VDM-4050

# AV over IP Controller

## User Manual




Issue Date: March 2022 | Firmware Version: V3.0.2

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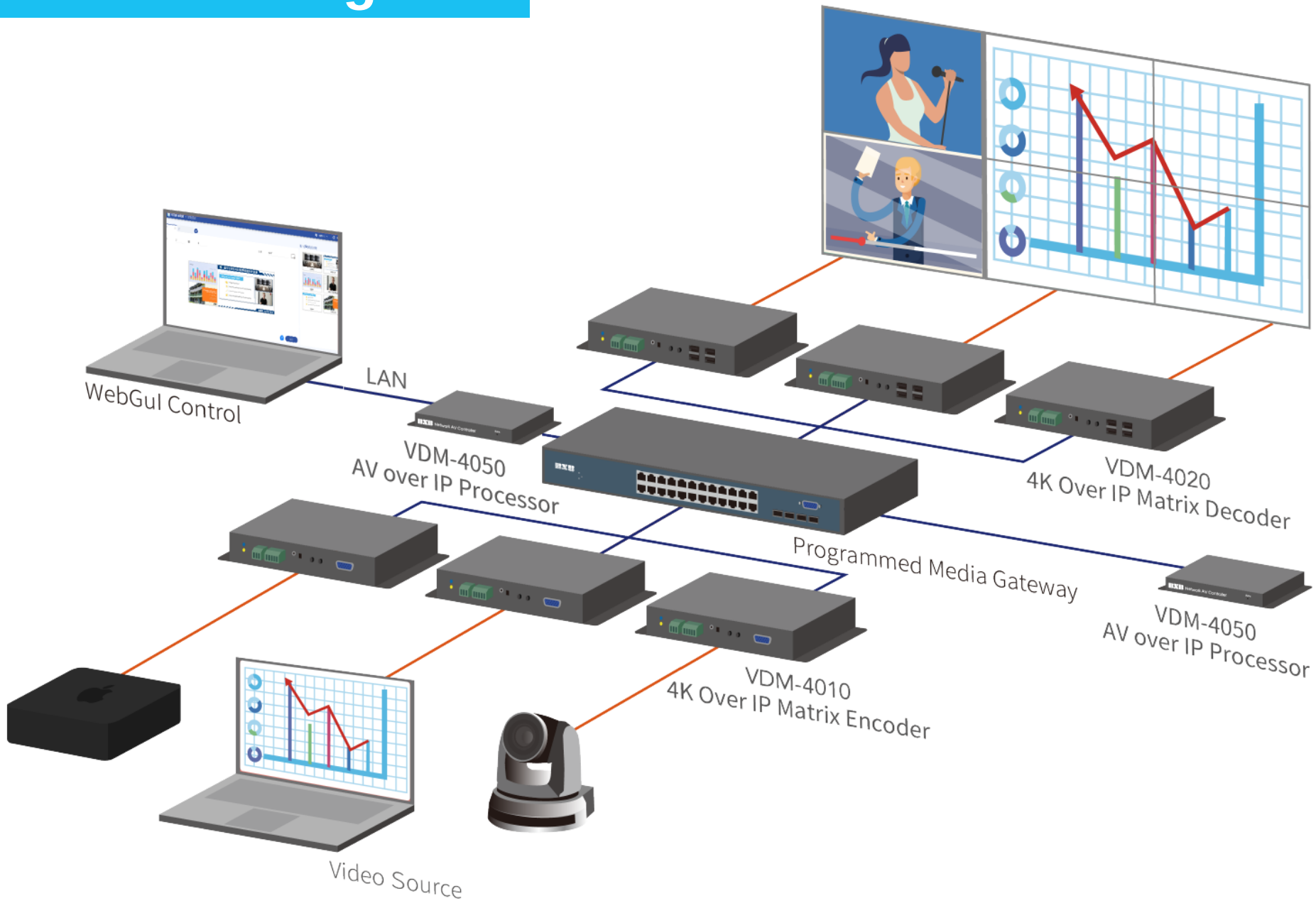
# Safety Instruction

1. Read the instruction manual carefully before installing and using this unit and keep this manual properly preserved.
2. Please follow the instructions and be aware of warning indications.
3. Do not use any spare parts without the recommendation of your dealer. Please use the fixing accessories offered by BXB. If the system is broken due to the improper fixing, BXB would not bear the responsibility for compensation.
4. Make sure the power cord has been fixed properly. Do not use any extension cords as this would result in fire or short circuit.
5. Do not stuff anything or spill liquid of any kind onto or into this unit.
6. Contact maintenance technicians if the conditions occur: A. Power cord or plug is damaged; B. Liquid has been spilled into the unit; C. The product does not work normally; D. The unit has been dropped or the cover has been damaged; E. The function cannot work completely.
7. Install this unit carefully. Impacting and fierce shaking should be avoided.
8. Do not disassemble or remodel this unit:
   A. High voltage and sensitive electrical circuit are inside of the unit. Do not disassemble it to prevent electric shock.
   B. The specification of any replaced spare part should be validated by manufacturer, or it may cause fire and short circuit.
9. Do not use this unit in the environment with improper temperature, moisture, and power level to avoid component damage. The adequate operation temperature is 0°C ~ 40°C (32 °F ~ 104 °F); relative humidity below 90%.
10. Do not expose the apparatus to rain and moisture. Please put it at a dry location to avoid any damage of the inside components. Adequate coverage is requisite if the unit is used outside.
11. Do not clean this unit and its accessories with liquid or chemical detergent. Just use a damp cloth for cleaning.
12. Do not switch on/off the power rapidly no matter it's operating or off. It can avoid the operation problem from the sensitive electronic circuit.

Caution: The static electricity treatment of printed circuit boards should follow ESD safety measure. Ground connection should be done well.

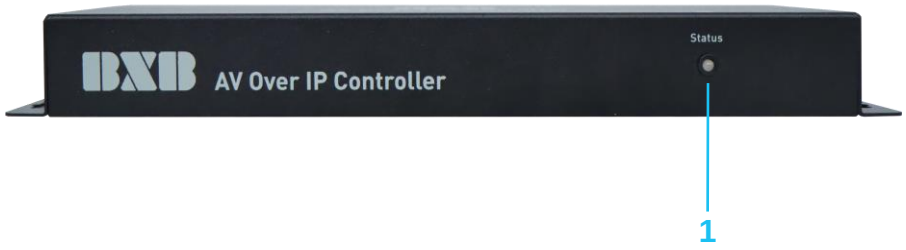
Caution: Please be aware of the voltage accordance with that in your country.

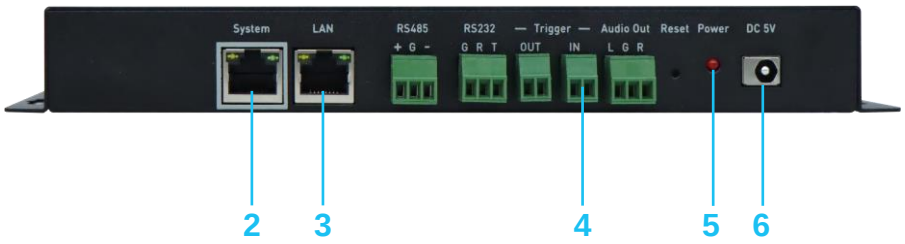
# Connection Diagram



# Physical Description

## Rear View




1. Status indicator light: the light will be on with red as turning on; the light will flash with green when it functions well.
2. System network port: for private network.
3. LAN port: for the network on site to control and configure settings via WEB GUI.
4. Trigger IN: get shorted as turning on to restore to the default settings.
5. Power indicator light: the red light remains on if the power connection is normal.
6. Power: connect the transformer (AC100-230V to DC-5V) for power supply.

# Using the Web UI

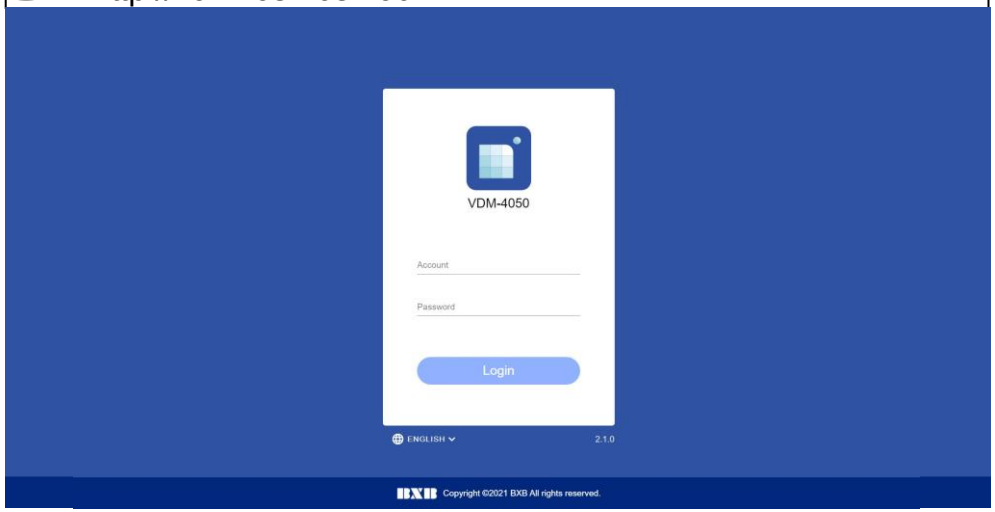
## Log In

1

Choosing a Web Browser

2

http://192.168.168.190



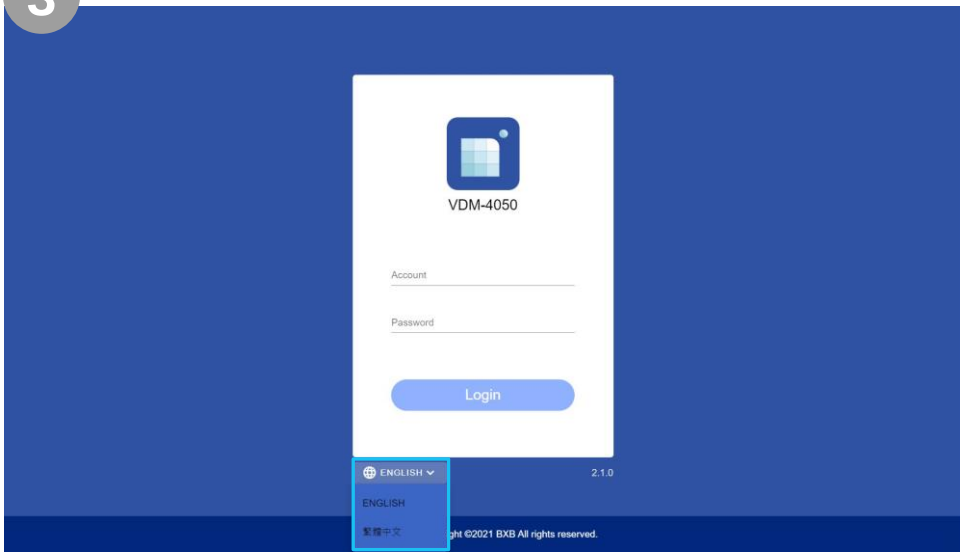

VDM-4050 is compatible with browser-based interfaces including Chrome, Safari, Microsoft Edge, Firefox, etc.

Key in the IP address (default: DHCP or 192.168.168.190) into the URL bar.

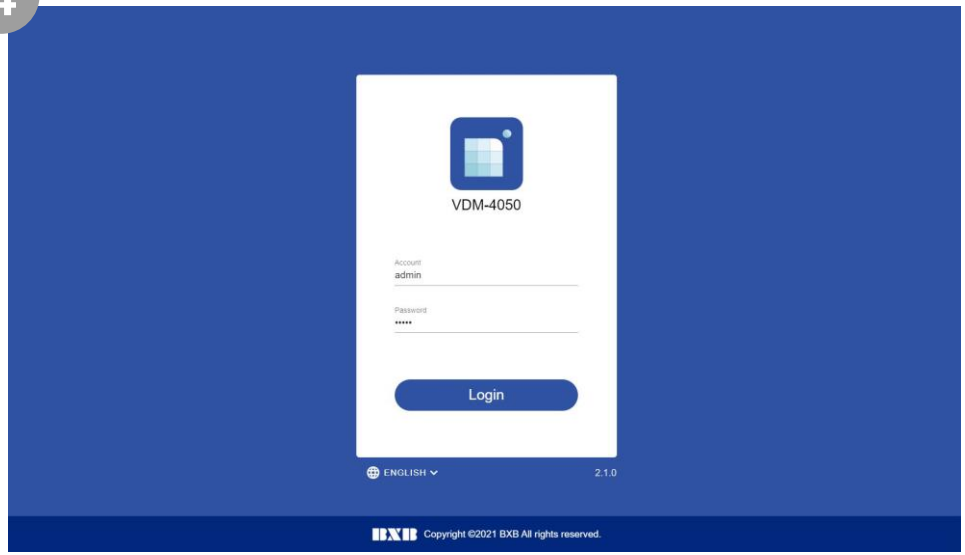
# Using the Web UI

## Log In

3




4




Select a language: supports Traditional Chinese and English.

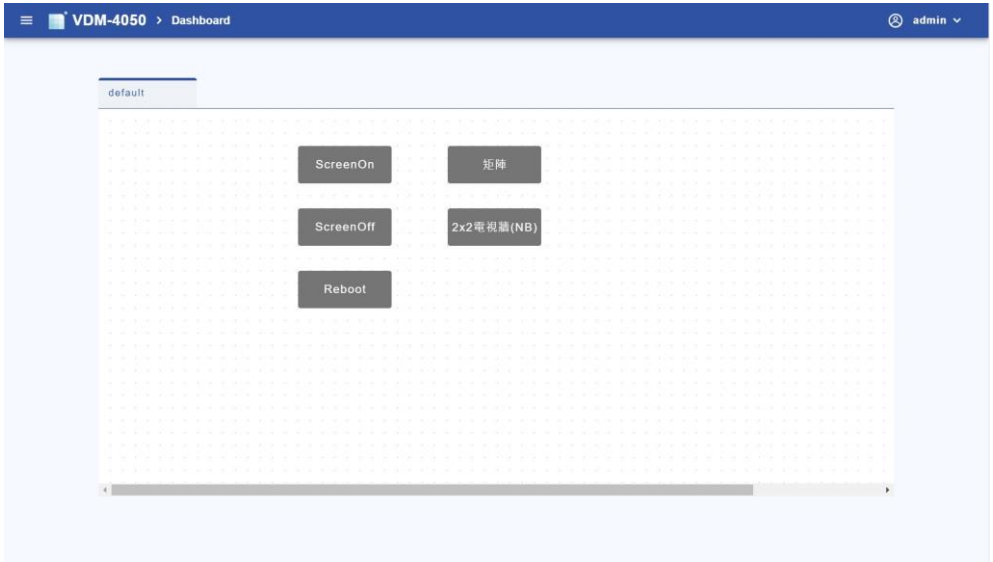
繁體中文 ENGLISH

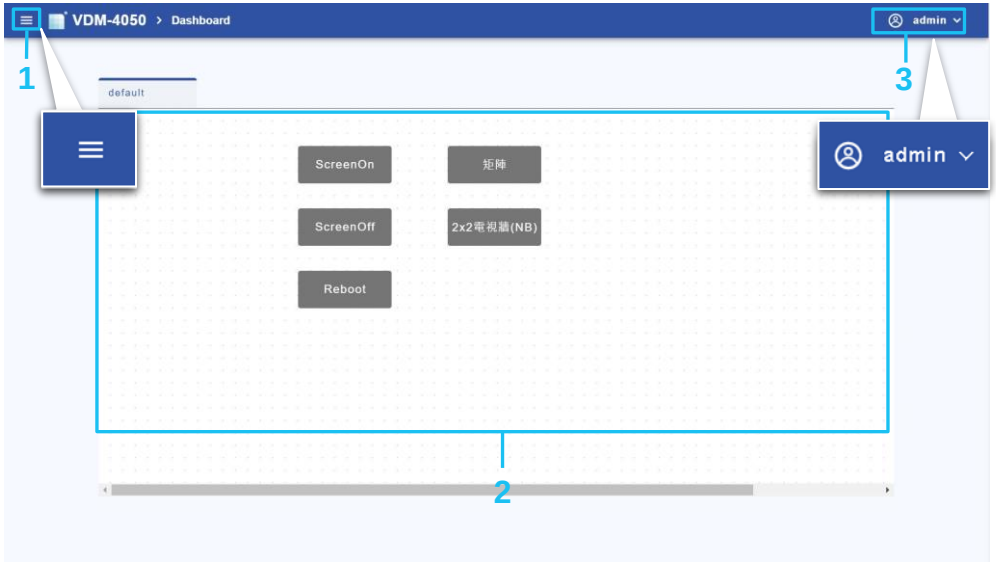
To enter the dashboard of the VDM-4050, just log in with the default ID “admin” and password “00000”.

To change the password, please log in with the default ID and password first. And then, click “admin” > “Change Password” at the upper right corner of the dashboard.

# Using the Web UI

## Dashboard



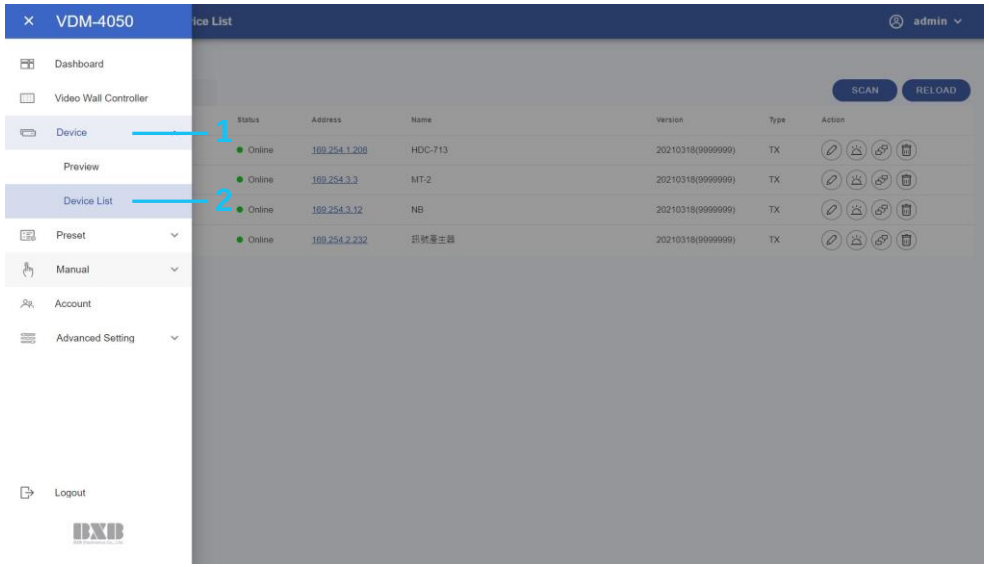

After logging in, you can see the “Dashboard”. You can quickly change scenes, actions of input / output groups, and change the video wall layouts.

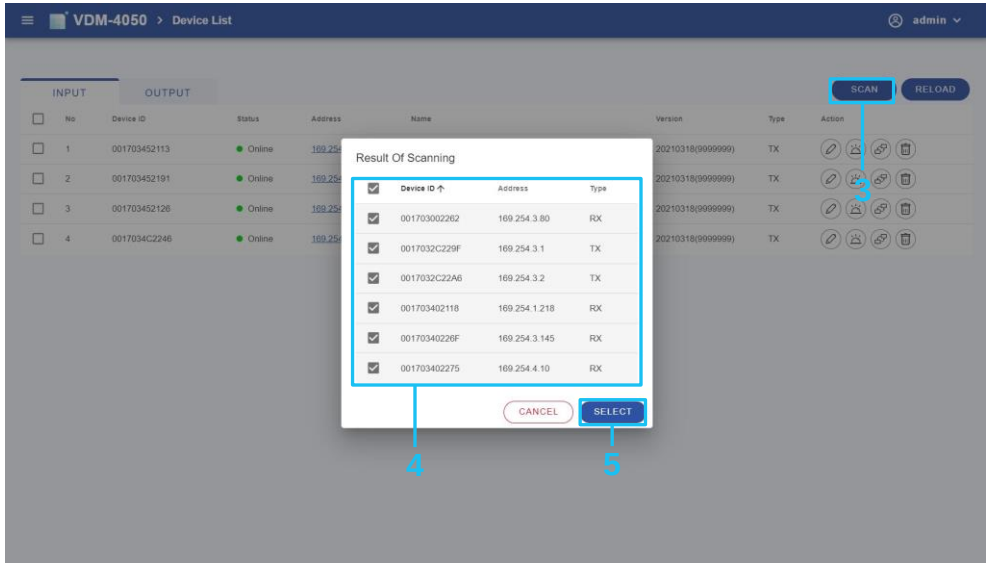
The presets and scenes should be set in advance. Please refer to P25 Presets and P36 Scene Visualization for more information. The default page after booting the system can be self-defined. Please check P46 .

1. Menu: all functions can be found right here.
2. Scene switch: self-define multiple scenes, video wall layouts, and input / outputs actions to quickly switch.
3. Admin: the present admin ID / change the password.

# Using the Web UI

## Device_Device List




For using the VDM-4050 first time, please go to “Device” page first for setting the input / output devices.

