# USER MANUAL

## Fixed 8 inputs 12 outputs Video Wall Controller with APP control

EW0812


Version: 2023.7

# 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.

Make sure the device ground connection.

**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 connecter before cleaning. Don’t use liquid or prayed 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.
9. If the equipment has obvious sign of breakage.
10. Ambient operation temperature: 0 ~ 45 degrees.
11. 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.

## 1. Introduction

It's a high performance video processing workstation with pure hardware architecture for spectacular video wall displaying which can be employed in fields including education and research, government announcement, information publishing, exhibition and show, controlling and commanding center, security monitoring, etc. Advanced image processing technologies such as high definition video signal collecting, real time and high resolution digital image processing. It also employs large-capacity, high-speed FPGA and CrossPoint switch to ensure the real-time processing of all input signal and the consistency of the data, leading to no image delay, discretization, frame loss, which guarantee excellent video displaying.

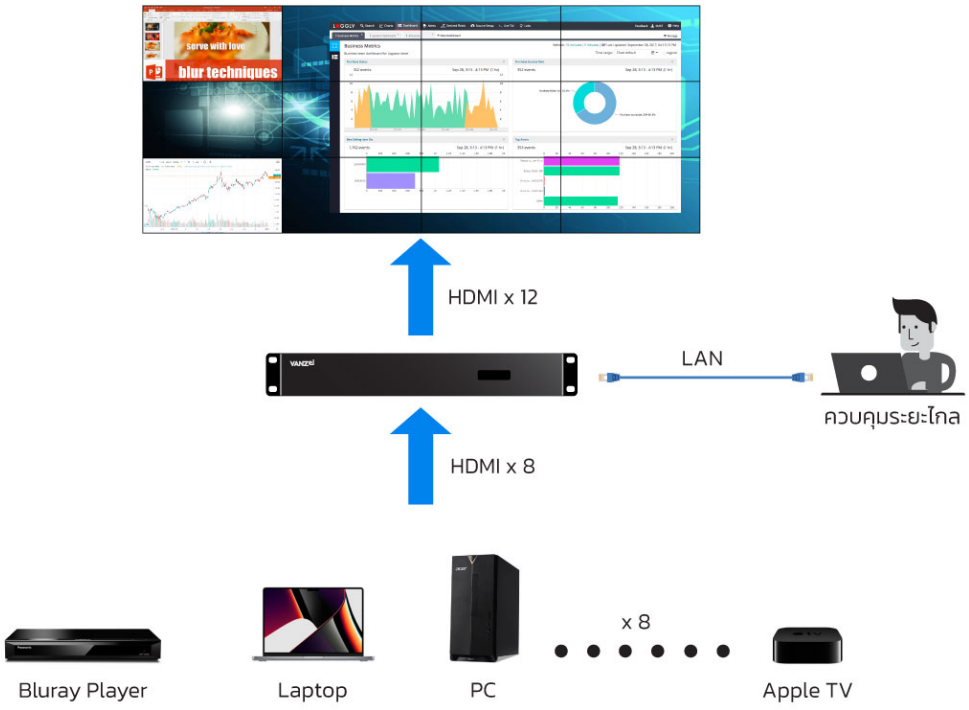
## 2. Features

- 1.5U modular chassis
- 8 HDMI input and 12 HDMI outputs
- Supports to open 2 windows on screen
- Supports PIP, cross-screen, pure-hardware design
- Supports 4 Video wall groups management
- Supports the PC software/ APP/ RS232 control
- Supports input sources preview

### 3. Specification

| | |
|---|---|
| Inputs number | 8 HDMI inputs |
| Outputs number | 12 HDMI outputs |
| Control | RS232, LAN, APP |
| Dimension | 410*350*72mm |
| Weight | 7kg |
| Power Supply | 100VAC–240VAC 50/60Hz |
| Consumption | 950W |
| Working Humidity | 10%-90% |
| Temperature | -10℃-50℃ |
| Storage | -20℃-75℃ |

## 4. Connection Diagram




## 5. Packing

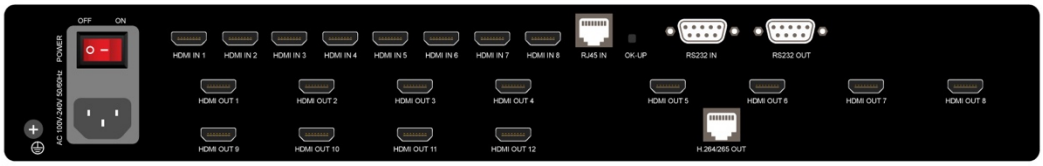
| No. | Name | Qty | Unit |
|---|---|---|---|
| 1 | Video Wall controller | 1 | Pcs. |
| 2 | Power cord | 1 | Pcs |
| 3 | USB-RS232 cable | 1 | Pcs |
| 4 | Rack ear | 2 | Pcs |

## 6. Panel description

### Front panel

**POWER**: power on/off indicator
**ACTIVE**: for control status indicator

**Back panel**

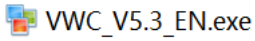



POWER SWITCH: ON/OFF
HDMI INPUTS: 8* HDMI inputs
RJ45 IN: LAN control port
RS232 IN: RS232 control port
RS232 OUT: RS232 to control other devices
HDMI OUTPUTS: 12 HDMI outputs
H.264.265 OUT: For the preview function

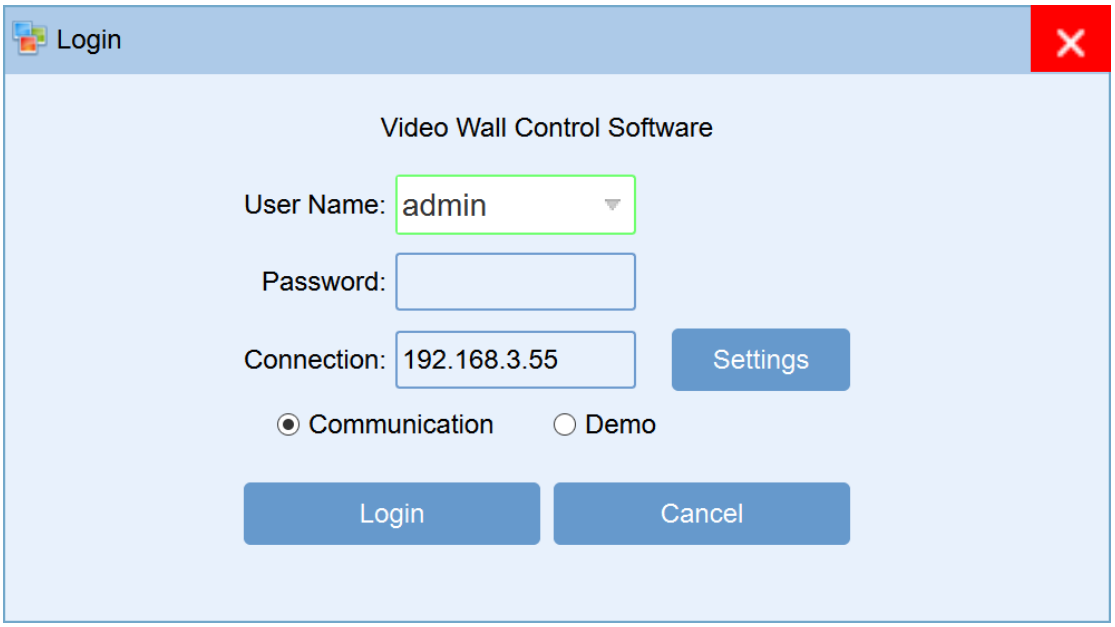
## 7. Video Wall Controller control Introduction

**PC Control software**

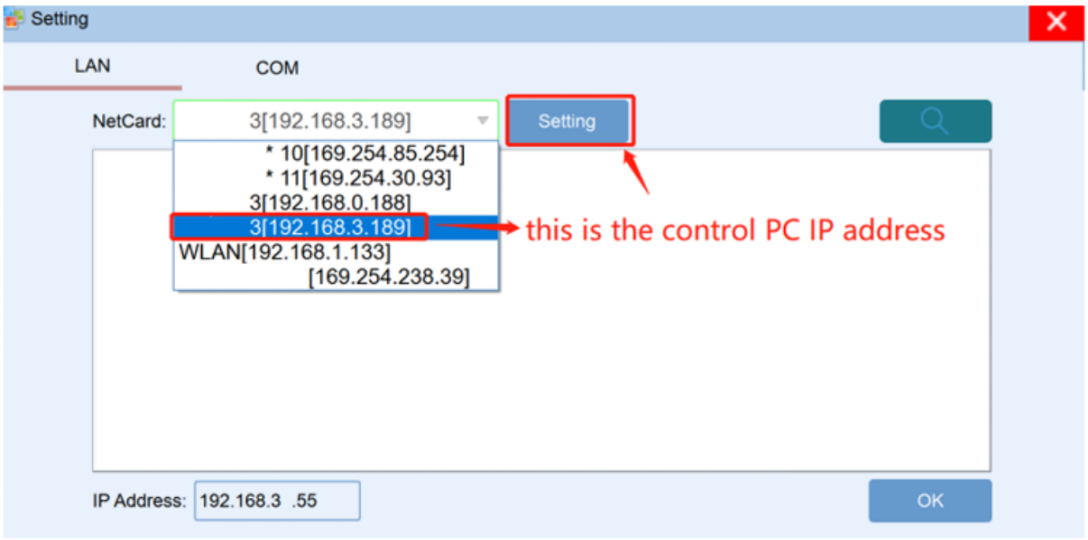
To protect environment, this control software will be sent by email and can download from the dealers website, after download or have the software ready, please follow the guide below to get started:
When open the control software folder, please click and run the “VWC_V5.3” .exe file



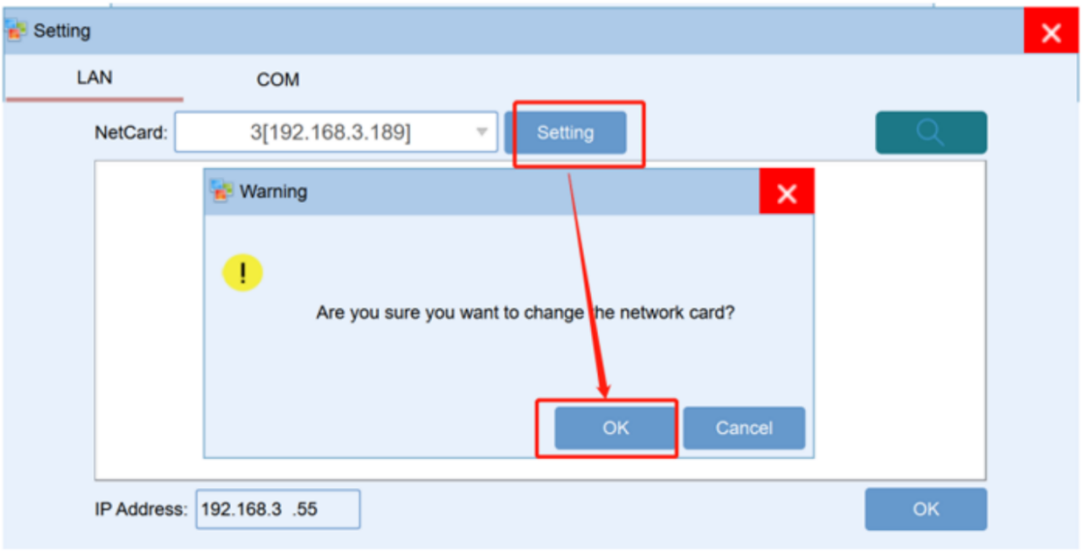
**Login interface：**



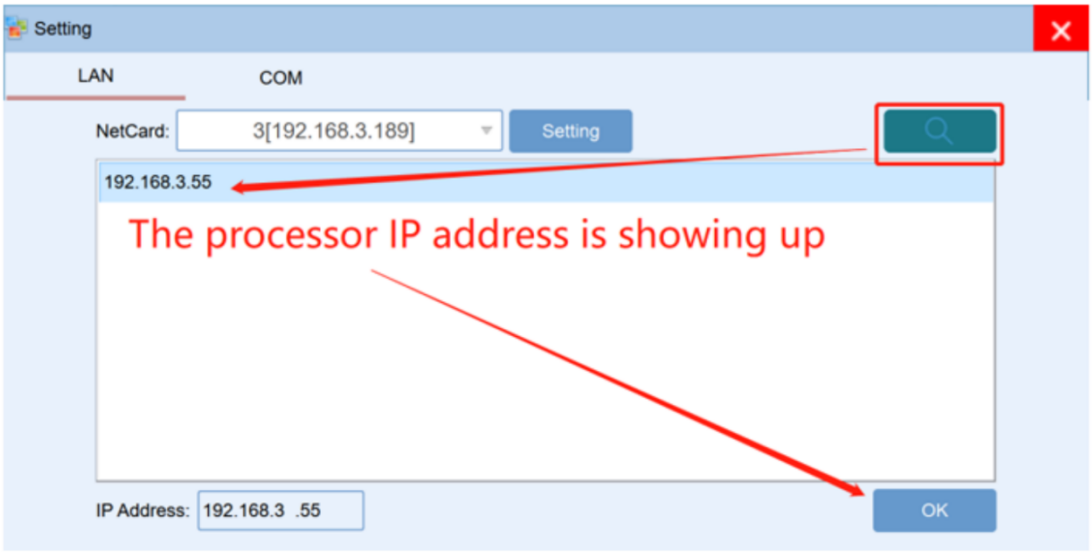

*Before entering the password, users will need to click “Settings” first to choose the right Netcard which is the control PC IP address, and then click “Setting”



