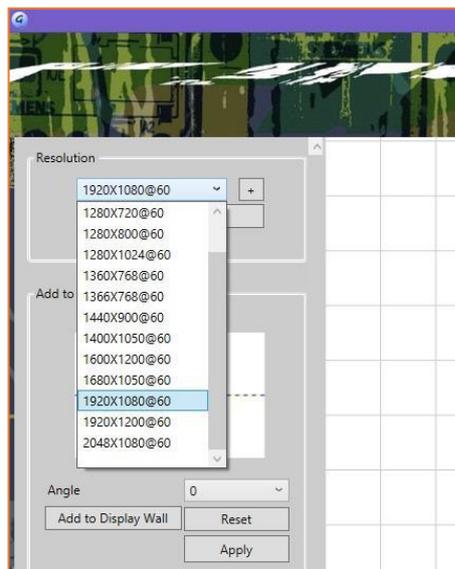
In **Output** section, users are able to choose the resolution of screens in video wall and set up the creative video wall layout.



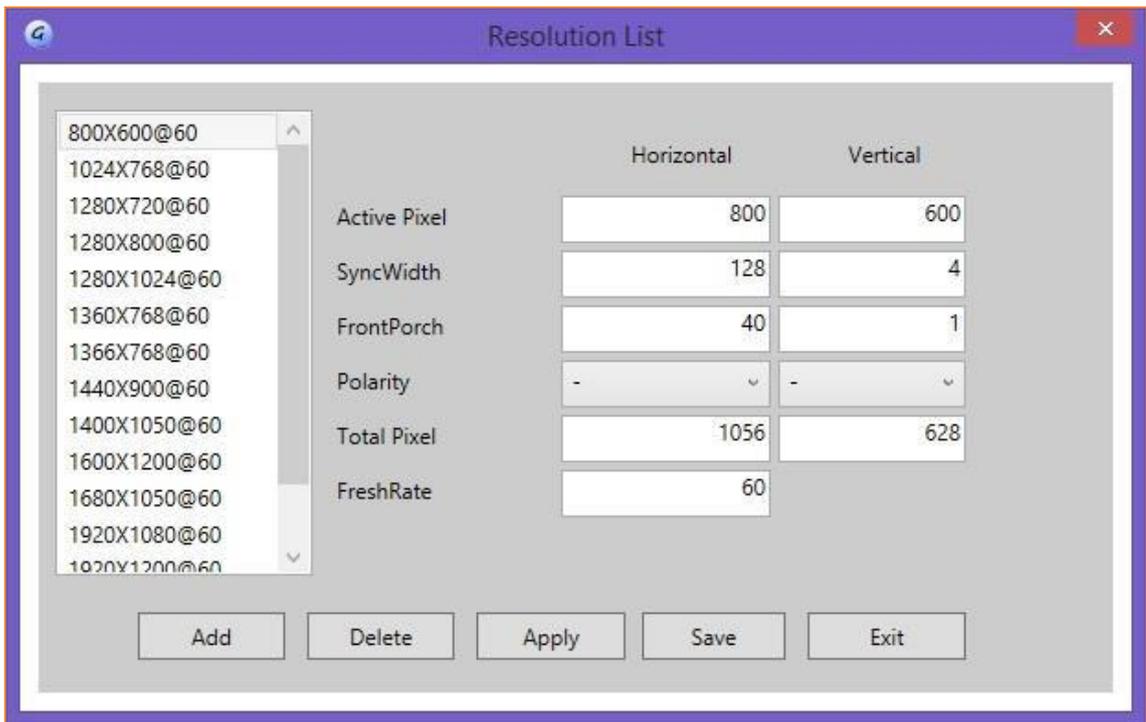
### 2.2.1. Choose the resolution of the screens

Users are able to choose the resolution of screens from the drop down menu in

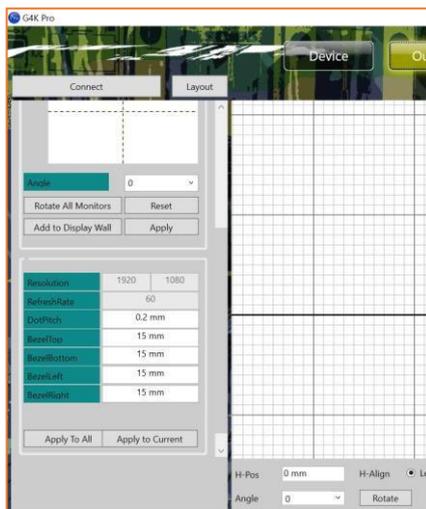
**Resolution**. The default output resolution is 1920 x 1080@60.



