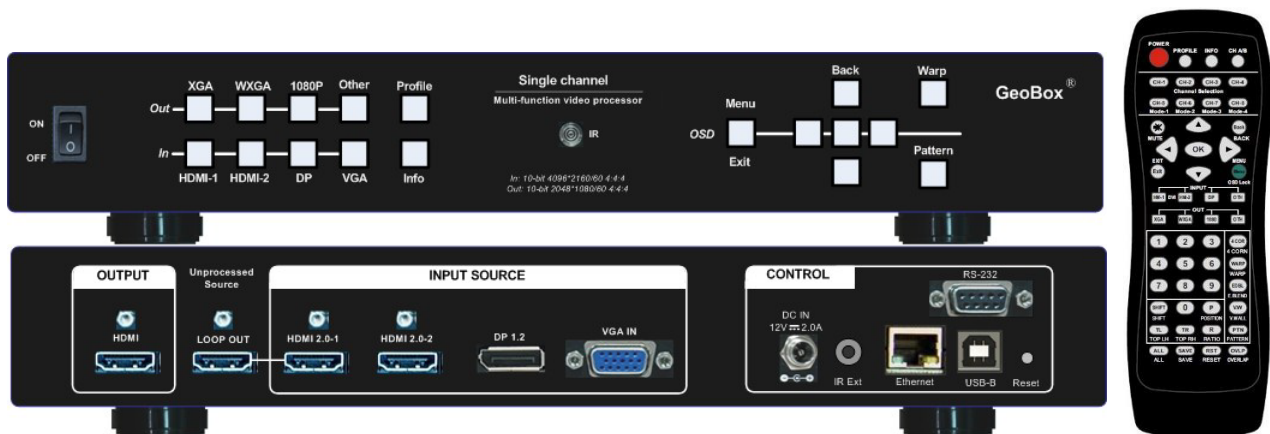


GeoBox

M811 Lite (M811L) Warping Box User Guide

*Input: up to 7680*2160 @30Hz, 5760*1200 @60Hz,
4096*2160 @60Hz, 4:4:4 full color sampling
Output: 2048*1080 @60Hz*

- *Single channel*
- *Image warp & geometry alignment*
 - *Edge mask*
 - *PIP/POP*
- *Image rotation and flip*
- *Image anyplace cropping*



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Limited Warranty and RMA statement

This device is designed and tested to the highest standards and backed by thirty months' parts and labor warranty. Warranties are effective upon the first delivery date to the end customer and are non-transferable. Warranty related repairs include parts and labor, but do not include repair of faults resulting from user negligence, special modifications, abuse (mechanical damage), shipping damage, and/or other unusual damages. The customer shall pay shipping charges when the unit is returned for repair. Manufacturer will pay shipping charges for return shipments to customers.

Manufacturer does not assume responsibility for consequential damages, expenses or loss of revenue, inconvenience or interruption in operation experienced by the customer. Warranty service shall not automatically extend the warranty period.

User can pay extension fee to extend the warranty period. Please contact us for more details. In the event that a product needs to be returned for repair, inform manufacturer and ask for a Return Material Authorization number.

FCC/CE statement

Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Notice:

- (1) An Unshielded-type power cord is required in order to meet FCC emission limits and also to prevent interference to the nearby radio and television reception. It is essential that only the supplied power cord by used.
- (2) Use only shielded cables to connect I/O devices to this equipment.
- (3) Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Introduction

M811 Lite (M811L) is upgrade model from G116 series. The major difference is to support 17*9 geometry alignment and 120*68 control points fine-tune in IR controller & PC Tool. Complete new GCT PC tool is adopted. It provides more friendly interface for PC tool operation and increase the accuracy. User can swap between GCT and IR control operations at any time. It supports up to 7680*2160/30Hz input resolution without additional settings.

M811L is multi-purpose warping box with multiple functions for projector display. Multi-units can be cascaded for large scale display.

4 input ports (2x HDMI, 1x DP, 1x VGA) and 1x HDMI output port are designed in M811L. Digital input supports up to 7680*2160 @30Hz and 5760*1200 @60Hz with 4:4:4 full color sampling. Output supports up to 2048*1080 @60Hz. It is integrated with 10-bit high end processor, motion adaptive de-interlace, low angle smooth algorithm, 3:2/2:2 pull-down and supports non-VESA standard input timing. Programmable EDID can optimize input timing to get the best video result.

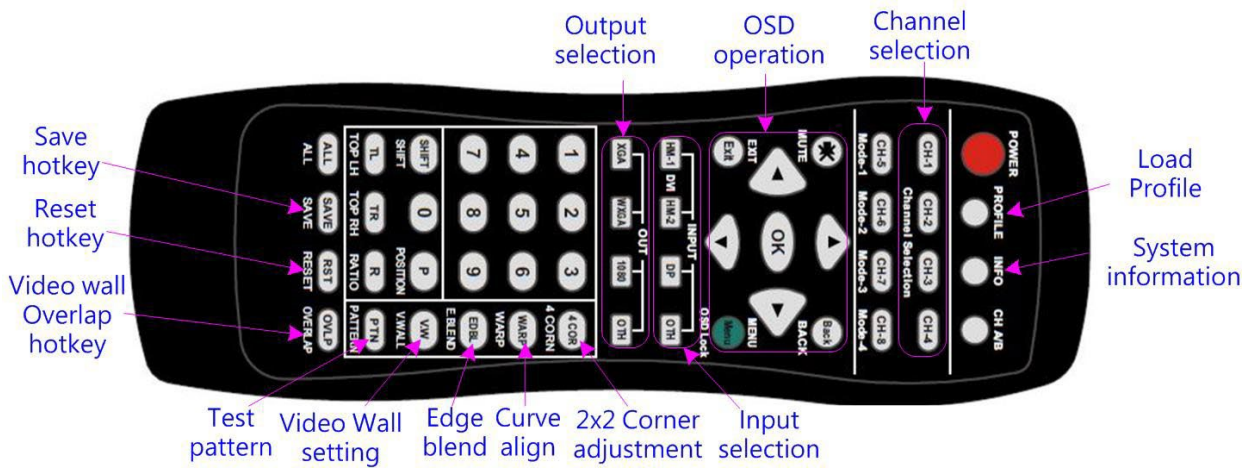
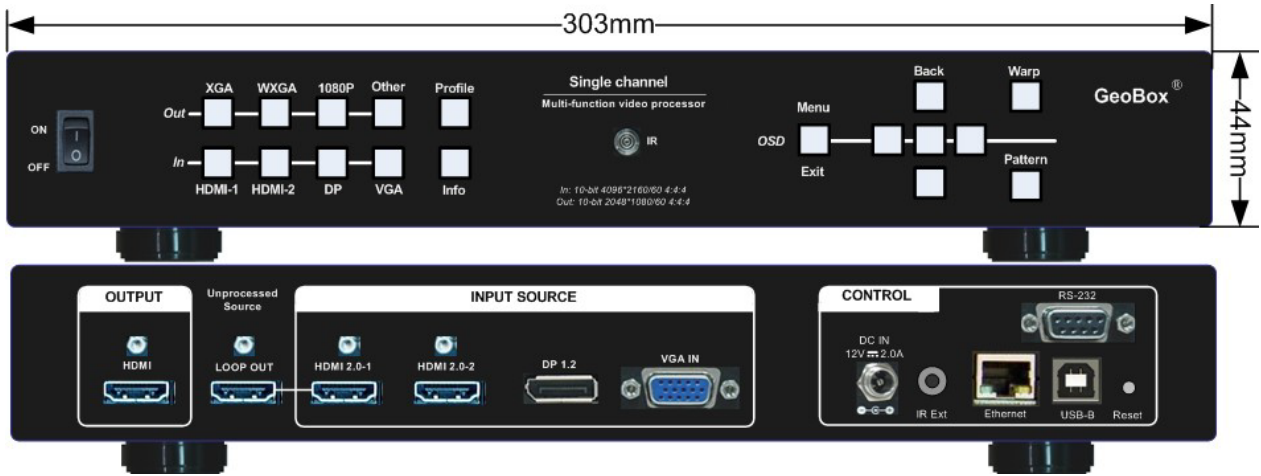
Advanced warp technology is embedded in M811L. User can use IR controller, USB, WebPage and Ethernet to perform edge blending and sophisticated geometry alignment up to 120x68 control points. Linearity Grid Line Adjustment for complete line movement up to 17x9 control point and "W" type Corner Wall image adjustment are new functions in geometry alignment. Video wall function is to split and allocate source image. Overlap function is to crop image at desired location, shift image position and change aspect ratio.

HDMI loop out is designed for signal source monitoring and multi-unit daisy chain connection.

PIP (picture in picture) and POP (Picture outside Picture) are standard functions in M811L. PIP image size is from 320*180 up to 1920*1200 with flexible position and aspect ratio adjustment. Overlap function allows further image size, aspect ratio and cropping area adjustment in PIP window.

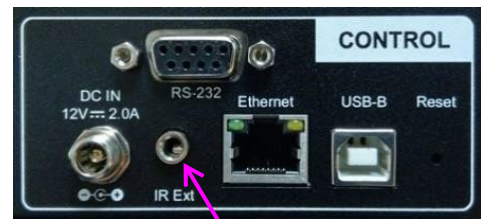
M811L is an ideal processor for image stacking, geometry alignment, PIP, POP, image format conversion, de-interlacing, image rotation and mobile mirror image displayed on portrait TV. It provides easy configuration, low entry barrier, cost effective, reliable and flexible solution.

Outlook



1. How to use IR Remote Controller

- IR remote controller has full functions for the operation of M811L.
- IR receiver is on Front Panel. One 3.5ϕ mm audio connector for IR extender is located at Back Panel of M811L. 1.8m IR extension cable is equipped in the packing. User can add audio cable to extend the distance up to more than 20 meters.
- IR remote control system is possible to be interfered and cause abnormal or discontinuous operation. Under this condition, PC Tool via USB or Ethernet operation may be the best choice.



Audio connector for IR extender

[Load] user settings System Information

Power on/off POWER PROFILE INFO CH A/B

Channel selection CH-1 CH-2 CH-3 CH-4

OSD Menu operation MUTE OK MENU BACK

Input source selection INPUT HDMI DVI DP OTH

Output resolution selection XGA WGA 1080 OTH

[4 Corner] geometry alignment 4COR

[Warp] curve geometry alignment WARP

[Edge Blend] menu EDBL

[Video Wall] Menu V.WALL

Grid pattern for geometry alignment PATTERN

Video Wall [Overlap] OVLAP

Setting [Save] menu SAVE RST RESET

System reset RC-400

1.1. Individual OSD control in multi-unit application

If multiple units of GeoBox is installed together or the IR receiver is put together, in order to avoid interference among multiple GeoBox during the installation, user can set different ID number for each GeoBox under [Options]→ [Setting]→ [Box ID] Menu. Press number keys in Remote Controller to determine which GeoBox can be controlled.

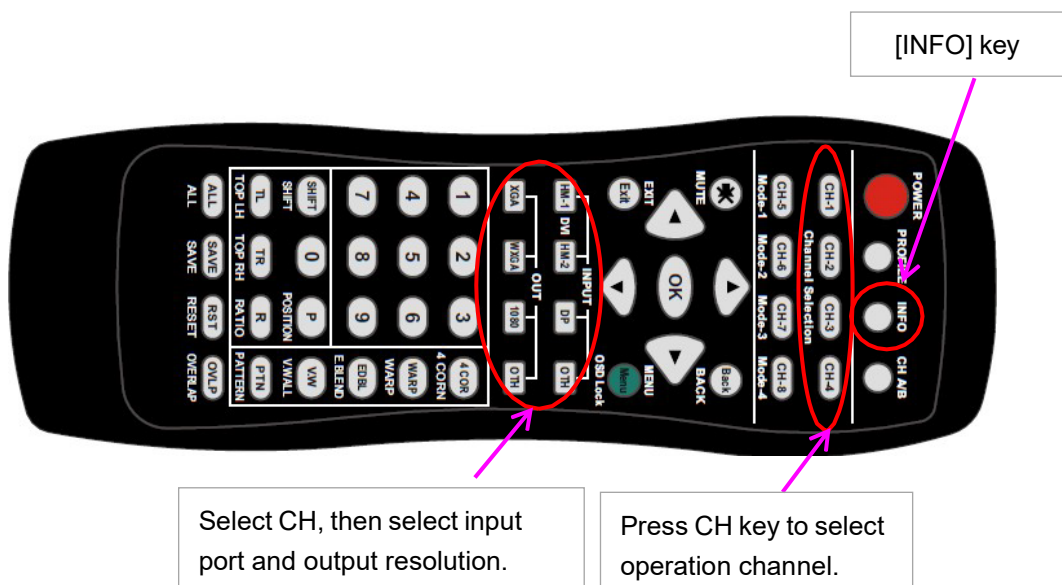
- 851: control GeoBox ID No. 1
- 853: control GeoBox ID No. 3
- 850: to unlock all units and user can control all GeoBox.
- If user presses 851, only ID #1 GeoBox can be controller through OSD. The rest units of GeoBox will be locked. The channel key LED will show blinking light with 1 second interval.

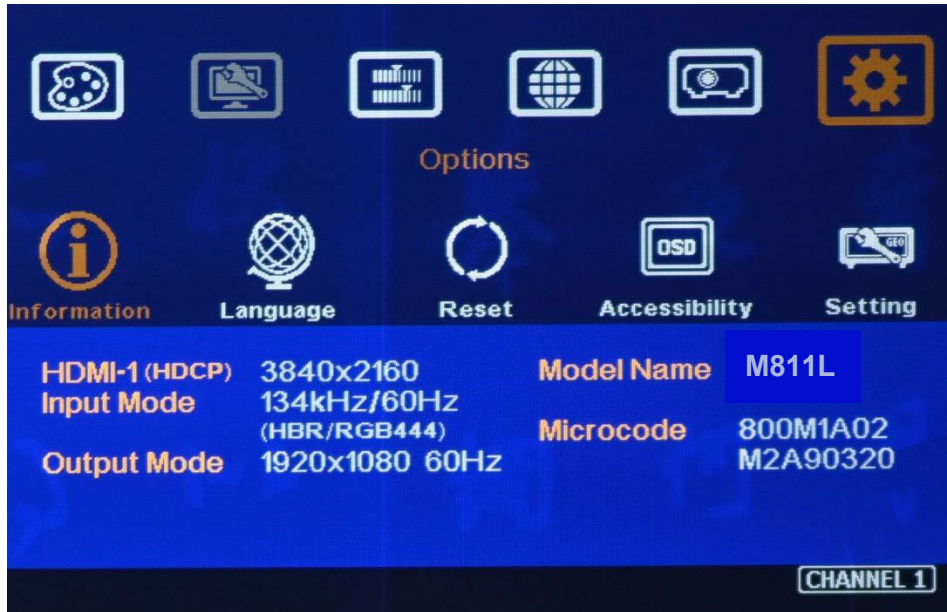
1.2. OSD menu Lock and Unlock

When continuously press [Menu] key in IR Remote Controller or front panel for 5 seconds, the OSD function will be locked and channel key LED will light up with 0.5 second interval. To press [MENU] key for 5 seconds will unlock OSD Lock.