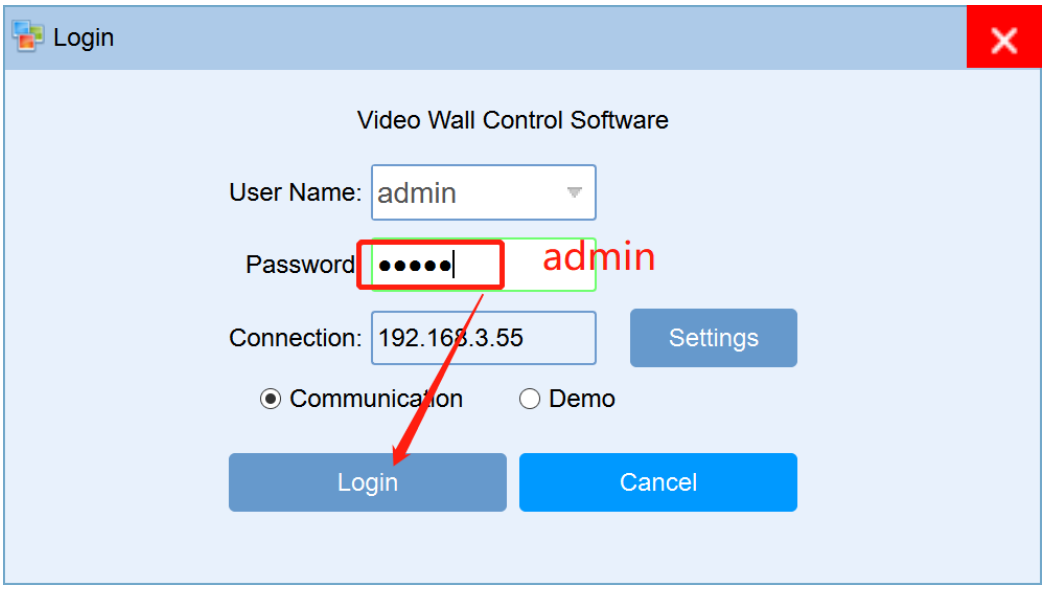

It will pop-up a window for the netcard selection confirming, then Click “OK” to confirm:



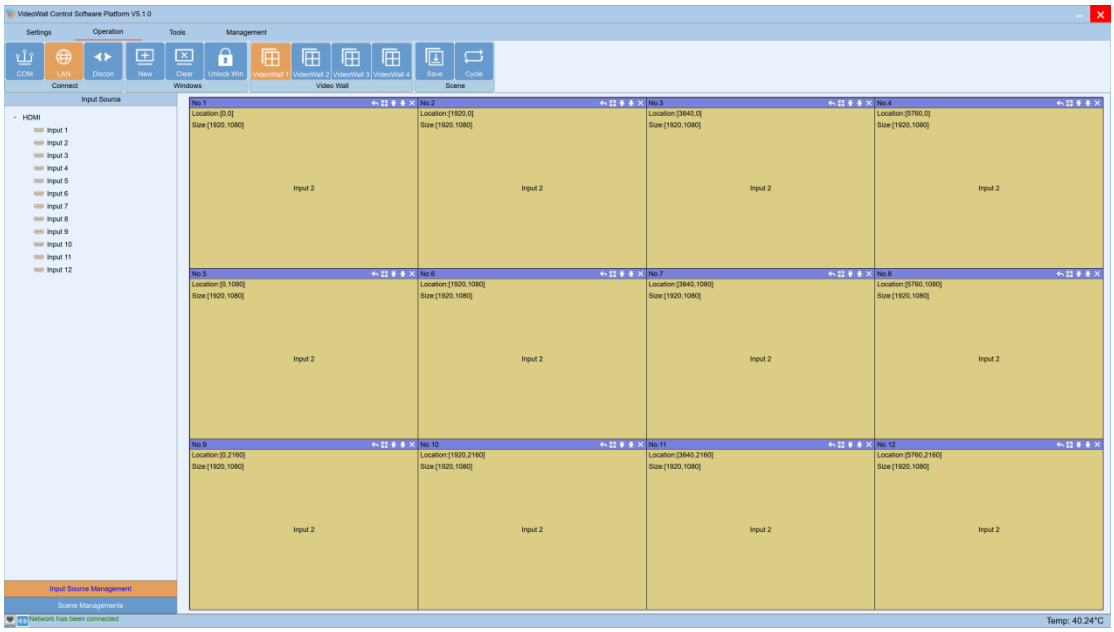

Click the “Search” icon to find the processor/controller IP address and click “OK”




Now will back to the Login interface again, enter the password “admin” and click “Login”

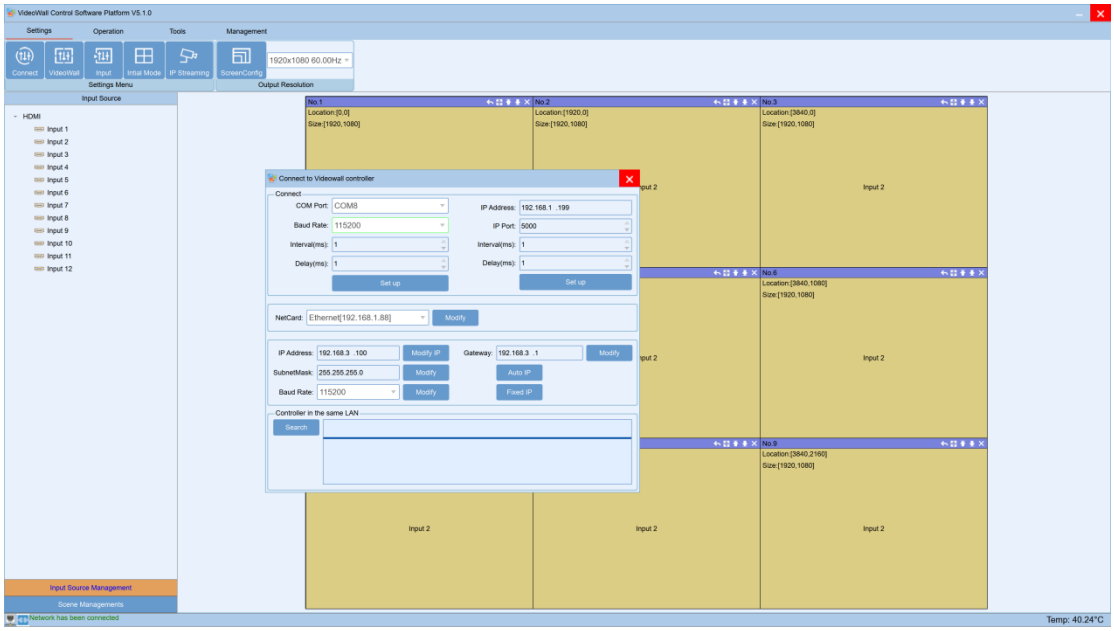


After click OK to login, it will be showing the “Main” interface as below:

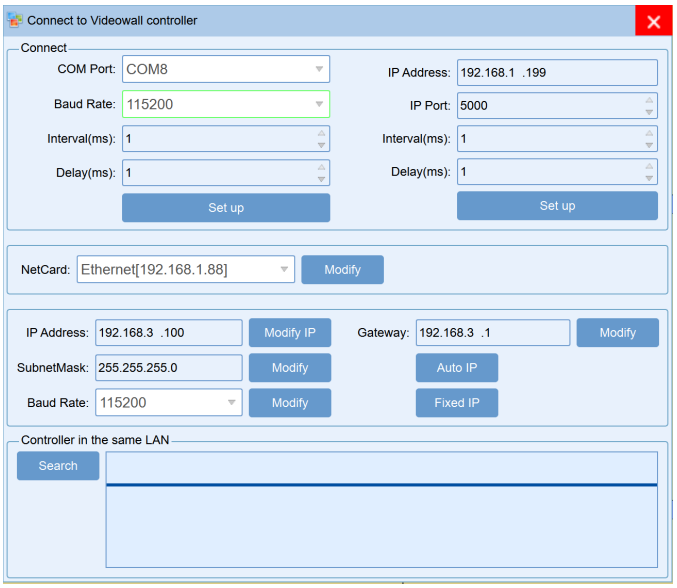


## Settings

This interface is for users to setup the connect method, Video Wall, Input etc settings:



Connect is for users to setup the communication methods for the control PC and the controller, users can set up the COM and IP address those parameters here. After modified the parameters, will need to reconnect and restart the controller.




For the ***VideoWall*** setting, it's for users to setup the Video Wall accordingly.

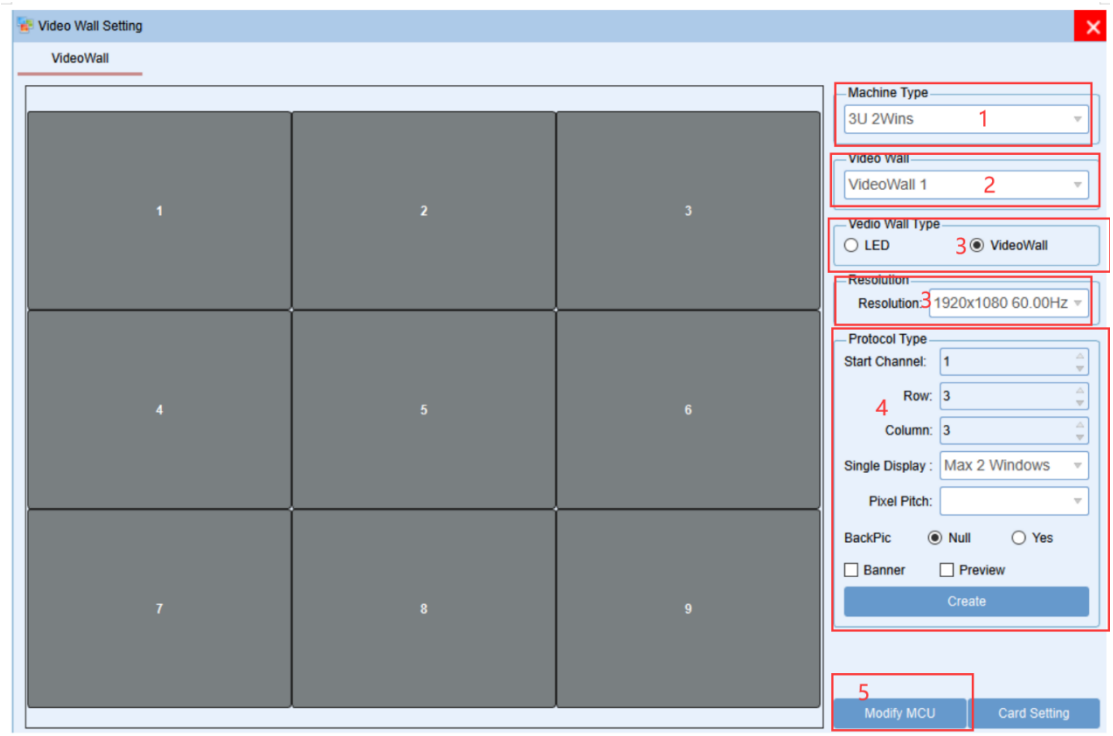
**Step 1:** According to the controller size&feature to choose the right one, here take example with the 3U 2 wins