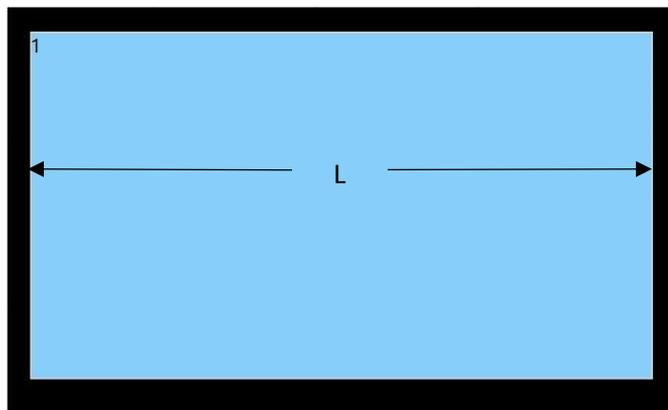
Or users are able to create custom resolution if the resolution needed is not in the list. By clicking '+' in **Resolution**, a dialog window will be shown for users to customise the resolution.



### 2.2.2. Enter the parameters of screens



- Dot Pitch      Display area Length (L) ÷ Quantity of Horizontal pixel (e.g. 1920)



For example

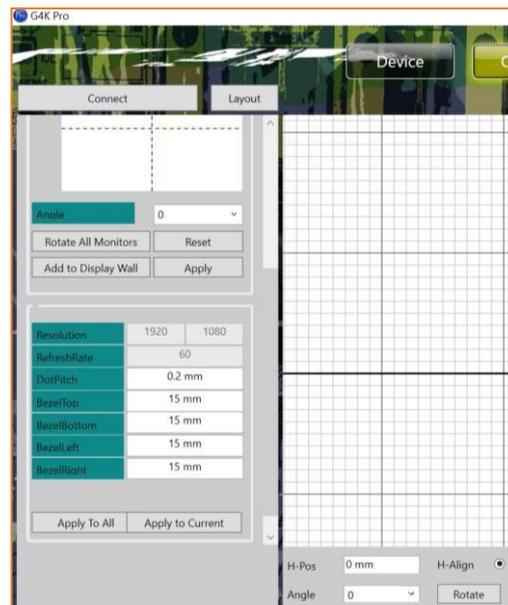
- 46" screen has 0.531mm Dot Pitch
- 49" screen has 0.561mm Dot Pitch
- 55" screen has 0.631mm Dot Pitch

- BezelTop width of screen top frame
- BezelBottom width of screen bottom frame
- BezelLeft width of screen left frame
- BezelRight width of screen right frame
- And then press 'Apply to All' to apply the changes to all devices including daisy chain ones
- Press 'Apply to Current' to apply the changes only to one G4K Pro device.
- Move/rotate the screens in software to create the desired layout
- Press 'Apply' to enable any layout change

**Note:** no change will be applied to the video wall until 'Apply' button has been pressed

### 2.2.3. Create video wall layout

G4K Pro remembers the last layout used. Users are able to modify the existing layout or create a new layout from scratch by deleting all the screens first.



#### 2.2.3.1. Add screens onto the wall

Highlight the screens in 'Add to Display Wall' and then press 'Add to Display Wall button' to add the screens onto the wall.

Up to 4 windows can be added at the same time. If more windows are needed, press 'Add to Display Wall' button again to add more.