1.3. System information and in/out LED indicators

- Once input signal and output ports are properly connected, LED indicator on the front panel will show up. If any of the LED in each channel is not lighted up, please check the in/out connection and cable.
- User can check detailed system information by pressing [INFO] key on remote controller: Select Channel→ press [INFO]→ show system information on OSD.



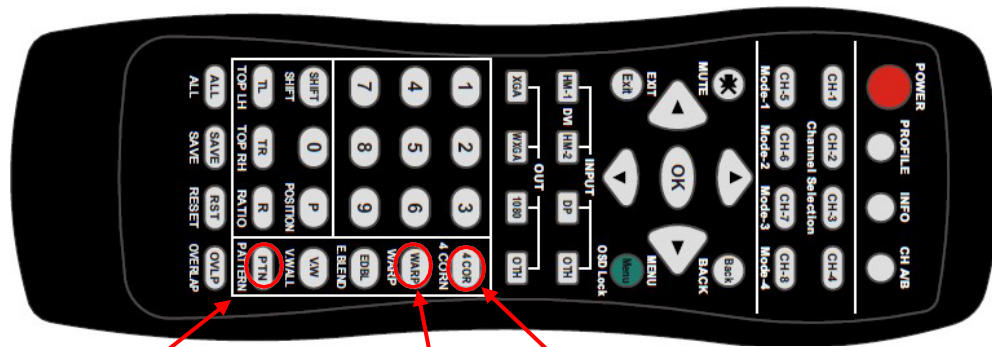


2. Geometry alignment

Geometry alignment is to align the image position to let the projection image match the screen and also let image grids between two adjacent projectors be stacked together.

2.1. Geometry alignment via IR controller & OSD

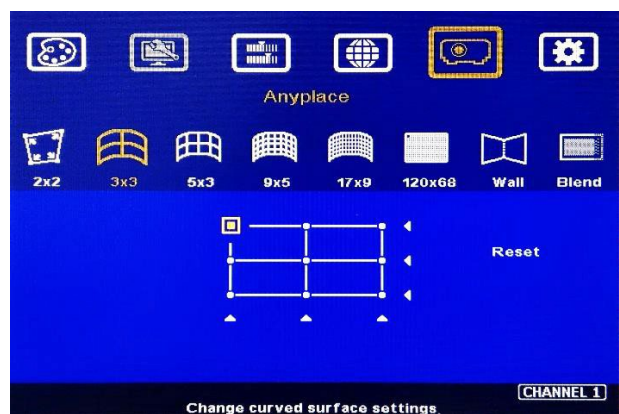




[Pattern] hotkey
 [Warp] adjustment
 3x3, 5x3, 9x5, 17x9
 [4 Corner] position
 adjustment

[2x2] 4 Corner adjustment

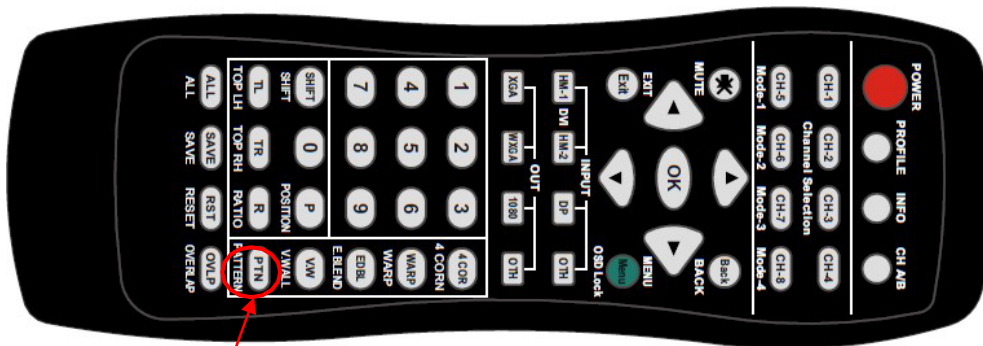
[Warp] adjustment



IR receiver is on the center of front panel. Please be familiar with OSD operation from remote controller, including activating grid pattern, channel switching and hot keys for [Input selection], [Output resolution selection], [4 Corner], [Warp], [Video Wall], [Edge Blend], [Pattern] and [INFO].

- User can install IR extender receiver near screen for easy GeoBox operation (Please add audio extending cable to extend the distance up to 20 meters). If multiple units of GeoBox are used and IR receivers are put together, please set [Box ID] for each GeoBox so that user can control each GeoBox separately through [85x] command. (Please see Section 2)
- Each channel should execute geometry, video wall setting and edge blending setting separately.

2.1.1. Select appropriate Grid pattern color

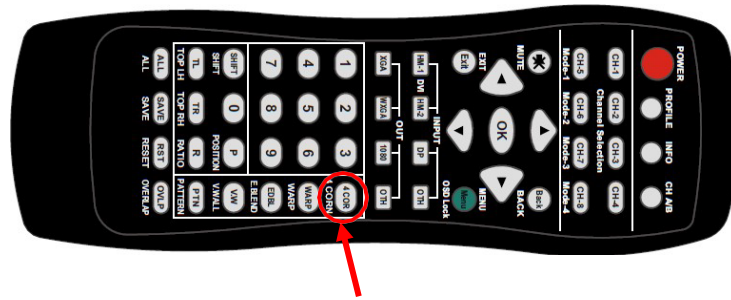


2) Click [PTN] key to open grid pattern, continuously click [PTN] key will change pattern color.

- The default grid size is 32*32 pixels. User can select different grid size under [Anyplace] → [Blend] → [Grid].
- Use channel selection keys and [Pattern] hotkey to show grid patterns in all projectors. Press [Pattern] key again will change grid color.
- To set two different pattern colors in adjacent projectors will be more convenient during geometry alignment.
- User can select the last pattern mode [OSD Value + background] and apply external test pattern for geometry alignment.

2.1.2. [2x2] 4 corner geometry alignment

- In most of applications, no need to do keystone correction in the projector before geometry alignment.
- If using short throw ratio projector in curved screen display, the image will have big distortion. Please use projector to do geometry alignment first before GeoBox.
- [2x2] alignment will adjust whole image with the same scaling factor. [Warp] alignment will adjust only some portions of the image.
- Please follow the sequence [2x2] → [3x3] → [5x3] → [9x5] → [17x9] to do geometry alignment to ensure entire image will have uniform scaling factor.
- If the screen is curved, it is possible to have some image inside or outside the screen after 2x2 adjustment. However, it doesn't matter once the image covers entire screen before 4 corner adjustment. [Warp] alignment can adjust the image position back to required position.



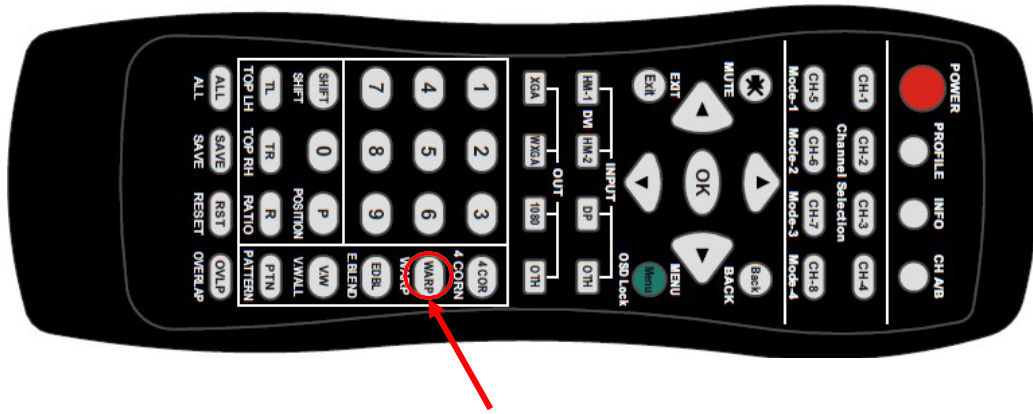
[2x2] 4 Corner hotkey



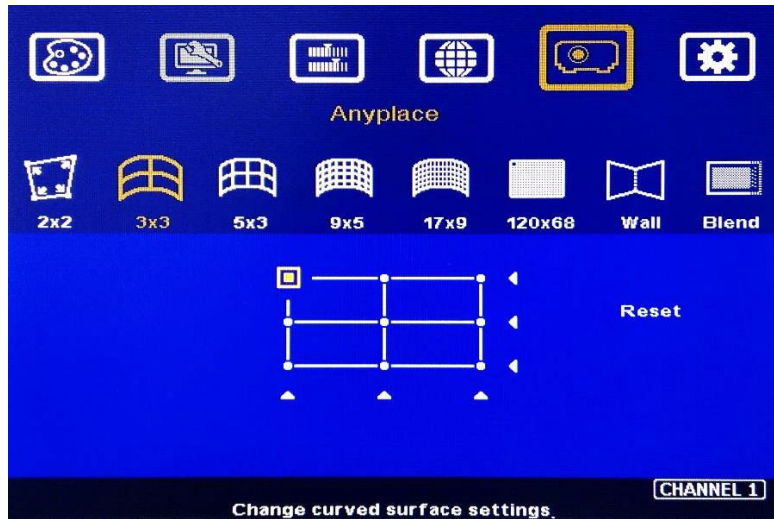
2.1.3. [3x3], [5x3], [9x5], [17x9] Warp alignment

- After finish [2x2] corner alignment, apply [3x3 Curved] geometry alignment to let 9 adjusting points be located at the required position including 4 corners, edge center points and center line position.
- Please use [5X3], [9x5] & [17x9] for further geometry alignment.
- For curved screen, the image side edge and center position will have difference grid size. The adjacent projector grid size will also change gradually, user can use Linearity Grid Line adjustment (in next section) to adjust the grid size and correct the image position within shorter time.
- After finish Warp alignment, user can use [2x2] for complete image position fine tune without changing the Warp result. If user executes [3x3] alignment again after [17x9] alignment, [17x9] grid position will be reset and only keep [3x3] grid point information.
- Geometry alignment range from remote controller can be up to 600 pixels in [2x2] + 600 pixels more in [3x3] for one corner/edge.
- If over GeoBox geometry adjustment range, the image will be broken. Please adjust projector installation position or use projector geometry alignment function to cover some adjustment.

- Ultra-short throw ratio projector is not suitable for curved screen display due to big image distortion. Once user can execute geometry alignment to required position, the image quality will be reduced, especially in the Text mode.

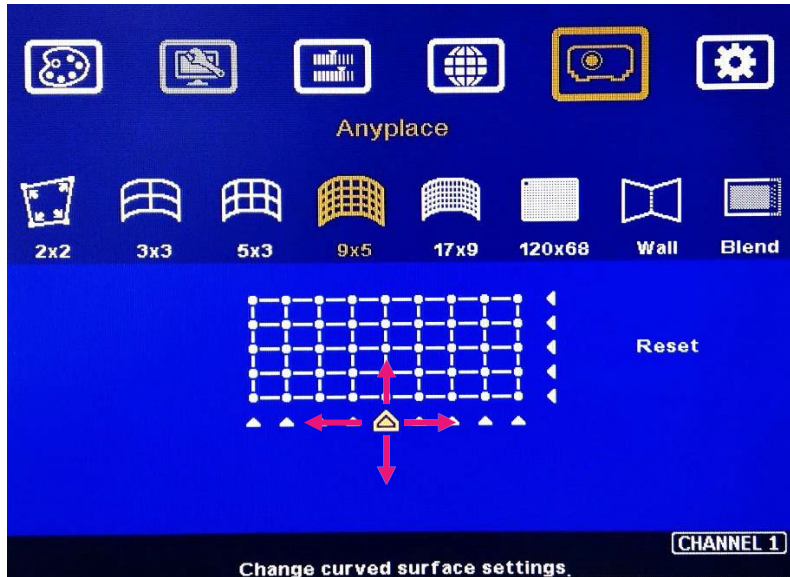


[3x3] warp hotkey



2.2. Linearity Grid Line adjustment

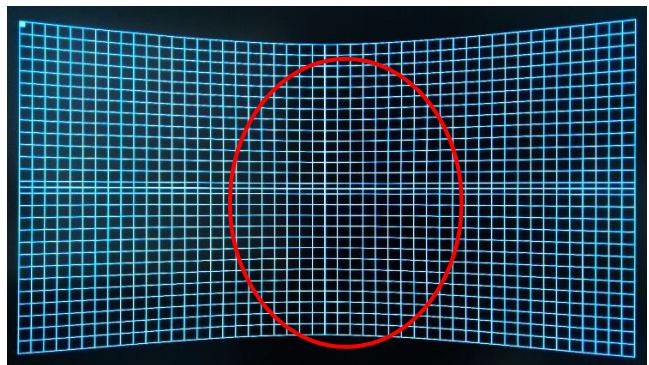
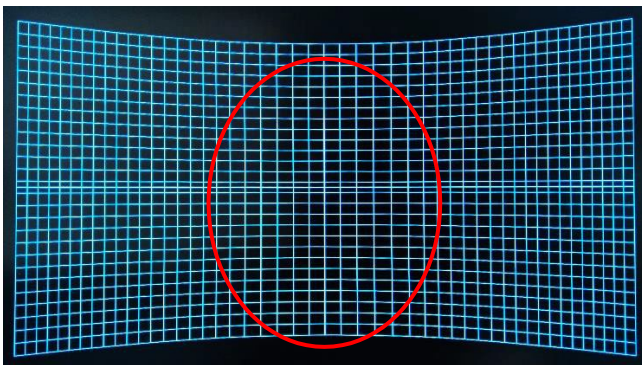
This function can quickly shift complete pattern grid line in both H&V directions.



- Linearity grid line adjustment is under [3x3], [5x3], [9x5] & [17x9] warp alignment menu. User can select the control point, then press ENTER to do grid line position adjustment. Each control point can shift the grid lines in both horizontal and vertical directions.
- When user projects the image to curved screen, the image grid size will continuously change—the grid size at the center will be bigger than both sides. Ultra-short throw projector will be more serious. Linearity grid line adjustment is designed to correct this kind of grid line gap difference.
- This function can co-work with Warp function.

