2x4 4K60 Video Wall Processor

4KVW24



User Manual

AV Access

Table of Contents

Introduction **2**
Overview 2
Features 2
Package Contents 3
Panel 3
Front Panel 3
Rear Panel 4
Installation and Application **4**
Brackets Installation 4
Application 5
OSD **9**
Control the Video Processor **10**
Front Panel Button Control 10
LAN Control 10
Obtain IP address 10
Telnet Control 10
Web UI Control 11
Specifications **26**
Warranty **28**

Introduction

Overview

This product is an expandable video wall processor. It is mainly suitable for application scenarios such as advertising display, digital signage, digital menus, etc., aiming to provide customers with better video enjoyment. It is equipped with 1 HDMI In and 1 DP In ports, with the highest input resolution up to 4K@60Hz 4:4:4, and supports HDCP 2.3, EDID selection and other functions. 4 HDMI Out ports allow users to create video wall layout modes including quick video wall mode and preset video wall mode, which are convenient for users to plug and play, and each HDMI Out port supports independent auto scaler function to enable best quality output. At the same time, the device is also equipped with 1 Loop Out port for video wall cascading. Multiple control options including front panel buttons, and LAN (telnet & web UI) control enable the unit can meet different requirements.

Features

- Supports quick video wall mode, including 2x2 (by pass), 1x2, 1x3, 1x4, 2x2, 1x2 (60°), 2x1, 3x1, 1x4 (90°), 4x1, 2x2 (the upper two windows flip) (Row x column), and Preset, and select source between DP input and HDMI input.
  Note: When select 1x2 (60°) mode, the displays need to be connected to HDMI out1 and HDMI out3.
- Supports preset video wall mode, in which users can set M (row: M≤6) x N (column: N ≤6) ≤4 x cascade number (up to 6) video wall layout mode, and set rotation of each display.
- Supports HDMI 2.0 with 4K@60Hz 4:4:4 8bit, especially 3840 x 600, 5400x1920 wide-screen resolution.
- HDCP 2.3 and backwards compatible.
- EDID management including EDID presets, EDID copy and customized EDID.
- Each of the four HDMI Out port supports an independent auto scaler for outputting the best quality video.
- One HDMI loop out for video-wall cascading connection.
- Supports auto switching between DP input and HDMI input.
- Supports OSD function to display IP address, HDMI output, and cascading information (in cascading connection mode only).
- An analog audio output port outputs de-embedded audio from selected input.
- Supports power on/off the displays automatically via CEC function.
- Supports multiple control options, including front panel buttons and LAN

(telnet & web UI).

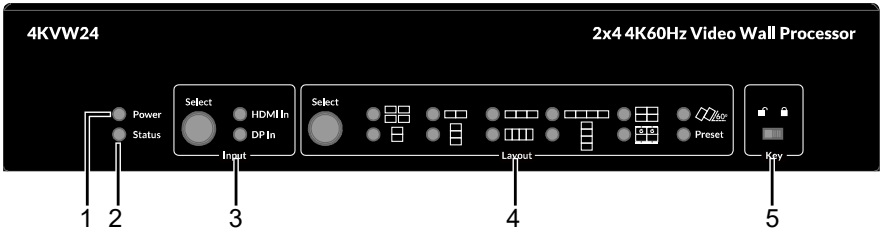
Package Contents

Before you start the installation of the product, please check the package contents:

- Video Wall Processor x 1
- Power Adapter (DC 20V/3A) x 1
- Mounting Brackets (with Screws) x 2
- User Manual x 1

Panel

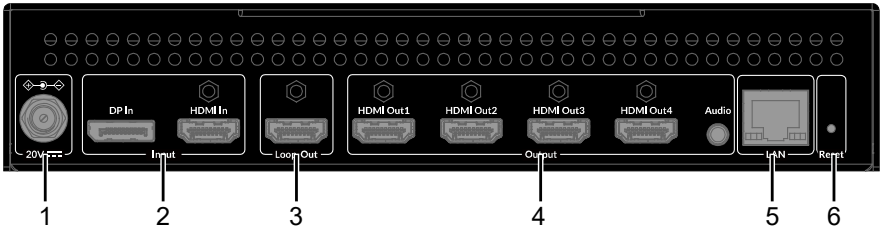
Front Panel



ID	Name	Description
1	Power LED	On: The device is powered on. Off: The device is powered off.
2	Status LED	Blinking: The device is working properly. Off: The device is not working properly.
3	Input	Select Button: Press to select input source between HDMI In and DP In cyclically. LEDs: On: The corresponding input is selected. Off: The corresponding input is not selected.
4	Layout	Select Button: Press to switch layout mode among 2x2 (by pass), 1x2, 1x3, 1x4, 2x2, 1x2 (60°), 2x1, 3x1, 1x4 (90°), 4x1, 2x2 (the upper two windows flip) (row x column), and Preset. Note: When select 1x2 (60°) mode, the displays need to be connected to HDMI out1 and HDMI out3 LEDs: On: The corresponding layout mode is selected. Off: The corresponding layout mode is not selected.
5	Key	Slide the switch to the corresponding position to lock/unlock the front panel buttons.