Angle of the windows can be added by choosing the angle degree in 'Angle' and press 'Rotate All Monitors'

Enter any degree in 'Angle' and then press 'Rotate' for single screen on toolbar at the bottom of the screen

### 2.2.3.2. Delete screens from the wall

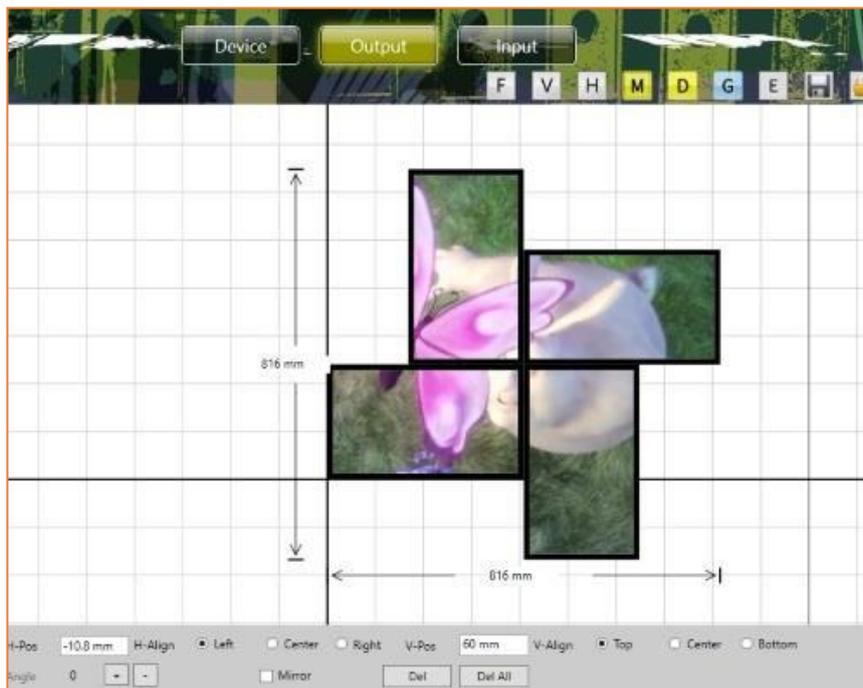
There are three ways to delete the screens from the wall.

1. Press **Reset** button at the left side of screen to delete all the screens on the wall
2. Press **Del All** button at the bottom of screen to delete all the screens on the wall
3. Highlight the screen and press **Del** button at the bottom of screen to delete the single screen

### 2.2.3.3. Change the layout of the screens

Users are able to manipulate the screens layout to achieve a creative video wall.

Users are able to use drag and drop to move each individual screen to a desired position. And use **'Angle'** at bottom to change the rotation of each individual screen.