Original projector image on curved screen
(The grids size at center will be bigger)

After apply Grid Line Adjustment



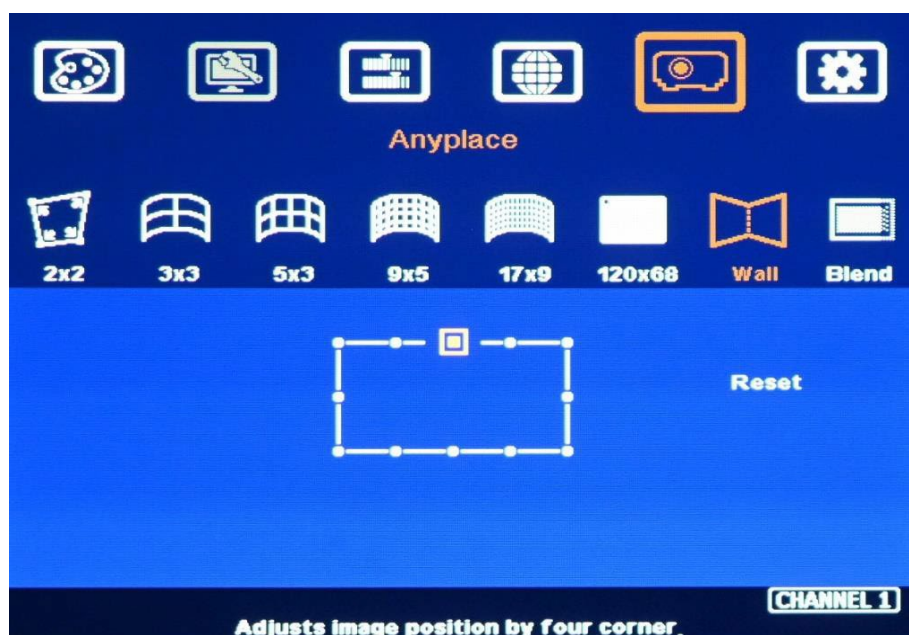
2.3. Corner Wall geometry alignment

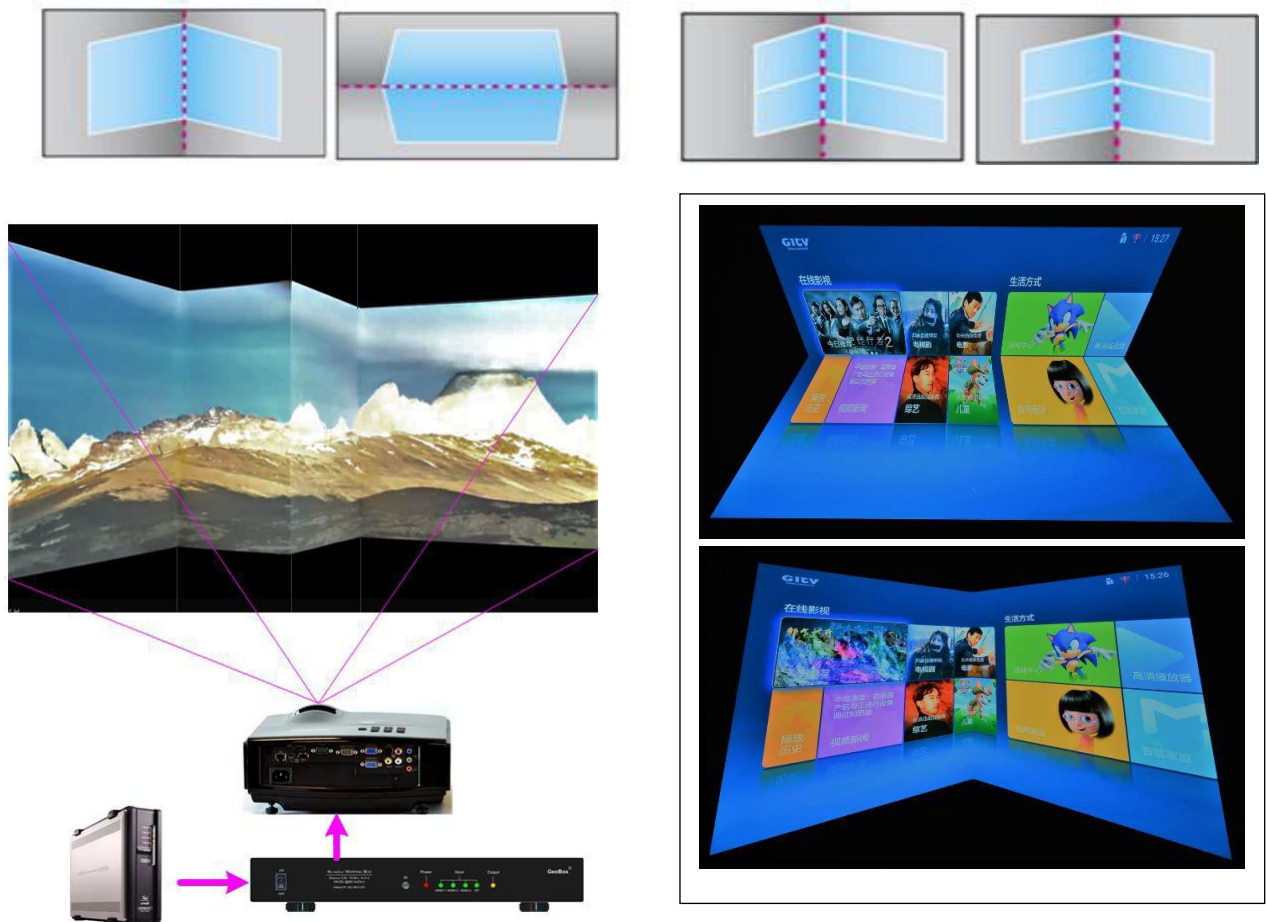
2.3.1. “W” shape Corner Wall geometry adjustment

Important note: When apply Corner Wall function, all the other geomtry alignment function will be disabled. User can only execute geometry alignment through 10 points of Corner Wall adjustment. 4 corner control points can execute 4 corner alignment same as [2x2] geometry alingment function. Edge Blend function will be still available.

Corner Wall alignment allows user to adjust the image at 90 degree corner wall or images at two sides of the pillar at wall corner through 10 control points across the edge of the image. It can execute horizontal and vertical corner wall alignment. User can only select either horizontal or vertical alignment at one time. This function can't co-exist with warp function. The image position can be adjusted as below:

- 4 corner positions of the image. The whole image position will be shifted the with same scaling factor. The adjustment range is 1200 pixels in both H&V directions.
- The rest 6 control points can correct the image position at wall corner or the images at two sides of the pillar at corner wall. It can shift the image positions in horizontal and vertical direction with the control range up to +_1200 pixels.
- User can't use ultra-short throw ratio projector for corner wall application. Otherwise, the image distortion will be too big to be adjusted and may also create focus issue. The ideal projector throw ratio should be larger than 0.8:1.





2.3.2. Corner wall application on curved screen

If user wants to implement Corner Wall function on curved screen, user can connect the signal to another G116 or G110 to do warp alignment, then connect the output to another unit for further Corner Wall alignment. Then user can execute curve alignment and Corner Wall adjustment at the same time.

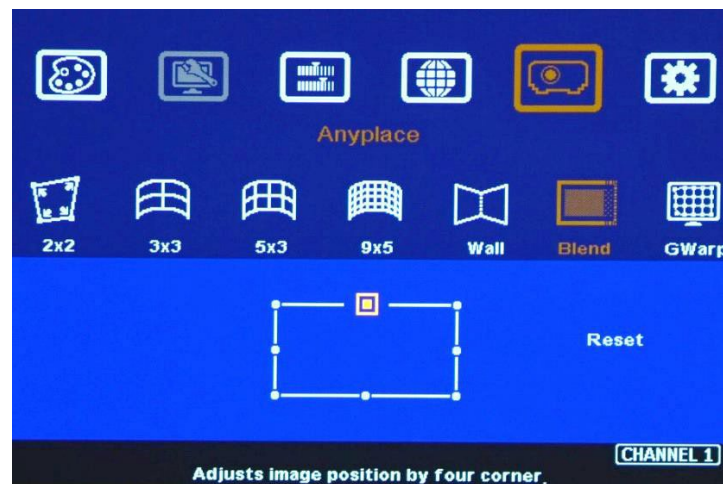
2.3.3. Important notice on curved screen application

The image quality in Corner wall adjustment will be degraded due to big geometry alignment. It is recommended to apply only multimedia content in this kind of applications. User can display the images at different side walls with different projectors to get the best video quality. GeoBox can crop correct image to get the right scaling factor based on the wall dimensions.

2.4. Edge mask

There is one edge mask functions in M811L.

- [Edge Mask]: There are 8 control points for edge mask. When user moves the position for each control point, it will result various edge mask effect. The maximum position adjustment for each control point is +_ 900 pixels in H&V directions.
- The starting point for [Mask] is calculated from the original edge position before geometry alignment.
- When implement edge mask, OSD menu will be also masked. User can change OSD location to avoid this issue or to implement through GCT will be more convenient without OSD masked issue.
- Please access [Edge Mask] through [Anyplace]→ [Edge Blend]→ [Mask]





Original Image after geometry alignment



Image [Shift] (Follow geometry curve)



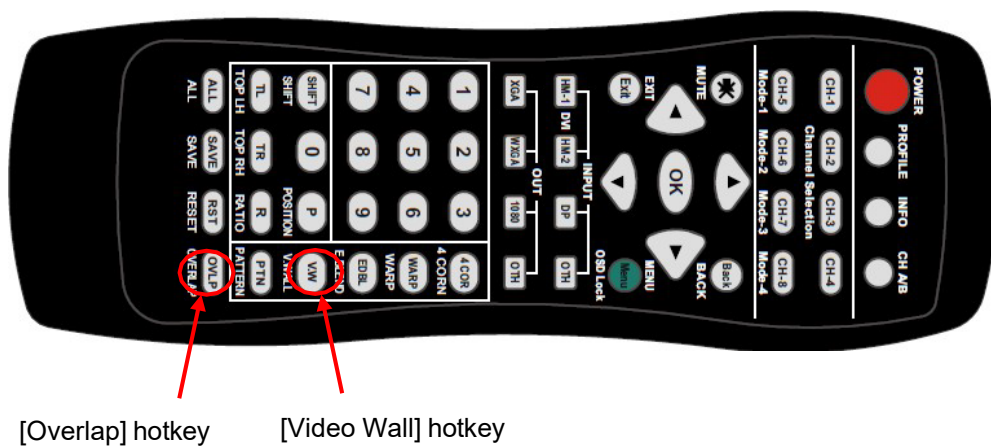
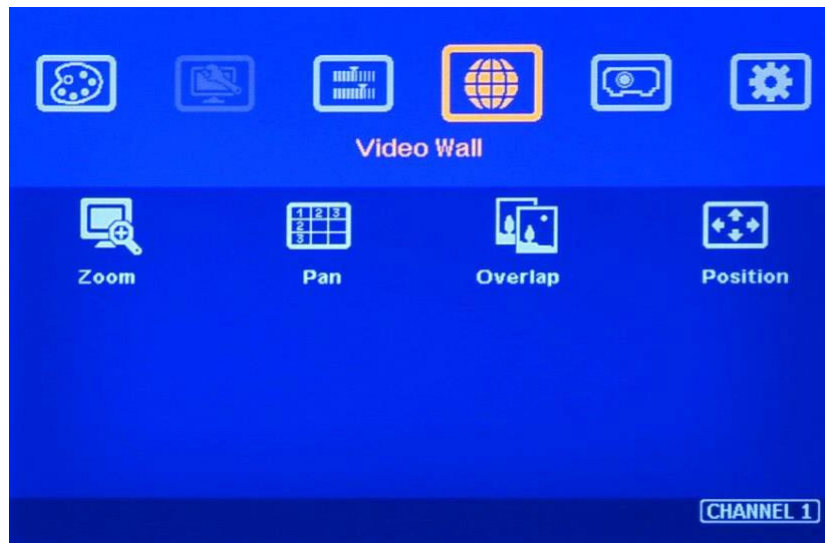
Image [Mask] (executed by 8 control points)

Another Image [Mask] example



3. Video Wall settings

- The purpose for Video Wall Setting is to split the image and assign specific image to each projector.
 - Zoom: split the image for each projector
 - Pan: assign image location. The location is counted from Left to Right and Top to Bottom.
 - Overlap: set cropping pixels in overlap region.
- Each channel shall execute [Video Wall] settings separately.



3.1. Zoom—split the image

- Based on the required image cropping size to set the Zoom value. If set horizontal ZOOM=2, the image will be stretched to double size in horizontal and half of the image can't be seen. User can use PAN to select visual image in LH half or RH half.
- Vertical ZOOM is to stretched the image in vertical direction similar to horizontal ZOOM. If user sets ZOOM H=2, V=2, user will see only 1/4 of the image. User can use PAN to select the visual section.



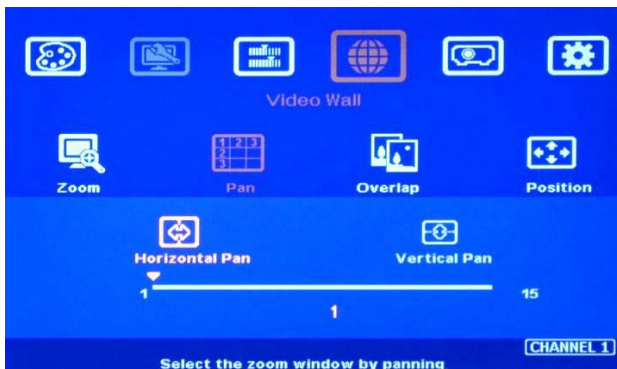
u	v	w
---	---	---

For 3 displays at horizontal position, Horizontal Zoom=3, Vertical zoom=1

u	v	w
x	y	z
{		}

For 3x3 displays (9 projectors), Horizontal Zoom=3, Vertical Zoom=3

3.2. [Pan]: assign image location

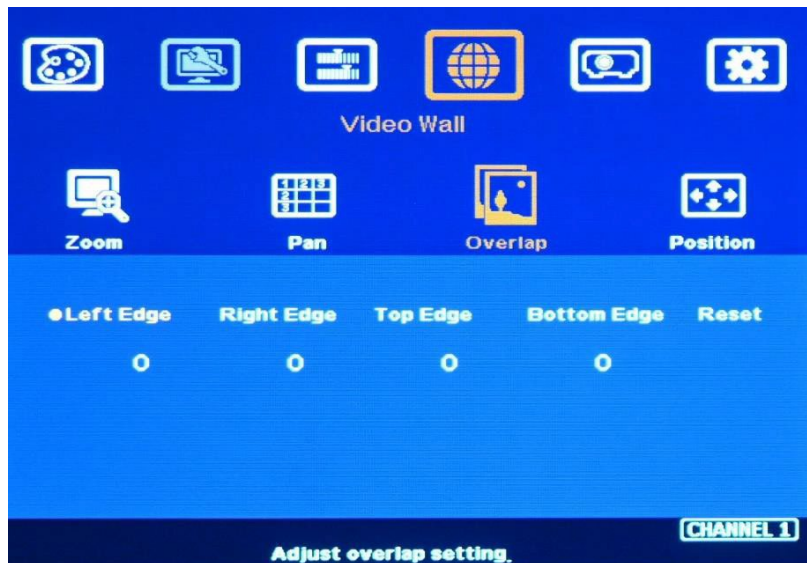


- Use [Pan] to determine the location of each split image in both horizontal and vertical directions.
- Default setting:
Horizontal Pan=1
Vertical Pan=1

u	v	w
x	y	z
{		}

*For No. w display: Horizontal Pan = 3
Vertical Pan = 1* *For No. z display: Horizontal Pan = 3
Vertical Pan = 2*