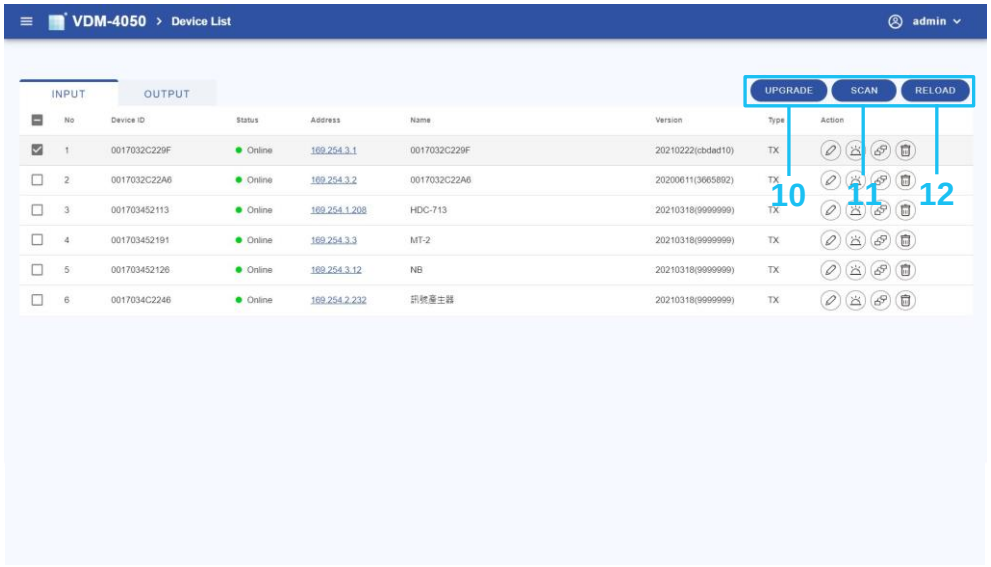
1. Click “Device”.
2. Device List: quickly scan the status of input and output devices, MAC, and IP address. You can also edit and manage the devices.
3. SCAN: scan the input and output devices that have connected but haven’t added to the list yet.
4. Select the devices you want to add to the list.
5. Click “SELECT” after confirmed.

※ The system only scans the devices that haven’t added to the list.

# Using the Web UI

## Device_Device List



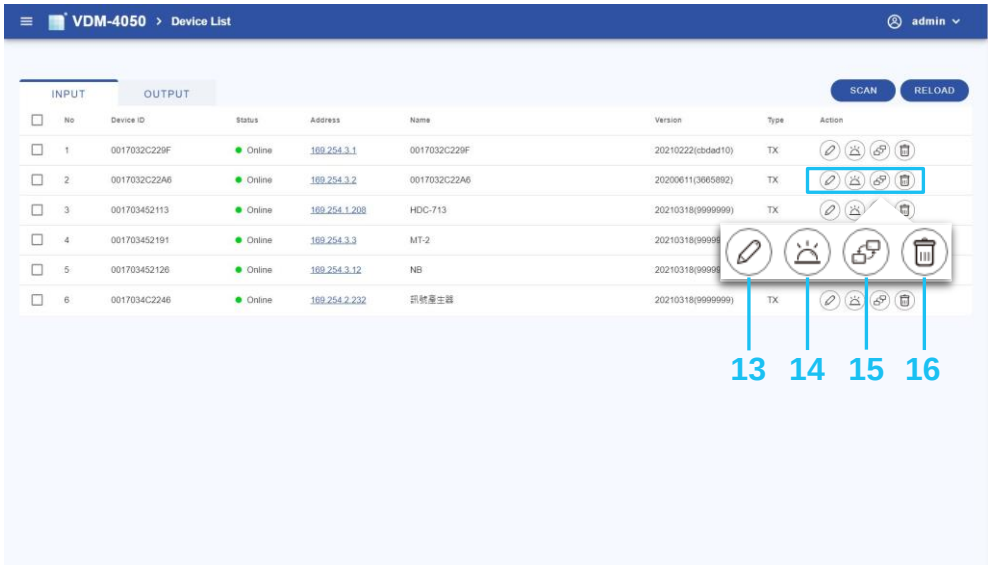



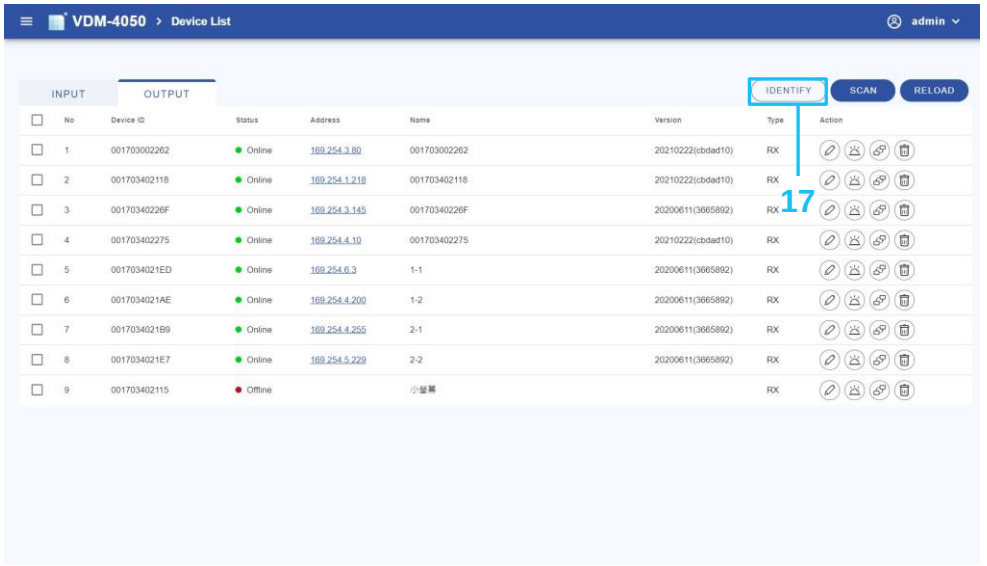

6. Device ID: ID of the input and output devices.
7. Status: connection status of devices
   Online > normal; available for device control
   Offline > abnormal connection; unable to be controlled
8. Address: the IP address of input and output devices.
9. Name: able to be edited.

10. Update: update the firmware of input and output devices (only for the selected devices).
    ※ To update the firmware, the VDM-4050 should connect with private network (169.254.XXX.XXX ).
11. SCAN: scan all the connected devices (not including the devices that already on the list).
12. RELOAD: re-detect the devices for checking the connection status.

# Using the Web UI

## Device_Device List



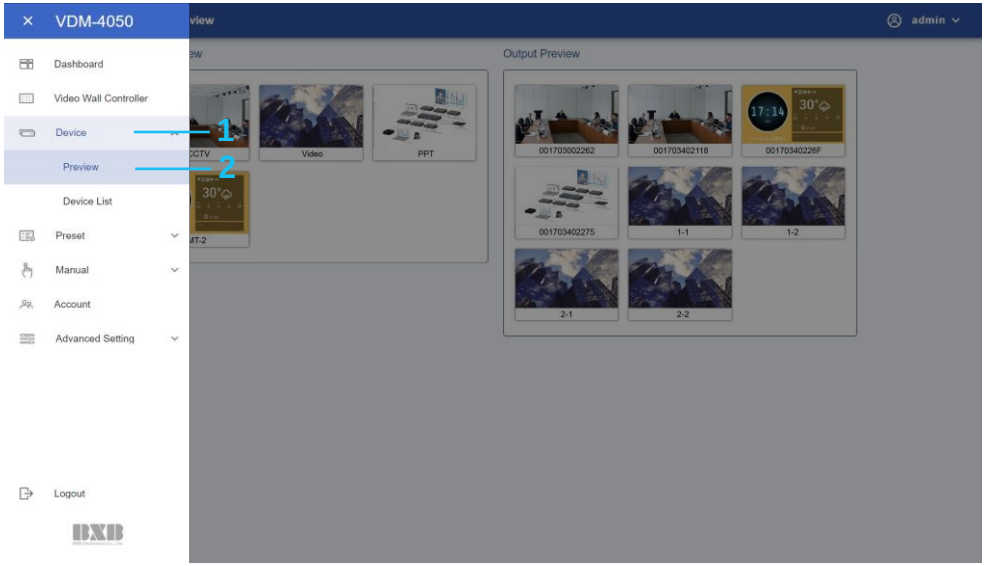

13. Edit: click to edit the device name.
14. Blink: click and then the indicator light on the device panel will flash to identity the location of the devices (please refer to P51~54 VMD-4010 / 4020 introduction).
15. Replace: the adding devices replace the present connected devices.
16. Delete: delete the devices from the list (only when the device doesn't belong to any preset).

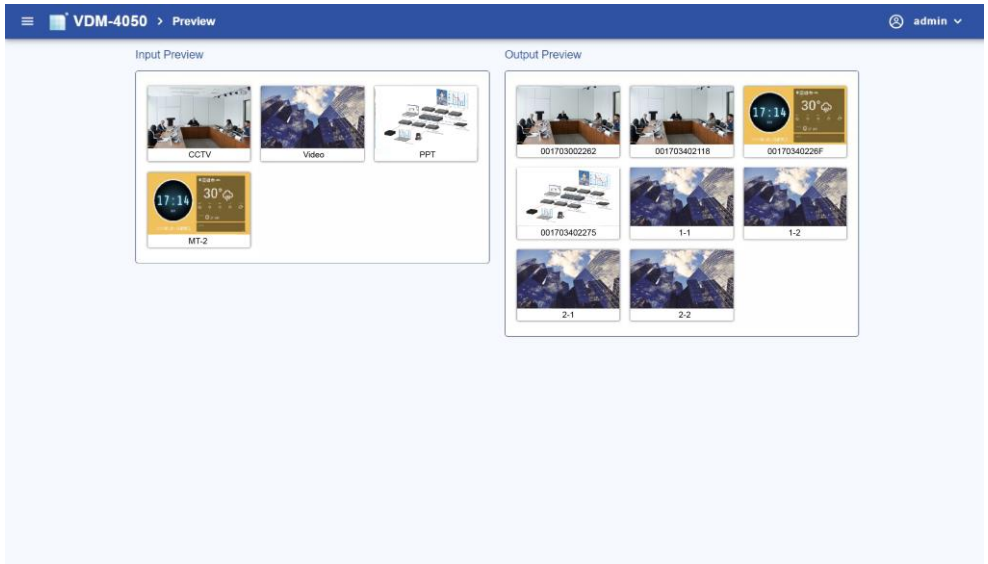
17. IDENTIFY: click and then the device ID would be shown on the output display (as the picture below). It's easy for you to quickly identify the corresponding output devices of each display.



# Using the Web UI

## Device_Preview




1. Click “Device”.
2. Preview: you can preview the images of input and output devices to double-check the accuracy of devices’ corresponding status.

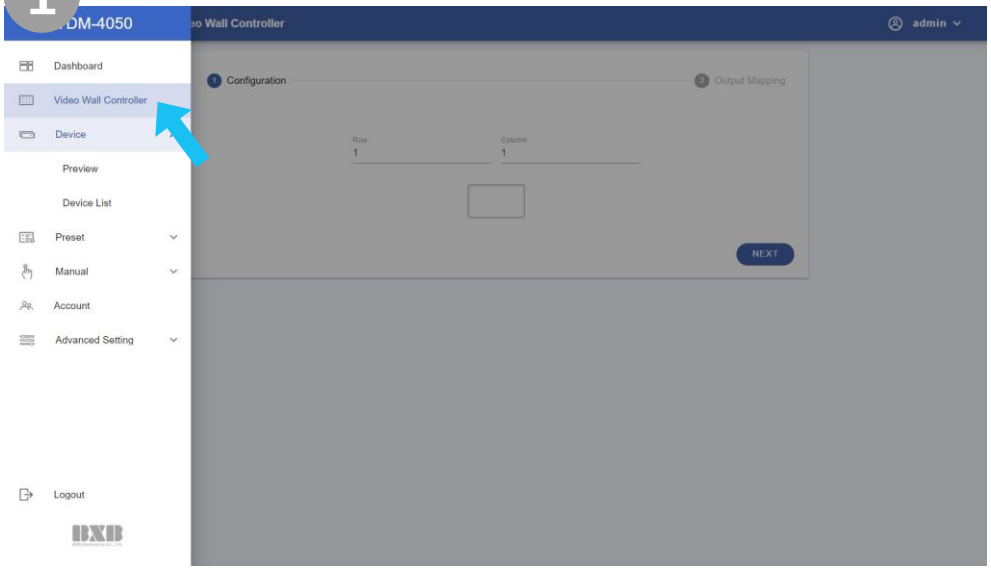
The preview images of input devices are shown at the left side; the preview images of output devices are at the right side.

# Using the Web UI

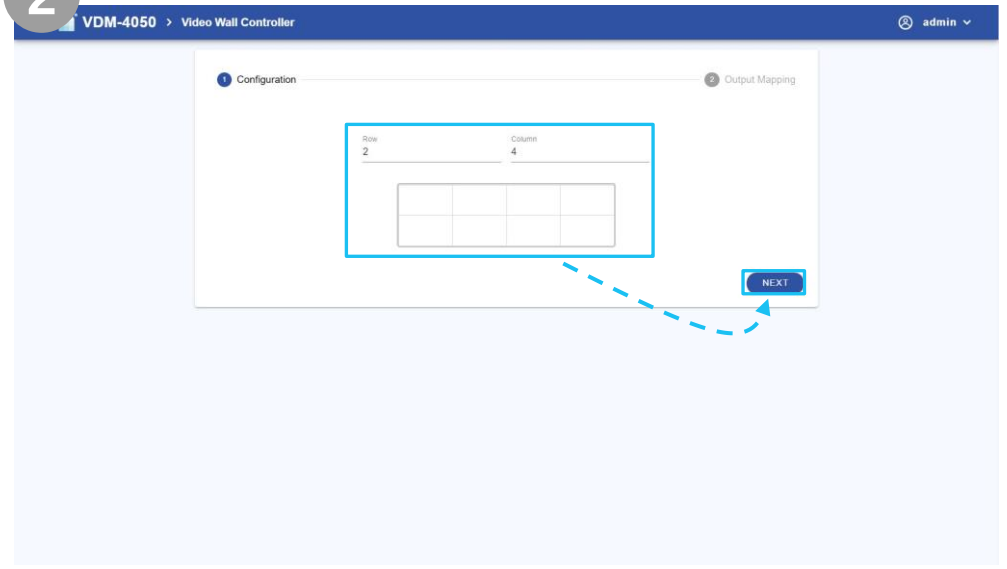
## Video Wall Controller

Set and manage the video wall layouts and scenes.

1




2



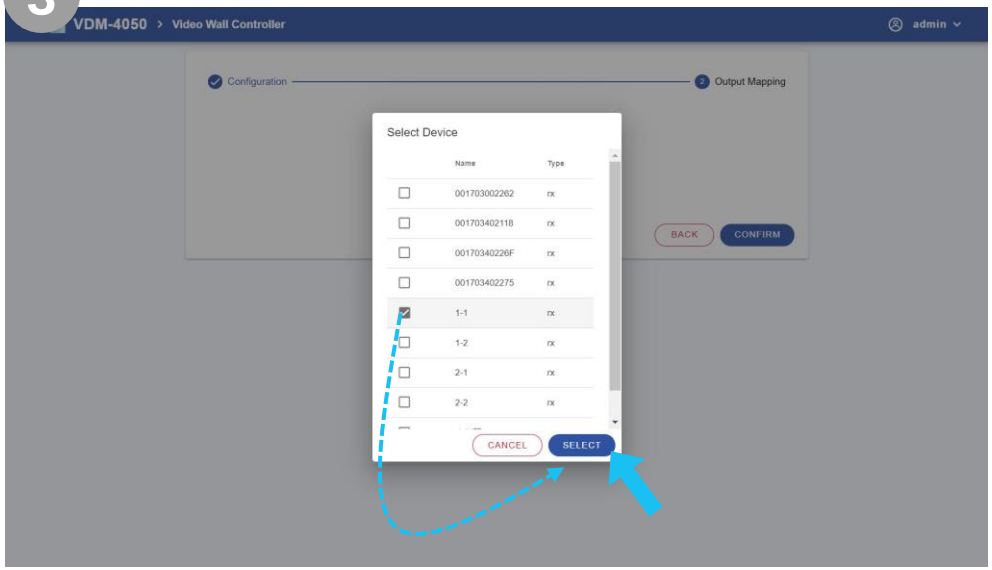

Click “Video Wall Controller”

Set the quantity of row and column for the video wall (e.g., row x 2 and column x 4 for 4 x 2 video wall).
Click “NEXT” after setting.

# Using the Web UI

## Video Wall Controller

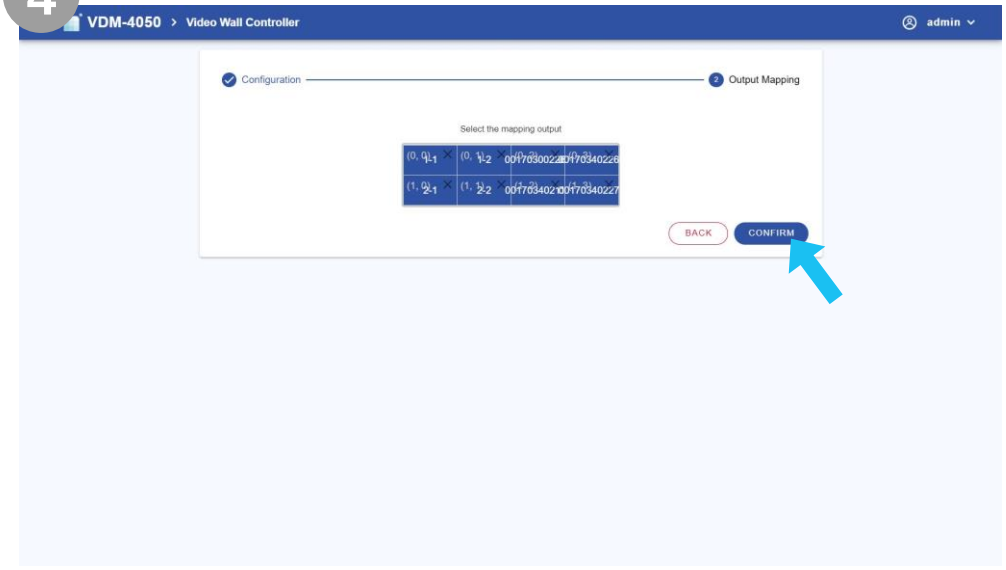
3




Set the output device to the corresponding position of the video wall. Click “SELECT” after confirmed.

※ Please set each output device’s corresponding position in sequence.

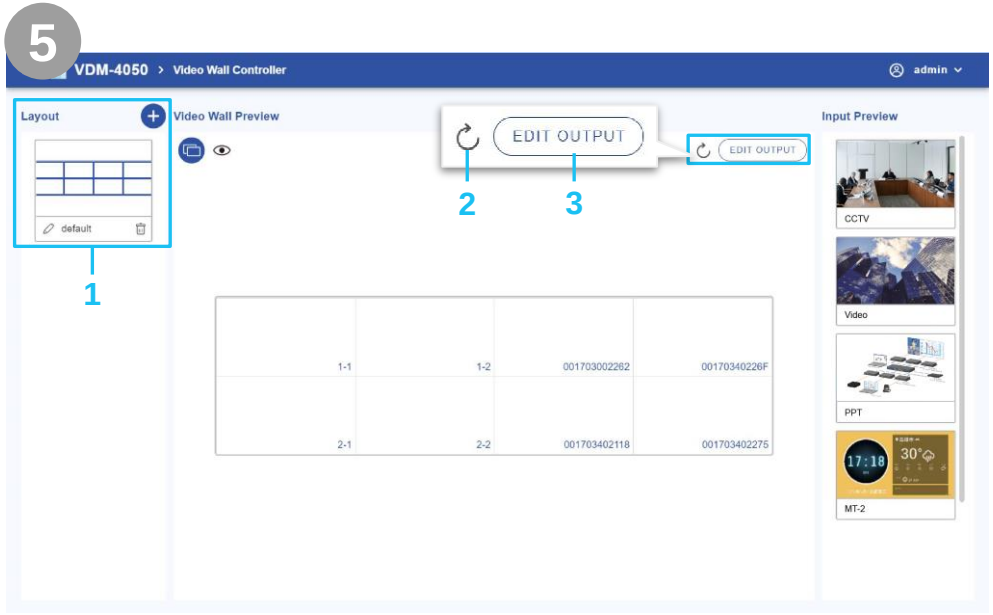
4

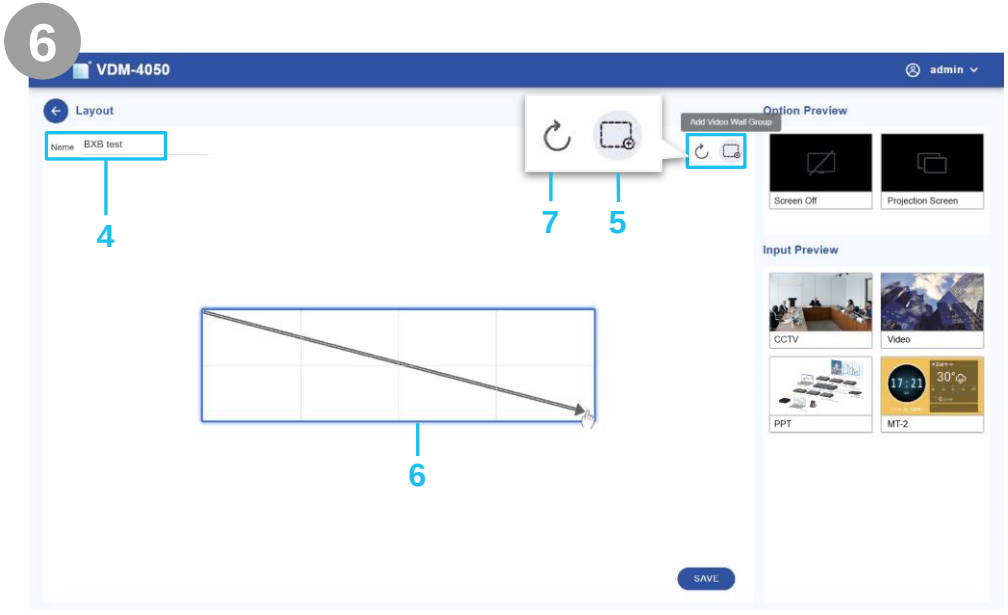



Click “CONFIRM” after setting.