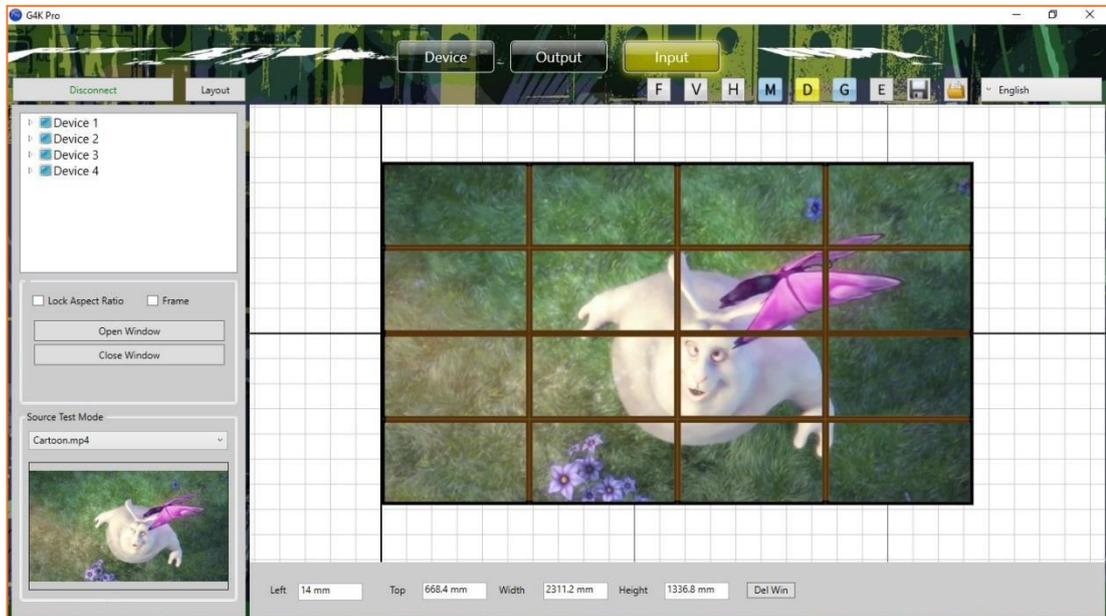


After changing the layout and other settings, users need to press **'Apply'** button in **'Add to Display Wall'** to enable these changes. A dialog window will be shown to indicate that the settings have been applied.



## 2.3. Input

In Input, Users are able to change the image size, location of input video.



### 2.3.1. Manage the input

#### 2.3.1.1. Lock aspect ratio, Frame

Lock Aspect Ratio Window covers the screen with the same aspect ratio as input source  
Frame Window covers the video wall to the edge of frames of the screens  
None Window covers the video wall to the display edge of the screens

#### 2.3.1.2. Open input source window

Highlight the device and click the Open Window button to open the input source window. The system will automatically fit the input window onto the video wall.

#### 2.3.1.3. Close input source window

Click the Close Window button to close the input source window

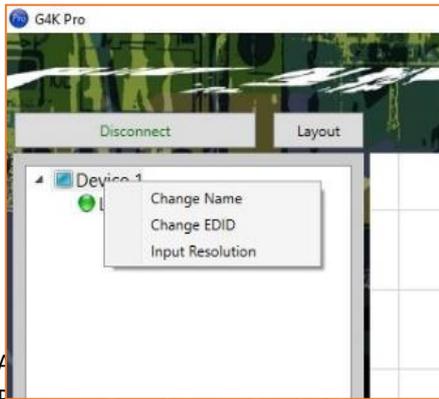
#### 2.3.1.4. Resize input source window

1. Use the mouse to highlight the window and move the mouse to the border of the window. The cursor will be changed to a resize cursor.
2. Press and hold the left mouse button and drag the border to resize the window to required size

#### 2.3.1.5. Move input source window

1. Place the mouse cursor on the window.
2. Press and hold the left mouse button and drag the window to the required position, and release the mouse button.

### 2.3.1.6. Change EDID



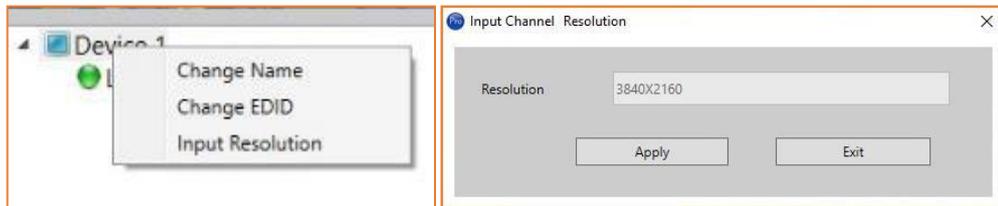
Users are able to change the input EDID of G4K Pro to match any shape of video wall layout. Go into 'Input' and then right click on the device needed EDID change and choose 'Change EDID' in drop down menu. The default path for EDID files are C:\G4KPro\Edid

If the EDID needed is not in the folder, users are able to customise the EDID using EDID Editor (3.4.5)

Users need to disconnect and connect the input to the G4K Pro in order to apply the change.

### 2.3.1.7. Check input resolution

Users are able to check the input video resolution in the management software



### 2.3.1.8. Source test mode

It will apply an image or video onto layout in the software to indicate the crop images for each screen of the video wall.



## 2.4. Tool Bar



### 2.4.1. Layout pre-set layouts saved on device

Layout Id	Layout Name
1	2x2
2	Windmill
3	Doughnut
4	1x4

Users are able to save up to 4 pre-set layouts here and the layouts can be loaded by the management software or 3rd party controller via telnet.