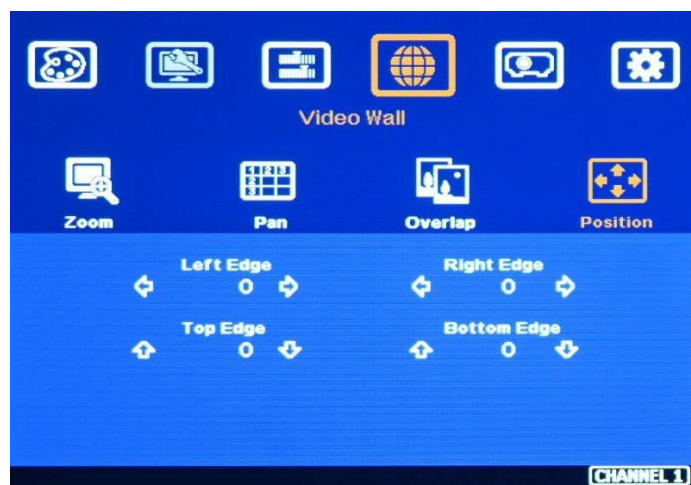
3.3. Overlap



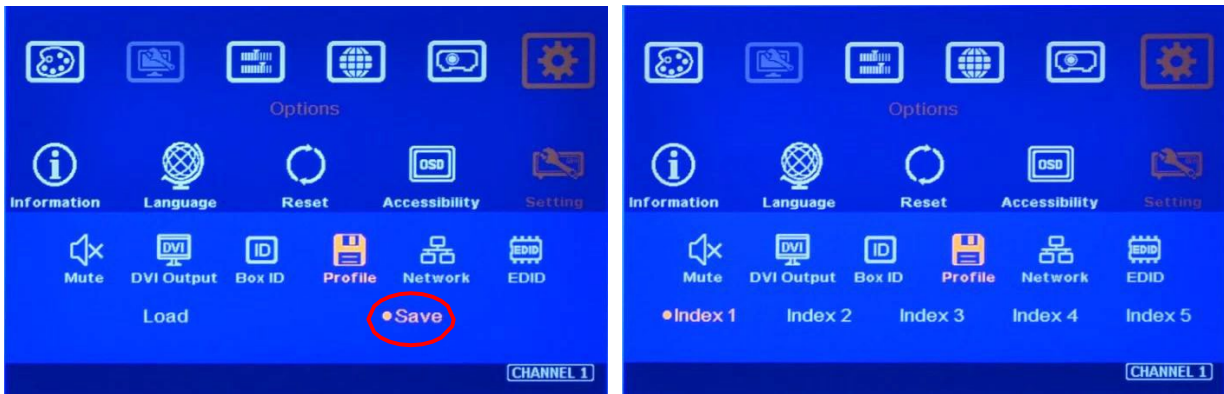
- Image pixel cropping range is up to +_1800 pixels for image position shift, aspect ratio adjustment, bezel compensation and creating overlap region for edge blending.
- User can crop any location of the image with variable size and shape through video wall function. User can use Zoom and PAN to crop the rough cropping area, then use OVERLAP function to do detailed pixel by pixel adjustment to get the exact required region.

3.4. [Position]: shift image position without changing image size

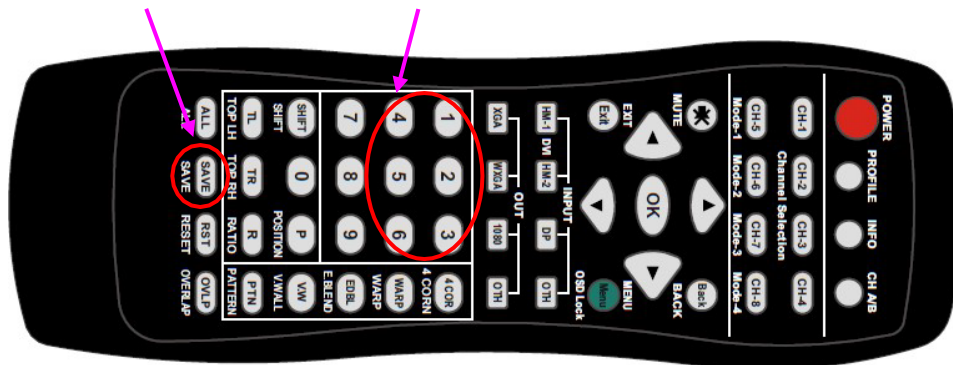
After cropping, user can shift image position at H&V directions without changing image size. Usually, it is for video wall application to fine tune image position. In projector edge blending application, user only changes Overlap value in one edge but not execute image shift.



4. Save/Load User Settings



Click [Save] hotkey Then select # key 1-5



4.1. Save User Settings

User can save up to 5 settings in M811L models.

a) Save setting via IR controller

- It will apply to all channels at the same time.
- Click [Save] hotkey → see [Enter Profile number] message → if select [Profile Number #2] → show [Profile #2 Saved] message → Finish.

b) Save setting via OSD

- It will apply to selected channel only. Each channel needs to execute separately.
- Select CH → Open OSD → [Options] → [Setting] → [Profile] → [Save] → select [Profile #] → [Exit]

4.2. Load (recall) User Settings

User can recall final setting through IR, RS232, front panel keypad, WebPage, USB or Ethernet.

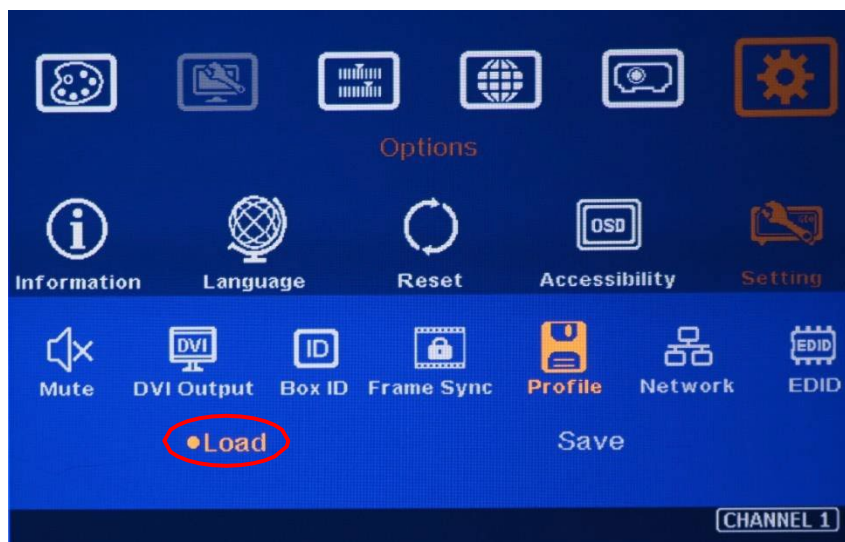
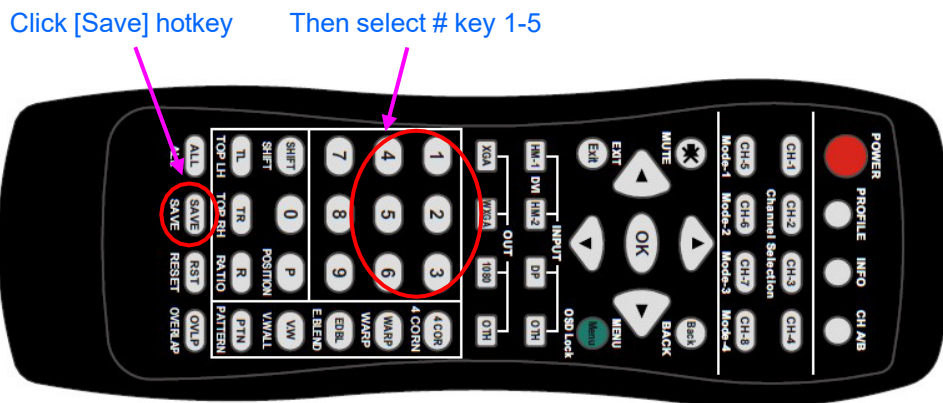
a) Load setting via IR controller

It will apply to all channels at the same time:

Click [Profile] hotkey → show [Enter Profile number] message → If select [Profile Number #2] → Show [Load Profile #2] message → Finish

b) Load setting via OSD

- It will apply to selected channel only. Each channel needs to execute separately.
- Select CH → Open OSD → [Options] → [Setting] → [Profile] → [Load] → select [Profile #] → [Exit]



4.3. **System Settings missing and erased**

- When user power off the system, M811L will save user setting without loss even the setting is not saved into Profile Index, unless someone changes it.
- Under below conditions, the settings data inside Profile Index will be kept without missing:
 - When system has been reset from OSD menu, it will take effect for one channel only and the Profile data will not be deleted.
 - Remote controller [Reset] hotkey will take effect for one channel and Profile data will not be erased.
 - When user update new Firmware, it will not affect Profile data.
 - To insert small pin into back panel Reset Hole for 5 seconds will erase all Profile Index data.
 - Under GCT operation, only [Do Factory Reset] will erase all Profile data. The rest operation will only affect single channel settings.

5. **Advanced functions and settings**

5.1. **EDID setting**

EDID setting is one of the methods to get the right signal resolution and solve image distortion issue.

- EDID is to tell signal source to output desired signal resolution to the system.
- EDID can be set to different resolution in different channels and input ports.
- If the input is looped to all input port in different modules, user only needs to set the first input port EDID. User can select different EDID directly from OSD list or use [Customize] function to create non-VESA standard timing.
- EDID setting range is H=1024-4080 (8 pixel/step), V= 720-3840 (1 pixel/step).
- If the required input resolution is beyond this range (such as 7680x1200 60Hz), user can set Customized output resolution in PC. GeoBox still can support all kinds of input timings under 600 MHz. It is nothing to do with EDID setting.
- PC or signal source may not follow GeoBox EDID setting due to hardware or software reason.
- Please download [PC 6k/8k Output Setup procedures] under below website:
<https://bit.ly/3uHXNhS>
- PC system will remember the EDID in the first connection and may not follow the resolution in the second setting. Please solve this issue by below ways:
 - Switch to other EDID resolution → press Enter → see the result → switch back to required EDID and check.
 - Select [Customize] menu under [EDID] → set to the designed resolution → press Enter. Please note that some resolution timing under [Customize] is reduce blanking signal. It will have lower pixel clock and may affect 3D display.

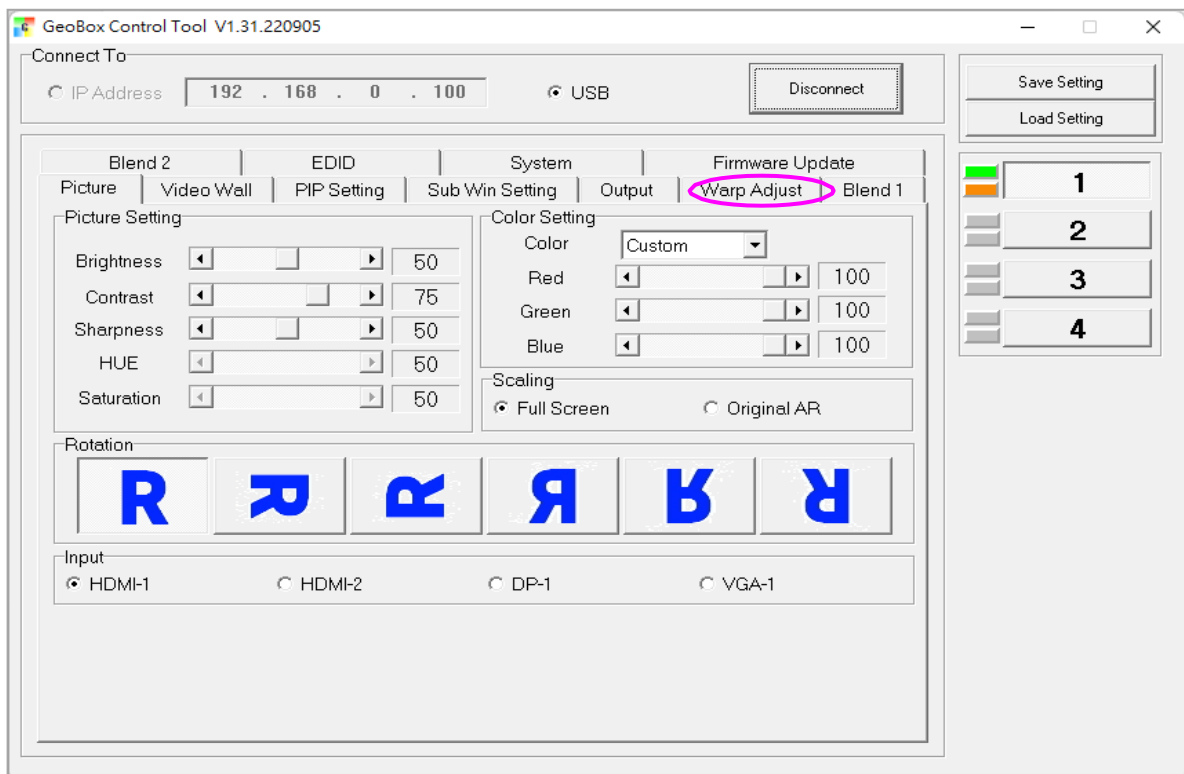
- To reset complete system through Insert small PIN into RESET hole for more than 5 seconds to reset the whole system and execute the EDID setting again. PC will treat it as new connection.
- Please check input/output timings under [INFO] key on remote controller.
- If one PC provides multiple outputs to multiple GeoBox. The settings in PC display card may change the output sequence after PC reboot. Please set different EDID in each GeoBox so that the output resolution setting will not change after PC reboot.

5.2. Geometry alignment via GCT PC tool

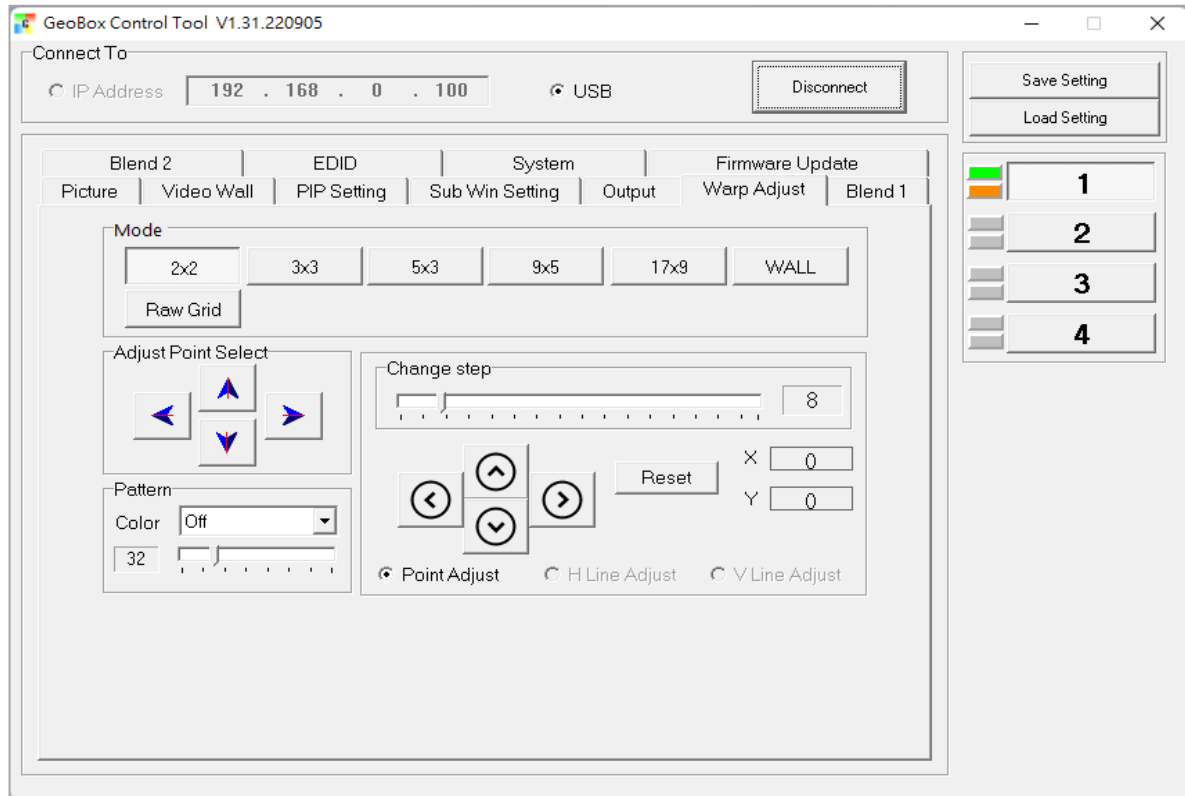
- GCT is a PC tool executed through PC. Once user opens GCT and connects with PC through Ethernet or USB. User can execute geometry alignment through PC keyboard and. After finish the setup, user can save the result to Box and no more PC is required.
- User can backup system settings in PC and copy to other units.
- Firmware and MCU code update can be executed through GCT. User can control multiple units at the same time through different IP address.
- Please see download “GCT User Guide” from website under [Support]➔ [\[PC Tool\]](#).