# Using the Web UI

## Video Wall Controller



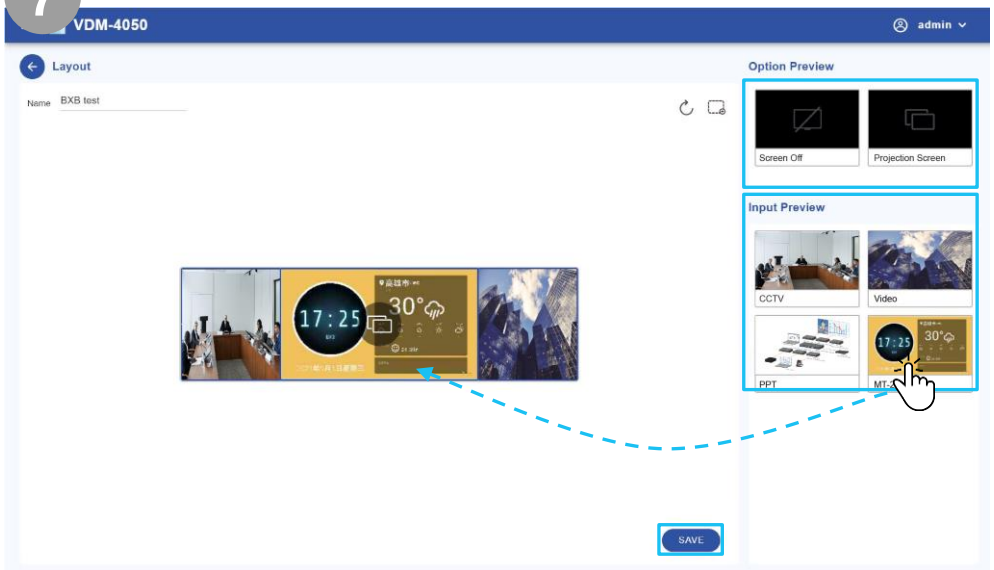

1. Layout: the default layout has already existed. You can revise or click + icon to add a new one.
2. Clear: click ↻ icon to reset the layout design.
3. EDIT OUTPUT: revise the corresponding output device for each display.

4. Name: name the layout.
5. Add Video Wall Group: click ⊡ icon to set a video wall.
6. Click and drag for the layout of the video wall.
7. Clear: click ↻ icon to reset all the video wall settings.

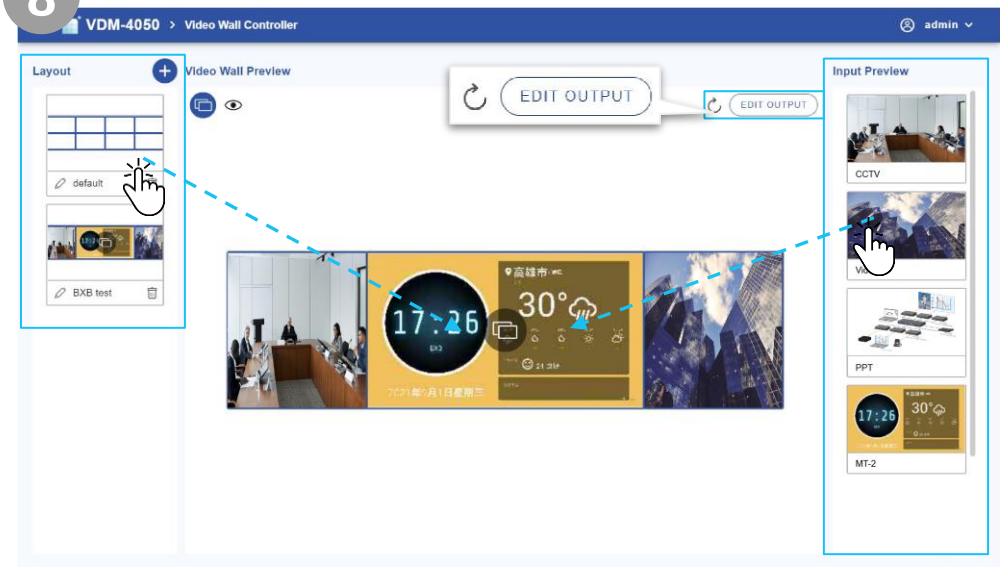
# Using the Web UI

## Video Wall Controller

7




8



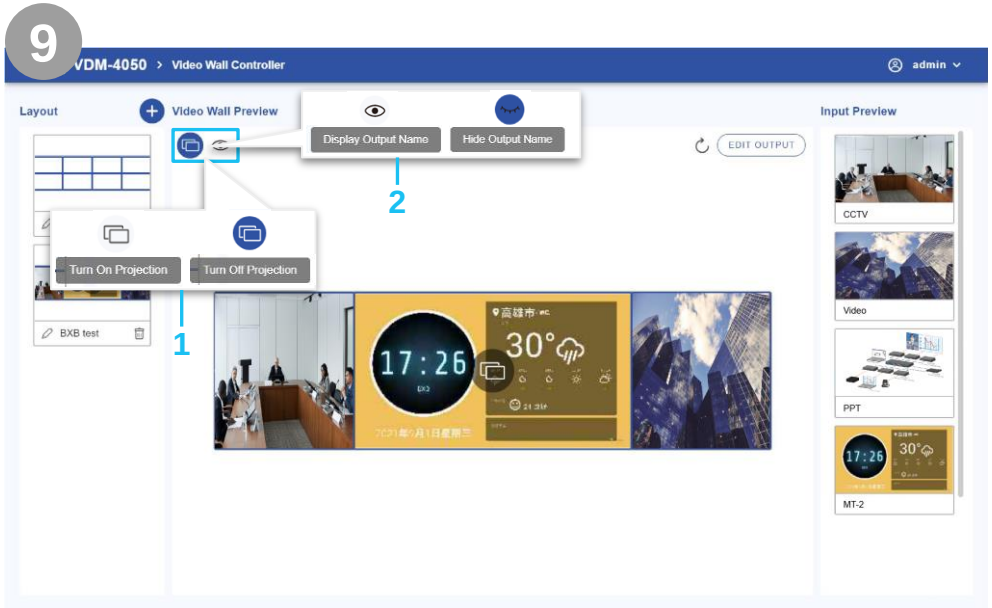

Drag the input preview to the area of video wall preview. You can check the presentation of the video wall in real-time. The images of “Screen Off” or “Projection Screen” (the “Option Preview” area at the upper right corner) can also be added to the video wall.

Click “Save” after setting.

The preview area at the center shows the video wall layout and output images. With the left side “Layout” preview, you can drag to the center for changing the layout. With the right side “Input Preview”, you can drag to change the input images. Click ↻ icon to clear the video wall images. Click “EDIT OUTPUT” to revise the corresponding output device for each display.

# Using the Web UI

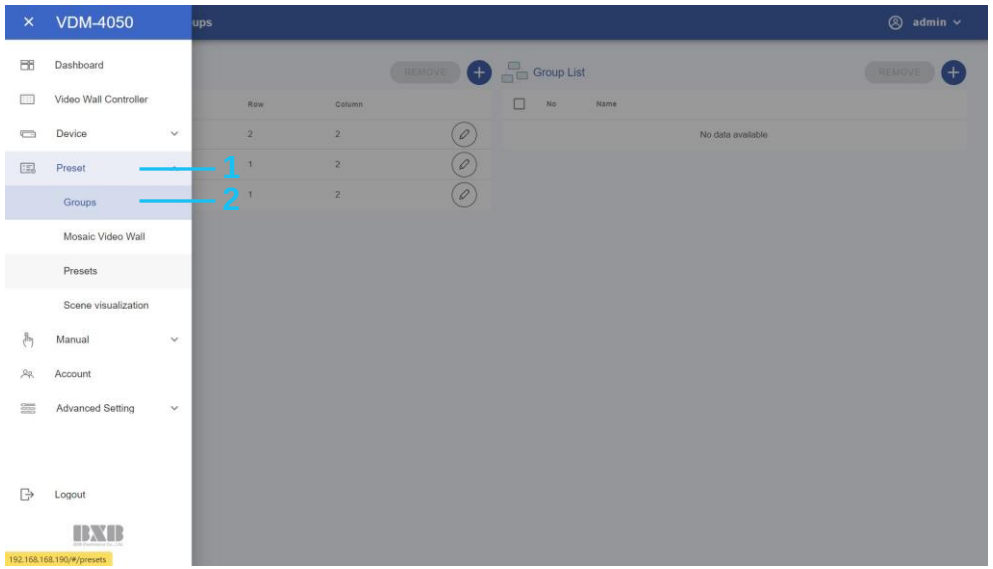
## Video Wall Controller

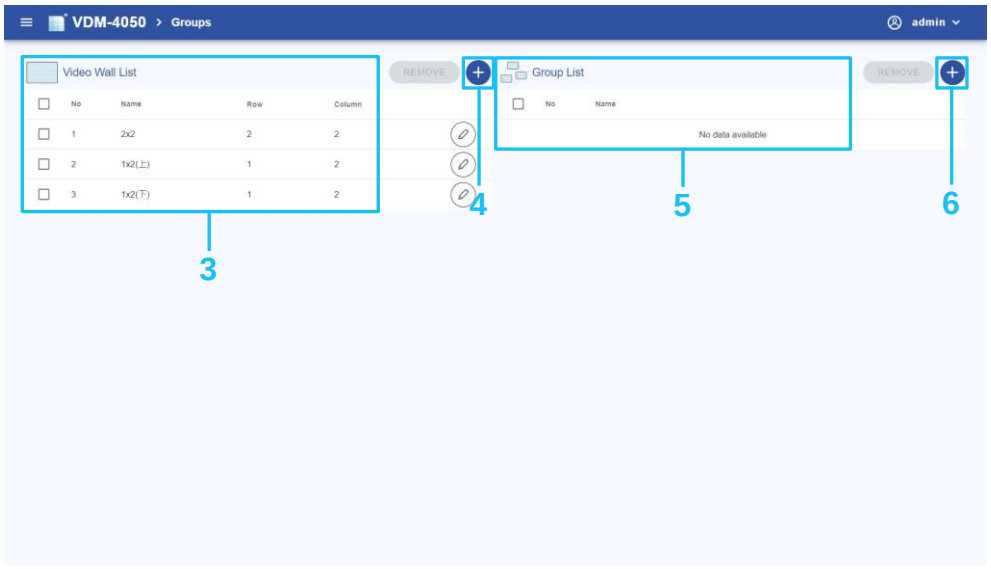



1. Projection: trigger the IO Control 5V and T3 pin of VDM-4010 (input device) to change the present output image to the input image (projection image). You can only trigger again after 10 seconds. This function can only be activated when the projection image has added to the layout.
2. Output Name: show / hide the name of output devices.

# Using the Web UI

## Preset_Groups



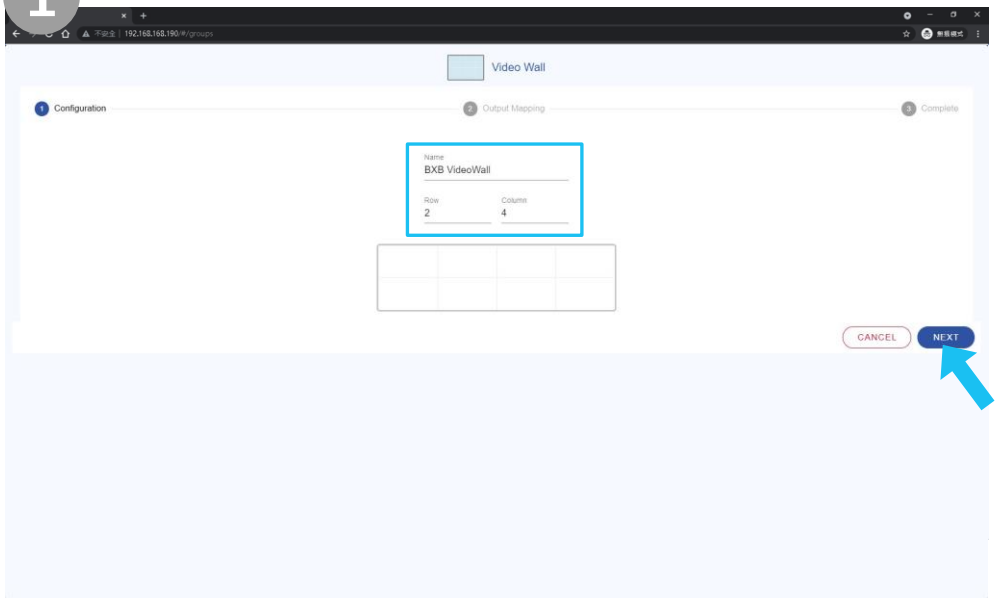

1. Click “Preset”.
2. Groups: set multiple output devices as a group.

3. Video Wall List: list of different video wall layouts.
4. ⊕ : click to create a new video wall list.
5. Group List: groups of output devices.
6. ⊕ : click to add a new group list.

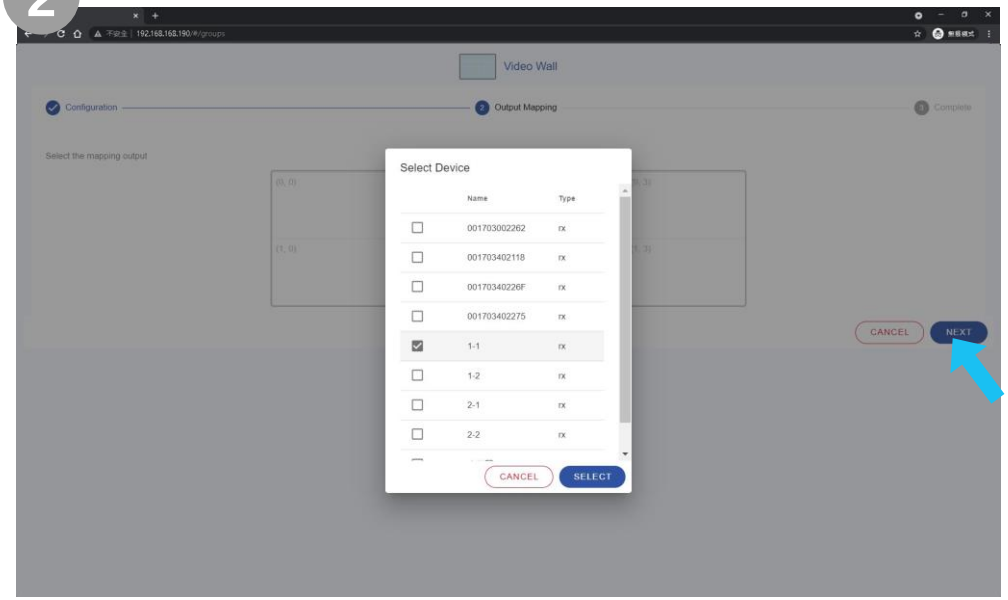
# Using the Web UI

## Preset_Groups_Video Wall List

1




2

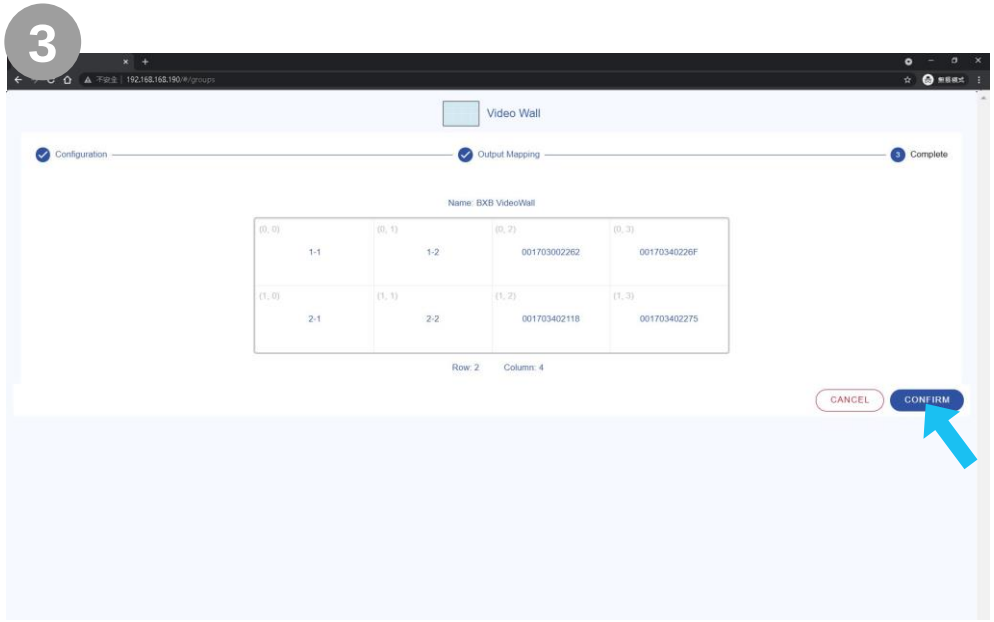


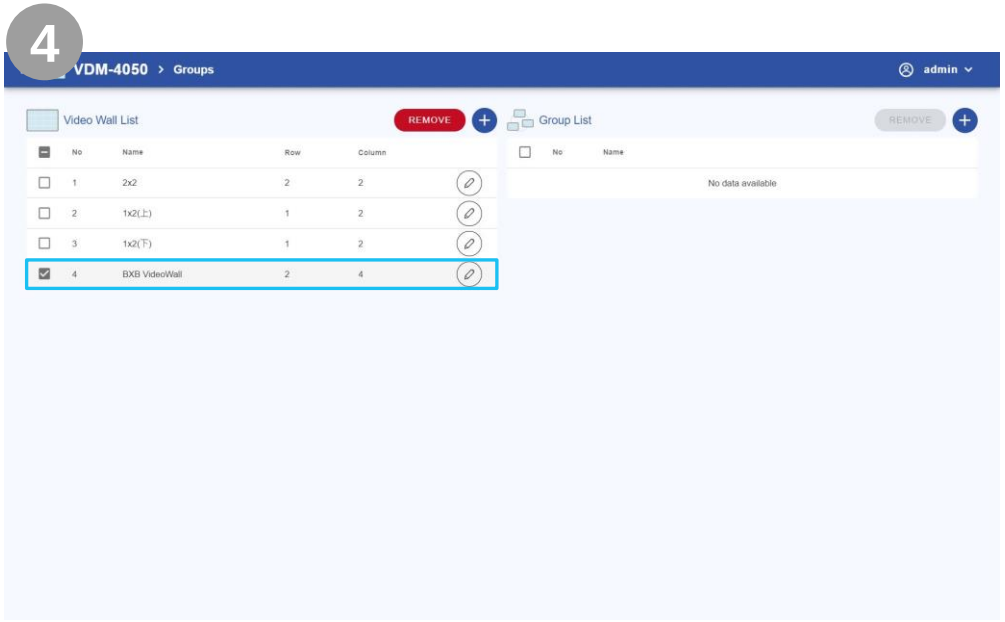

Key in the name of the video wall and then set the row and column (e.g., row x 2 and column x 4 for 4 x 2 video wall). After setting, click “NEXT”.

Select the corresponding output device for each display (please set in sequence). After setting, click “NEXT”.

# Using the Web UI

## Preset_Groups_Video Wall List



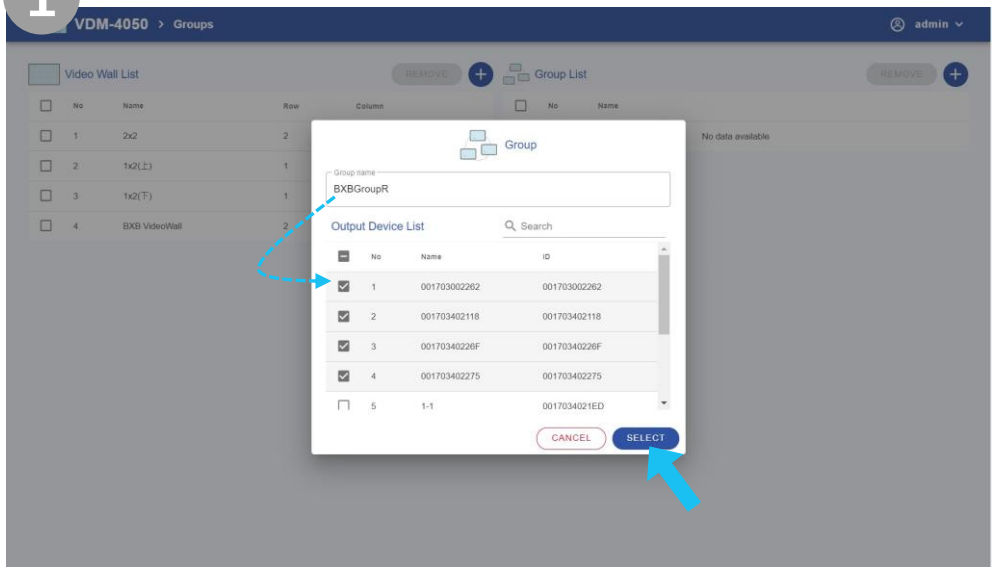

After confirming all the corresponding devices for each display, click “CONFIRM”.

The new video wall list has been added. Click ✎ to revise the selected list; click REMOVE to delete the selected list.