**Step2:** Choose the video wall group, here take example VideoWall 1.

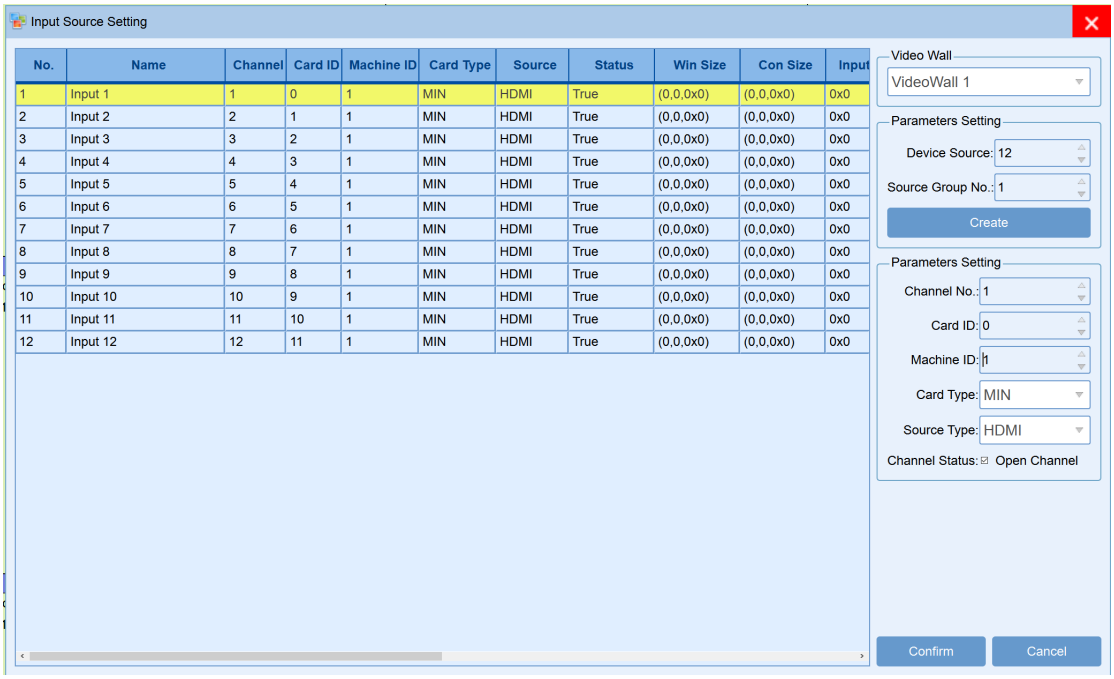
**Step3:** Choose the resolution for the video wall, usually recommend the 1920x1080P@60Hz.

**Step4:** Set up the Video Wall size, here take example of a 3x3 Video Wall, so the Row is 3, Column is 3, and the click "Create"

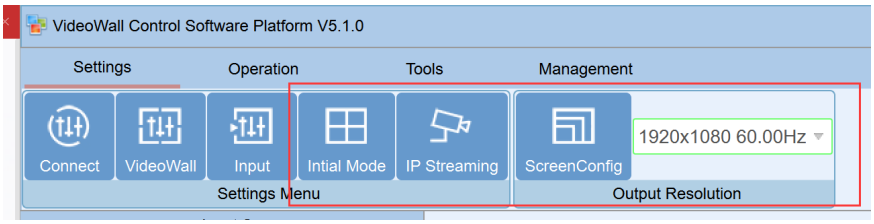
**Step5:** After all the above 4 steps, still need to click the "modify MCU" to finish the settings.




For the ***Input source*** setting, it's for users to setup the input source group, source and card type

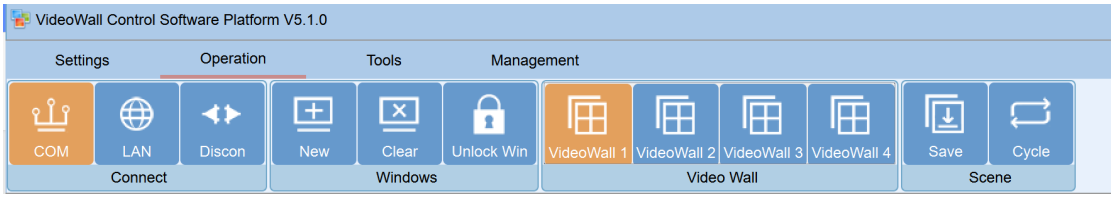



For the ***Initial mode, IP streaming and the Screen config*** settings are only used when have the specific cards plugged into the controller.



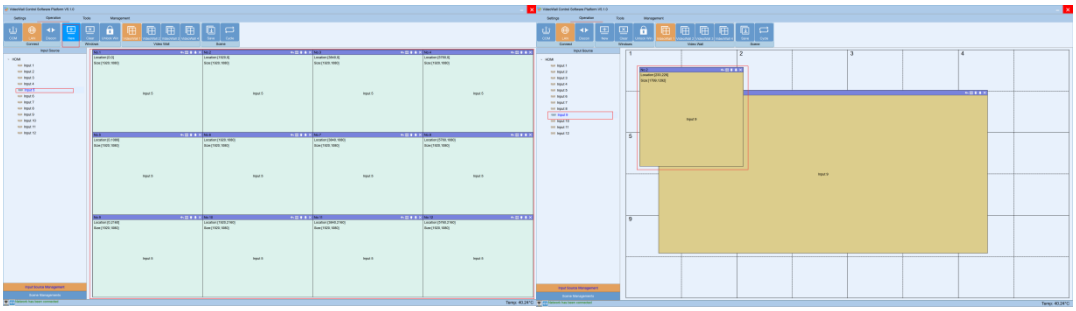

## Operation

Under this interface, users can see the **Connect**, **Windows**, **Video Wall** and **Scene** those function.

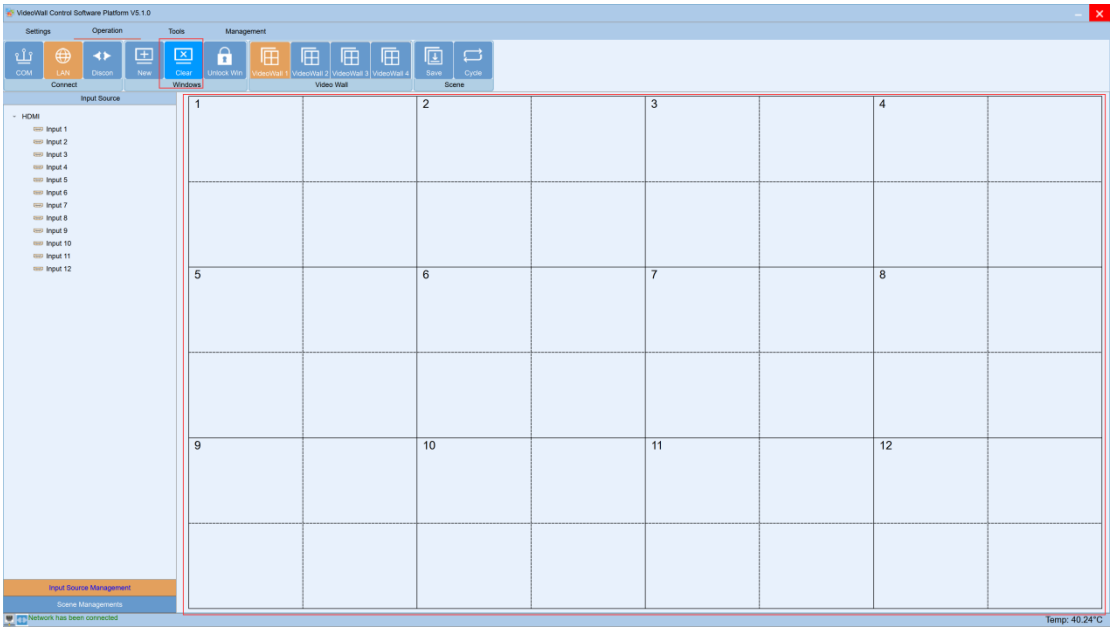



**Connect** is for users to click to snyc with controller either by the COM, LAN or to Discon(disconnect). Once click the LAN or COM to sync, the software will pop-up and “wait” window to sync.

**Windows** is for users to open a new window, clear all the windows or lock/unlock the windows Click “New”, it will open a window of the selected source to all the connected displays, also show the windows on the control software; Users also can select the source and then use the mouse to drag any size window on the video wall.



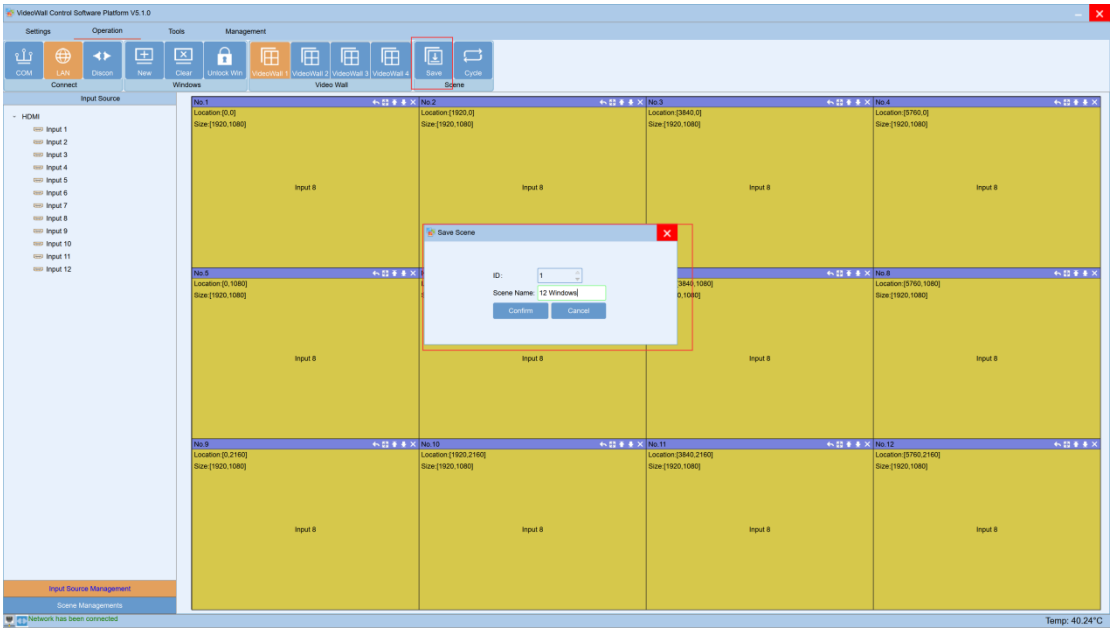
If click the “Clear”tap, it will close all the windows:



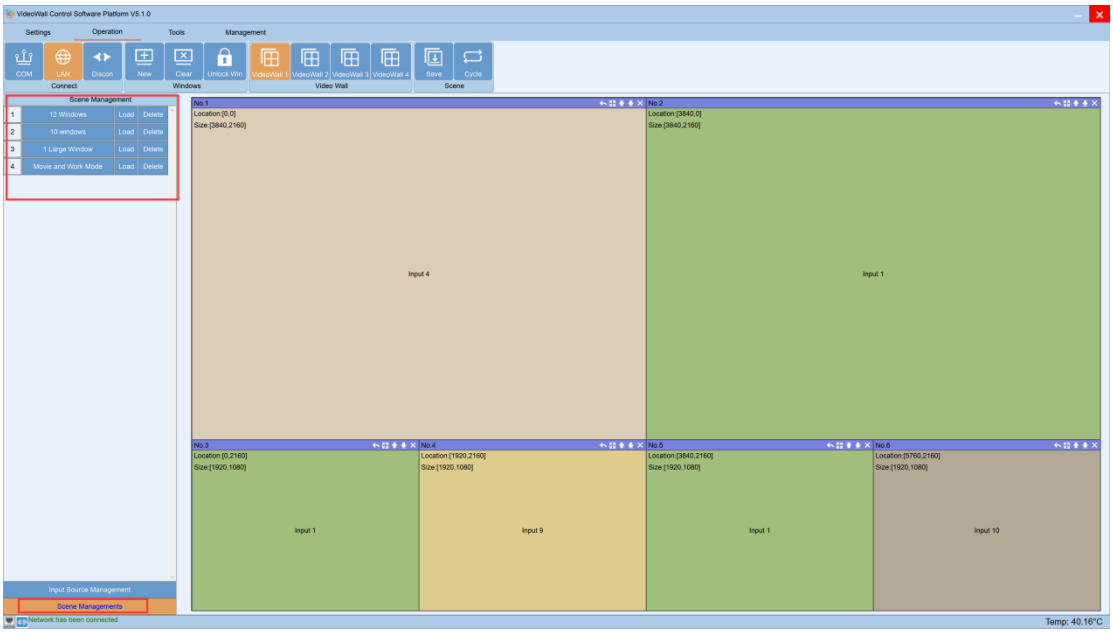

**Video Wall** is for users to select and control the specific Video Wall, this processor can support 4 video wall groups.