Right click onto each layout to **Save** new layout, **Call**, **Modify** or **Delete** existing layouts

Save Device Layout  
Call Device Layout  
Modify Layout  
Delete Layout

### 2.4.2. F Firmware update

Press this button to open firmware update dialog window

- Select the firmware file (.zip file)
- Make sure the IP address is the same address as the unit which needs to be updated
- Please update .bin file first and then .bit file

UpdateDeviceHardware

G4K Pro Device Firmware Update Software

Device Firmware(.bin) [ ] [Update]

Device Firmware(.bit) [ ] [Update]

Device IP [192.168.1.25] PORT [1024]

[Quit]

### 2.4.3. V Version of firmware of devices

It shows the firmware version of all the processors which are connected to the software.

### 2.4.4. H Home

Centre the layout to the grid area.

### 2.4.5. M Show Measurements

Show the length and width of the video wall layout

### 2.4.6. D Snap to Display

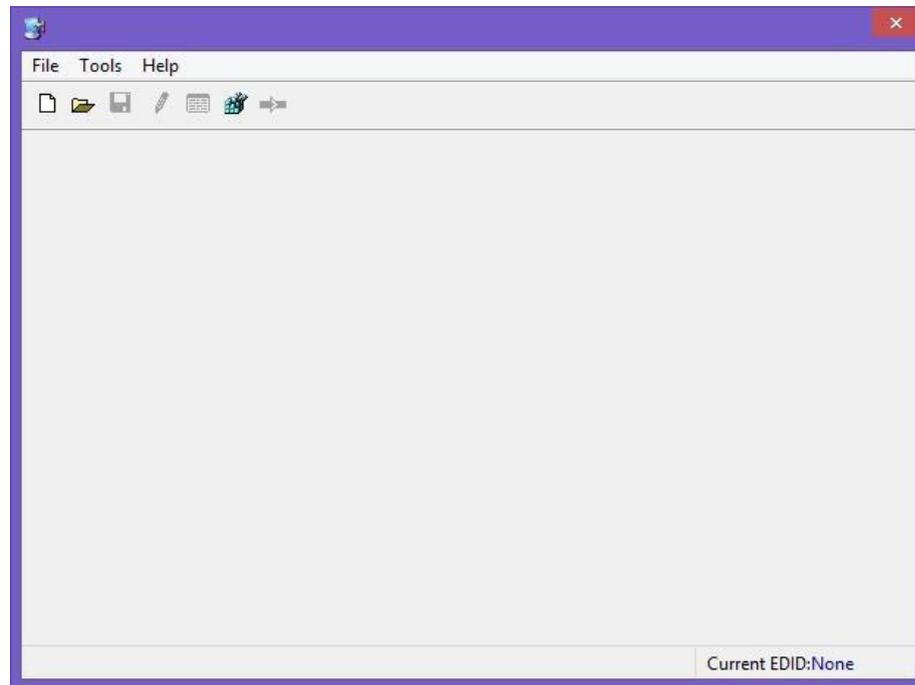
When move the display, it will snap to the next display.

### 2.4.7. G Snap to Grid

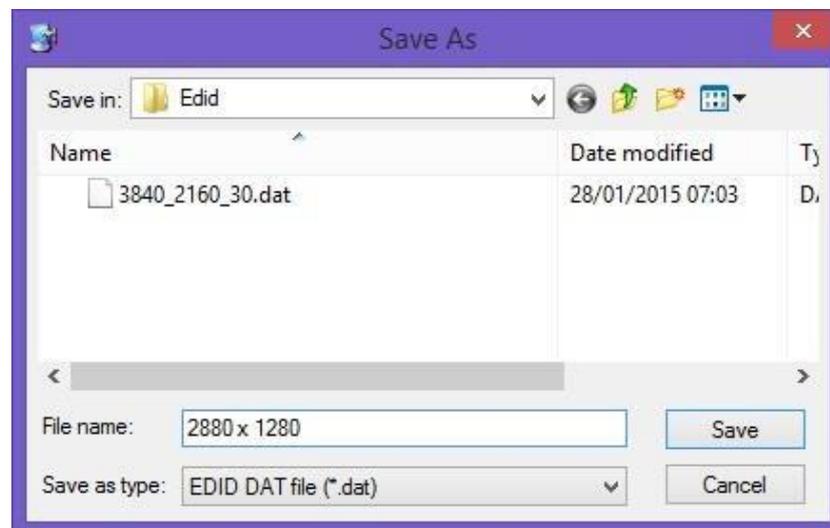
When move the display, it will snap to the next grid.