5.2.1. Geometry alignment through GCT [Warp Adjust]

- After connect GCT with PC through USB or Ethernet connection, once click [Connect], user will see below operation window.



- Click [Warp Adjust] menu, user will see below menu.



5.2.2. Shortcut keys for [Warp Adjust]

- [CTRL+ALT+#]: select adjust channel
- [P]: Enable grid pattern with different colors (W, R, G, Y, C, Transparent)
- [CTRL + P]: Disable grid pattern. User can see OSD menu.
- Start from [2x2] alignment, then follow [3x3]→ [5x3]→ [9x5]→ [17x9] sequence for geometry alignment. If go back to lower control point adjustment, it will reset higher control point adjustment. [2x2] alignment will not reset curve adjustment result.
- [M]: Change Adjust mode from [2x2]→ [3x3]→ [5x3]→ [9x5]→ [17x9]
- (PC language shall set to English, otherwise, some hotkey functions may not work)
- Use [CTRL + Arrow] key to select control point.
- Use [Arrow] key to adjust control point position with default step (8 pixels/step)
- Use [Shift + Arrow] key to adjust control point position with 1 pixel/step.
- User can switch OSD menu and GCT control without erase the adjustment data.
- While switching GCT control to OSD, please open OSD through MENU key, then click [Anyplace], OSD will be located at the same geometry alignment menu, such as [9x5] or [17x9]. If user click [Warp] key on remote controller, user will access to [3x3] adjustment and erase all the data above [3x3]. It will have the same situation when switch from OSD menu to GCT.
- **We propose to do [Profile Save] before switching to different control method.**

5.2.3. **Save settings**

- We propose user save setup result into Profile at each important step.
- Save Profile under GCT will save the data in all channels at the same time.
- Click [System] tab, select the # under [Save Profile], user will save the setting into Box. User can save up to 5 Profiles. If save into the same profile #, it will be updated to new data.
- The Profile for each channel is separate. User can load Profile data at the same time through [Load Profile] or load the data in each channel individually through OSD menu.
- Click [Save Setting] to save data into PC as backup or copy to another Box. The file type is [BSF]. [Save Setting] will only keep CURRENT settings on the screen and will not include Profile Data. If user wants to copy all Profile Data to another Box. User needs to load the data in each profile and save it into PC separately.
- To copy 5 Profile Data requires 5 BSF files. User can execute [Load Setting] from each BSF file and execute [Save Profile] in new Box in order to transfer all Profile Data into new box.

5.2.4. **System Reset by GCT**

- [CTRL + Shift + R]: Reset system settings.
- Input / Output resolution and Profile Index settings will remain the same without reset.

5.3. System reset

GeoBox is possible to be interrupted during system setup stage. User can implement reset procedures to reset the system to default condition through below process:

- Use small pin to insert RESET hole at back panel for 5 seconds, user will see [Reset to Default] message. It will apply to all channels at the same time.
- Open OSD menu to reset the system. It will only be functional in one channel.
- User [Reset] hotkey on remote controller will go to Reset OSD menu for one channel only.
- When operating through OSD or remote controller, user can select to reset [Reset All] or only reset [Video Wall setting] or [Anyplace] (geometry) setting.
- **Reset from OSD or remote controller will not delete Profile Index data. RESET from RESET Hole on back panel will delete all Profile Index data.**



5.4. Control system settings—Box ID, RS232, Ethernet

- User can control or operate M811L settings through Ethernet. Default IP address is 192.168.0.100.
- When multiple units are used at the same time, user can set different IP address in each box so that each box can be controlled independently.

5.4.1. Box ID

- The range of Box ID is 0 ~ 99 for RS232 command.
- If user uses remote controller to execute system operation, the Box ID range is 0 ~ 9.

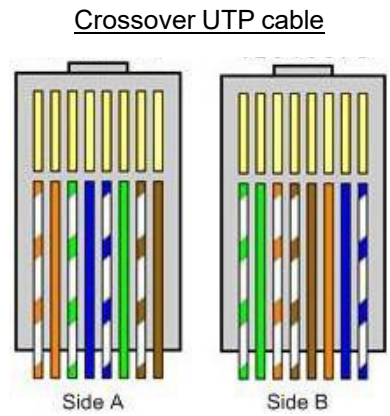
5.4.2. RS232 setting



- RS232 is designed with DB-9 connector. User can select baud rate between 11520 and 9600.
- UART protocol for the control via RS-232 or Ethernet is available in the website.

5.4.3. Ethernet

- User needs to connect GeoBox to WiFi Router or switch/hub through RJ45 to LAN port. Then user can control the system through Ethernet.
- Crossover UTP cable can be used for direct connection between PC and GeoBox. User needs to set PC TCP/IPv4 with the same domain segment as GeoBox (for instance, to set IP address at 192.168.0.105) and subnet mask at 255.255.255.0). In some PC, normal UTP cable can be used.
- Open web browser (Google Chrome or Microsoft Edge) and input GeoBox IP address (default is 192.168.0.100), user can see GeoBox WebPage and menu with virtual keys similar to OSD for further system operation. There is no additional software is required.
- If user can't connect the network, please power off/on GeoBox again to let PC detect M811L network settings.
- User can set DHCP for the connection. If necessary, please [Renew] DHCP to get IP address before network connection through OSD menu.
- GCT PC Tool is another web tool for system setting and operation. It can also update Firmware or MCU code. GCT can be downloaded from GEOBOX website under Resource tab.
- Each GeoBox can set different IP address for independent operation and control via the same PC.
- After get into Network setting OSD, please use < > OSD keys to select OSD menu items and use ^ v OSD keys to change IP address.
- If GeoBox is connected with WiFi Router (through LAN port), user can control GeoBox through WiFi via PC, iPad or mobile phone.
- Default TCP server port is 1266. Please download Telnet Application Note at <https://www.geoboxav.com/application-note>

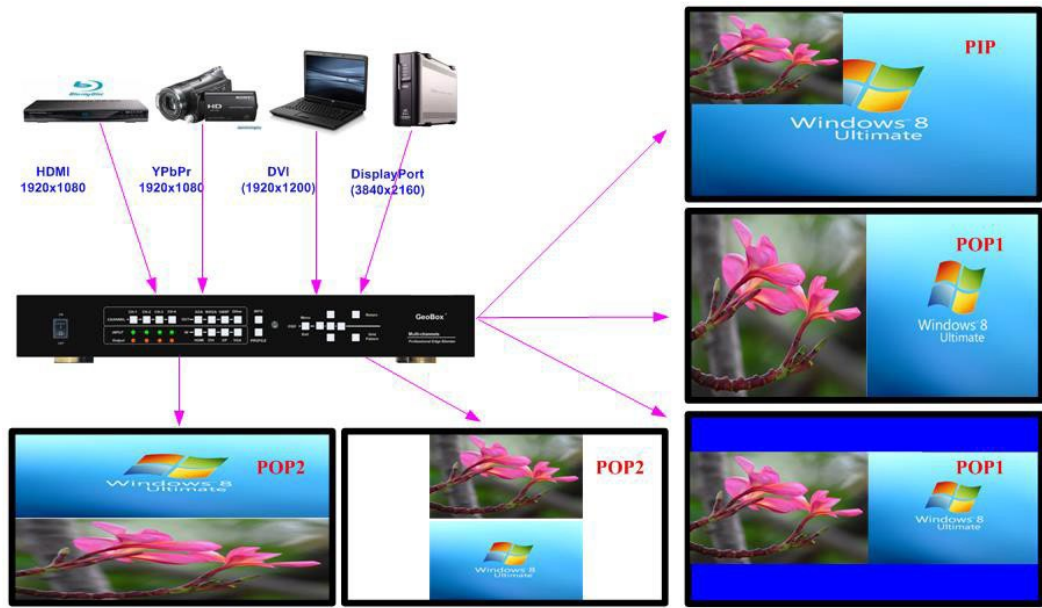


5.5. PIP/POP—Dual window display

Activate dual window display: OSD → [Image Properties] → [PIP Settings] → [Display]



- ✓ PIP: Picture in Picture
- ✓ POP1: Side by Side display
- ✓ POP2: Top/Bottom display
- ✓ 90/270 image rotation is not available under PIP/POP function.
- ✓ Both main and sub-image will go through the same high end video processing.



5.5.1. PIP (Picture in picture)

- Only display in one channel or one projector. If PIP across entire screen is required or 3/4 split views are required, please add one G901 or S901 at the front end.
- The minimum size of sub-window is 320*180 Pixels and maximum size is 1920*1200 pixels. The size is adjustable.
- The aspect ratio and image size in PIP can be further adjusted through [Overlap] function under [PIP setting] menu.
- 90/270 degrees image rotation is not available under PIP display mode.
- The location of the PIP image can be controlled by OSD menu to any location inside one projector.

5.5.2. POP (PBP) (Picture by picture)

- POP1: Side by Side display, POP2: Top/Bottom display.
- POP window can display full screen image or maintain original image aspect ratio. [Overlap] function can do further aspect ratio adjustment.
- No 90/270 degrees rotation is available.
- POP can only be displayed in one channel or one projector. If POP across entire screen is required. User can apply Flexible display setting to display independent content in each projector. Please see more details in Flexible Display section.

5.5.3. Main Menu under [PIP Setting]



Menu under [PIP setting]:

- Display: enable PIP, POP1, POP2
- Size: set PIP size
- Position: set PIP position
- Ratio: set PIP/POP display aspect ratio
- Source: select input source for PIP/POP
- Orientation: rotate sub-window direction
- Overlap: adjust PIP/POP image cropping area, position and aspect ratio.

a) [Display]:

- Disable: disable PIP or POP function
- PIP: select PIP (picture in picture) display function
- POP1: Side by Side display mode.
- POP2: Top/Bottom display mode.

b) [Size]: (Only apply to PIP function)

- The size of the PIP image can be adjusted through [Size] OSD menu.
- The minimum PIP size is 320*180 and maximum size of PIP image is 1920*1080 pixels.
- PIP image can be displayed with full screen. Further aspect ratio, image size or cropping area can be further adjusted through [Overlap] function under [PIP Settings] menu.

c) [Position]: (only apply to PIP function)

- The position of PIP image can be adjusted with 100 steps in H&V directions.
- The PIP image will be maintained inside one projector and can't be outside main image.
- Further Pixel by Pixel PIP image position finetune can be done by [Overlap] function.

d) [Source]

- The input source for PIP/POP is selectable. Main image can be selected from [Image Properties]→ [Input Signal] menu or remote controller hot key. Sub-window shall be selected from [Image Properties]→ [PIP Setting]→ [Source] menu.
- Only HDMI + DP, DP+VGA or HDMI+VGA can be selected as PIP/POP sources.
- **No two HDMI input sources can be as main and sub-window sources at the same time unless user adds one HDMI to DP adapter to connect HDMI source from DP port.**

e) [Ratio]: Set Aspect Ratio in PIP/POP

- [Full Screen]: same aspect ratio as main window in PIP.
- Full screen display in POP mode without blanking border.
- [Original AR]: keep the same aspect ratio as sub-window input source.
- POP main image aspect ratio can be adjusted through [Image Properties]→ [Scaling] OSD menu.
- Sub-Window aspect ratio can be adjusted through [Image properties]→ [PIP Setting]→ [Ratio] menu. [PIP setting]→ [Overlap] menu can also adjust the cropping area of sub-window.

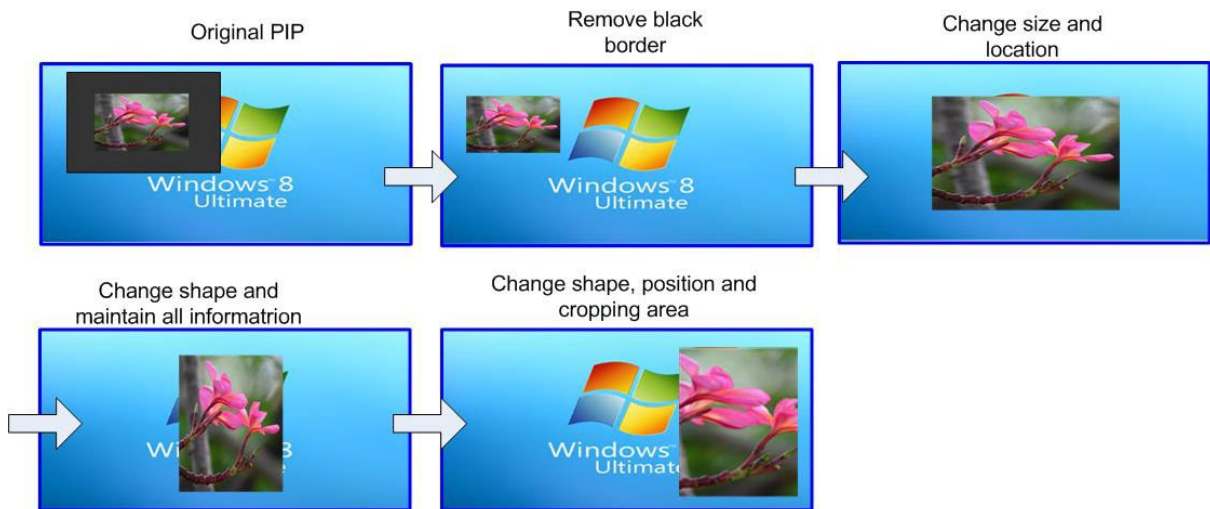
f) [Orientation] for PIP/POP

- When PIP/POP is implemented, main image and sub-image can't be rotated at 90/270 degrees. Only 180 degrees rotation or RH/LH image flip and UP/Down flip function can be executed.
- Main image rotation shall be executed from [Orientation] under [Image Properties] menu and Sub-image rotation shall be executed from [PIP setting]→ [Orientation] menu.
- Main and sub-image can be rotated at different directions.