**Scene** is for users to save the current switching status and setup for the scenes cycling

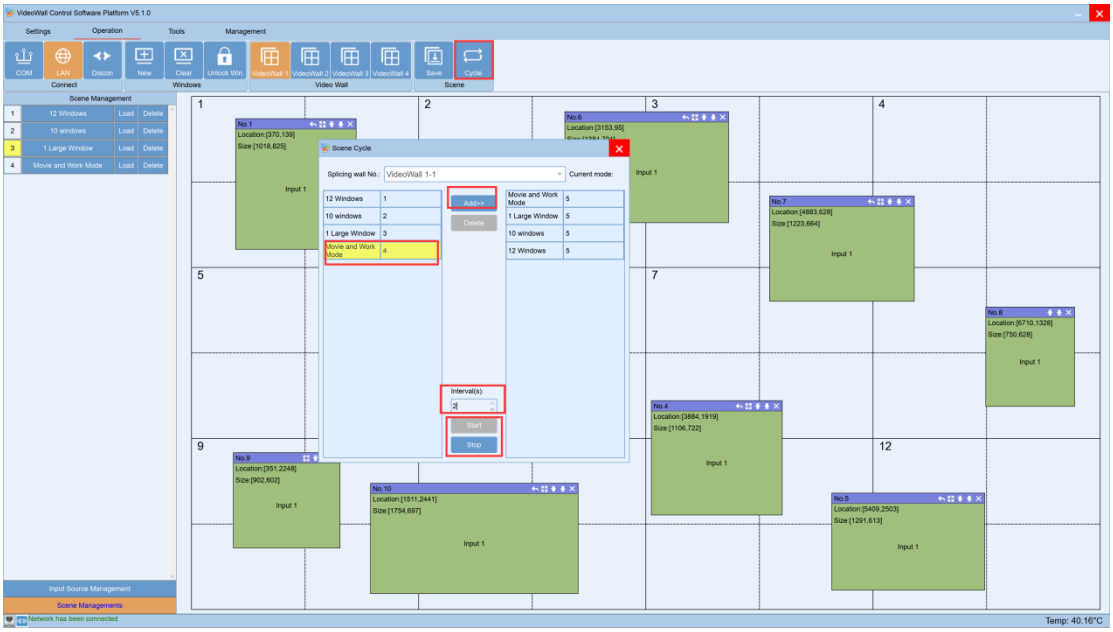
To save the current status, users will only need to click the “Save” button, it will pop-up the Save scene window, users can enter the scene name and click to save.




Users can click the “Scene Management” at the left down corner, it will show all the saved scenes. Then users can rename it, load or delete it.



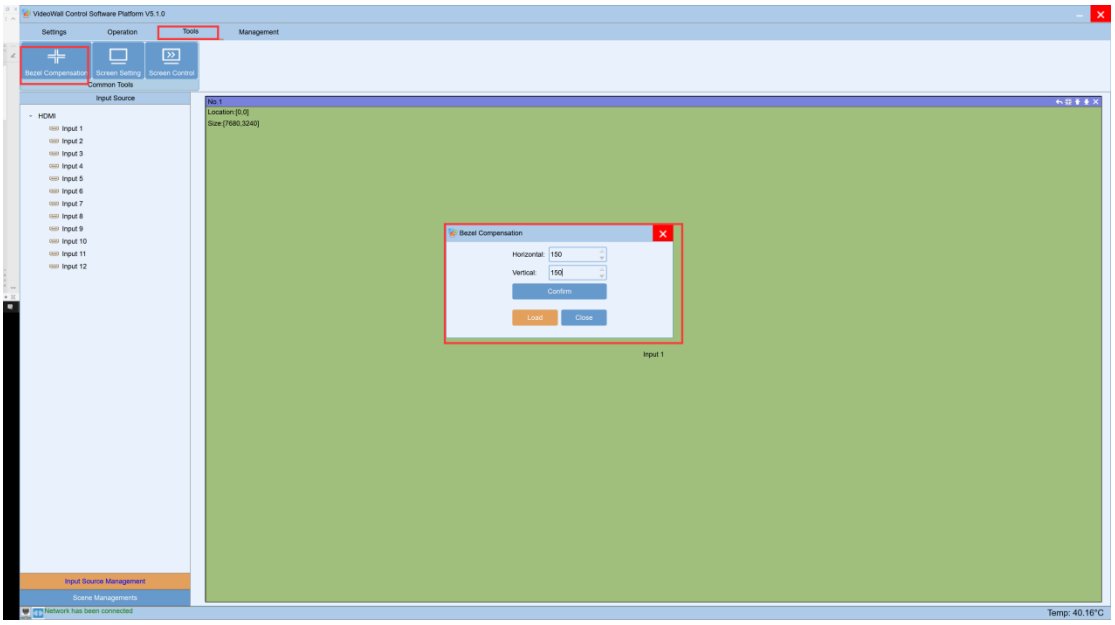

Users also can setup the scenes cycling, but click the “Cycle” button on the top of the control software.



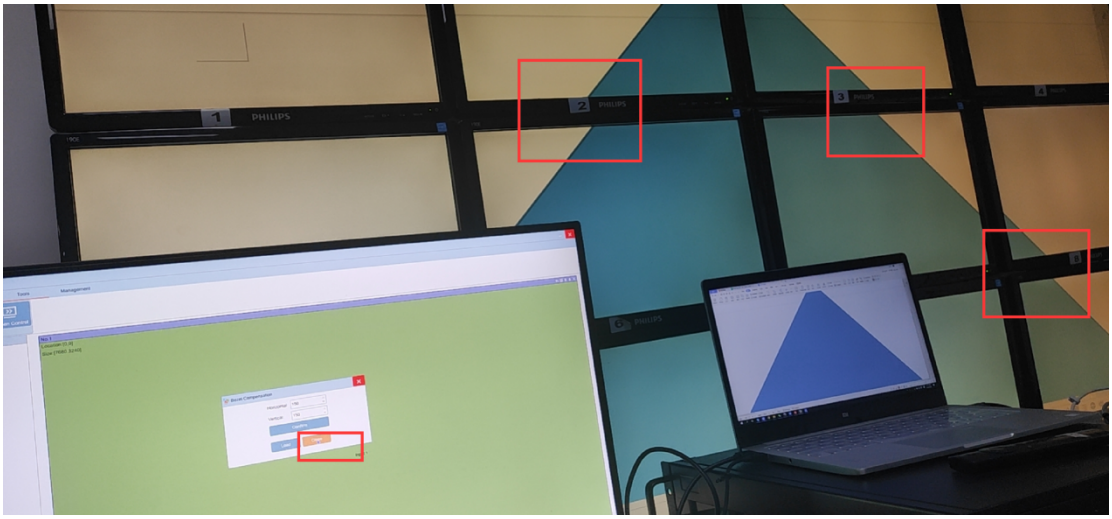
## Tools

Under this interface, users can setup the bezel correction, screen settings, screen control.

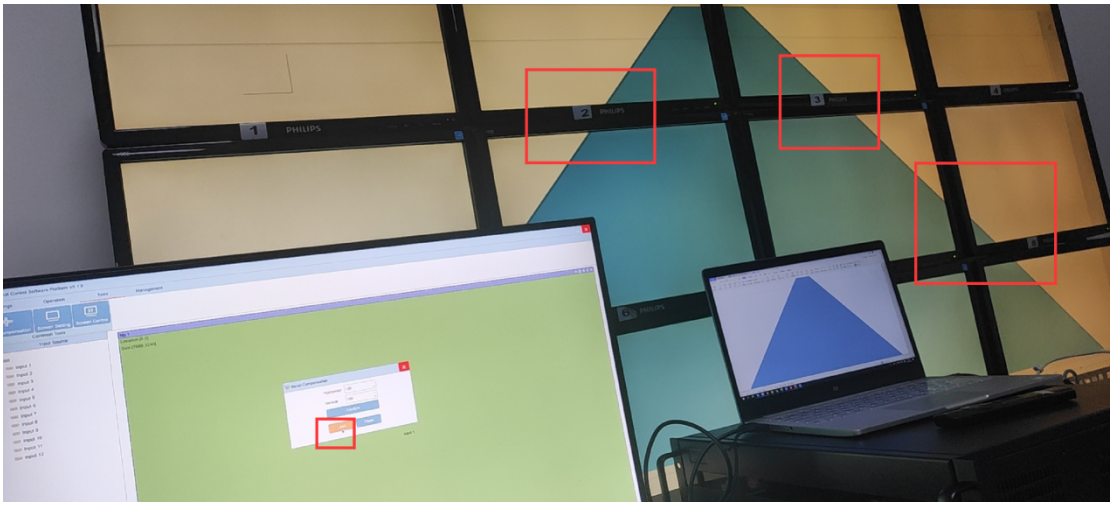
***Bezel compensation*** is for the users who have old and large bezel TV, users can set up the Horizontal and Vertical parameter to correct the image showing the displays.



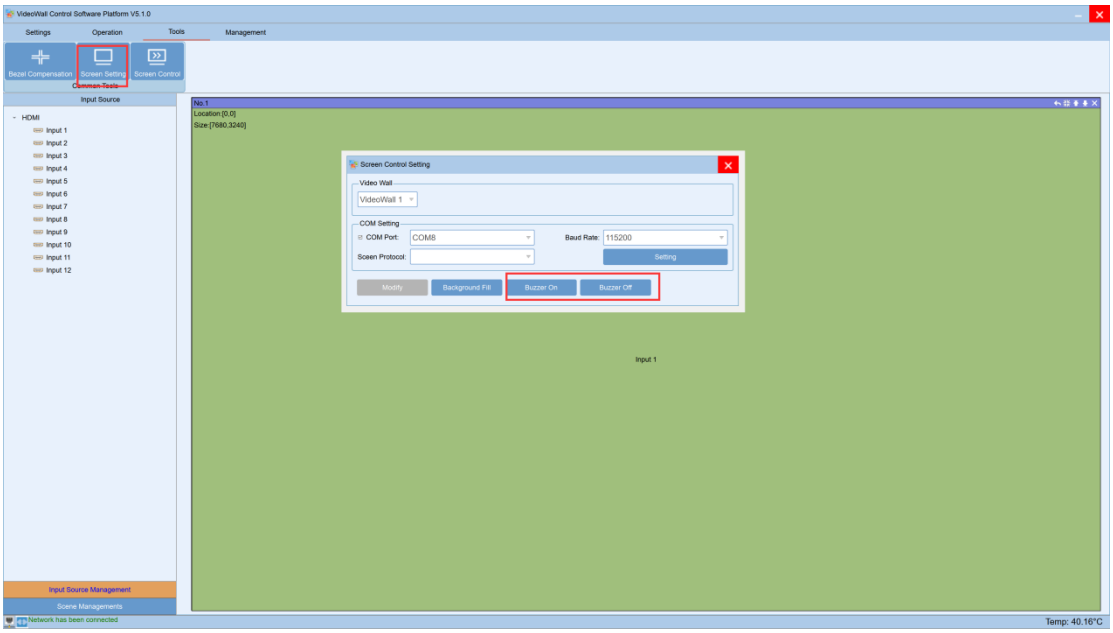
When no bezel correction or correction OFF, it will be showing as below:



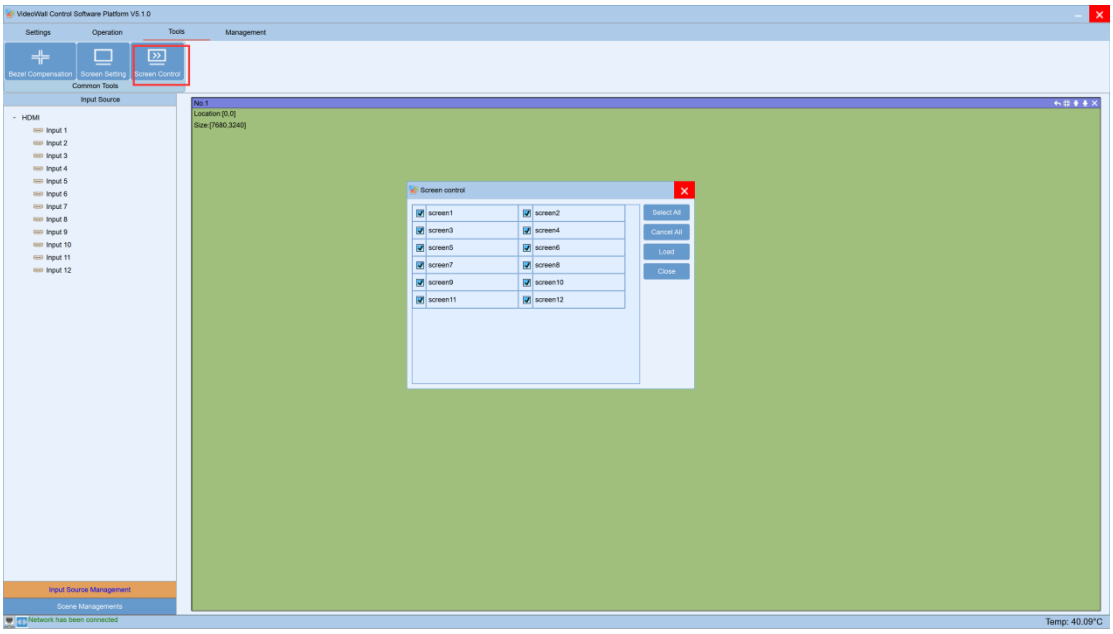
When with bezel correction or correction ON, it will be showing as below:



Screen setting is for the users to set up the parameter to control the screens, Turn on or turn off the beep sound of the controller.

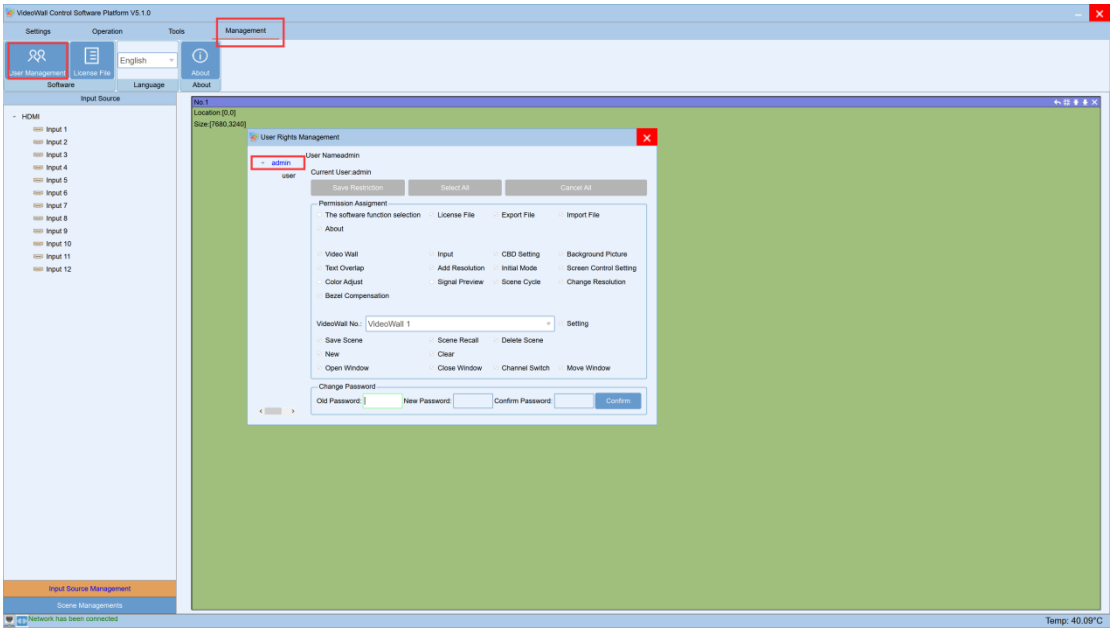


The screen control is to select the screens for controller to control them, this function is mainly for turning off or turning on the screens. This function will need to make sure there's a RS232 cable connected the screens and controller, also need to know the COM commands for the screens.



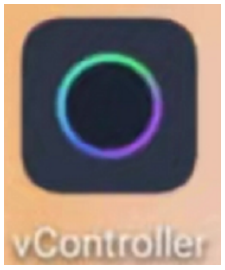

## Management

Under this interface, users can manage the different users to log in with different rights. To add a new user, will need to make sure it's logged in with under the Admin, then can add/manage the users. A right click on the "admin", it will show the add users option:



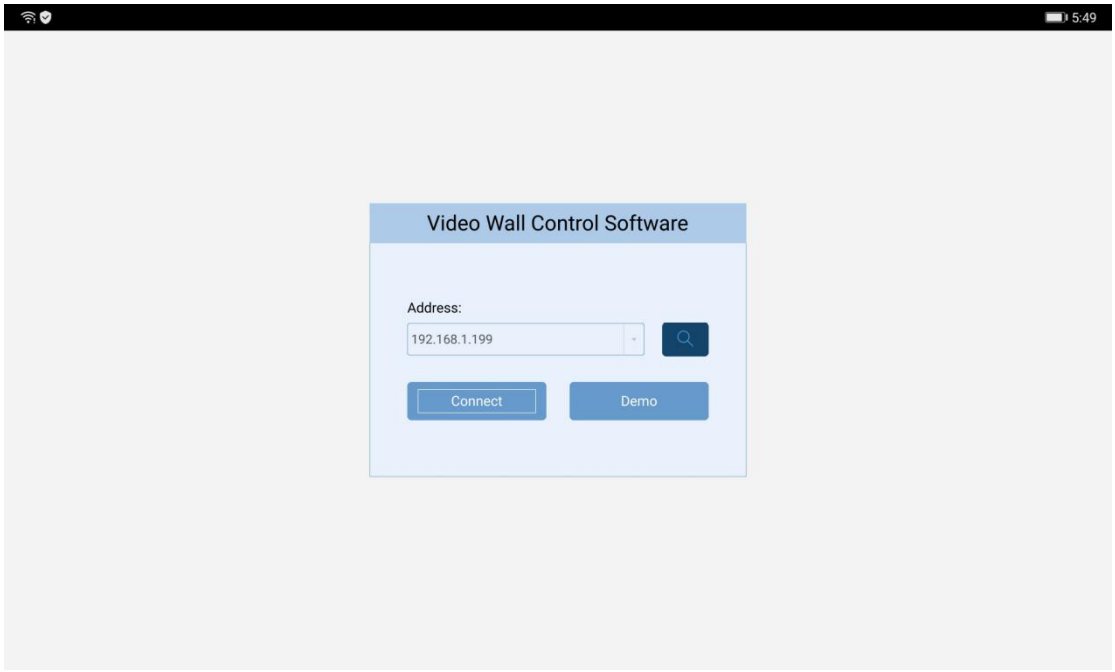

## Android APP Control

This video wall controller also can support the Android tablet control, users can get the APK. File from the local dealers.

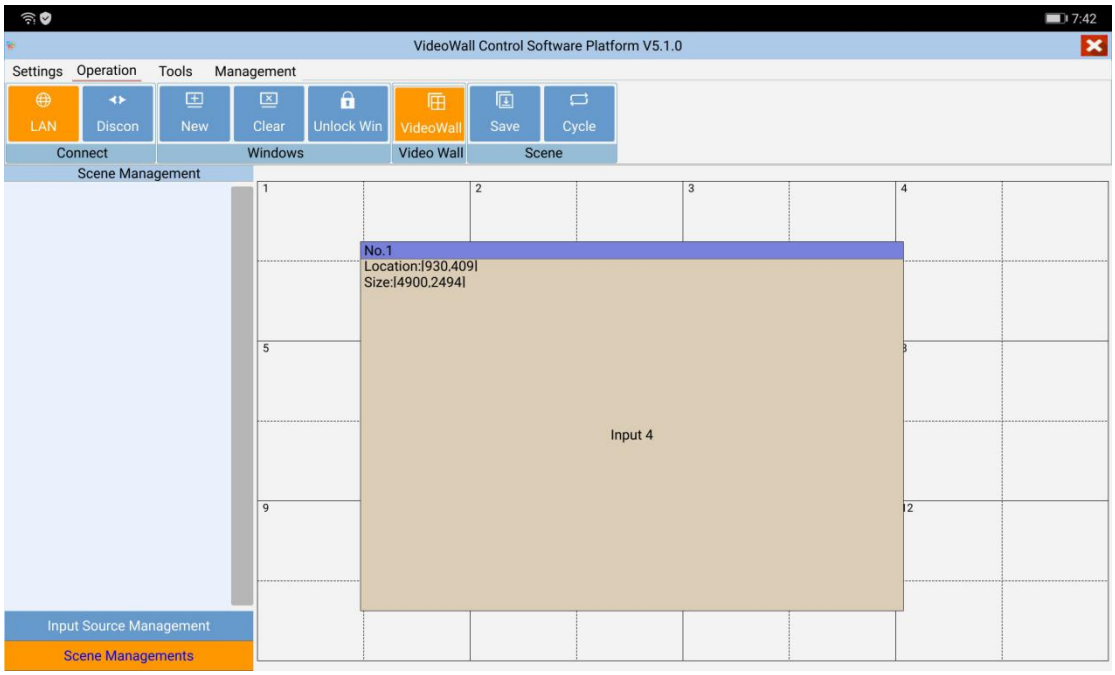



To use the APP control, it will need to make sure the controller is connected to a WIFI router, and the control tablet needs to connect to the same network. After those settings, the APP control is ready to go:

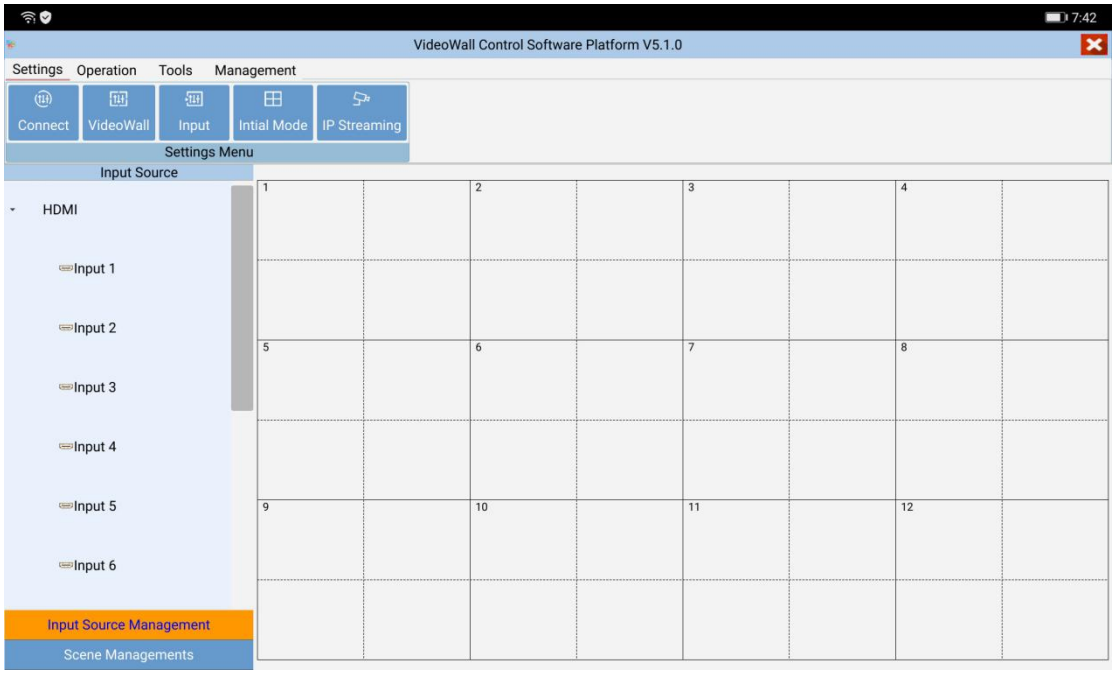
Click the “search” icon, it will fill out the IP address automatically, and then click “connect” to login.