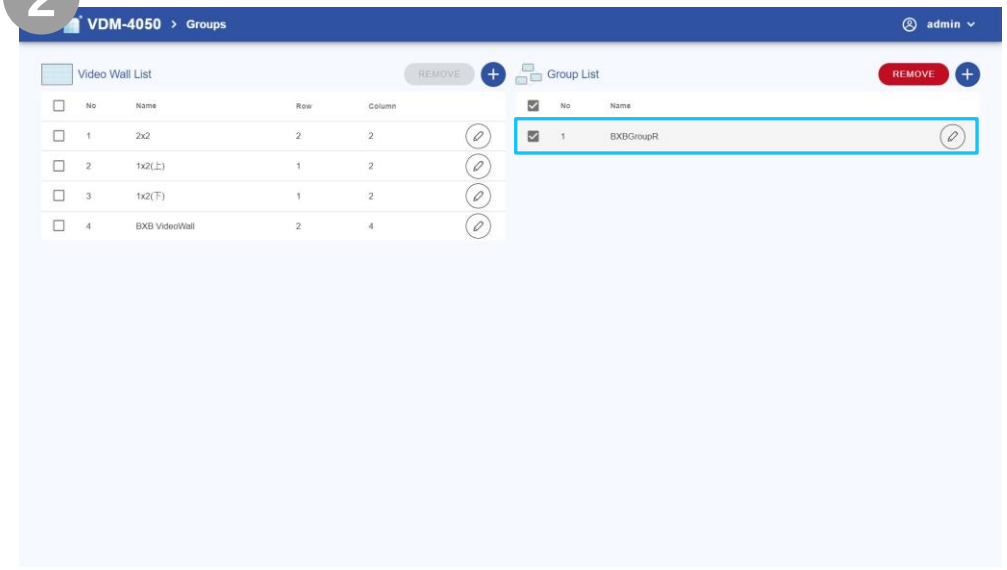
# Using the Web UI

## Preset_Groups_Group List

1




2

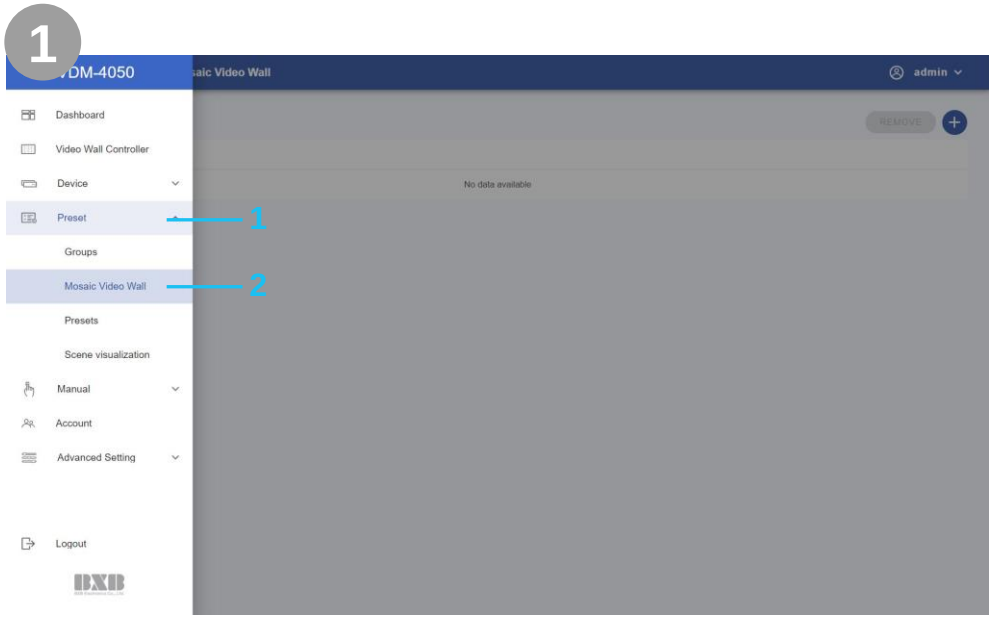


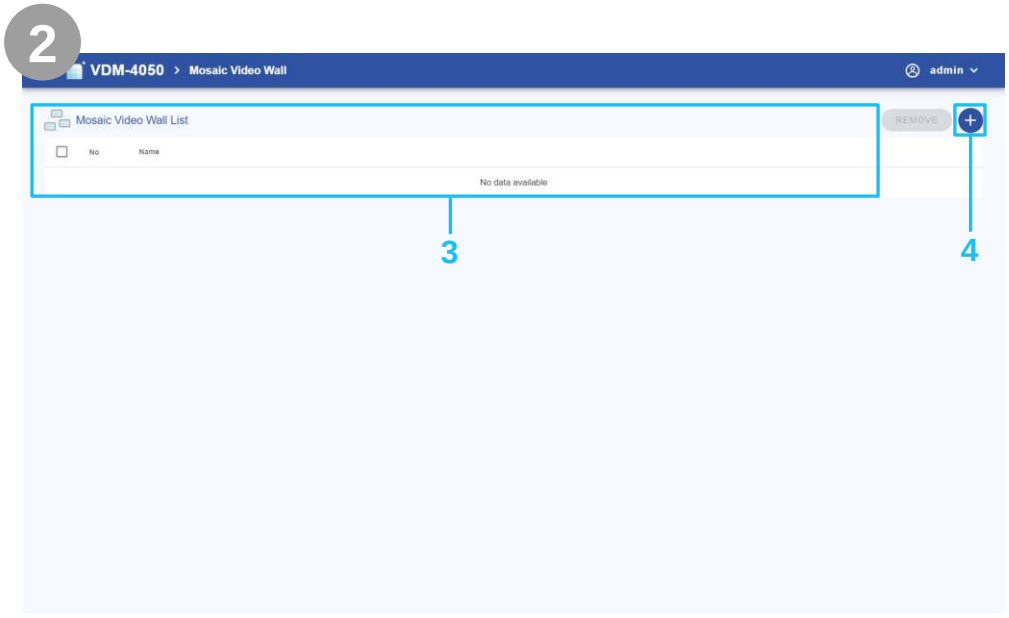

Key in the group name first and then select the output devices for setting as a group. After checking the boxes of the output devices, click “SELECT”.

The new group list has been added. Click ✎ to revise the selected list; click REMOVE to delete the selected list.

# Using the Web UI

## Preset_Mosaic Video Wall

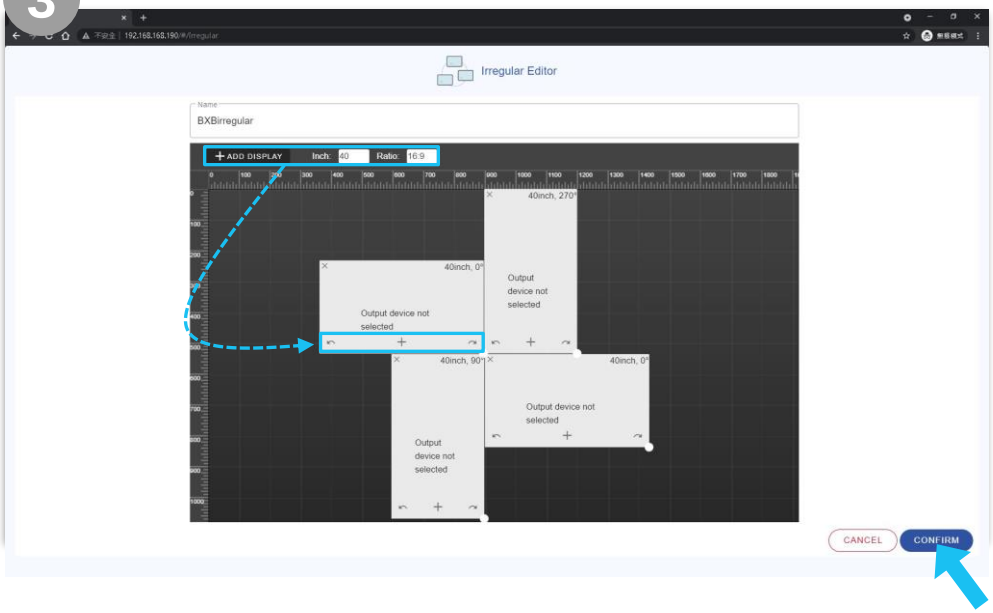


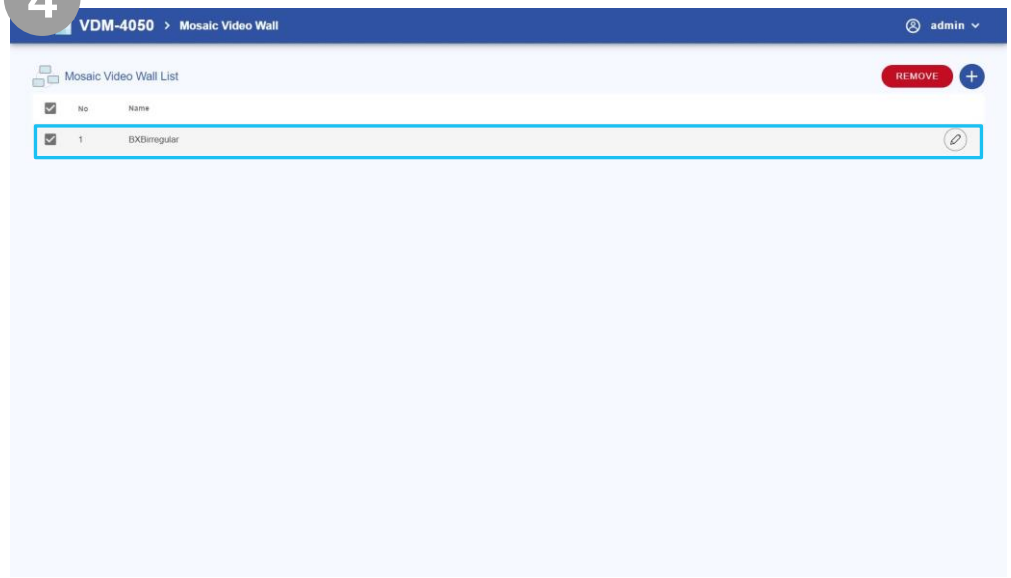

1. Click “Preset”.
2. Mosaic Video Wall: present a mosaic video wall based on different display sizes and angles.
3. List of mosaic video wall.
4. Click + to create a new mosaic video wall.

# Preset_Mosaic Video Wall

3




4

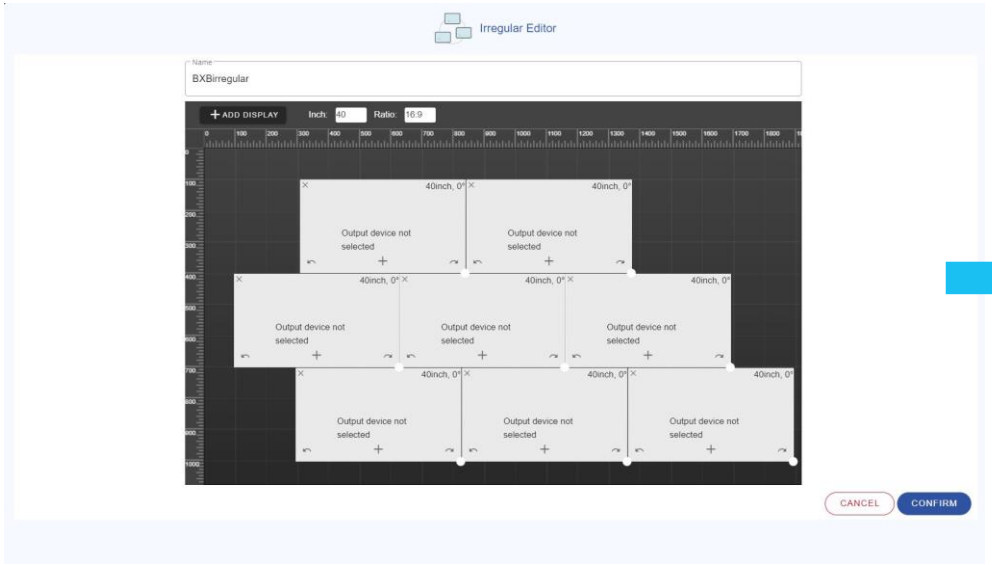



Key in the name of the mosaic video wall first and then set the size and ratio for each display (default: 40 inch; 16:9 ratio). Next, drag each editing display to the specified position. The rotation icons enable you to adjust the display angle as 0°, 90°, 180°, and 270°. Click “+” to set the corresponding output devices. After editing, click “CONFIRM”.

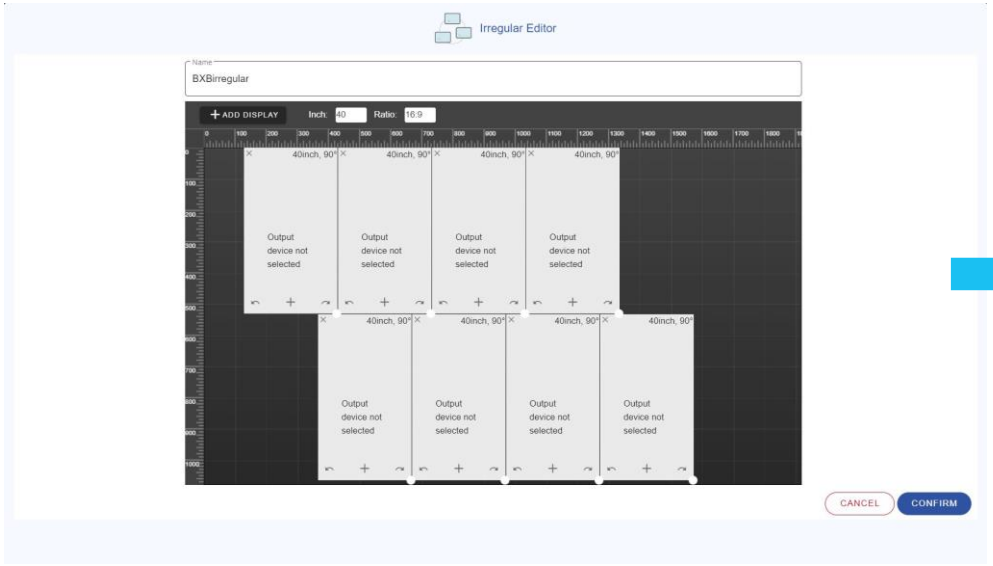
The new mosaic video wall has been added to the list. Click ✎ to revise the selected item; click REMOVE to delete the selected item.

# Using the Web UI

## Preset_Example of Mosaic Video Wall



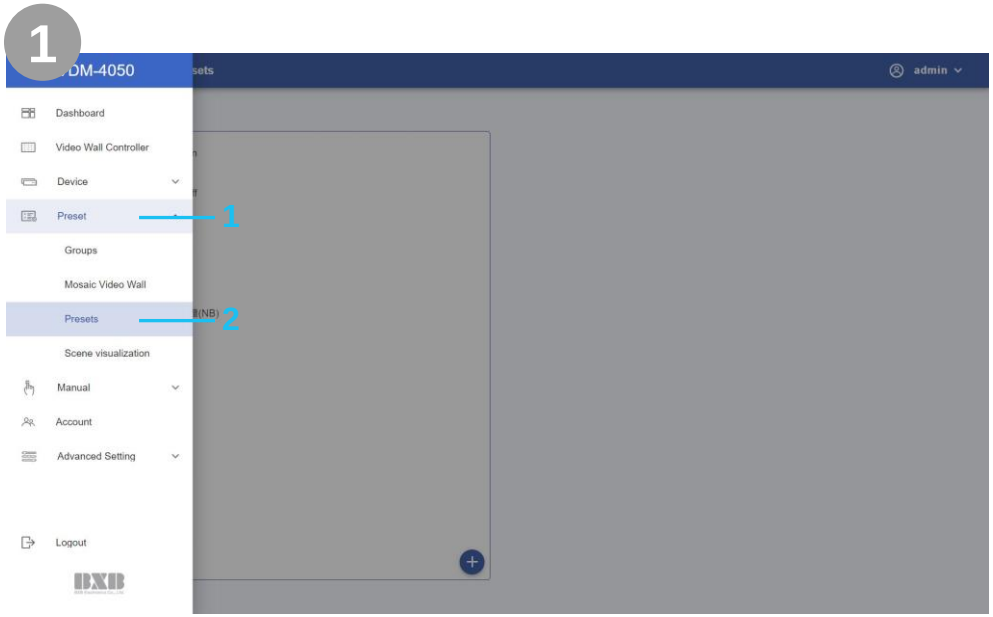


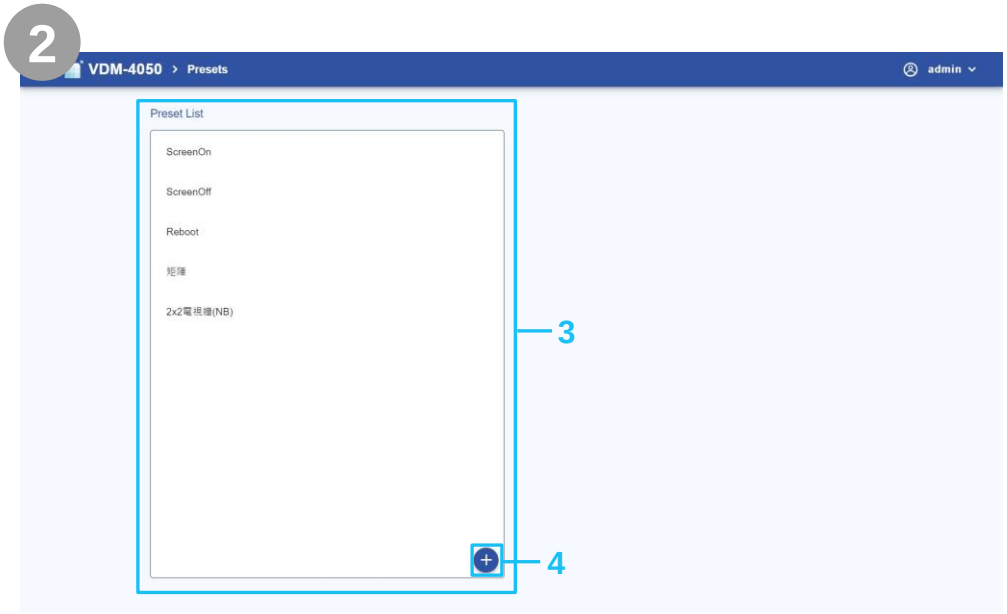






# Using the Web UI

## Preset_Presets

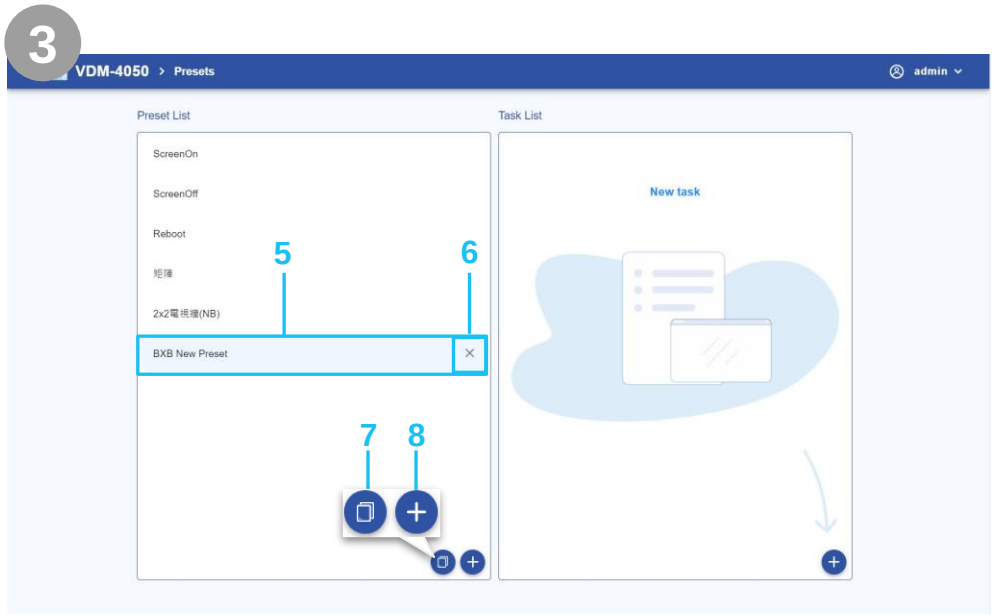


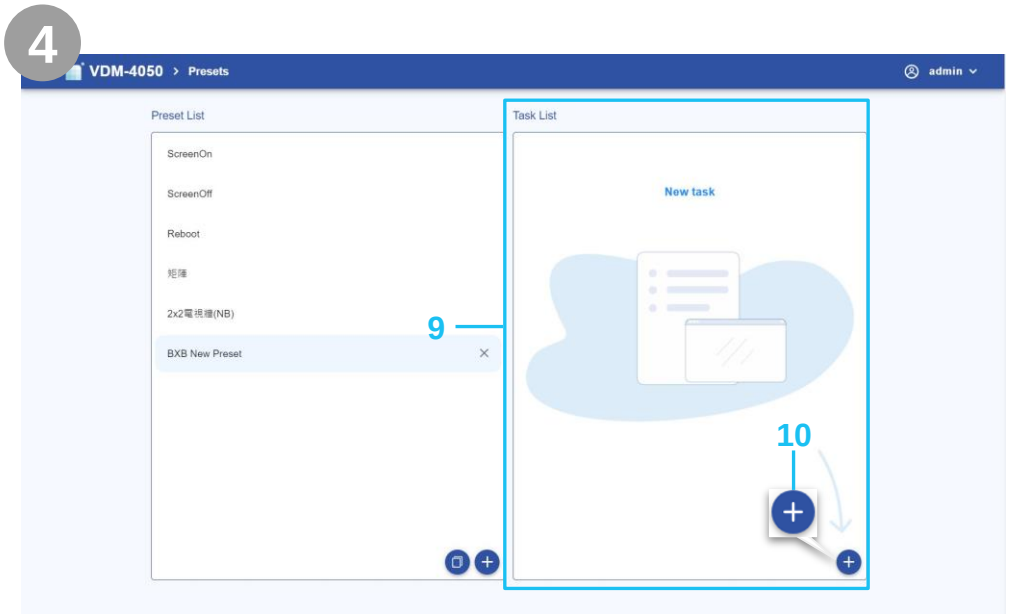




1. Click “Preset”.
2. Presets: set the preset tasks for quick switch in the future. E.g., input / output device mapping, adding execution into devices, input source cropping, and mosaic video wall setting.
3. List of presets.
4. Click ⊕ to add a new preset.

# Using the Web UI

## Preset_Presets



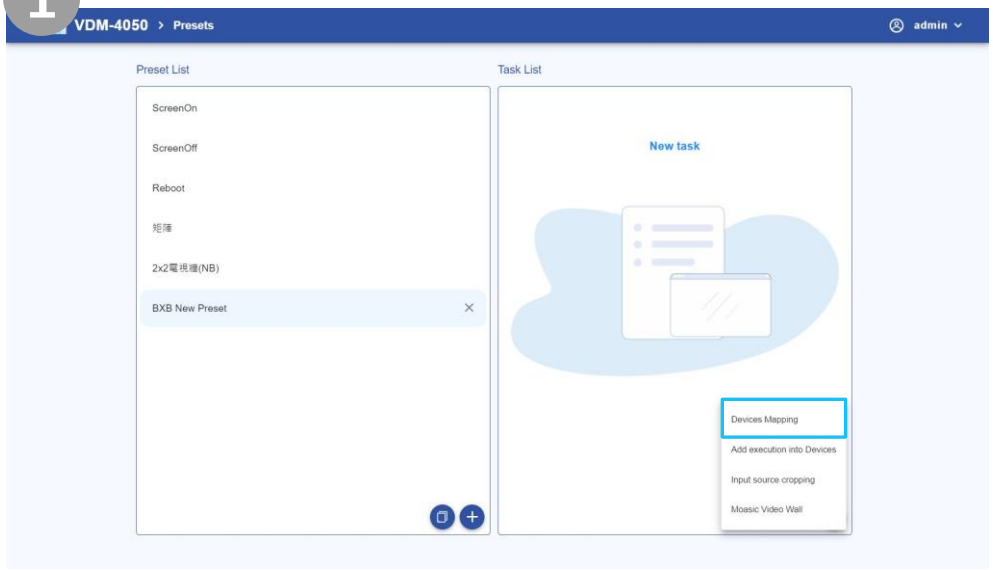

5. Key in the name. The default name is “New Preset”.
6. Click to delete the preset from the list.
7. Click icon to copy the selected preset.
8. Click icon to add a new preset.