- When main image is 90/270 degrees rotated and user executes PIP/POP function, main image will be returned to normal display direction. Image 180 degrees rotation or flip can still be executed without change.

g) [Overlap]: adjust cropping area and aspect ratio of PIP/POP image

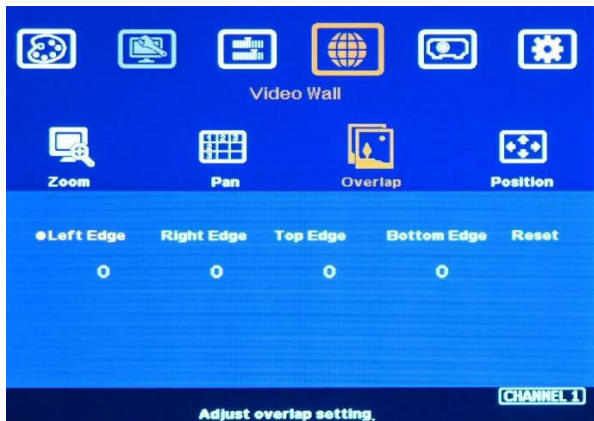
- User can execute further image cropping and aspect ratio change in PIP/POP image.
- After further Overlap adjustment, user can further expand PIP image size from 180*90 pixels up to WUXGA resolution. User can also adjust image size in POP mode.



6. Advanced applications

6.1. Entire aspect ratio adjustment

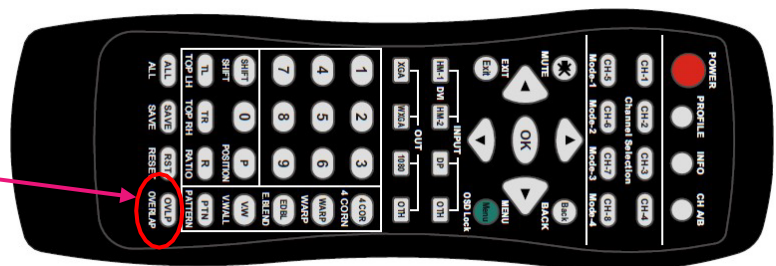
User can change the aspect ratio of the image with black borders or to stretch the image in specific direction to compensate the aspect ratio difference. The Maximum adjustment range is 1800 pixels in each edge. User can adjust [Overlap] value under [Video Wall] menu to change the cropping area and achieve aspect ratio change.



Activate [Overlap] under [Video Wall] menu

- User can select the edge required for edge shift, then adjust Overlap value to see aspect ratio change.
- The image position shift range is +_1800 pixels in each edge.
- IR controller [Overlap] shortcut key is also available.

[Overlap] shortcut key



6.2. How to support 5k/6k/8k input signal

M811L can support input signal up to 7680*2160/30Hz or 7680*1200/60Hz. GeoBox EDID setting is only up to 3840*2400/60Hz input resolution. Once user requires higher input resolution from PC, user needs to set Customized output timing from PC display card. Please download [PC 8k_6k output setup procedures] application note from GEOBOXWebsite at <https://www.geoboxav.com/software-m81x/m811l>.

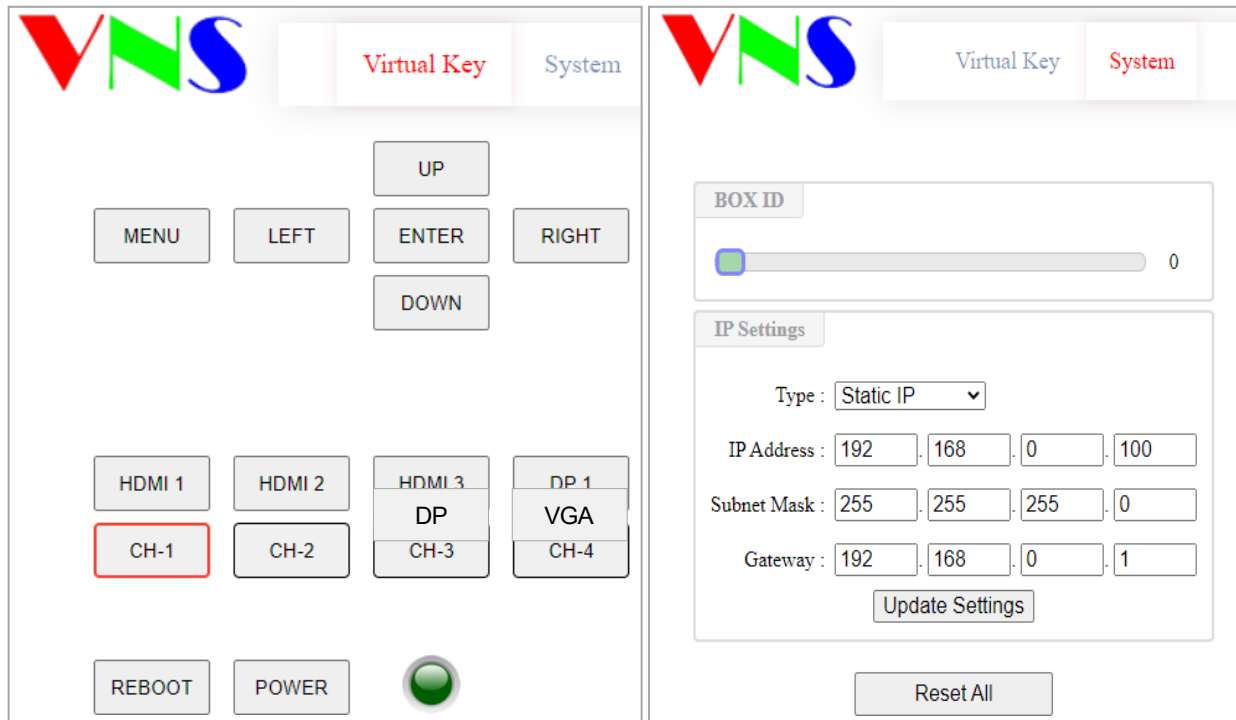
Once PC customized output timing is setup, user needs to connect to the same GeoBox with the same EDID to let PC output required timing. When the system is turned off, the setting in both PC and GeoBox will not change.

7. WebPage and GCT PC tool

- WebPage is embedded inside GeoBox. Once user connects GeoBox through Ethernet IP address, user can see virtual key for the operation.
- GCT is standalone PC tool that can be downloaded from GEOBOXWebsite. It is HID interface and can be controlled through USB or Ethernet. No software driver is required.

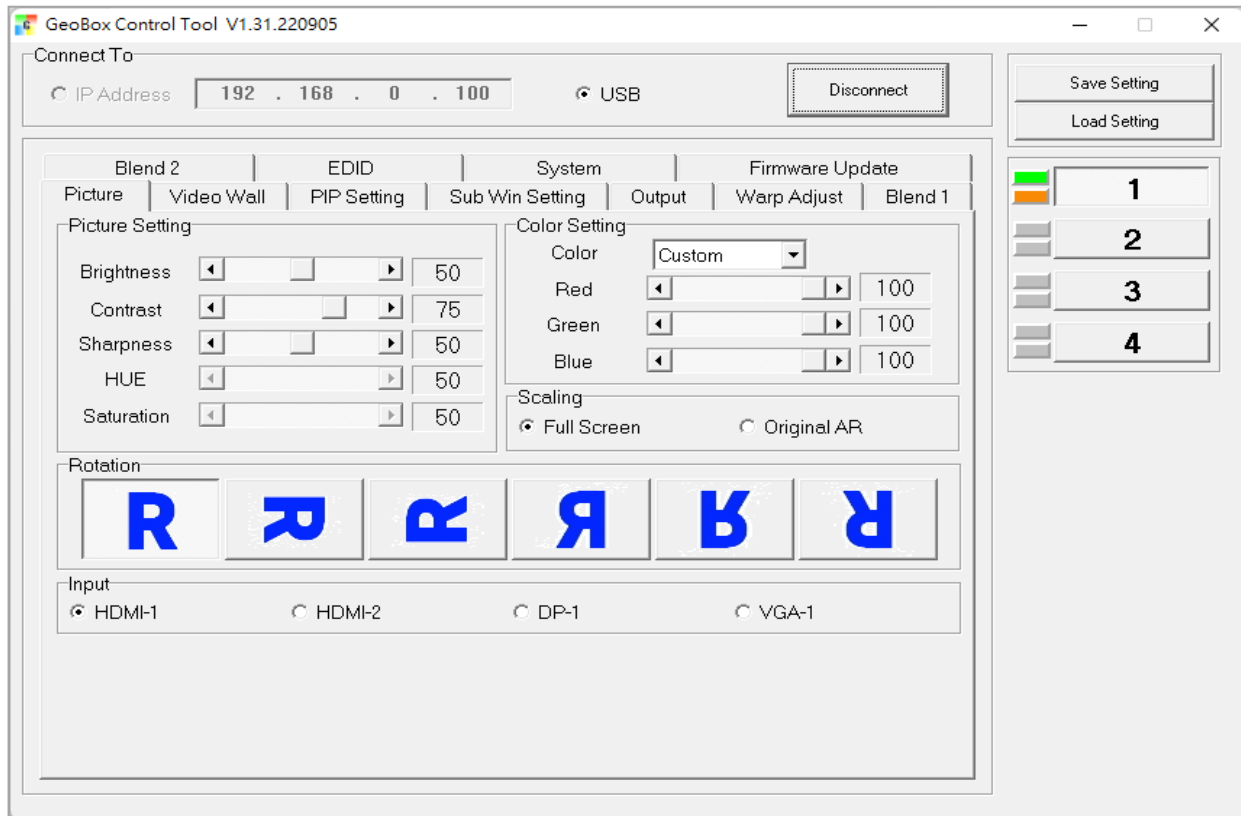
7.1. WebPage

- WebPage is embedded inside M811L. Once user connects M811L with PC through Ethernet, user can access WebPage and execute all operation similar to OSD menu through Virtual Keys and OSD Menu. No appropriate software tool is required.
- The connection can go through Ethernet router LAN port, WiFi Router or Cat 5/6 cable. User can set each M811L with different static IP address in the same domain, then open Google Chrome or Microsoft Edge browser with IP address to access each unit of M811L for independent operation. There is no limitation in the number of M811L that can be controller at the same time.
- If the system is connected through UPT cat 5/6 cable between PC and GeoBox, user needs to manually set TCP/IPv4 with the same network segment such as 192.168.0.105 with subnet Mask at 255.255.255.0 and connect through Chrome or Edge.
- User can turn on/off the system through WebPage and see the status through power indicator.



7.2. GeoBox Control Tool (GCT)

- GCT is a PC tool to control and setup M811L through PC.
- Please download GCT PC and User guide from GEOBOX website under RESOURCES menu at <https://www.geoboxav.com/software-m81x/m811l>
- GCT can be connected through Ethernet or USB. User can use PC keyboard and mouse for the control and can backup system setting in PC or copy to other units.
- Firmware and MCU code update can be executed through GCT. User can control multiple units at the same time through different IP address.

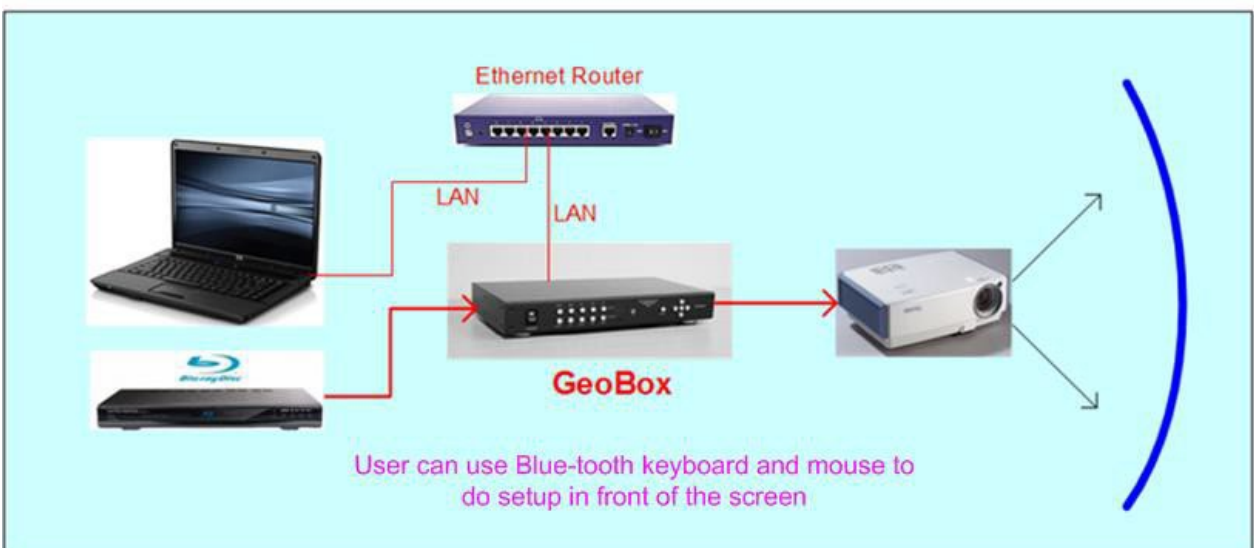


7.2.1. Important concept

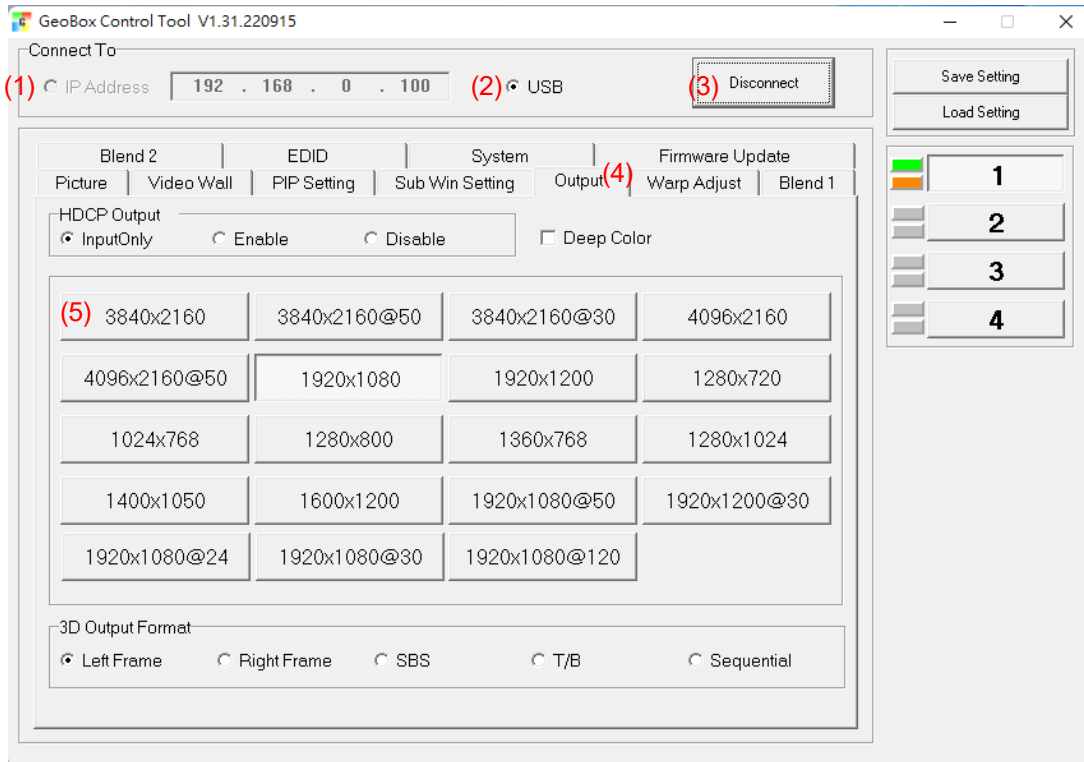
- GCT can execute all the functions same as OSD.
- GCT and OSD adjustment is synchronized and will update to the Box at real time. User can control the Box via GCT and OSD at the same time.
- Besides the same functions as OSD, GCT can update Firmware and backup or copy the settings to other units.
- New GCT version needs to match MCU code and FW version. When user apply new GCT and see [MCU code is too old] message, please update new FW & MCU code. Please download from website under SUPPORT menu.
- When user turns off GeoBox, the settings will not change.