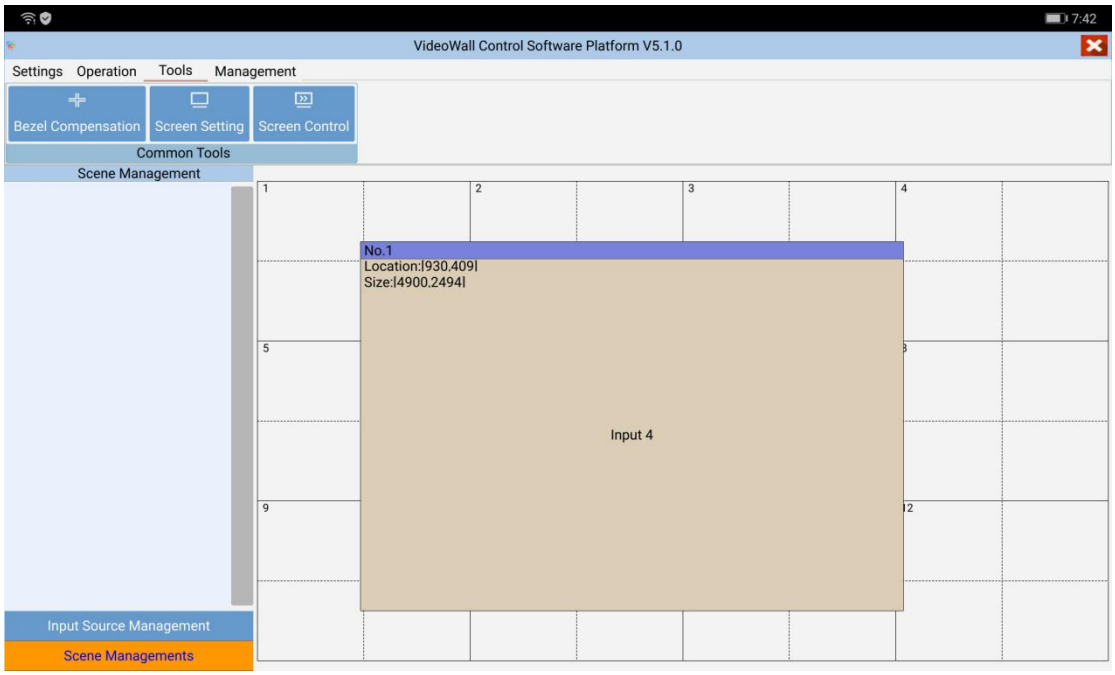

After login, it will be showing the similar to the PC control software, the operation tap:



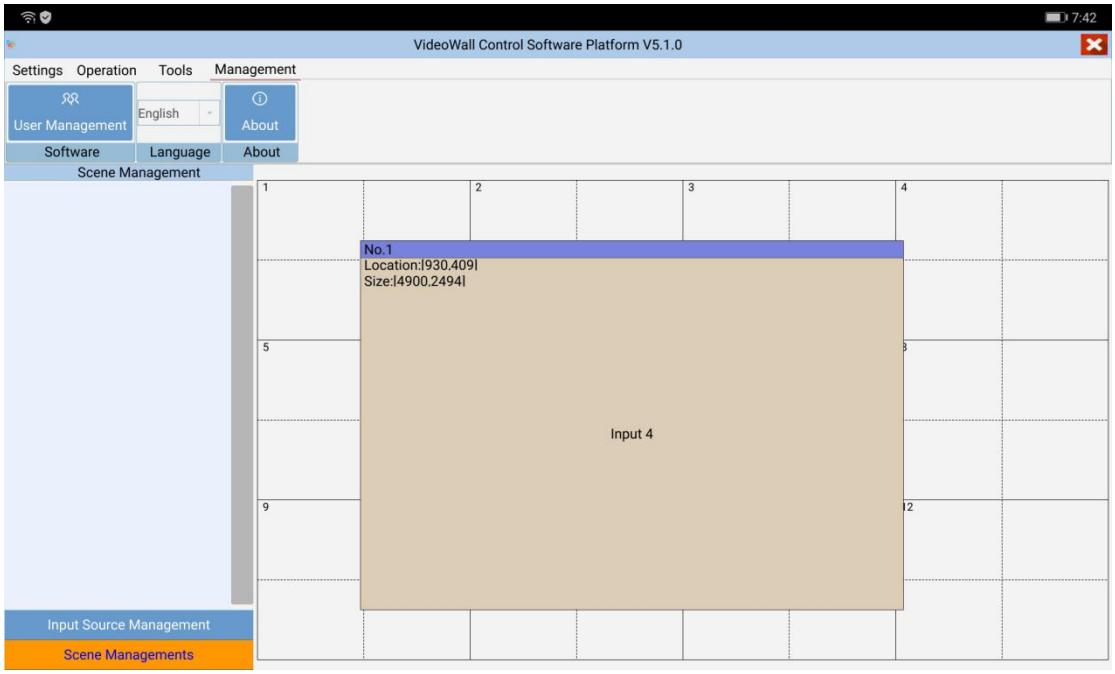

The Settings tap:




The tools tap:

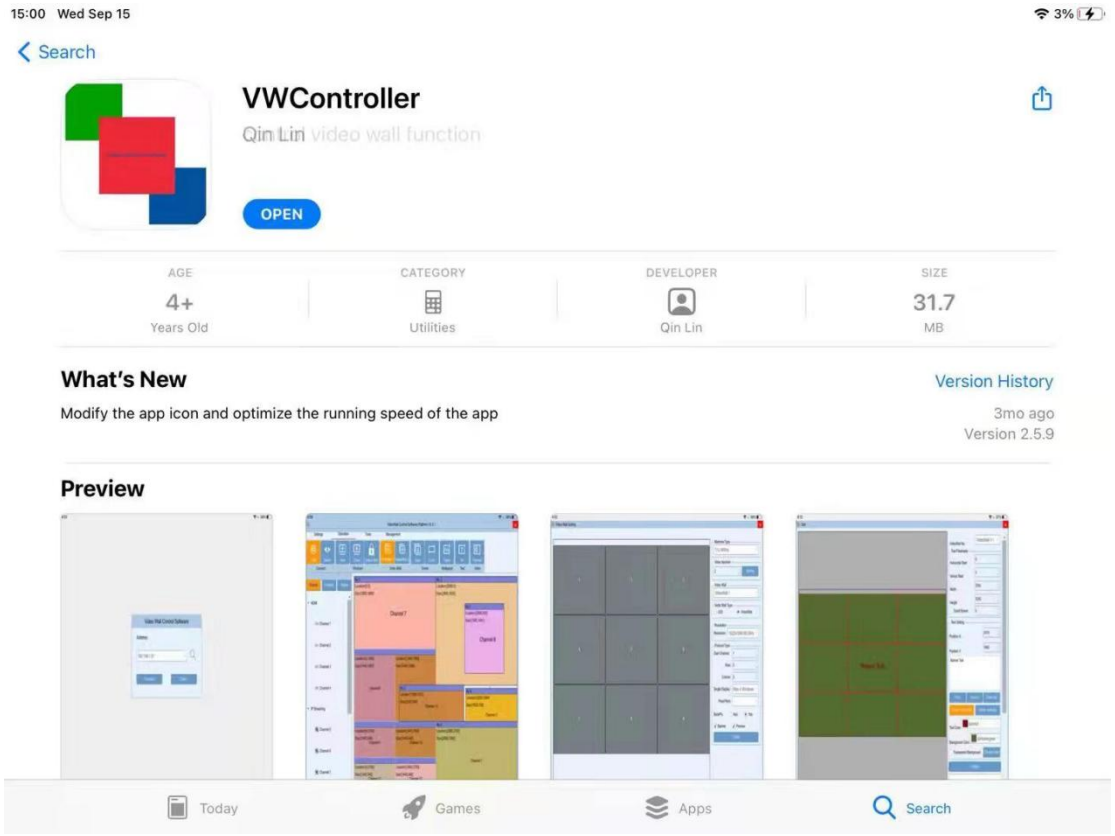



And the management tap:




## iOS APP control

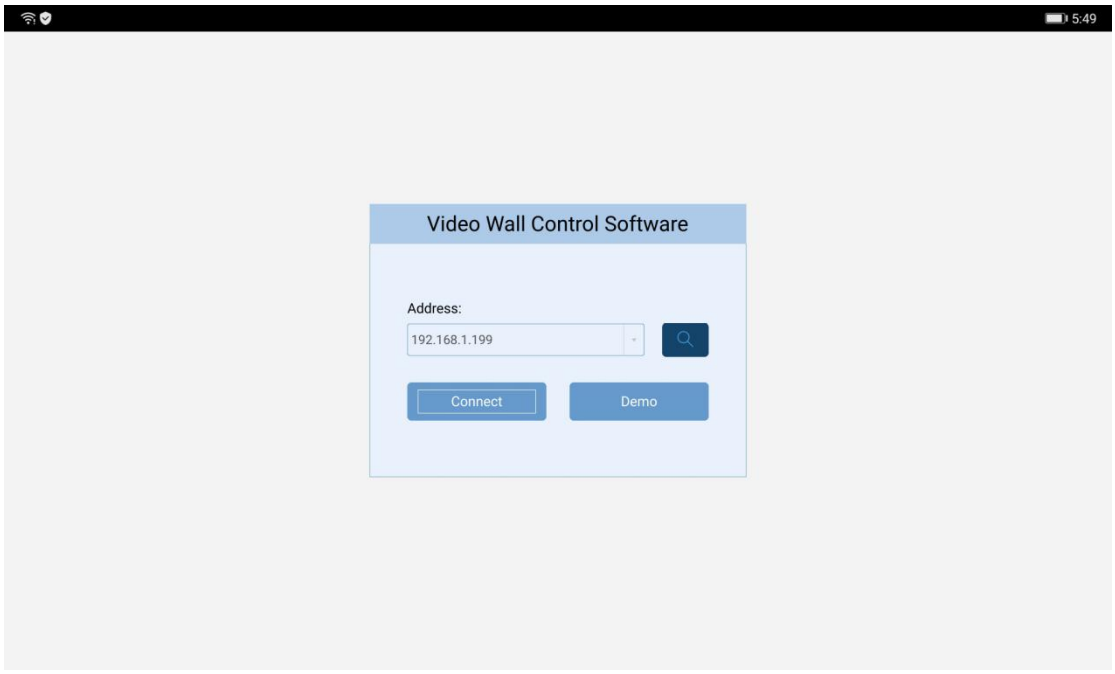
For iOS users just need to download the APP from the application store by searching the name “VWController”. As the screenshot below:



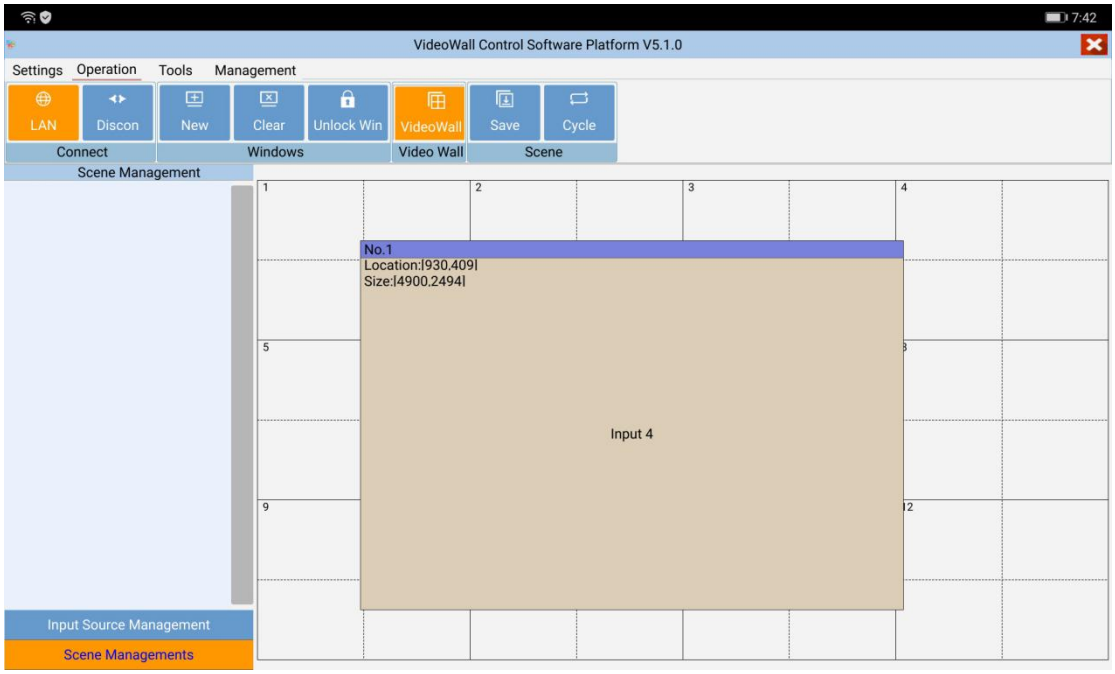

To use the APP control, it will need to make sure the controller is connected to a WIFI router, and the control iPad or tablet need to connect to the same network. After those settings, the APP

control is ready to go:

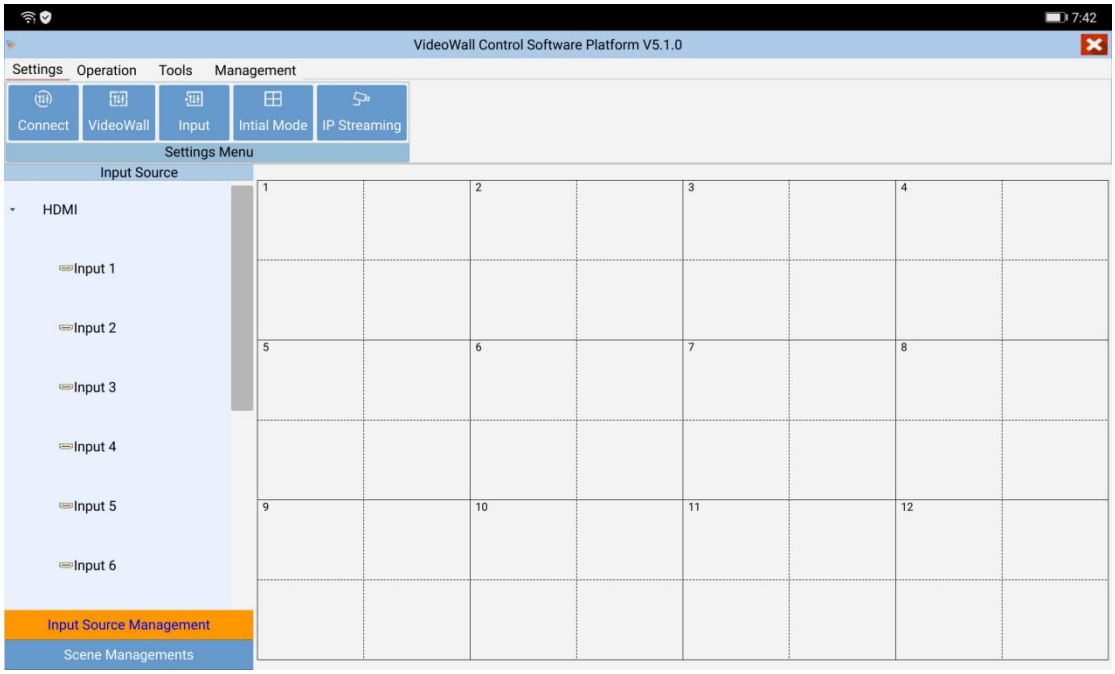
Click the “search” icon, it will fill out the IP address automatically, and then click “connect” to login(The control UI will be just the same the Andorid APP).



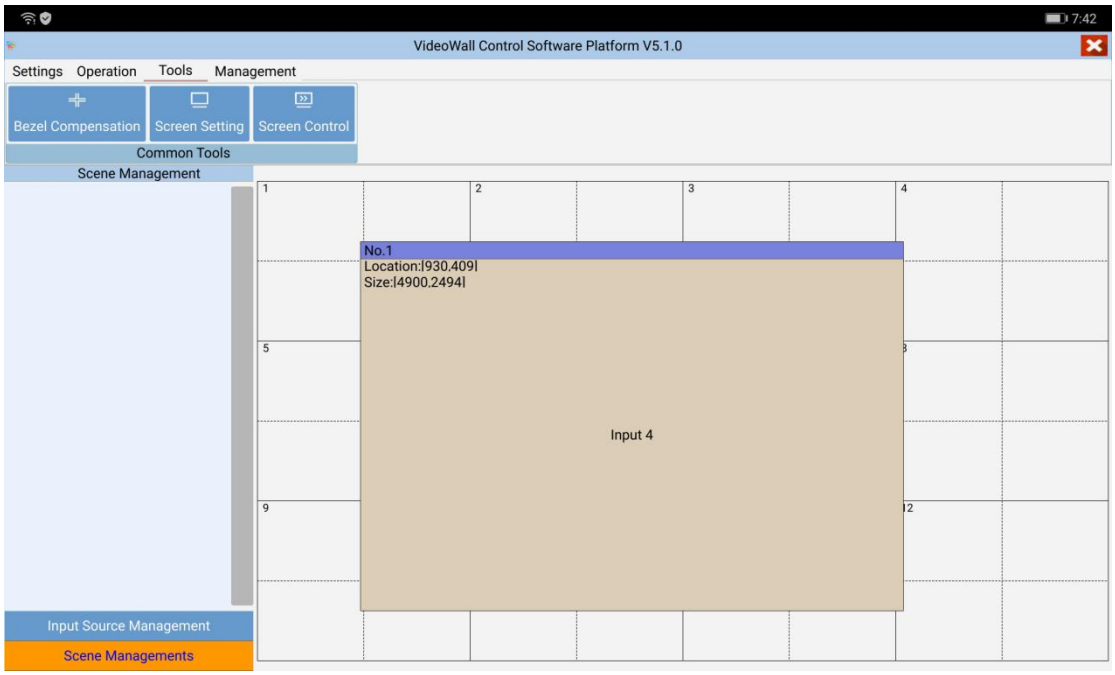

After login, it will be showing the similar to the PC control software, the operation tap:



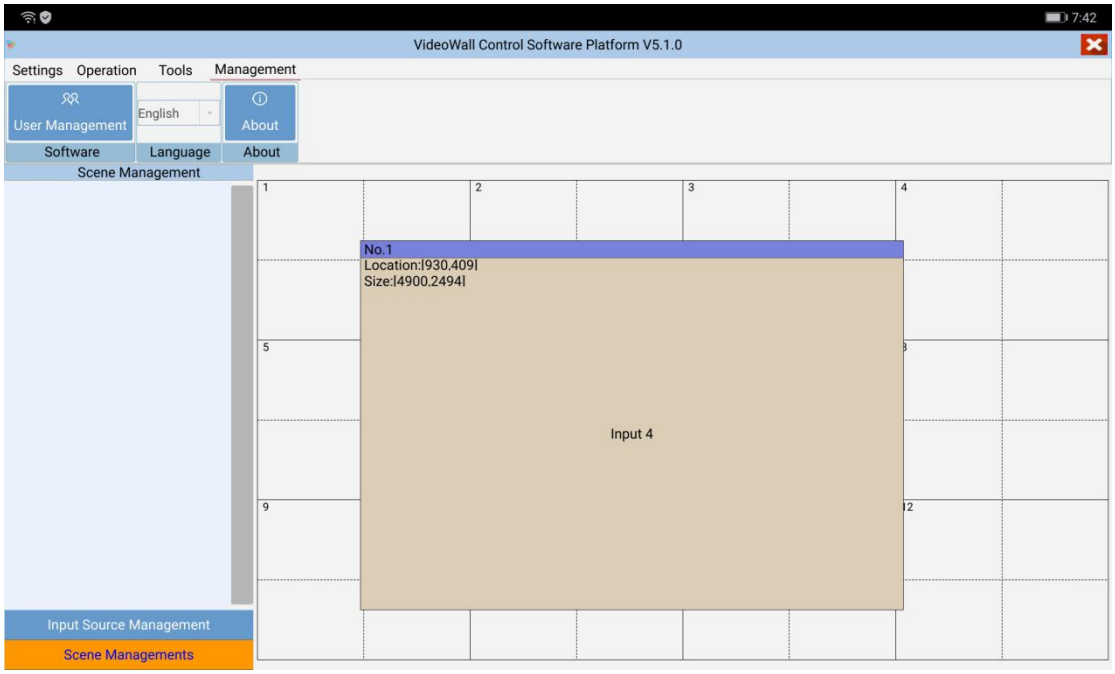

The Settings tap:




The tools tap:




And the management tap:




## The 3rd Party Control command

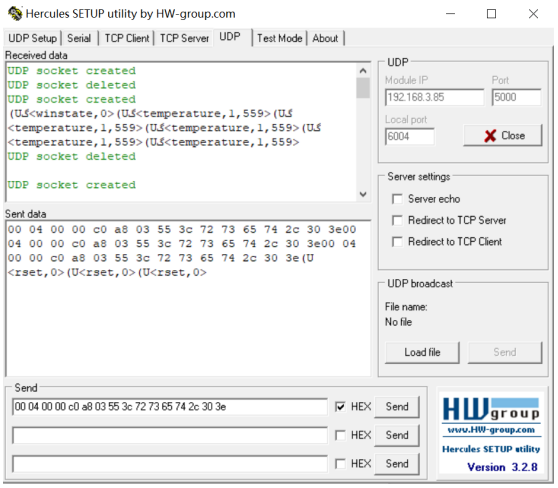
### Sending the commands via UDP

Sending the commands to the controller via the UDP protocol to control the controller

Via: UDP Socket

Target port number: 5000

Commands format: 8-bit command head+commands




8-bit command head:

**head[0]:** mark, the default value is (0x0004>>8)&0xFF;

When sending the background image or scrolling text, the value is (0x0008>>8)&0xFF

**head[1]:** mark, the default value is (0x0004>>0)&0xFF;

When sending the background image or scrolling text, the value is (0x0008>>0)&0xFF

**head[2]:** the default is 0x00;

When sending the background image or scrolling text, the value is (def_pak>>8)&0xFF

The def_pak means the data size

**head[3]:** the default is 0x00;

When sending the background image or scrolling text, the value is (def_pak>>8)&0xFF

The def_pak means the data size

**head[4]:** It's for first bit of the IP address, eg, it's the 193 of IP address: "192.168.3.100"

**head[5]:** It's the 2nd bit of the IP address, eg, it's the 168 of IP address: "192.168.3.100"

**head[6]:** It's the 3rd bit of the IP address, eg, it's the 3 of IP address: "192.168.3.100"

**head[7]:** it's the 4th bit of the IP address, eg, it's the 100 of IP address: "192.168.3.100"

*** Example 1:**

Send the clear window command to 192.168.3.91

Command is <rset, 0>

The sending command will be: 00 04 00 00 c0 a8 03 5b 3c 72 73 65 74 2c 30 3e

*** Example 2:**

Send the open new window command to 192.168.3.91

Command is <open,1,0,0,0,0,1919,1079>

The sending command will be: 00 04 00 00 c0 a8 03 5b 3c 6f 70 65 6e 2c 31 2c 30 2c 30 2c 30 2c 30 2c 31 39 31 3c 2c 31 30 37 39 3e

## Sending the commands via RS232

The RS232 commands will be the same as the UDP, only difference is no need the 8-bit head.