9. List of tasks.
10. Click icon to add a new task.

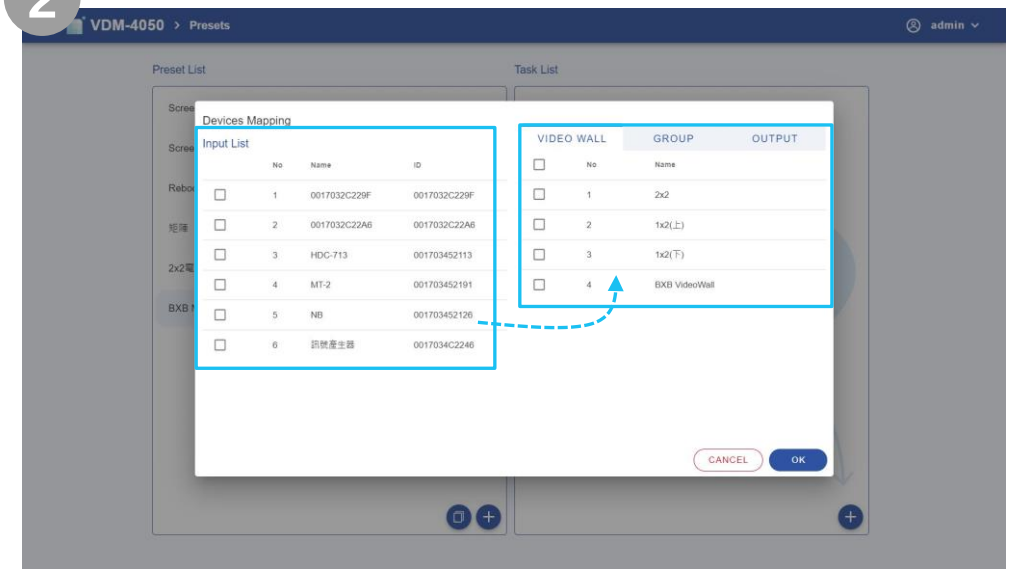
# Using the Web UI

## Preset_Presets_Devices Mapping

1




2




Select a task based on your using demand:

- ● Devices Mapping
- ○ Add Execution into Devices
- ○ Input Source Cropping
- ○ Mosaic Video Wall

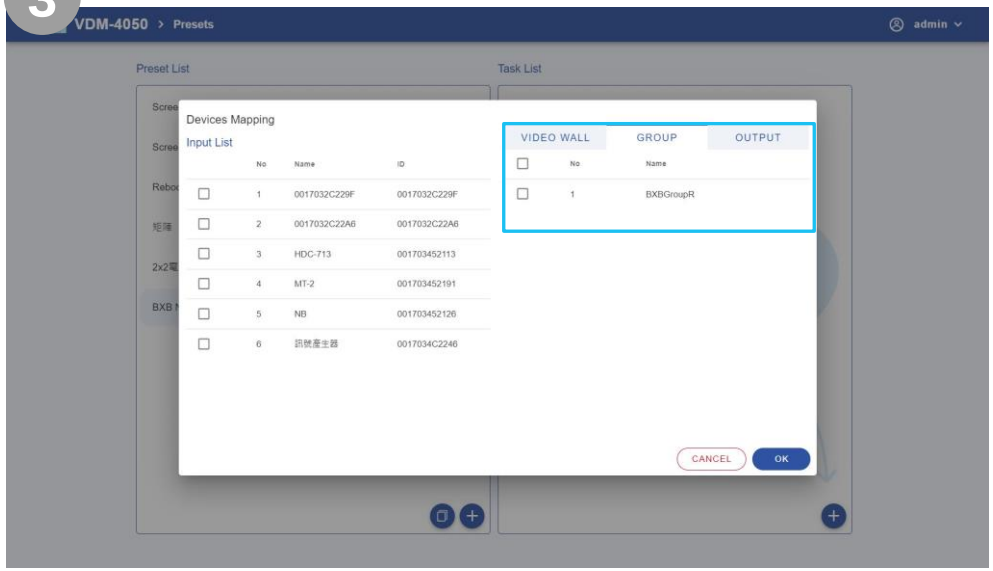
From the input list, select a device and the corresponding output type (select one device only):

- ● VIDEO WALL (check all that apply)
- ○ GROUP (check all that apply)
- ○ OUTPUT (check all that apply)

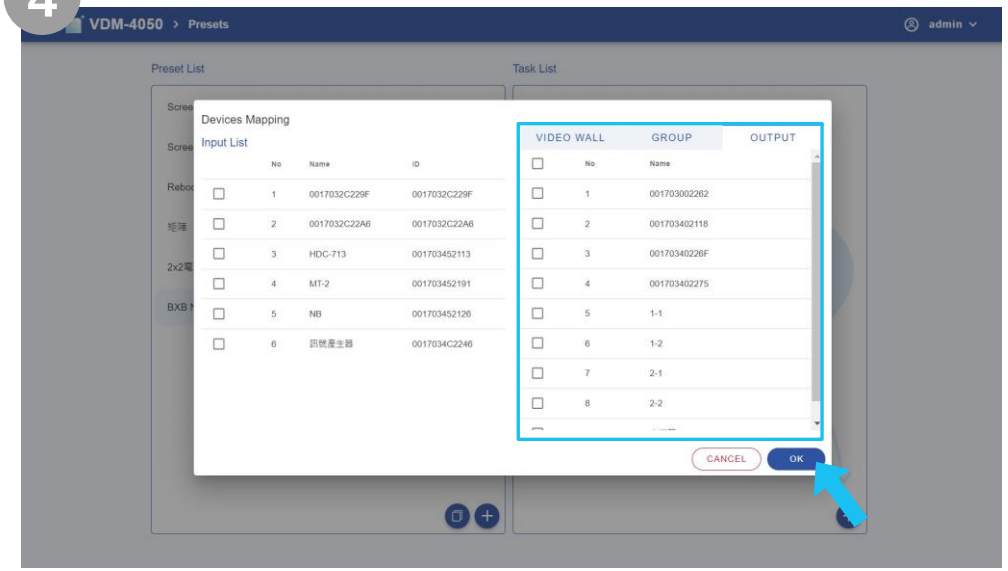
# Using the Web UI

## Preset_Presets_Devices Mapping

3




4




Three output types:

- ○ VIDEO WALL (check all that apply)
- ● GROUP (check all that apply)
- ○ OUTPUT (check all that apply)

Three output types:

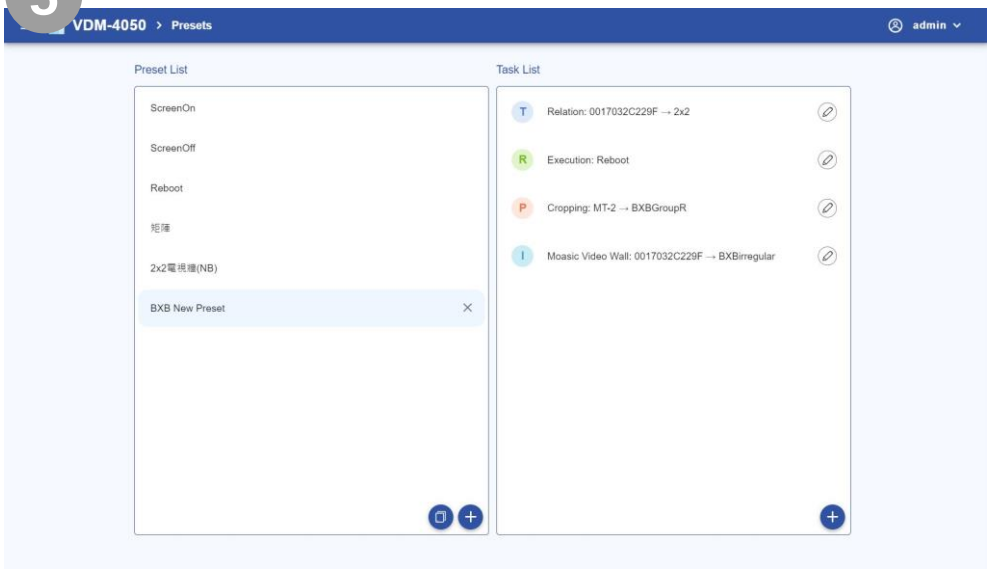
- ○ VIDEO WALL (check all that apply)
- ○ GROUP (check all that apply)
- ● OUTPUT (check all that apply)

Click “OK” after confirmed.

# Using the Web UI

## Preset_Presets_Devices Mapping

5

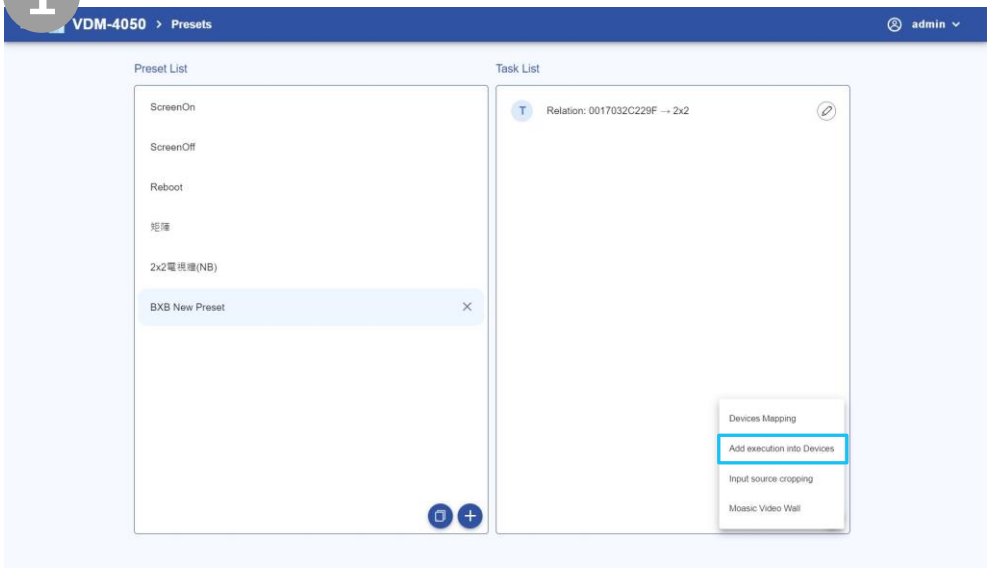



A preset list has been created. You can add multiple tasks into the list; each task can be copied and revised (the picture shown above is only an example; please set the preset based on your need).

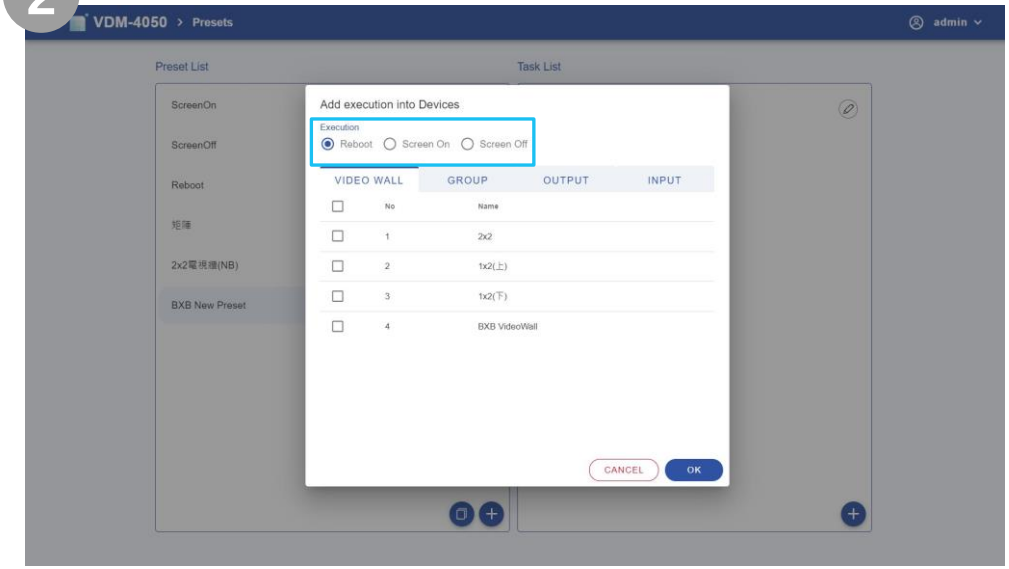
# Using the Web UI

## Preset_Presets_Add Execution into Devices

1




2




Select a task based on your using demand:

- ○ Device Mapping
- ● Add Execution into Devices
- ○ Input Source Cropping
- ○ Mosaic Video Wall

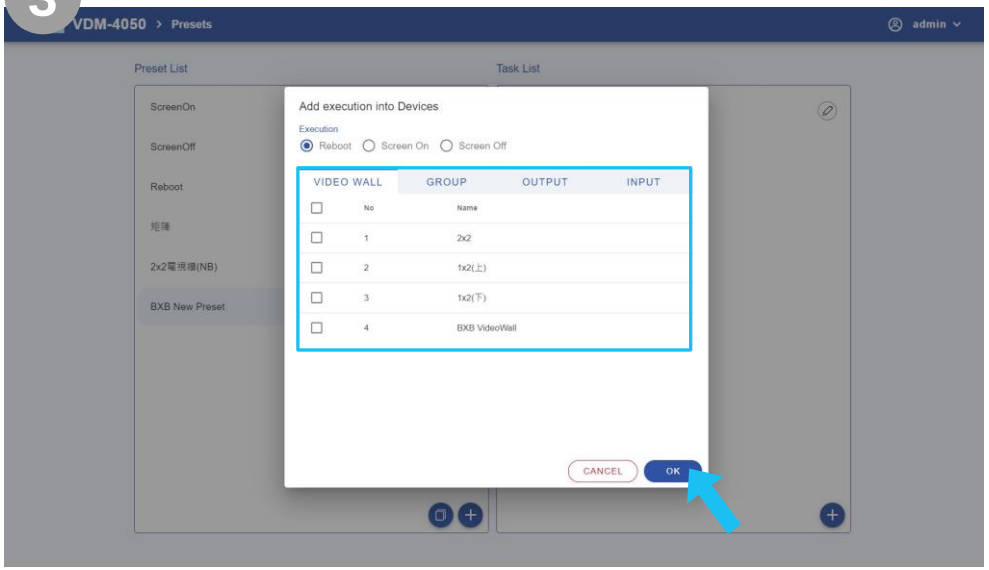
Select an action among the three:

- ● Reboot: restart the input and output devices.
- ○ Screen On: turn on the input and output devices.
- ○ Screen Off: turn off the input and output devices.

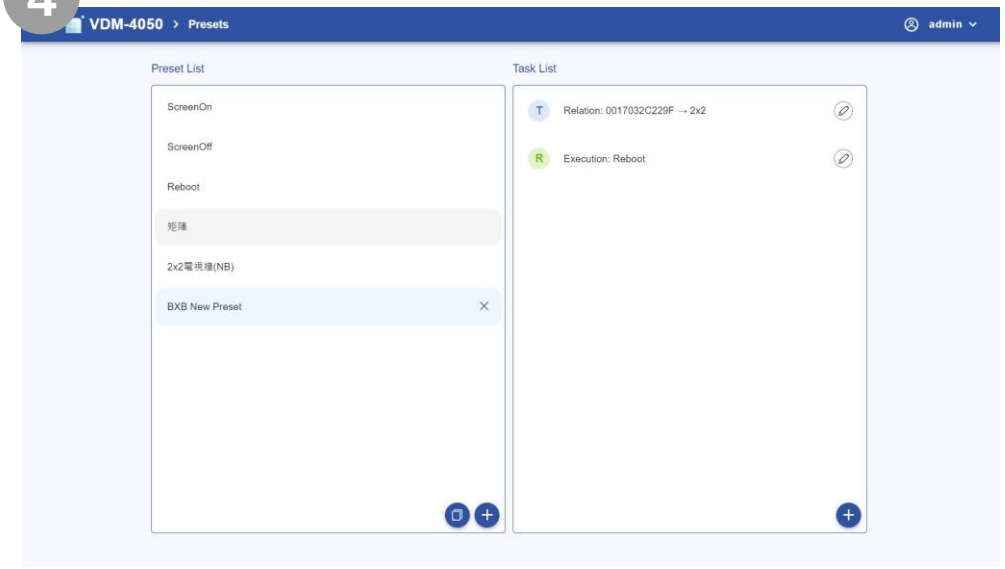
# Using the Web UI

## Preset_Presets_Add Execution into Devices

3




4




Select one device types among the four:

- ● VIDEO WALL
- ○ GROUP
- ○ OUTPUT
- ○ INPUT

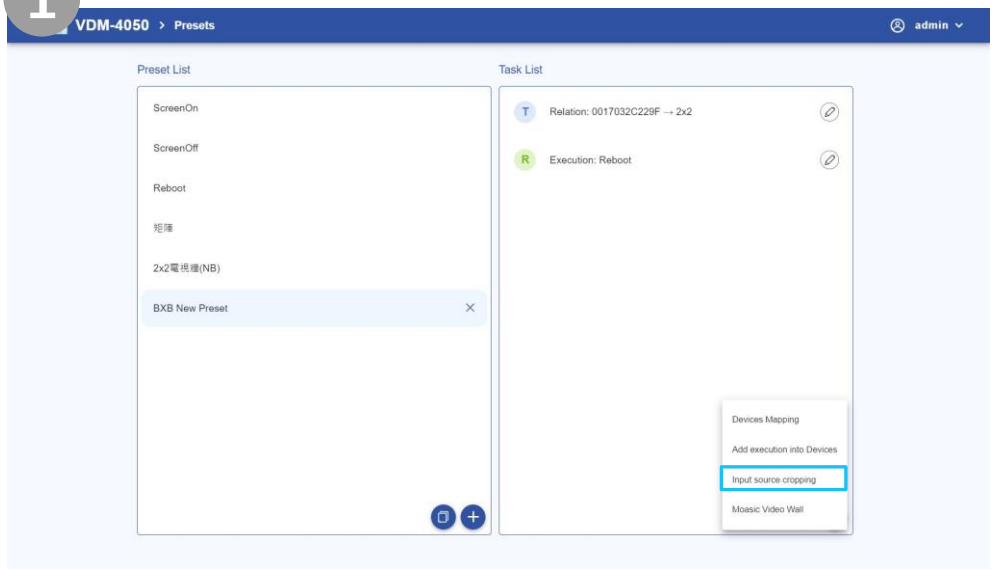
Click “OK” after confirmed.

An execution item has been created. You can add multiple items into the list; each item can be copied and revised (the picture shown above is only an example; please set the preset based on your need).

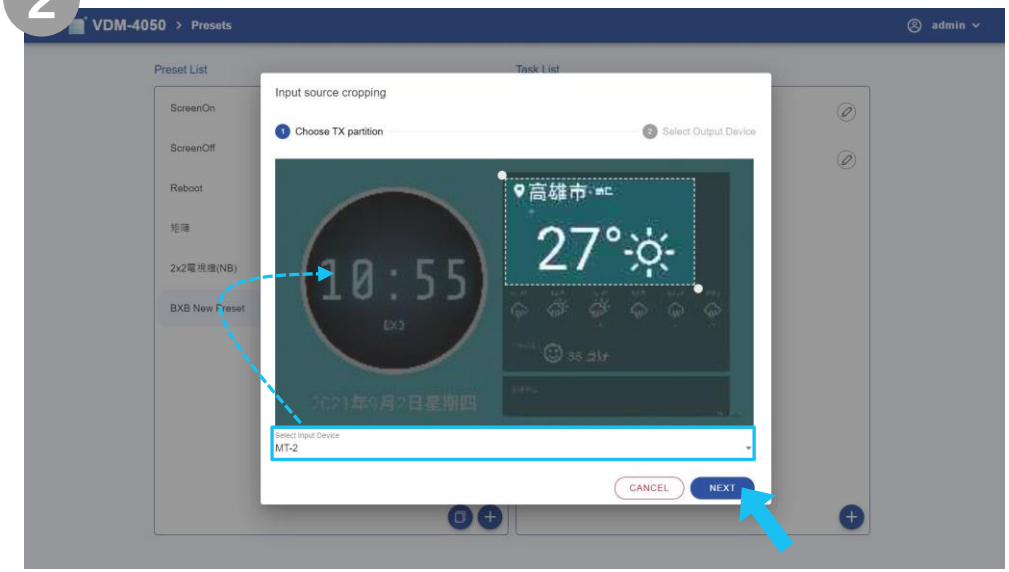
# Using the Web UI

## Preset_Presets_Input Source Cropping

1




2




Select a task based on your using demand:

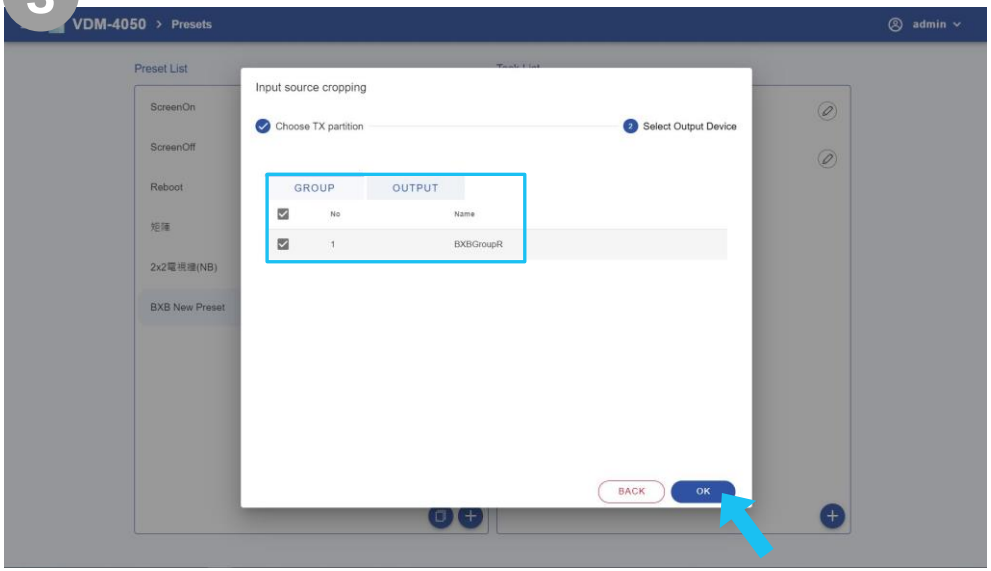
- ○ Device Mapping
- ○ Add Execution into Devices
- ● Input Source Cropping
- ○ Mosaic Video Wall

Select an input source and then zoom in the specified area via drag and move. Click “NEXT” after setting.