## 2.4.8. E EDID Editor

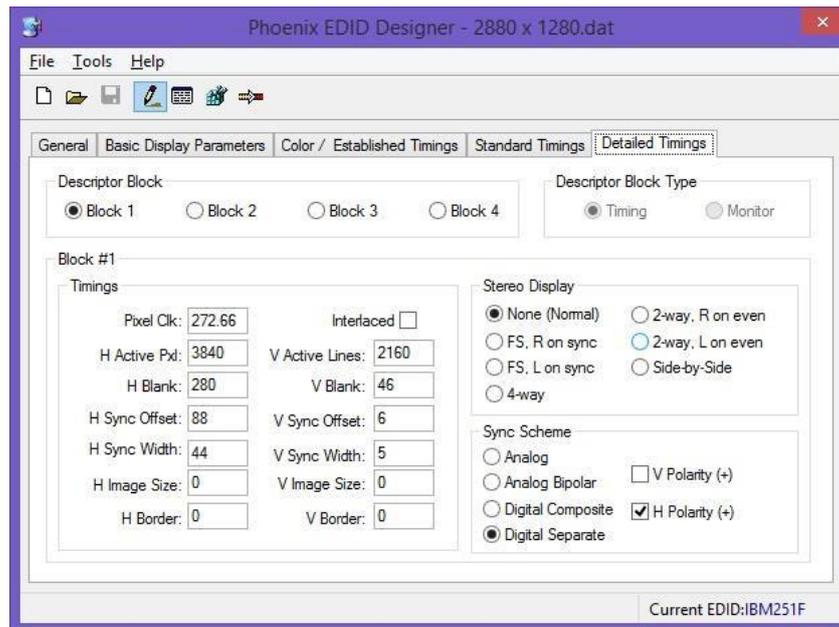
It enables users to create custom EDID for the processor. Open the Editor by click  on toolbar.



1. Open an existing EDID file from folder of processor\Edid
2. Save the file as another file name before doing any change



3. Press **Read Only/Modify** Button  to enable the 'edit' mode
4. Press 'Detailed Timings' to open the EDID settings



5. Change the **H Active Pxl** and **V Active Lines** to the required resolution setting and save it.
6. Change the Pixel Clk to:  

$$\frac{(H \text{ Active Pxl} + H \text{ Blank}) \times (V \text{ Active Lines} + V \text{ Blank}) \times \text{required frame rate } 10^6}{}$$
and save it
7. The new EDID is ready for users to load onto processors.

### 2.4.9. Save as

Save the current video wall layout onto the control PC.

**Note:** please be aware the difference between layouts here and layouts in 3.4.1

### 2.4.10. Load Layout

Load the pre-set video wall layout from control PC.

### 2.4.11. Language

Change the language of the software.

## 4. Troubleshooting

### 4.1. No Connection

#### 4.1.1. Ensure the unit is powered up

4.1.2. Ensure the PC and processor at the same IP group

4.1.3. Ensure the IP address is correct for processor

- IP address of each device will be shown on screen when no video input is applied.

### 4.2. No Output

4.2.1. If IP address is shown on screen, it means no input video source being detected.

- Ensure the video source is on
- Ensure the video source device sends the signal out (Processor INPUT statue LED light will be on if input video signal presents)

4.2.2. Black screen

- Ensure the processor and screens are powered up
- Ensure the connection to screens are OK
- Ensure the screens on correct channel (DVI or HDMI or VGA)
- Ensure the processor is on main device mode or is daisy-chained properly if works as slave device

**Note:** The header of each processor in 'Device' of processor management software has 5 different colour to indicate which mode this device is on (**3.1.2.5, No.5**)

- Ensure the input source window is applied and covers the screen in '**Input**' of the management software