Baud rate: 115200

***Example 1:**

Send the clear window command

The sending command is <rset, 0>

***Example 2:**

Send the open new window command

The sending command is<open,1,0,0,0,0,1919,1079>

***Example 3:**

Send the switch window command

The sending command is<move,1,7,0,490,405,2129,1402>

## Commands Details

Open a new window:

| Commands | Description |
|---|---|
| <open,W_ID,SourceChl,SourceType,x0,y0,x1,y1> | Open a new window |
| W_ID | It's for the Window number, start from 1 |
| SourceChl | For the input channel, can start from 0 |
| SourceType | It's a fixed number, put 0 |
| x0 | It's for the Window horizontal starts, can support from 0 |
| y0 | It's for the Window vertical starts, can support from 0 |
| x1 | It's for the Window horizontal ends, can support from 0 |

| | |
|---|---|
| y1 | It's for the Window vertical ends, can support from 0 |

*Examples:

Open a new window 1: <open,1,0,0,0,0,1919,1079>

Open a new window 2: <open,2,0,0,1935,6,3831,1085>

Open a new window 3: <open,3,0,0,3855,11,5759,1079>

Open a new window 4: <open,4,0,0,69,1218,4678,2601>

Move the window:

| Commands | Description |
|---|---|
| <move,W_ID,SourceChl,SourceType,x0,y0,x1,y1> | Move the window |
| W_ID | It's for the Window number, start from 1 |
| SourceChl | For the input channel, can start from 0 |
| SourceType | It's a fixed number, put 0 |
| x0 | It's for the Window horizontal starts, can support from 0 |
| y0 | It's for the Window vertical starts, can support from 0 |
| x1 | It's for the Window horizontal ends, can support from 0 |
| y1 | It's for the Window vertical ends, can support from 0 |

*Example:

Open a new window 1: <open,1,0,0,1041,251,2290,1049>

Move this window 1 to right direction to 1224 : <move,1,0,0,1224,251,2473,1049>

Move this window 1 to left direction to 853: <move,1,0,0,853,274,2102,1072>

Source switching:

| Commands | Description |
|---|---|
| <move,W_ID,SourceChl,SourceType > | Switch the input source |
| W_ID | It's for the Window number, start from 1 |
| SourceChl | For the input channel, can start from 0 |
| SourceType | It's a fixed number, put 0 |

*Example:

Switch the input channel to the channel 2 on Window 1: <move,1,1,0 >

Switch the input channel to the channel 3 on Window 1: <move,1,2,0 >

Switch the input channel to the channel 4 on Window 1: <move,1,3,0 >

Switch the input channel to the channel 4 on Window 2: <move,2,3,0 >

Scenes or preset save:

| Commands | Description |
|---|---|
| <save, mode, groupID, modeIndex,sname> | Scenes or preset save |
| groupID | It's a fixed number, put 0 |
| modeIndex | For the scenes number, can start from 0 |
| sname | For the scene/preset name |

*Example:

Save as scene 1, name is mode 1: <save,mode,0,0,573a666f005f0031>

Save as scene 2, name is mode 2: <save,mode,0,1,573a666f005f0032>

Save as scene 2, name is mode 2: <save,mode,0,3,573a666f005f0034>

Scenes or preset recall/load:

| Commands | Description |
|---|---|
| <load,mode,groupID,modeIndex> | Scenes or preset save |
| groupID | It's a fixed number, put 0 |
| modeIndex | For the scenes number, can start from 0 |

*Example:

Recall the mode 1: <load,mode,0,0>

3C 6C 6F 61 64 2C 6D 6F 64 65 2C 30 2C 30 3E

Recall the mode 2: <load,mode,0,1>

3C 6C 6F 61 64 2C 6D 6F 64 65 2C 30 2C 31 3E

Recall the mode 3: <load,mode,0,2>

3C 6C 6F 61 64 2C 6D 6F 64 65 2C 30 2C 32 3E

Load the Video wall group:

| Commands | Description |
|---|---|
| <load,current,wallID> | Load the Video wall group |
| wallID | Video wall group ID, starts with 0 |

*Example:

Load the Video Wall group 1: <load,current,0>

Load the Video Wall group 2: <load,current,1>

Load the Video Wall group 3: <load,current,2>

Load the Video Wall group 4: <load,current,3>

Clear the window:

| Commands | Description |
|---|---|
| <rset, wallID> | Clear the window |
| wallID | For the video wall group number, can start from 0 |

*Example:

Clear Video Wall group 1: <rset, 0>

Clear Video Wall group 2: <rset, 1>

Clear Video Wall group 3: <rset, 2>

Turn on the background image:

| Commands | Description |
|---|---|
| <config,board,output,backpic,open,wallID,matrixCh,totalWidth,totalHeight> | Open the background image |
| wallID | For the video wall group number, can start from 0 |
| matrixCh | For the output channels with background image |
| totalWidth | The actual background image width size |

| | |
|---|---|
| totalHeight | The actual background image hight size |

*Example: Turn on the background image, size is 3840*1080

<config,board,output,backpic,open,0,9,3840,1080>

Turn off the background image:

| Commands | Description |
|---|---|
| <config,board,output,backpic,close,wallID,wallID,matrixCh> | Open the background image |
| wallID | For the video wall group number, can start from 0 |
| matrixCh | It's a fixed number, put 0 |

*Example: Turn off the background image

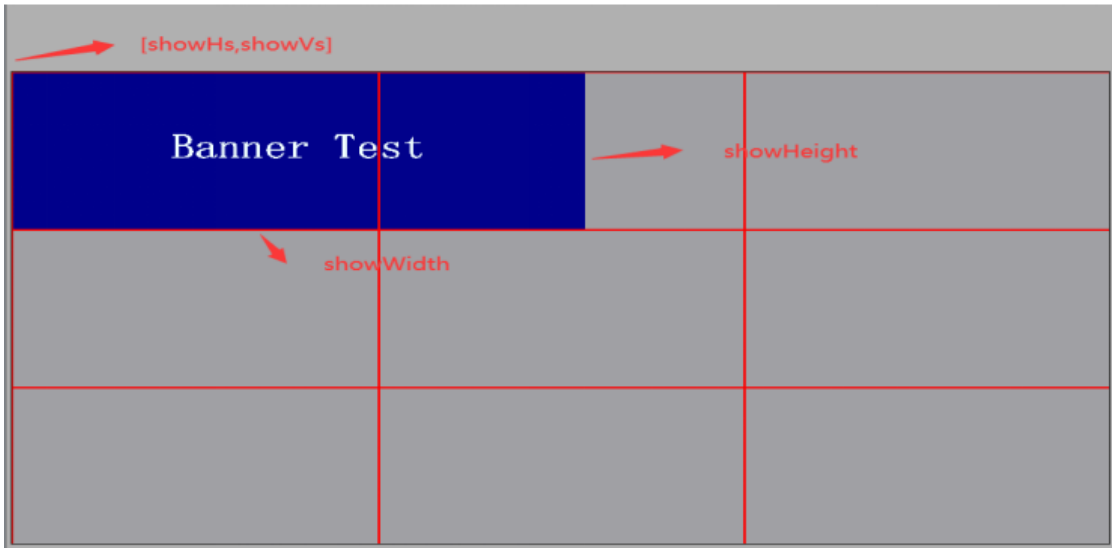
<config,board,output,backpic,close,0,0>

Turn on the scrolling text:

| Commands | Description |
|---|---|
| <config,board,output,banner,open,wallID,matrixCh,isRoll,rollSpeed,showHs,showVs,showWidth, showHeight> | Turn on the scrolling text |
| wallID | For the video wall group number, can start from 0 |
| matrixCh | For the output channels with background image |
| isRoll | The scrolling text speed, the default is 5 |
| showHs | Scrolling text horizontal starts |
| showVs | Scrolling text vertical starts |
| showWidth | Scrolling text show width |
| showHeight | Scrolling text show height |

*Example: Turn on the scrolling text:

<config,board,output,banner,open,0,10,0,5,0,0,5760,1080>




Turn off the scrolling text:

| Commands | Description |
|---|---|
| <config,board,output,banner,open,wallID,matrixCh,showHs,showVs,showWidth,showHeight> | Turn off the scrolling text |

| | |
|---|---|
| wallID | For the video wall group number, can start from 0 |
| matrixCh | For the output channels with background image |
| isRoll | The scrolling text speed, the default is 5 |
| showHs | Scrolling text horizontal starts |
| showVs | Scrolling text vertical starts |
| showWidth | Scrolling text show width |
| showHeight | Scrolling text show height |

*Example: Turn on the scrolling text:

<config,board,output,banner,close,0,10,0,0,5760,1080>

Screen control:

| Commands | Description |
|---|---|
| <send,control,screen,IsHex,cmd> | Screen control |
| IsHex | For the commands format, 1 for HAX, 0 for the string |
| cmd | For the string |

*Example: Turn on the screen control: <send,control,screen,0,ffff>

Window put top or button:

| Commands | Description |
|---|---|
| <TorB,W_ID,Z> | Screen control |
| W_ID | For the window ID, start from 1 |
| Z | 1 for top, 0 for bottom |

*Example:

Put the window 3 on the top: <TorB,3,1>

Put the window 2 on the top:<TorB,2,0>

Close the single window:

| Commands | Description |
|---|---|
| <shut,W_ID> | Screen control |
| W_ID | For the window ID, start from 1 |

*Example:

Close the window 3 on the top: <shut,3>

Close the all windows:

| Commands | Description |
|---|---|
| <reset,wallID> | Screen control |
| wallID | For the Video wall groups, start from 0 |

*Example:

Close all the windows : <rset,0>

Output resolution configure:

| Commands | Description |
|---|---|

| | |
|---|---|
| <config,board,output,resolution,MachineID,wallID,pixelCmd,BoardID> | Output resolution configure |
| MachineID | Controller ID |
| wallID | Video Wall group ID, start from 0 |
| pixelCmd | Resolution, eg the 1920x1080@60Hz commands is 0x01 |
| BoardID | The controller internal ID number, starts from 0 |

*Example:

Set the output card 0 resolution to 1280x760 60Hz : <config,board,output,resolution,1,1,2,0>

Set the output card 1 resolution to 1280x800 60Hz : <config,board,output,resolution,1,1,4,1>

Set the output card 2 resolution to 1366x768 60Hz : <config,board,output,resolution,1,1,6,2>

Set the output card 2 resolution to 1280x800 60Hz : <config,board,output,resolution,1,1,7,3>

Video wall setup:

| Commands | Description |
|---|---|
| <config,screen,size,splictNum ,Line,Column,,machineType,spliceType,backboardType,winNumber,pixelIndex,previewState,previewState,initChannel,backpicType,bannerType> | Video wall setup |
| splictNum | Video Wall number |
| Line | Video Wall line number |
| Column | Video Wall column number |
| machineType | Controller type, start from 0 |
| spliceType | 0- For LCD, 1-for blending, 2-for LED |
| backboardType | 0-2U 2Wins-1，1-2U 2Wins-2，2-3U 2Wins，3-6.5U Wins，4-11U 2Wins，5-2.5U 4Wins，6-4U 4Wins，7-6.5U 4Wins，8-11U 4Wins |
| winNumber | 1- For 1 window, 2- for 2 windows; 4- for 4 windows |
| pixelIndex | Resolution number, starts from 0 |
| previewState | Turn on or off the preview function |
| initChannel | The start channel |
| backpicType | Background image type |
| bannerType | The scrolling text method, the default is 0 |

*Example:

Set a 1*2 Video wall, LED, 2U 2Wins-1controller, 2-window maximum, turn on preview, start channel is 1, the commands will be: <config,screen,size,2,1,2,2,0,0,2,17,1,1,1,5>

Set a 3*4, LED, 6.5U 2Wins, 4-window, Preview off, start channel 4, the commands will be: <config,screen,size,12,3,4,2,2,3,4,0,0,4,3,1>

Change the IP address:

| Commands | Description |
|---|---|
| <config,board,controlsys,machineID,groupID,boardType,boardID,network,target,ipAddress,ipPort> | Change the IP address: |
| machineID | Controller ID, starts with 1 |
| groupID | Video Wall group ID, starts with 0 |
| boardType | For the board type, here default as 3 |

| | |
|---|---|
| boardID | For the IP board number, here for the target IP number |
| target | For the setup type:<br>“targetip”- setup IP address;<br>“targetmask”- setup the submask address<br>“targetgate”- setup the gateway |
| ipAddress | New IP address, the format is “###.###.###.###” |
| ipPort | Port number, only used when the target is “targetip” |

*Example:

Change/set the board 1, IP address, the new IP address is 192.168.3.91, the port number is 5000:

<config,board,controlsys,255,255,6,1,network,targetip,192.168.3.91,5000>

Change/set the board 1 mask address,new address is 255.255.255.0

<config,board,controlsys,255,255,6,1,network,targetmask,255.255.255.0>

Change/set the board 1 gateway, new address is 192.168.3.1

<config,board,controlsys,255,255,6,1,network,targetgate,192.168.3.1>