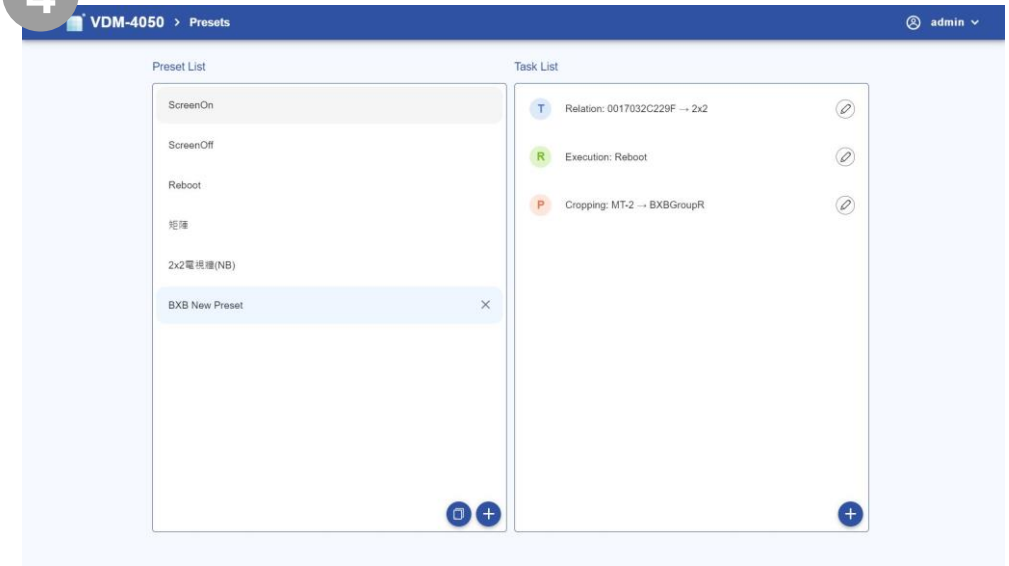
# Using the Web UI

## Preset_Presets_Input Source Cropping

3




4




Select an output device type:

- ● GROUP
- ○ OUTPUT

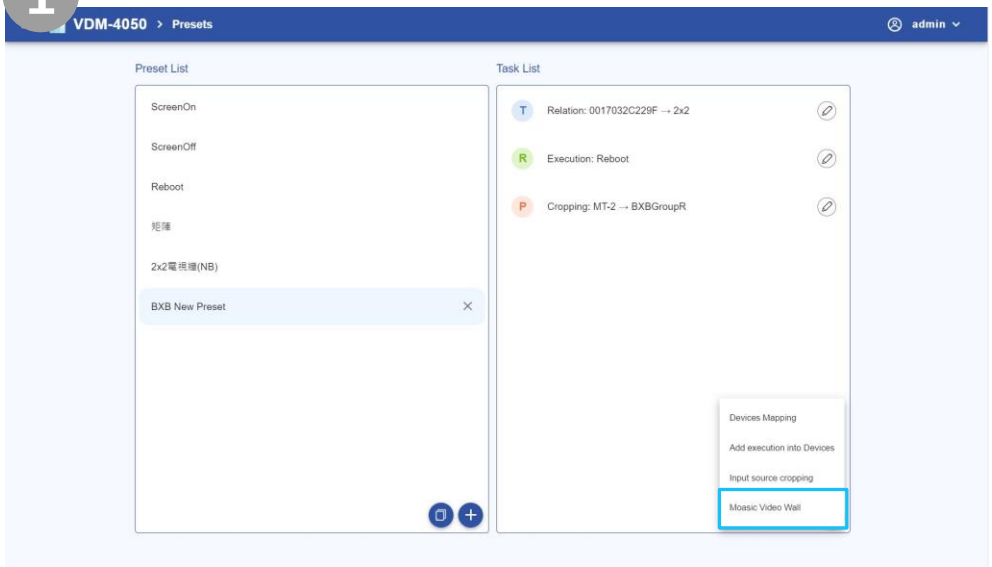
Click “OK” after confirmed.

An input source cropping has been created. You can add multiple items into the list; each item can be copied and revised (the picture shown above is only an example; please set the preset based on your need).

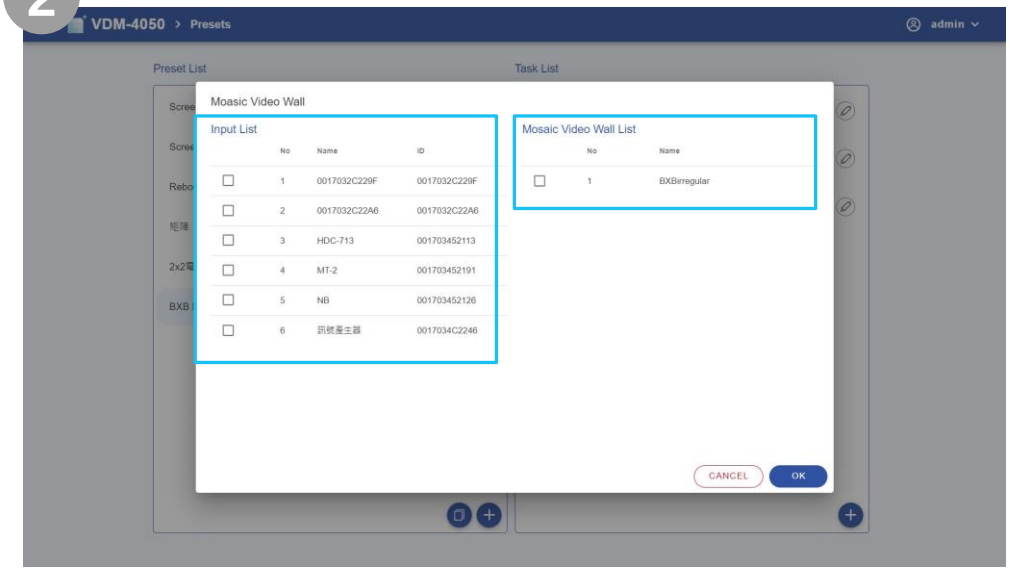
# Using the Web UI

## Preset_Presets_Mosaic Video Wall

1




2



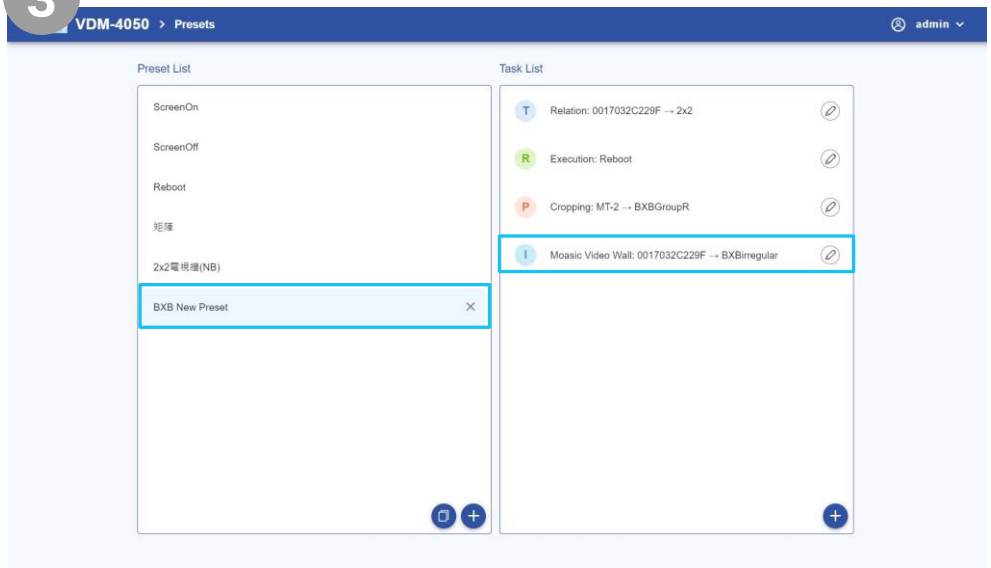

Select a task based on your using demand:

- ○ Device Mapping
- ○ Add Execution into Devices
- ○ Input Source Cropping
- ● Mosaic Video Wall

Select a device from the input list and then check a preset mosaic video wall from the list (the list should be set in advance, please refer to P22). Click “OK” after setting.

# Preset_Presets_Mosaic Video Wall

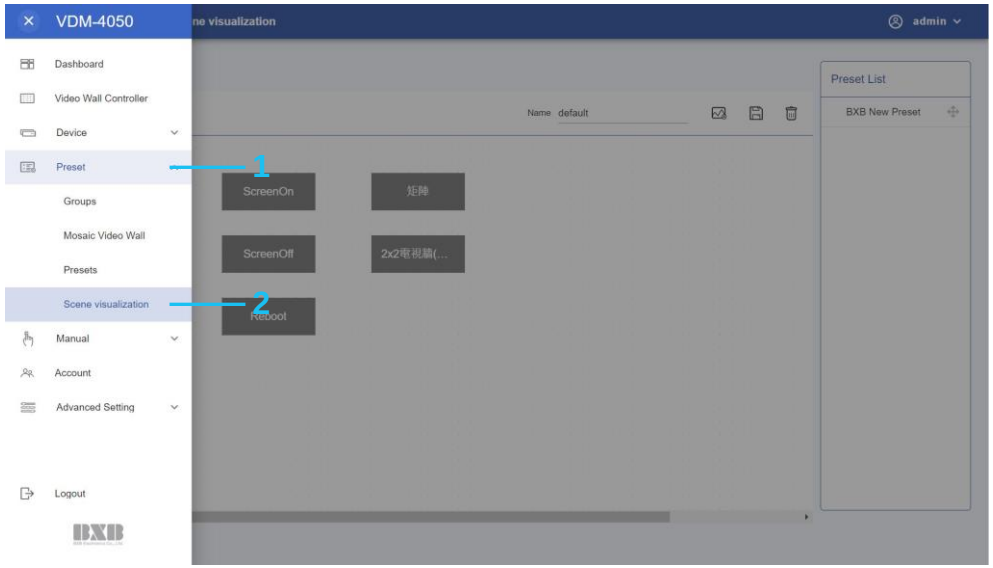
3

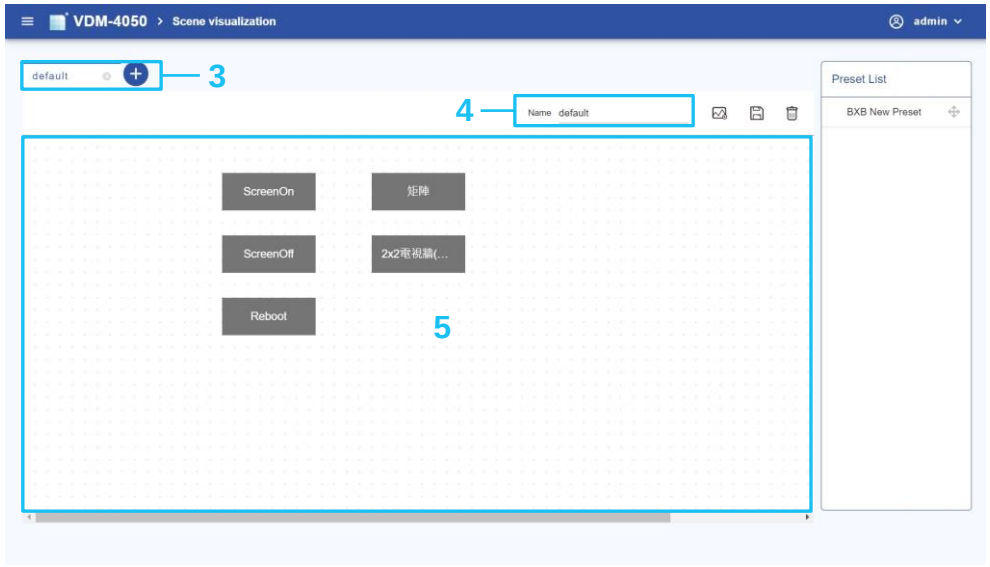



A mosaic video wall has been created. You can add multiple items into the list; each item can be copied and revised (the picture shown above is only an example; please set the preset based on your need).

# Using the Web UI

## Preset_Scene Visualization



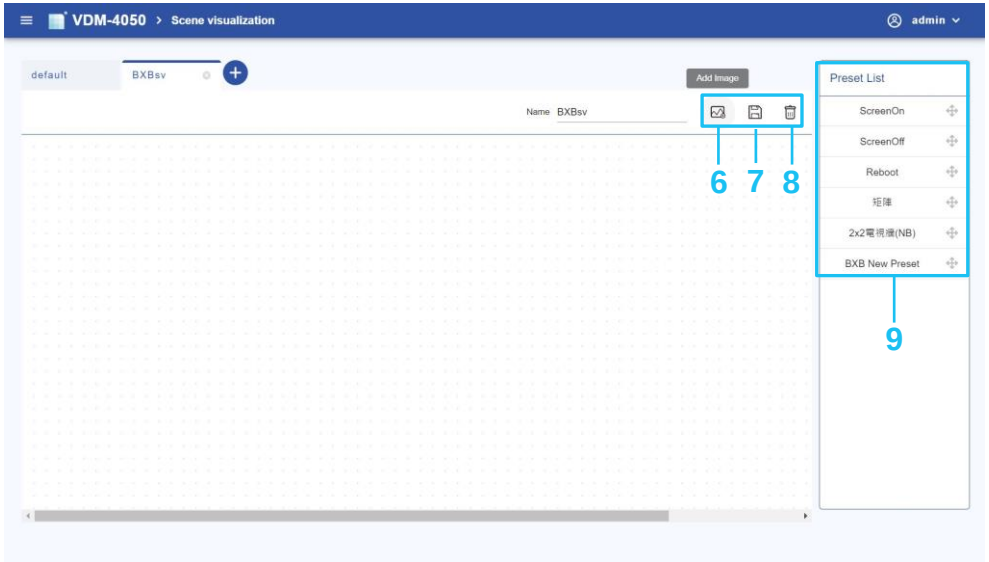




1. Click “Preset”.
2. Scene Visualization: edit multiple scenes via the intuitive UI, making scene switch easier and more instant, enhancing the operation efficiency.

3. A default scene has been set. Click + to create a new one.
4. Edit the name of the scene.
5. Position the presets on the editing area for setting the scene.

# Using the Web UI

## Preset_Scene Visualization







6. Add Image: add an image for the background of the scene.
7. Save: save the edited scene.
8. Remove Preset: delete the added preset list and images.
9. Preset List: the tasks that already been set.

10. Add a background image (non-essential if there's no need)
11. Click on the image for the eight bearing points; after that, you can adjust the image size and drag to set its position.

# Preset_Scene Visualization







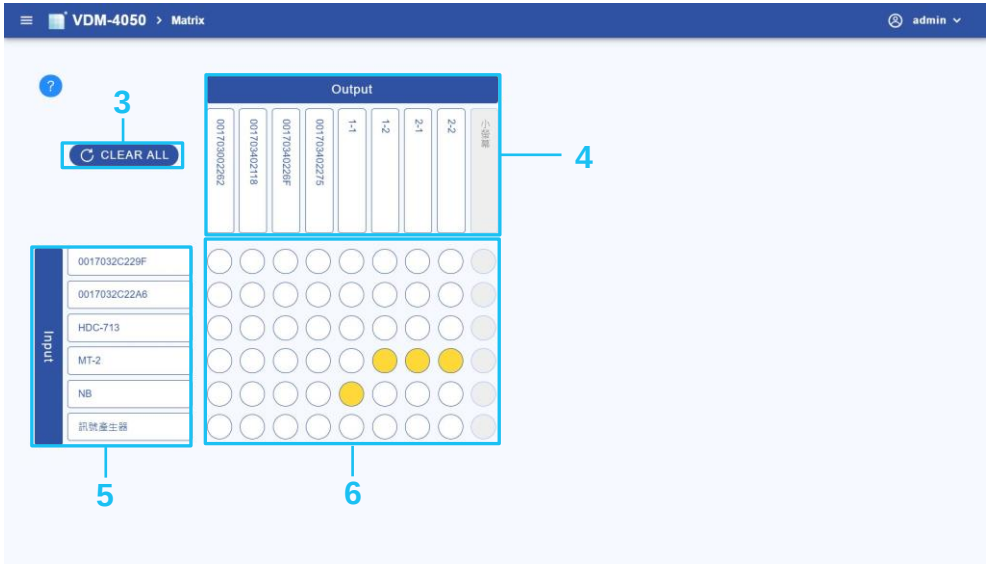
12. Click and drag the preset task to the editing area.
13. Click on the task button for the eight bearing points and then adjust its size.
14. Click “Save” icon after setting.

Go back to the Dashboard page. You can click the task buttons directly to operate the system (the content shown above is only an example; please set based on your need).

# Using the Web UI

## Manual_Matrix

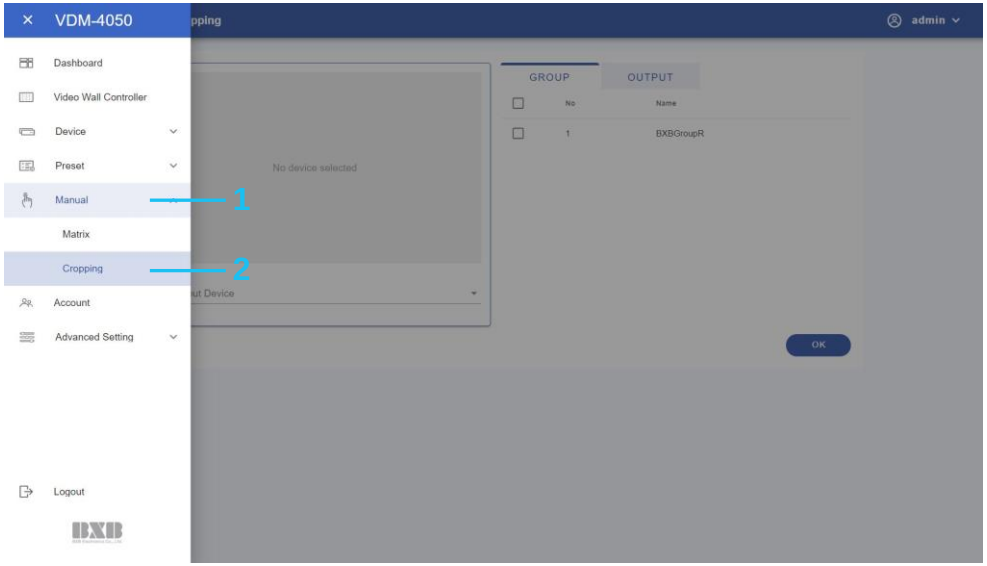


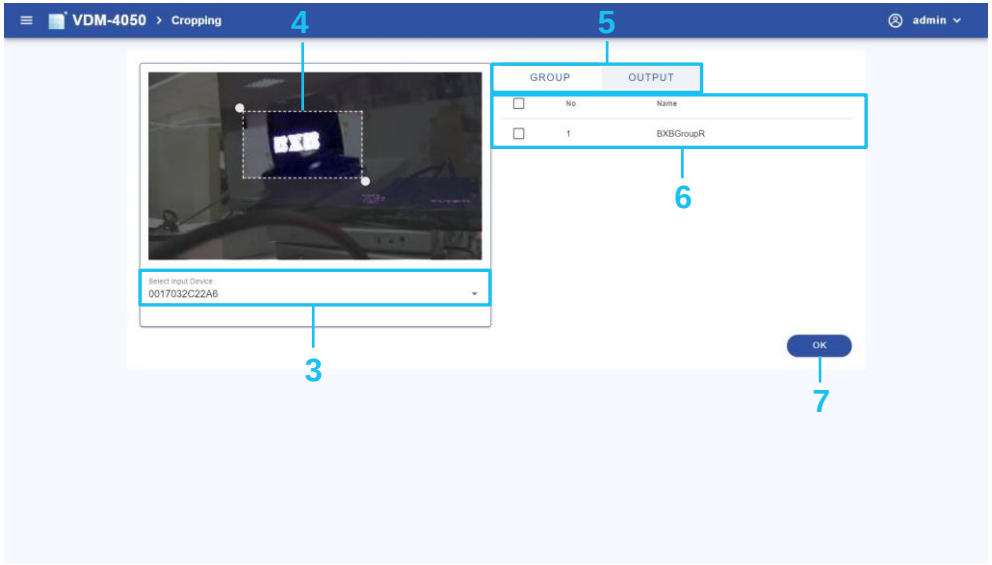




1. Click “Manual”.
2. Matrix: via the matrix setting with checkboard interface, you can set one / multiple input devices corresponding with one / multiple output devices, which enables you to switch the image quickly.
3. Clear the current matrix setting.
4. Output devices.
5. Input devices.
6. Matrix setting area: simply click to switch (yellow: corresponded; white: non-corresponded. Each input can correspond to multiple outputs; each output can only correspond to one input).