7.2.2. Procedures for edge blending via GCT

a) System connection



- (1) Ethernet: For multiple unit control, please user Ethernet Router for the connection with multiple boxes and set different IP address for the control.
- (2) USB: connect with USB-Type B cable.
- (3) Open GCT → Click [Connect] → user will see green and orange indicators at right hand side. It is to confirm the right connection with PC.



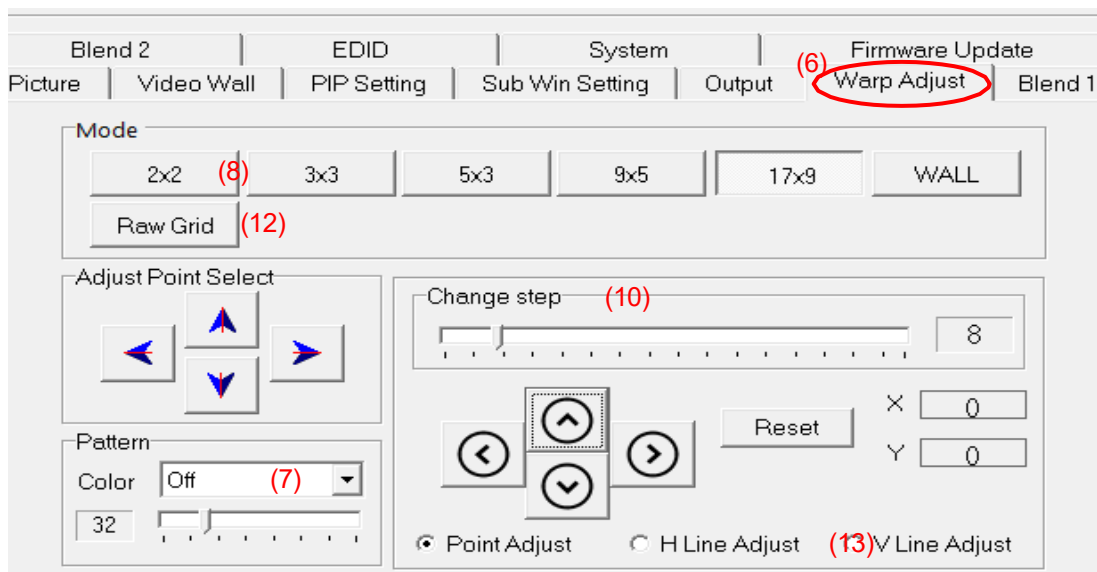
b) Set output resolution

- (4) Output resolution should be the same as projector Native Resolution.
- (5) Set required output resolution under [Output] menu.

c) [Warp Adjust]: start geometry alignment

All channels should execute geometry alignment at the same time to let grid lines perfect matching.

- (6) Click [Warp Adjust] to access below geometry alignment Menu.



- (7) Select Pattern color for each channel. Adjacent channel should have different colors.

-
- (8) Start from [2x2] geometry alignment in all channels and let the image in each projector to be located at desired (pre-marked) location.
 - (9) Following [3x3] → [5x3] → [9x5] → [17x9] in all channels at the same time to let all grid lines in overlap area to be stacked perfectly.
 - (10) The adjusting step can be selected. User can also use keyboard hotkeys to select:
[CTRL+Arrow]: 8 pixels/step. [SHIFT+Arrow]: 1 pixel/step
 - (11) If finish [17x9] alignment, user can return to [2x2] for further alignment but if return to [5x3], only [below [5x3] warp data will be kept.
 - (12) [Raw Grid] is for detailed position fine-tune after [17x9]. The maximum adjustment point is 100. After [Raw Grid] alignment, user can go back to [17x9] or [2x2] to do further adjustment. The adjustment points under [Raw Grid] adjustment will remain at the same location without changing by [2x2] or other alignment.
 - (13) When projecting to curved screen with short throw ratio projector, the image will have bigger grid size at the center and smaller at both sides. User can use Linearity Grid Line adjustment (13) to do the whole line movement. It will reduce the time for the adjustment. This function is available under [3x3] to [17x9] and in both horizontal and vertical lines.

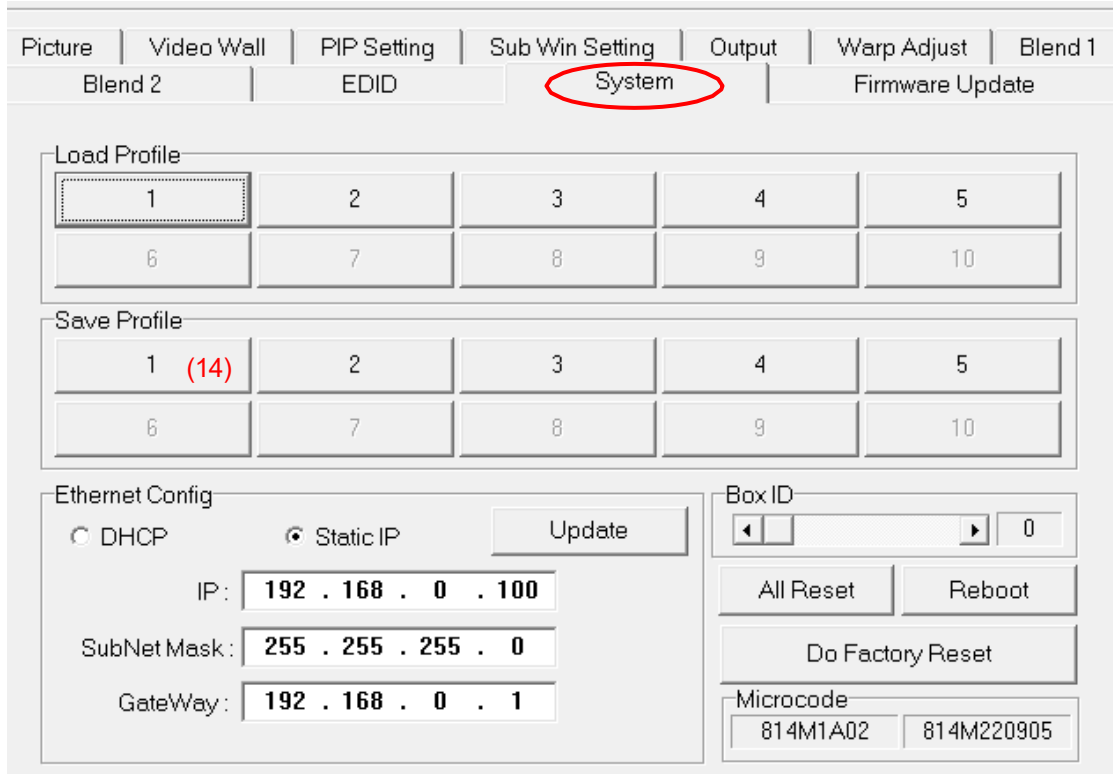
d) **Keyboard hotkeys for geometry alignment**

Please set PC language in English so that user can use Keyboard hotkeys to execute system operation.

- [CTRL+ALT+#]: select channel
- [M]: Change circularly Warp Adjust mode from [2x2] → [3x3] → [5x3] → [9x5] → [17x9] → [Wall] → [2x2] → [3x3]...
- [CTRL + Arrow]: Select control point
- [Arrow]: adjust control point position, default is 8 pixels/step.
- [Shift + Arrow]: Geometry adjustment with 1 pixel/step
- [P]: Enable grid pattern with different color
- [CTRL + P]: turn OFF pattern to see OSD menu for the operation by remote controller
- [R]: Reset geometry alignment settings in current mode and channel.
- [U]: undo the last geometry alignment step.

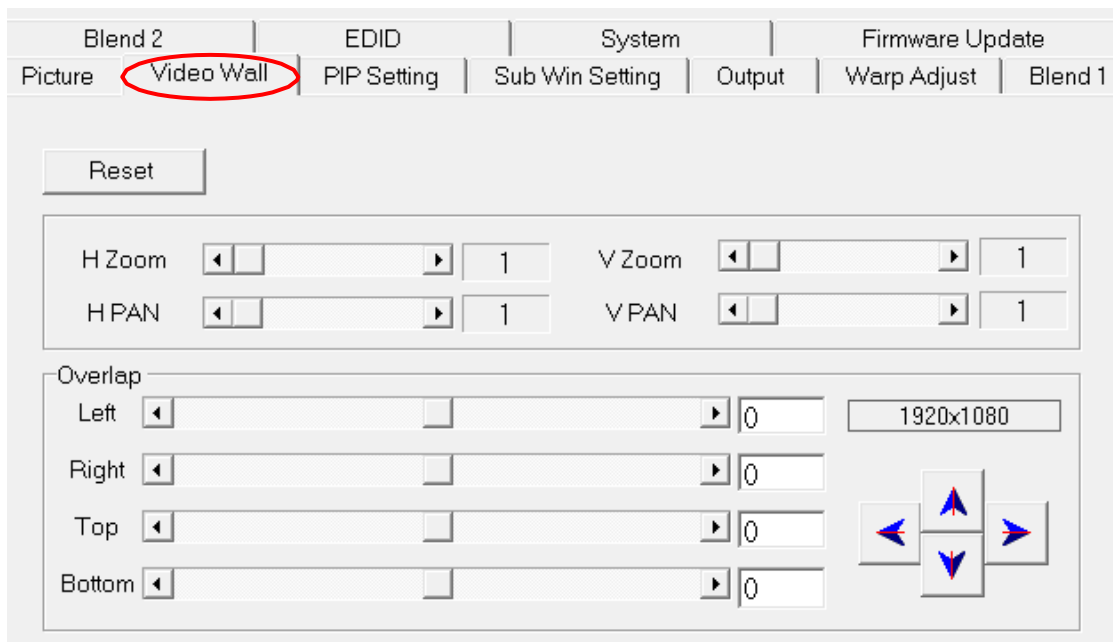
e) **Save geometry alignment result temporarily**

- (14) Geometry alignment take the most of the time. After finishing geometry alignment, please save the result under [System] → [Save Profile].



f) [Video Wall] settings

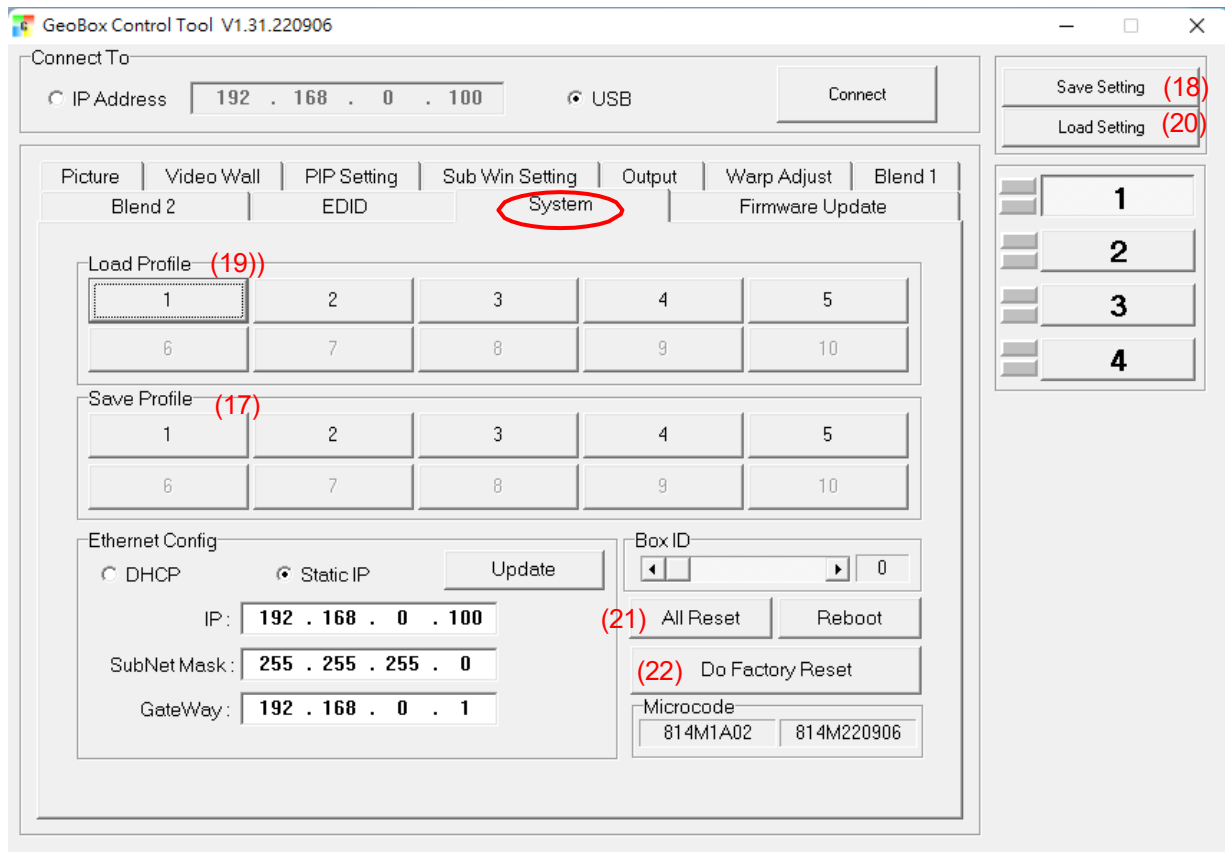
- [Video Wall] is to split the image and assign the location for each projector. It will also adjust the overlap pixels for related edges based on the overlap size.
- Please see detailed description in [Video Wall] section,



g) **Save final settings**

User can save the final settings into two locations:

- (17) [Save Profile]: under [System] menu, user can save the final setting into profile index by selecting number in [Save Profile]
- (18) [Save Setting]: it will save current settings into BSF file in PC. It will not include Profile data. This data can be as a backup or copy to another box.



h) **Load back final settings**

User can load back the final settings from two locations:

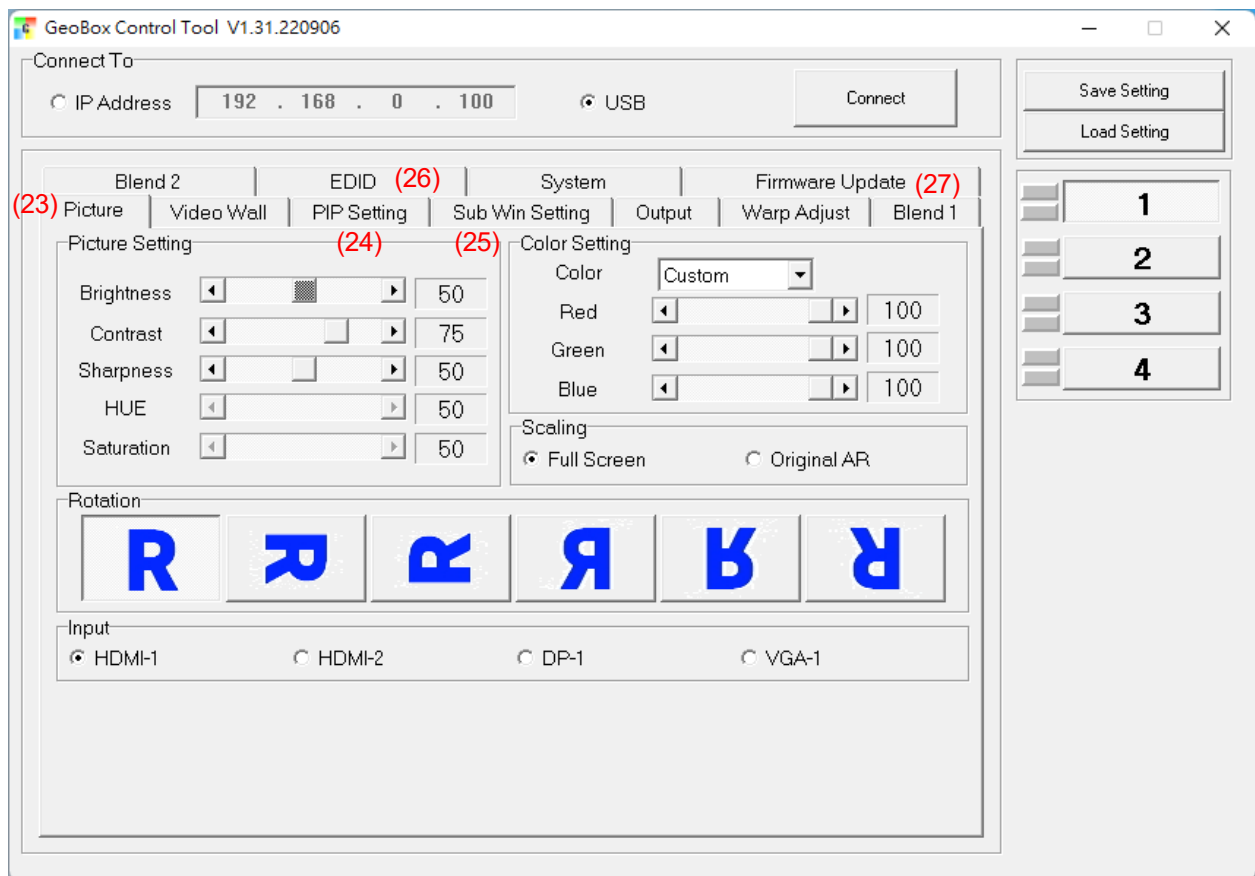
- (19) [Load Profile]: under [System] menu, user can load the final setting from profile index by selecting number in [Load Profile].
- (20) [Load Setting]: it will load the settings from PC BSF file. After load back the data, user needs to save it into Profile Index for permanent storage.

i) **System Reset**

User can load back the final settings from two locations:

- (21) [All Reset]: Reset all channel at the same time but not include Profile Index data.
- (22) [Do Factory Reset]: reset the system to factory default including profile Index data in all channels. Same function as reset from back panel reset hole.

j) Miscellaneous functions

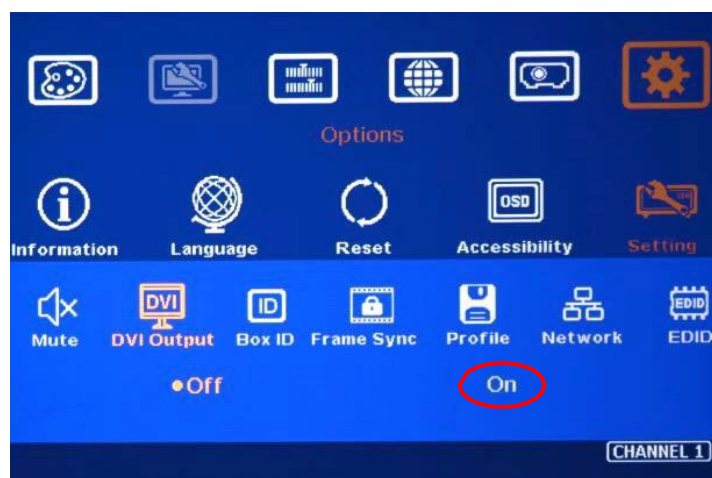


- (23) [Picture]: Input selection, image rotation, aspect ratio, color adjustment.
- (24) [PIP Setting]: select PIP/POP/3/4 split view types and set PIP size and location.
- (25) [Sub Win setting]: select sub-win signal source, rotation, aspect ratio and overlap setting
- (26) [EDID]: set EDID resolution for each input port
- (27) [Firmware update]: update firmware and MCU code. MCU code is for keypad and GCT control.

8. Miscellaneous settings

8.1. HDMI vs. DVI Output Signal

- HDMI digital signal is compatible with DVI signal. Most of display devices can support both digital signals. However, some old equipment may have less flexibility in signal compatibility. In this case, user may need to select DVI output format to get normal display in some devices.
- HDMI signal embeds more signal information, such as audio and HDCP. Once some information is missing, it will also affect the display. It may cause intermittent or loss of image. Under this condition, user can try to set DVI output. The connection doesn't need to change.



8.2. System Standby and Automatically Turn Off Output

- [Options]→ [Accessibility]→[Standby Time]
- If set [Standby Time] at 60, the system will get into Standby Mode after 60 seconds when no input signal is detected. The output signals from M811L will also be terminated at the same time. If M811L detects input signal again (hot plug signal), it will automatically turn on the system.
- If the projector can automatically turn off/on by detecting input signal, user can control signal source to execute entire system on/off control.

8.3. Change Background Color

When no signal input, the system will show blue color background with [Power Saving Mode] message on the screen. User can change background color to black on the screen with no text message on it through [Options]→ [Accessibility]→ Black Screen]→ [On]



8.4. Turn off splash screen Logo

- Use can turn off splash screen Logo through [Options]→ [Accessibility]→ [Logo Time Out] and set the value at "0". Default setting is 10 seconds.
- It will reduce the boot up time.

9. **Trouble Shooting**

9.1. **Front Panel LED indicators**

- User should see Input / Output LED lights in each channel. If no light illuminated in specific channel, please check Input / Output connecting cables, signal source & projector in that channel.
- If user sees continuous blinking in some channel LED, it means OSD may be locked. Please press [Menu] key for 5 seconds or press 850 number keys in remote controller to disable [OSD locked].
- If user sees blinking LED on Input/Output LED indicators at the same time with 1 second interval, it means the system gets wrong FW/MCU code or HW failure. User can turn off/on the system again to see if it can solve the issue. User can also update the MCU code and FW through GUU PC tool. If the issue is still existing, user needs to apply RMA and send back the unit to factory for checking.

9.2. **No image in the projector**

- If user can't see the image, please click [Menu] key to activate OSD. If user can see normal OSD, the system should be normal. Please click [INFO] key to check input and output timings.
- If user can't see the OSD, please change signal source, HDMI cable or display device to find the root cause of the failure.
- HDCP may be the reason for no image. Please make sure display device is HDCP compliant.

9.3. **Intermittent or Loss of Input Signal**

- Check the HDMI cable quality and make sure all cables are fitted correctly. 4k/60 signal requires high speed certified cables.
- Cable length: Connecting cable length should be as short as possible. Replace a short cable to verify the possible root cause.
- HDCP compliant issues: If the input source or the monitors are not HDCP compliant, it is possible to stop GeoBox from negotiating HDCP link and show intermittent, abnormal or no image. Please check HDCP condition in signal source or display device.
- Resolution issues: check if signal source and connecting cables can provide source signal supported by GeoBox.
- DVI/HDMI signal compatibility: some display devices may only support HDMI or DVI video signal and execute wrong signal format detecting. The default output is HDMI. User can change output with DVI format through [Options]→ [Setting]→ [DVI]→ [On].
- Usually, to swap with different cable, output channel, signal source and projector can verify the root cause for the failure.
- User can connect a monitor at the end of the Loop out port to check signal source stability.

9.4. **Video quality issues**

- Use the highest resolution and number of color bits (RGB 4:4:4) images allowed by M811L to be used as a signal source whenever possible. Please click INFO key to verify input/output resolution.
- There are a number of lower-quality AV players, the specification and actual output are difference, or because of the use of lower color sampling bits or poor image compression technology, resulting in lower quality or image is not smooth (LAG).
- If the use of H.264/H.265 compressed files, please select a player with hardware decoding to get smooth video quality.
- If the input signal is interlaced signal (interlaced-1080i), and the image is rotated, then the channel will have no [3D Motion adaptive de-interlaced] processing function. If user applies static image source, the output video will have a slight jitter phenomenon. The processing channel quality will be reduced. Use a progressive signal source setting (1080p/2160p) whenever possible.
- Please press [INFO] shortcut key to check the input/output signal settings.

9.5. **Power ON/OFF by IR controller**

- When the system is power off by IR controller, user needs to power on by IR controller as well. If user power off/on directly from power switch, it will not work.

9.6. **System Crash and Malfunction**

- After FW update, please reset the system through a pin inserting to reset hole on the back panel for 5 seconds to avoid abnormal settings inside the system.
- When the input source is 4:4:4 PC graphics signal, only [Brightness], [Contrast] and [Sharpness] three items under [Picture] menu can be executed. If the input is YUV video source, all the items are functional.
- When implement [Corner Wall] alignment, other geometry functions will be not functional.
- Remote controller may be interfered by environment and can't be smoothly operation.
- When geometry alignment is over the maximum adjusting range, the system may crash. It can be recovered by decreasing adjustment range or system reset.

10. **Technical support**

- User can send e-mail to sales@vigilink.com together with as much information as possible.
- The following information is required for a swift response.
 - Sink device (projector): type and model number
 - Screen details or specific application details.
 - GeoBox model No. and series No.
 - Details of the signal source and the resolution.
 - Press [Info] key to get System Information and send the data to us, including input/output timing and F/W version.
 - The exact nature of the problem. Please be as detailed as possible.
 - If possible, please attach the Pictures of the issue.
 - Usually, we will response within 24 hours (excluding weekends)
- Please note that if the machine is sent back for repair, user needs to pay for the delivery cost.

11. **Safety Precaution and Maintenance**

11.1. **Power Supply**

Please connect electric power for all devices in the system from the same Power Distribution Box with correct grounding. Open the power after finishing system connection to reduce the risk for system damage from high floating voltage.

11.2. **Working Environment**

Please locate M811L in an environment free from dust, moisture and high temperature with good ventilation.

11.3. **Warranty**

This device is designed and tested to the highest standards and backed by a thirty-months parts and labor warranty. Warranties are effective upon the first delivery date to the end customer and are non-transferable.

11.4. **Maintenance and Repair**

Apart from what is detailed in User Guide, maintenance should be carried out by competent technician assigned by VigilLink. If M811L is physically damaged, it should be returned for repair using GEOBOX/VIGILLINK RMA procedures. If the unit is opened by user, it will lose the right for warranty protection.

Specification

- Input: 2x HDMI 2.0b, 1x DP1.2a and 1x VGA
- Output: 1x HDMI 1.4b
- Loop output: 1x HDMI 2.0b for cascade.
- HDCP compliance: Input: HDMI: HDCP V2.2/V1.4, DP: HDCP: V1.3, Output: HDCP V1.4.
- Max. input resolution: 7680*2160 @30Hz, 5760*1200 @60Hz, 4096*2160 @60Hz
- Input supports progressive and interlaced RGB/YUV signal, 4:4:4 Chroma sampling, up to 30 Color bits.
- Support non-VESA standard input timings for easy connection with various signal sources.
- Output up to WUXGA/2048*1080/60, progressive 4:4:4 RGB, 15 selectable Output resolutions.
- 2 frames system latency: 33ms (@V=60Hz)
- Warp engine for geometry alignment up to 17*9 control points in IR control and GCT PC Tool.
- 120x68 grid pixel position fine-tune. Each control point can be adjusted with 1/4 pixel/step and moved up to 12.5 pixels adjustment range. Maximum adjusting points are 100 points. up to 12.5 pixels adjustment range. Maximum adjusting points are 100 points.
- Geometry adjustment range up to 600 pixels in both H&V directions.
- Support Corner Wall adjustment in H&V at flexible location.
- Support Linearity Grid Line adjustment for quick H&V line position alignment.
- Edge Mask with 8 control points up to 900 pixels at each control point in H&V directions.
- Embedded video wall function for image split, cropping and position adjustment.
- Selectable grid pattern size from 8-120 pixels in H&V direction. Default is 32*32 pixels.
- Selectable grid pattern color with optional transparency to see background image for external pattern.
- Flexible aspect ratio adjustment in each edge up to +_ 1800 pixels position shift.
- 10-bit processor, 3:2/2:2 cadence, low angle smooth algorithm, high quality scaling engine.
- 3D motion adaptive de-interlace.
- Frame lock function to get perfect synchronized outputs while multiple units are cascaded.
- Support xvYCC & 8/10/12-bit deep color processing.
- Individual color adjustment in each processing channel.
- Individual 90/180/270 rotation, flip, cropping, scaling & color adjustment.
- PIP/POP function with PIP image size from 320*180 up to 1920*1200 resolution with flexible position and adjustable aspect ratio. This function is not available when the main image is 90/270 degrees rotation.
- Selectable and programmable EDID in the range: H=1024-3840, V=720-2400.
- User can save up to 5 settings and can be recalled by remote controller, RS232, USB or network.
- ESD Protection: ±15kV (Air-gap discharge), ±8kV (Contact discharge)
- Working environment: 40° C, 10-90% RH
- Control: keypads, IR, RS232, USB, Ethernet
- Power supply: DC: 12V 2A, Max. Power consumption: 12V/0.7A, 8.4W
- Dimensions (Body only):
 - Without protruding parts: 303mm*164mm*44mm.
 - With protruding parts: 303mm*175mm*55mm
- Weight (Body only): 1.5kg
- CE/FCC/RoHS Certified
- 30 Months Warranty

Revision History

Revision	Date	Originator	Comments
V1.00	2022-0913	Steve Wang	Preliminary version
VL_V1.01	06/05/2023	Matthew Choi	Updated Company and warranty data