# Using the Web UI

## Manual_Cropping

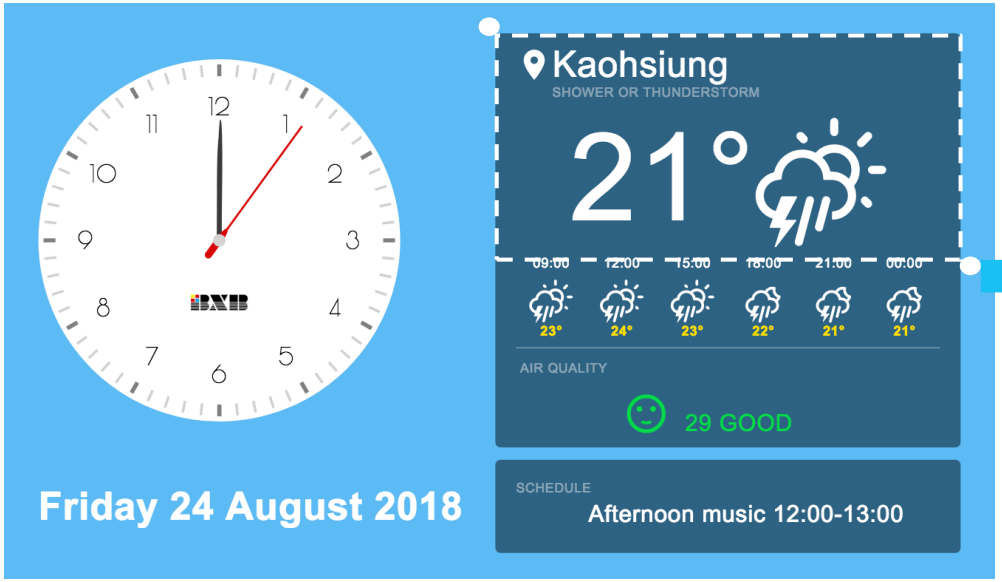



1. Click “Manual”.
2. Cropping: drag and drop the area to focus the point.
3. Select an input source.
4. Crop the area for zoom-in and then adjust its size and position.
5. Select an output type: GROUP / OUTPUT.
6. Select the item of the output type (available to choose more than one).
7. Click “OK” after setting.

# Using the Web UI

## Manual_Cropping_Example

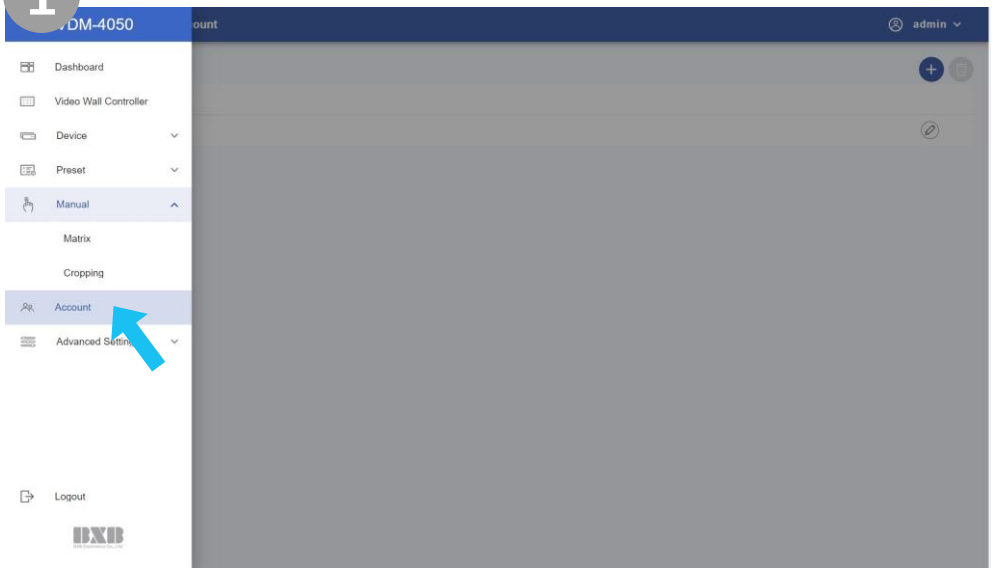




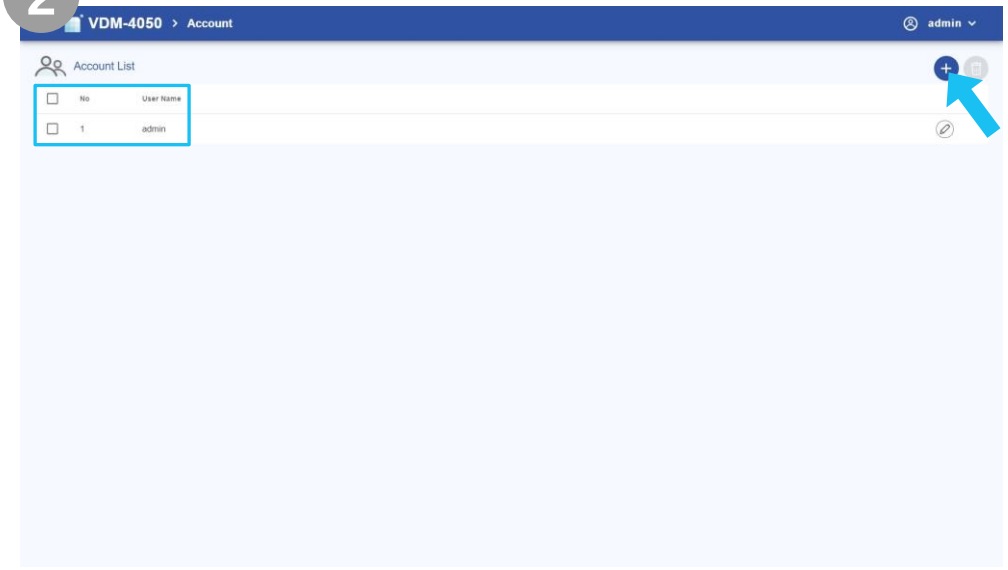

# Using the Web UI

## Account

1




2



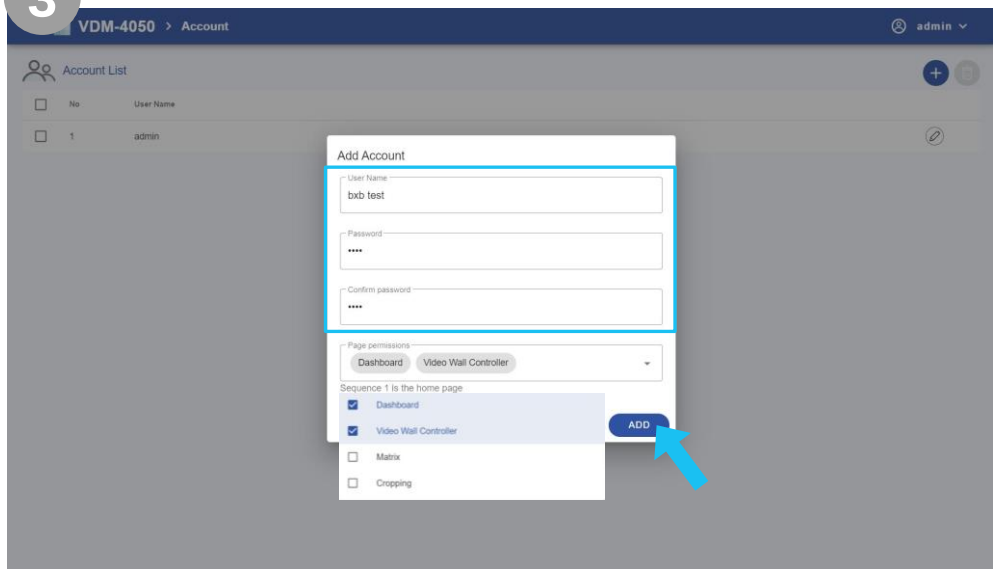

Click “Account”.

The default account “admin” possesses the highest authority to manage the system (besides “admin”, the other accounts are unable to configure the settings).

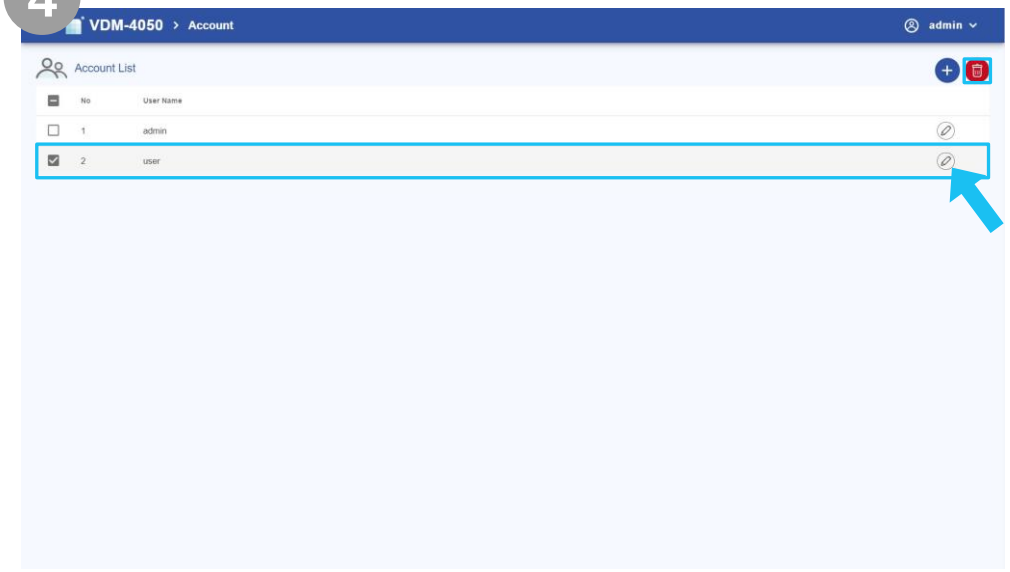
Click + to add a new account.

# Account

3




4




Key in the user name of the account (support Chinese) and password and then select the items allowed to be managed (the item of sequence 1 would be set as the home page):

- ● Dashboard
- ● Video Wall Controller
- ○ Matrix
- ○ Cropping

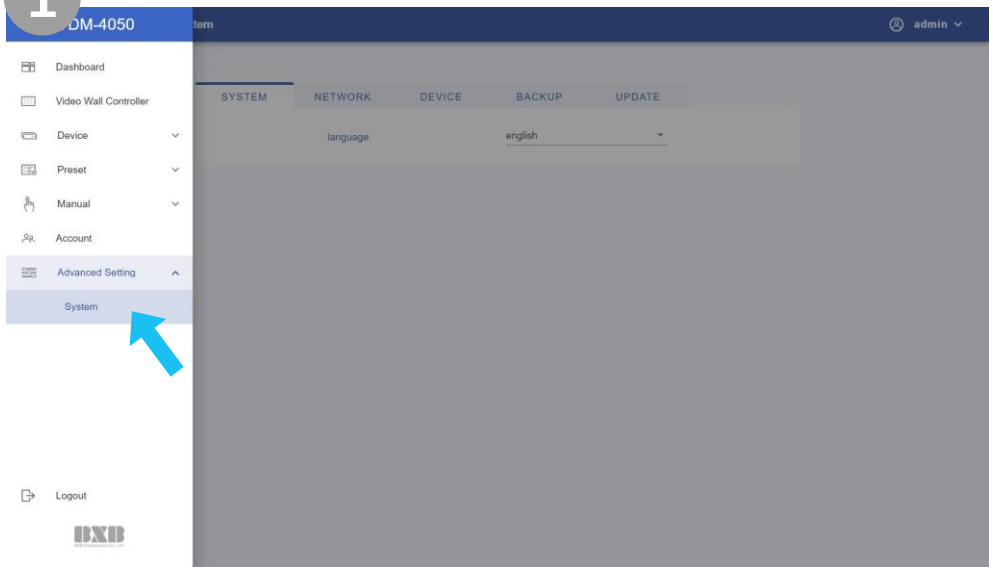
Click “ADD” after setting.

Click icon to revise the password and the authorization of the account; click to delete the selected account.

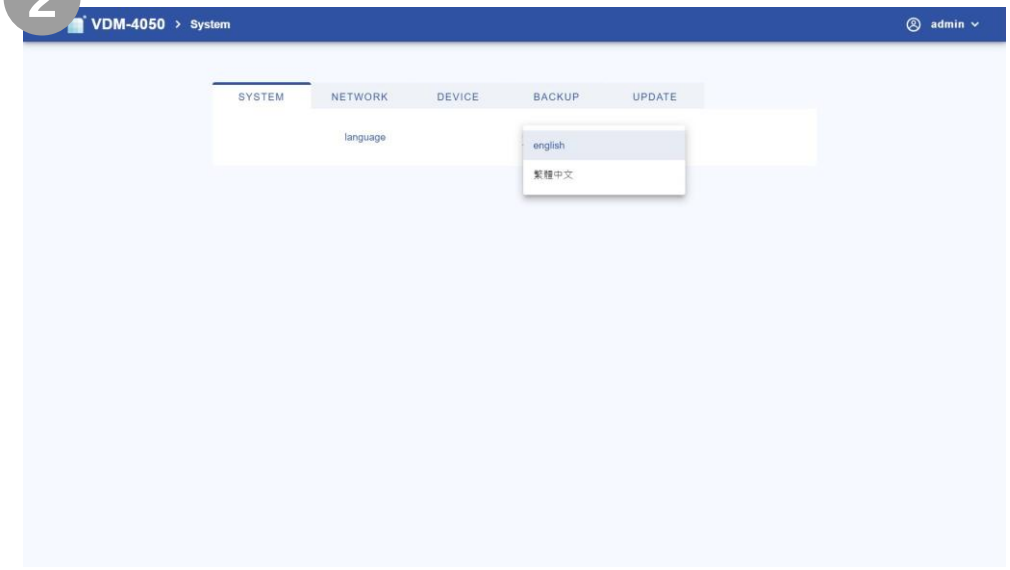
# Using the Web UI

## Advanced Setting _ System _System

1




2



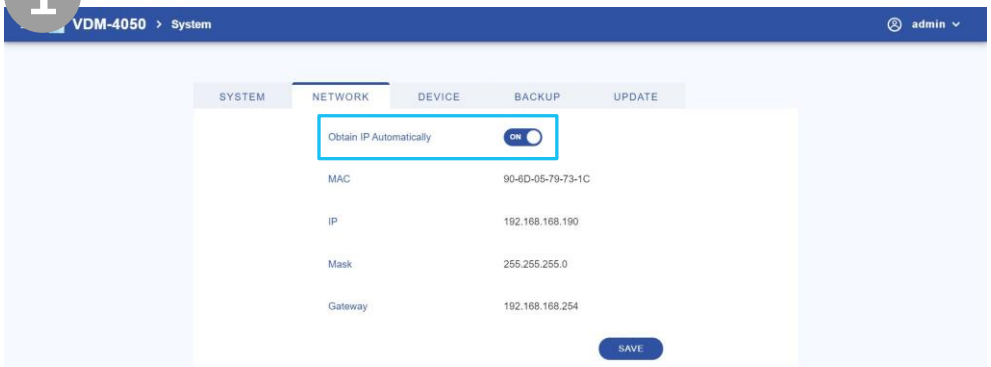

Click “Advanced Setting” > “System” to configure the system settings and preferences.

Click “SYSTEM” to set the language of the UI interface. English and Traditional Chinese are supported.

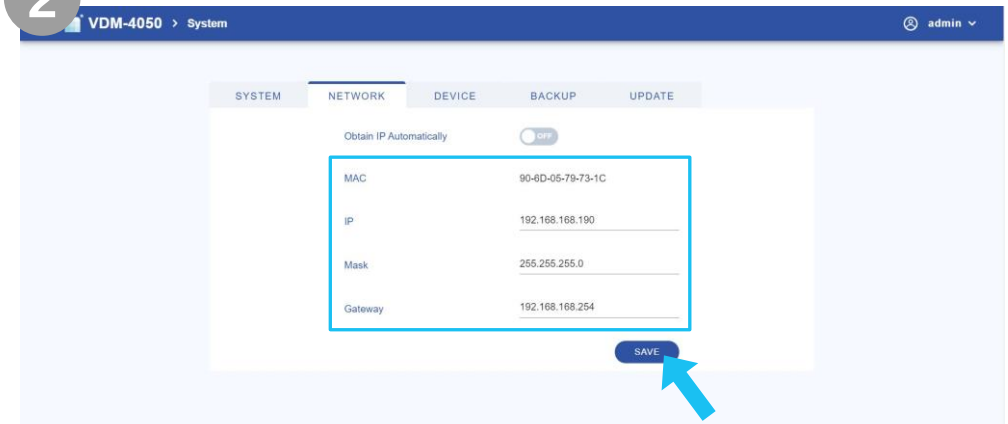
# Using the Web UI

## Advanced Setting _ System _Network

1




2




Click “NETWORK” to set the network configurations. The default setting is “Obtain IP Automatically”. If the system cannot get the network information, the default IP will be “192.168.168.190”.

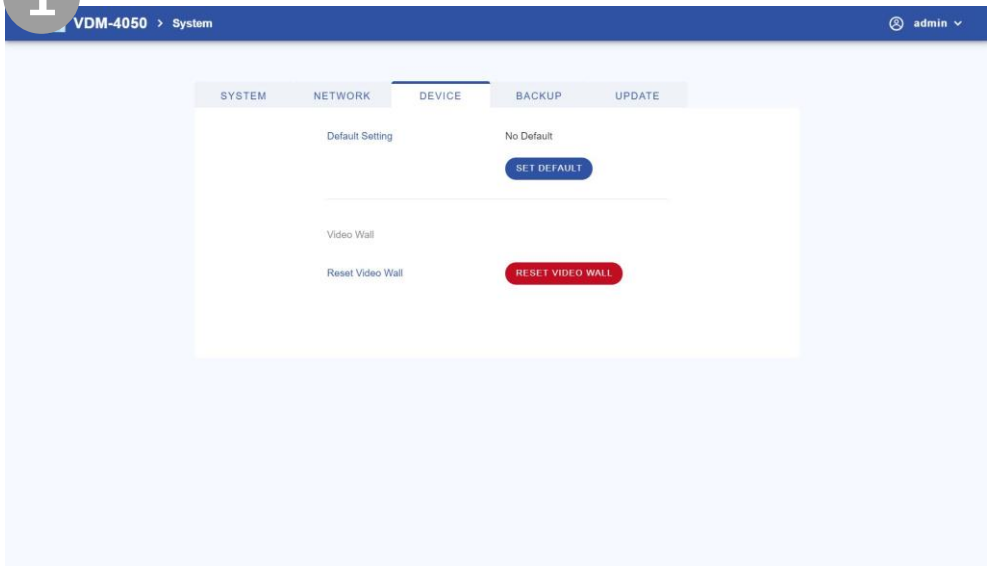
※「System」network port is the private network for VDM-4050. You can only check the related information, not changing the settings.

With the static IP mode, you can set the IP address, mask, and gateway based on the actual network environment. After setting, please click “SAVE” (Note: after saving the settings, the system will reboot).

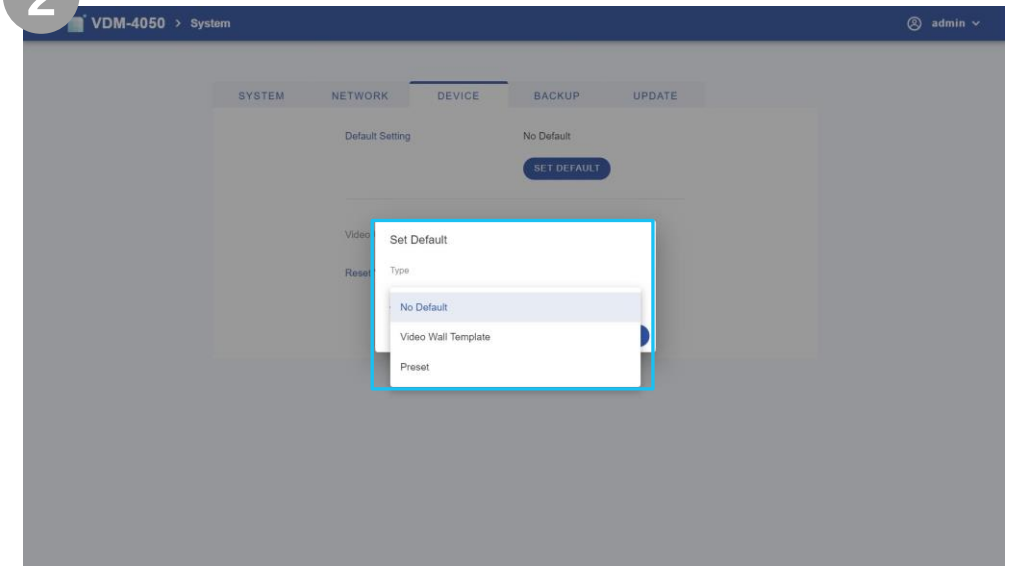
# Using the Web UI

## Advanced Setting _ System _Device

1




2




Click “DEVICE” to set the default action of inputs / outputs as booting the system and change the video wall function.

Set the default after booting the system:

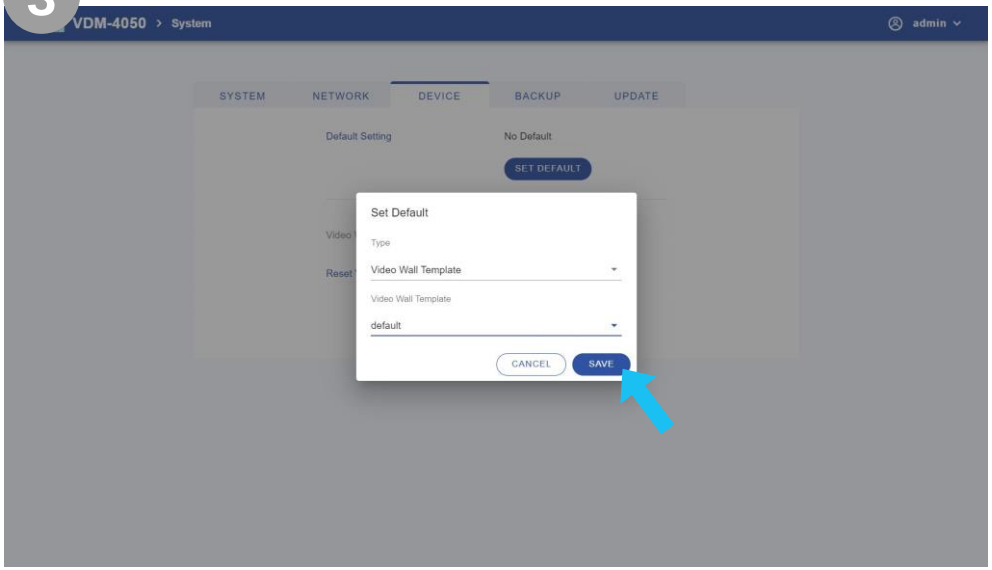
- ○ No Default
- ○ Video Wall Template
- ○ Preset

(the video wall layouts and presets should be set well in advance)

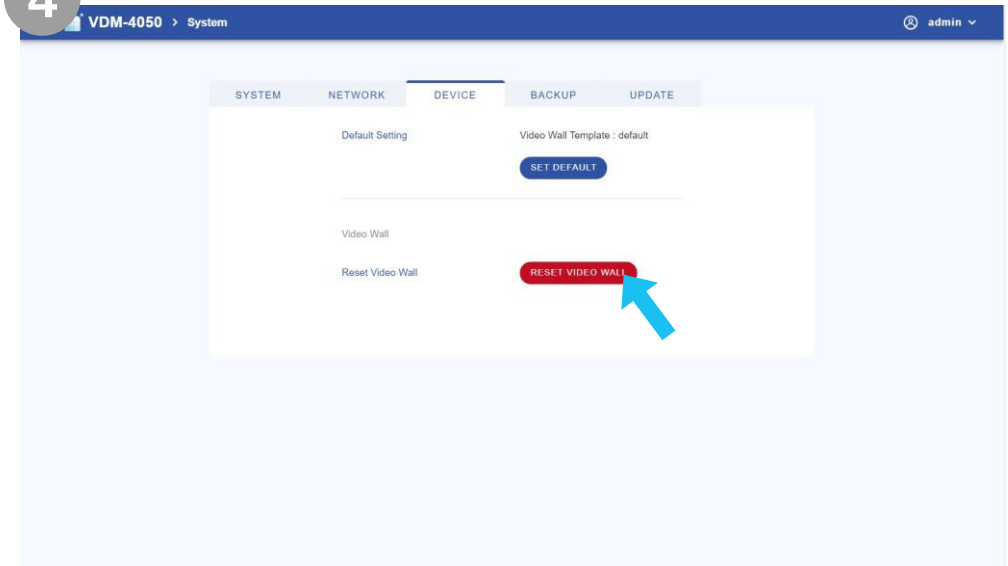
# Using the Web UI

## Advanced Setting _ System _Device

3




4



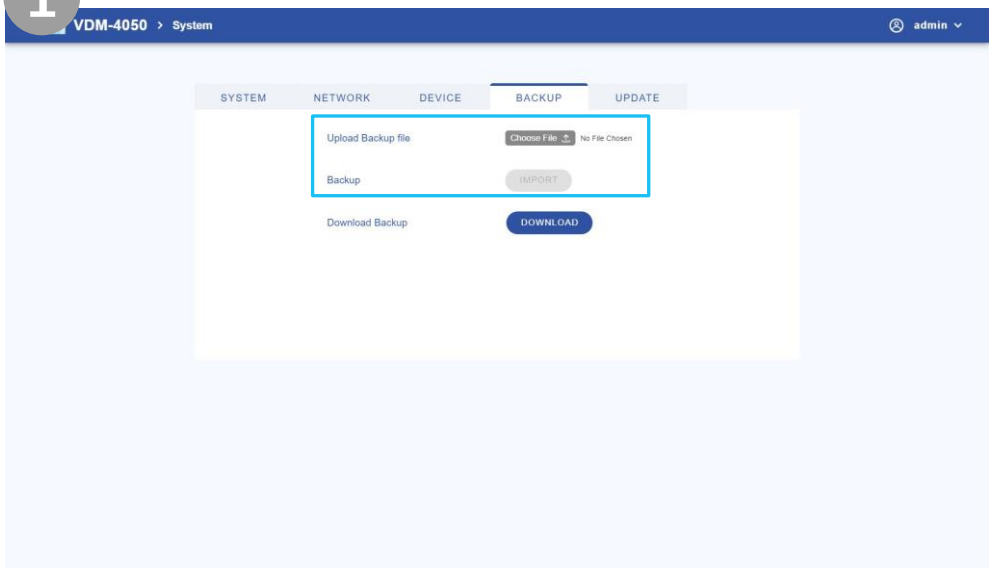

Example of setting the video wall template as the default:
Type > Video Wall Template > default (the content shown above is only an example; please set based on the actual need)
Click “SAVE” after setting.

Click “RESET VIDEO WALL” to clear the edited contents of Video Wall Controller.

# Using the Web UI

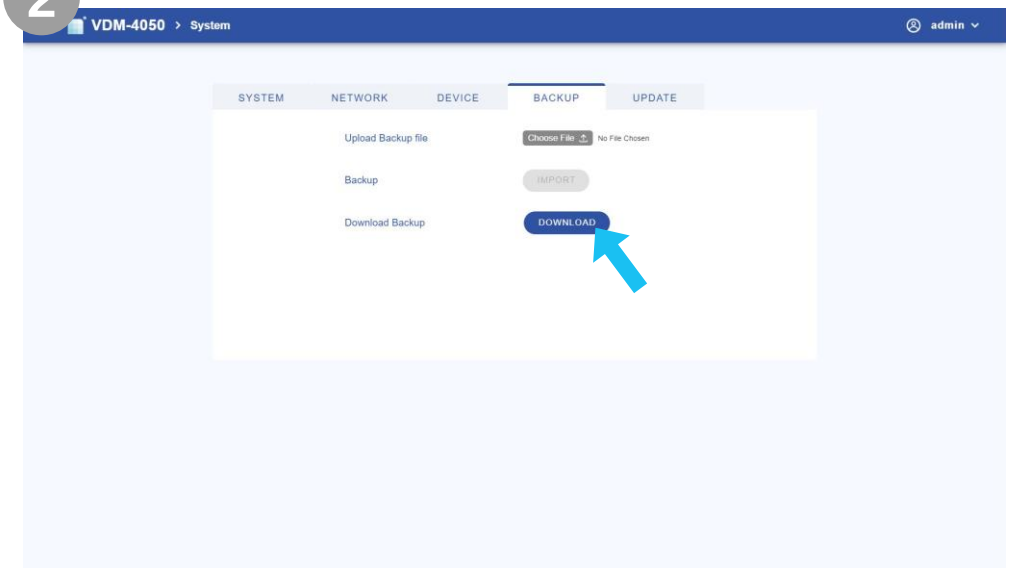
## Advanced Setting _ System _Backup

1




Click “BACKUP” for making backup and restoring the system. Upload the exported backup file (.bk format) and then click “IMPORT” to restore the data (the system will re-boot after importing).

2

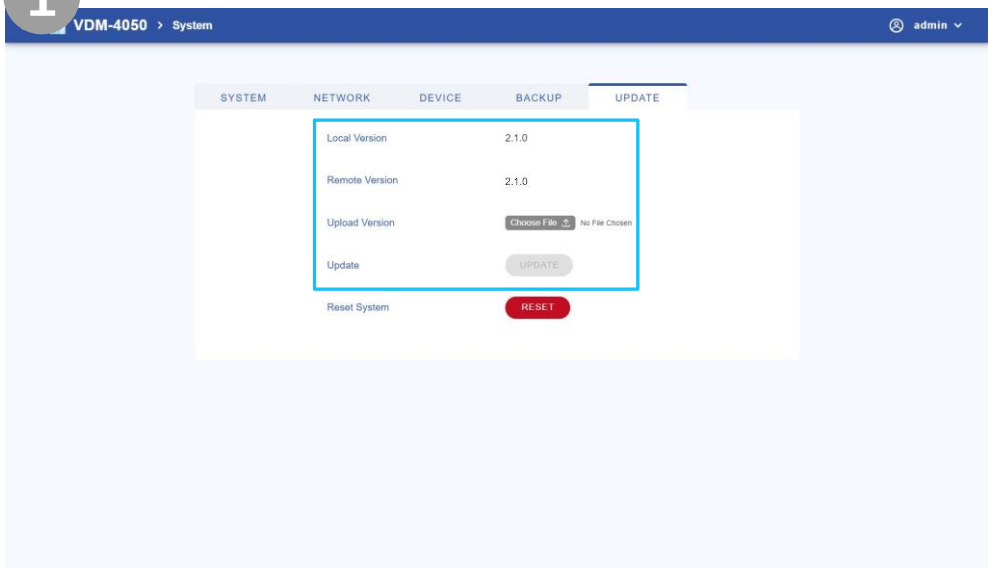



Click “DOWNLOAD” to download the present system configurations.

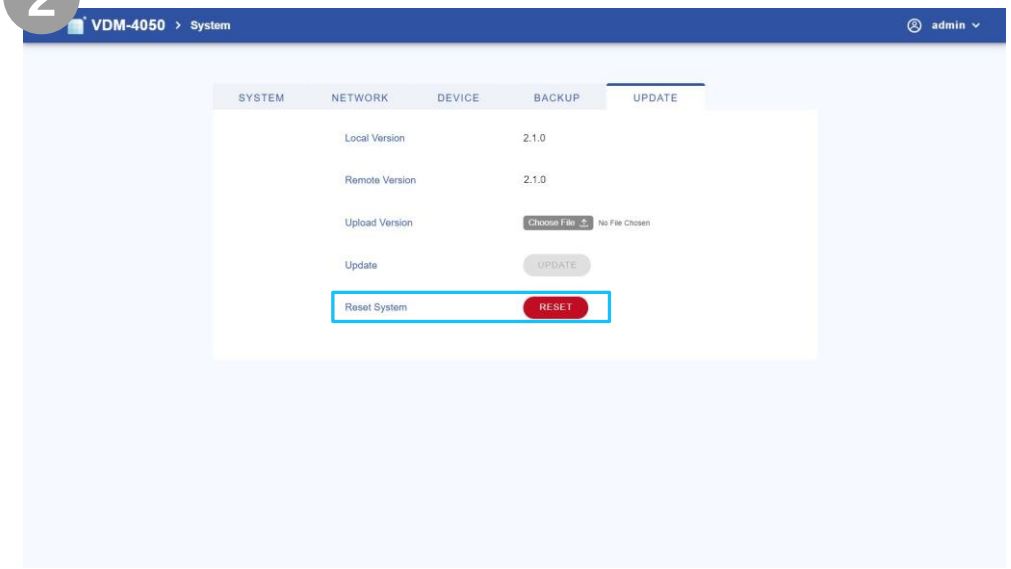
# Using the Web UI

## Advanced Setting _ System _Update

1




2




Click “UPDATE” to check the firmware version / update.

Local Version > the present version

Remote Version > the firmware version will be shown here as the new one released.

Upload Version > update the firmware manually

Update > update the firmware

(Note: power-off is not allowed as the firmware is updating)

Reset System: all the data of VDM-4050 will be cleared and the system would be restored to the default (not including the network and account settings).

# 4K Over IP Matrix Encoder / Decoder

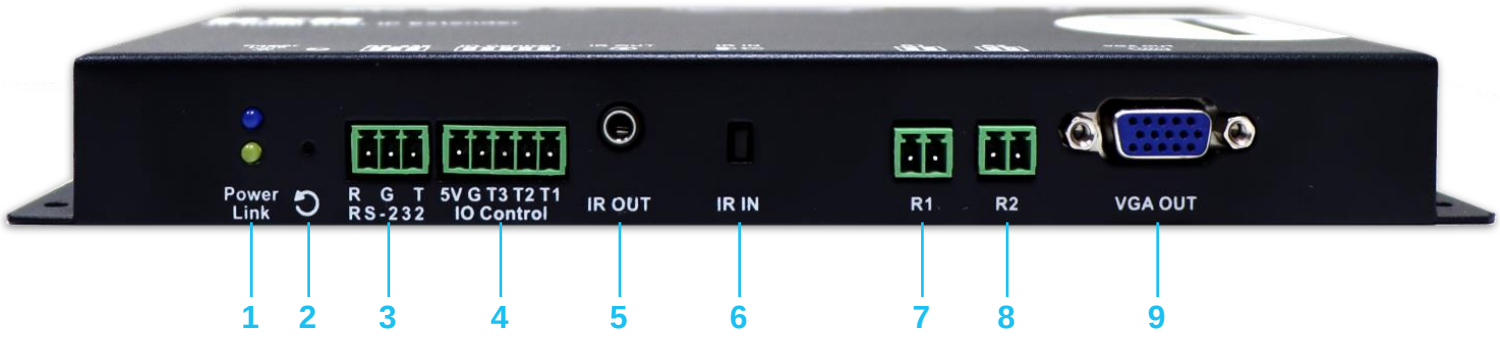
## Introduction




- VDM series is a high-performance AV over IP solution which supports HDMI, USB, IR, RS-232, and USB extension.
- VDM-4010 encoder is for connecting with a PC or any HDMI output devices. VDM-4020 decoder is for connecting with HDMI / DVI-D displays, microphones, loudspeakers, USB accessories (keyboard / mouse / flash drive), and RS-232 devices.
- Easily deploy video and audio network via the standard gigabit ethernet and TCP / IP protocols. All the Lan switchers and hubs can be connected.

# 4K Over IP Matrix Encoder / Decoder

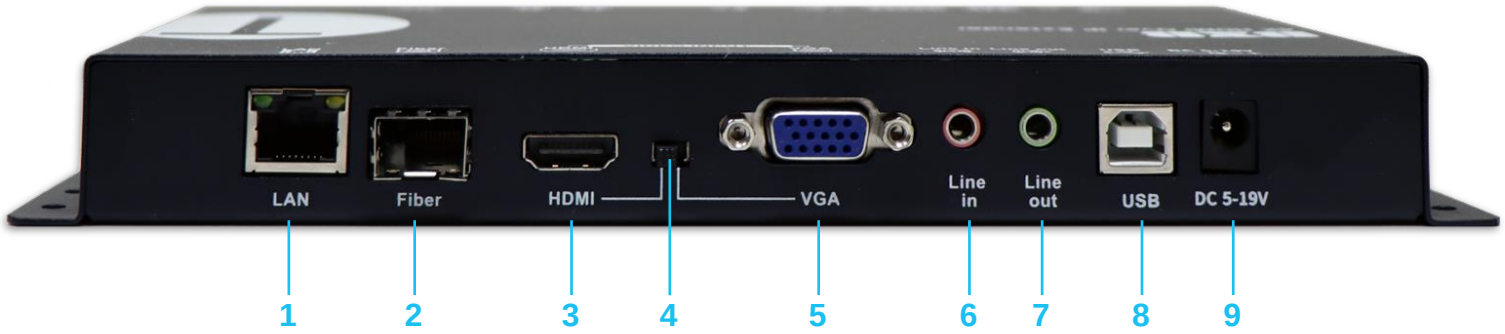
## VDM-4010 Front Panel




1. **Blue LED indicator (Power / Status) & green LED indicator (Link)**
   - Blue LED flashes / Green LED off → device booting
   - Blue LED lights / Green LED off → no data transfer in progress or network cable unplugged
   - Blue LED lights / green LED flashes → connecting
   - Blue LED lights / green LED lights → network communication established
2. **Reboot:** restart the device.
3. **RS-232:** bidirectional RS-232 transmission. The baud rate can be configured via web-based interface.
4. **IO Control:** projection trigger 5V and T3.
5. **IR OUT:** connect to an emitter (sold separately).
6. **IR IN:** transmit the received IR signal to the decoder and control its devices (receiver sold separately).
7. **R1**：
   - Get shorted once → disconnect with the VDM-4020.
   - Keep shorted until Power LED and Link LED flash → reset to the default values.
8. **R2**：
   - Get shorted once → select Video / Graphic Mode. Video Mode for improving the compression ratio and reduce the bandwidth; Graphic Mode for the un-compressed bandwidth.
   - Get shorted for 3 sec → select Anti-Dither Off or Anti-Dither 1/2 mode. ATI graphic card enables activating Anti-Dither 1/2 mode to reduce compression ratio.
   - Keep shorted until Power LED and Link LED flash → transmit the EDID of HDMI display for device detection.
9. **VGA OUT:** connect a VGA monitor to this connector.

# 4K Over IP Matrix Encoder / Decoder

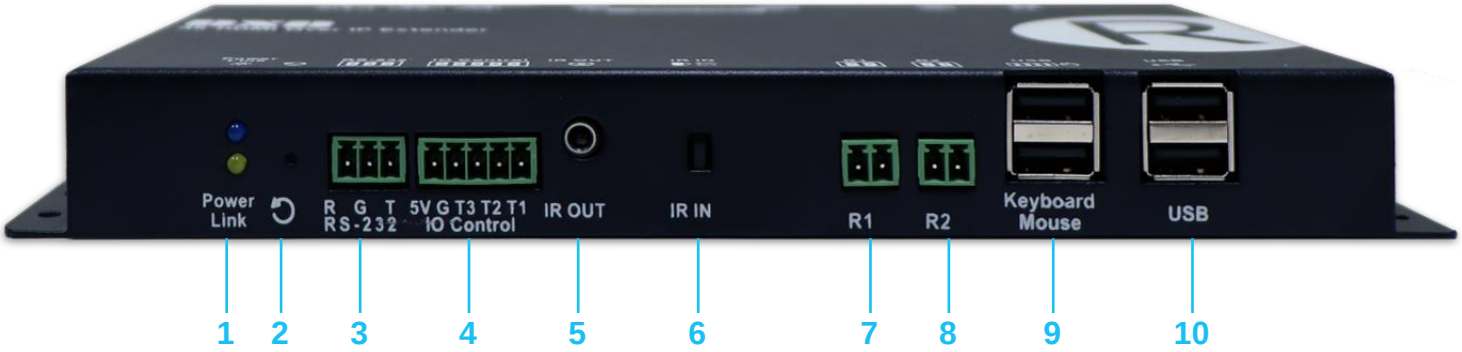
## VDM-4010 Rear Panel




1. **LAN:** transform the signal into TCP/IP packet to the decoder endpoints. You can use a Gigabit switch for extension.
2. **Fiber:** MINI-GBIC connector for SFP module. 1G or greater is suggested.
3. **HDMI IN:** connect a video source to this connector.
4. **DIP:** manually select HDMI / VGA input.
5. **VGA IN:** connect a VGA source.
6. **Line in:** delivers analog audio input signal to the decoder.
7. **Line out:** for microphone output.
8. **USB Hub ( USB-to-PC ):** connecting to USB hosts.
9. **DC 5V-19V JACK:** connect to the BXB 12V power adapter.

# 4K Over IP Matrix Encoder / Decoder

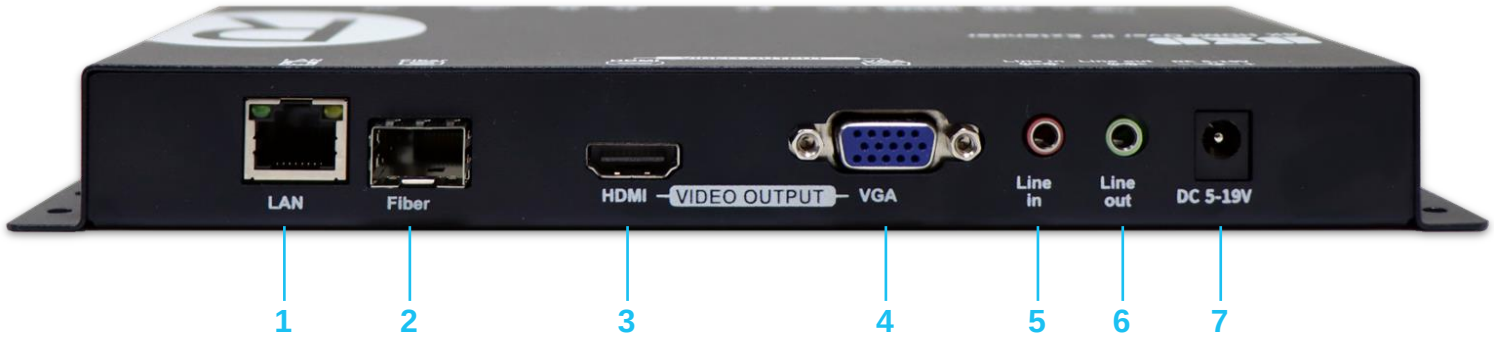
## VDM-4020 Front Panel




1. **Blue LED indicator (Power / Status) & green LED indicator (Link):**
   - Blue LED flashes / Green LED off → device booting
   - Blue LED lights / Green LED off → disconnection
   - Blue LED lights / green LED flashes → connecting
   - Blue LED lights / green LED lights → link established
2. **Reboot:** restart the device.
3. **RS-232:** bidirectional RS-232 transmission.
4. **IO Control:** IO control interface.
4. **IR OUT:** connect to an emitter (emitter sold separately).
6. **IR IN:** transmit the received IR signal to the headend and control its devices (receiver sold separately).
7. **R1** :
   - Get shorted once → after seeing the menu, get R2 shorted to see the available VDM-4010 in sequence. Get R1 shorted again to select a specific VDM-4010.
   - Keep shorted until Power LED and Link LED flash → reset to the default values.
8. **R2** :
   - Get shorted once → get / give up USB control privilege when multiple VDM-4020 connect to the same VDM-4010.
   - Get shorted for 3 sec → select Anti-Dither Off or Anti-Dither 1/2 mode. ATI graphic card enables activating Anti-Dither 1/2 mode to reduce the compression ratio.
   - Keep shorted until the Power LED and Link LED flash → copy the EDID of the HDMI display to the VDM-4010.
9. **USB x 2:** connect to a keyboard and mouse for controlling the PC. The keyboard can invoke the hotkey function.
10. **USB x 2 (console):** connect to USB peripherals such as keyboard and mouse to control the PC or connect to a flash driver for reading the contents of files.

# 4K Over IP Matrix Encoder / Decoder

## VDM-4020 Rear Panel




1. **LAN:** transform the signal into TCP / IP packet to the decoder endpoints. You can use a Gigabit switch for extension.
2. **Fiber:** MINI-GBIC connector for SFP module. 1G or greater is suggested.
3. **HDMI OUT:** connect to an HDMI monitor.
4. **VGA OUT:** connect to a VGA monitor.
5. **LINE in:** for microphone input.
6. **LINE out:** deliver the audio signal of microphone to the loudspeaker.
7. **DC 5V-19V JACK:** connect to the BXB 12V power adapter.




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