ID	Name	Description
		🔒: Lock the front panel buttons. 🔓: Unlock the front panel buttons.

Rear Panel



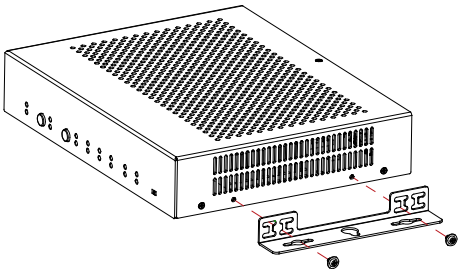
ID	Name	Description
1	20V	Connect to the power adapter provided.
2	Input	Connect to a DP source to DP In port and an HDMI source to HDMI In port.
3	Loop Out	Connect to an HDMI display or connect to Input port of the next device for cascading connection.
4	Output	HDMI Out 1~4: Connect to HDMI displays for video wall connection. Audio: 3.5mm audio port. Connect to an audio receiver for outputting de-embedded audio.
5	LAN	Connect to a network device (e.g., network switch, router, computer, etc.) for LAN control (Web UI & Telnet).
6	Reset	Use a needle to insert into the hole: Hold it for about 5s: reset the IP mode to default settings (DHCP). Hold it for about for about 15s: reset the device to factory defaults.

Installation and Application

Brackets Installation

Note: Before installation, please ensure the device is disconnected from the power source.

1. Attach the installation bracket to the enclosure using the screws that were provided in the package separately. As shown in the figure.



2. Attach the brackets to the surface you want to hold the unit against using the screws (not included).

Application

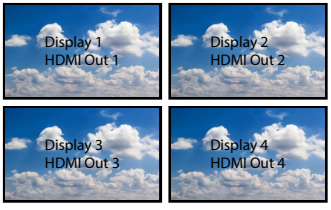
The video wall processor provides quick video wall mode, including 2x2 (by pass), 1x2, 1x3, 1x4, 2x2, 1x2 (60°), 2x1, 3x1, 1x4 (90°), 4x1, 2x2 (the upper two windows flip) (Row x column), and preset video wall mode, in which users can set M (row: M≤6) x N (column: N≤6) ≤ 4 x cascade number video wall layout mode, and set rotation of each display.

Video Wall diagrams in Quick video wall mode:

Note:

- In quick video wall mode, displays must be connected to the corresponding HDMI output ports as the following images, and can't be adjusted.
- Each screen of 2x2 (by pass) layout mode shows the complete image from selected input.

Note: When select 1x2 (60°) mode, the displays need to be connected to HDMI out1 and HDMI out3



2x2 (by pass)



1x2



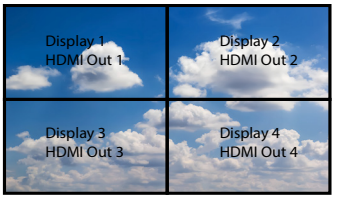
1x3



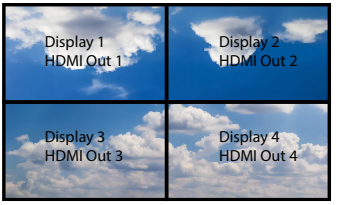
2x1



1x4



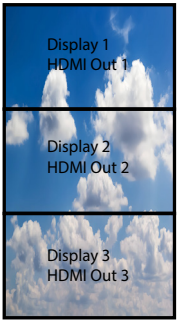
2x2



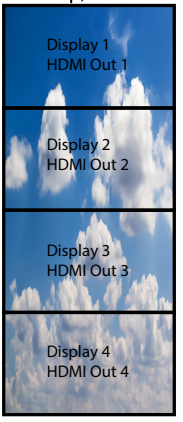
2x2 (the upper two windows flip)



1x2 (60°)



3x1



4x1



1x4 (90°)

The device supports video wall expansion through Loop Out port in preset video wall mode. Connect the Loop Out port of the first device to HDMI In port of the second device, and the second device select the input the Loop Out port connected as input source. The first device and the second device can form a larger video wall as requirement. It supports cascading up to 6 devices for creating video wall. In quick video wall mode, the device doesn't support cascading mode. In preset video wall mode, the device supports cascading connection.

In cascading connection, LAN control is available for the device the control device connected only. Users can set output distribution for the video wall

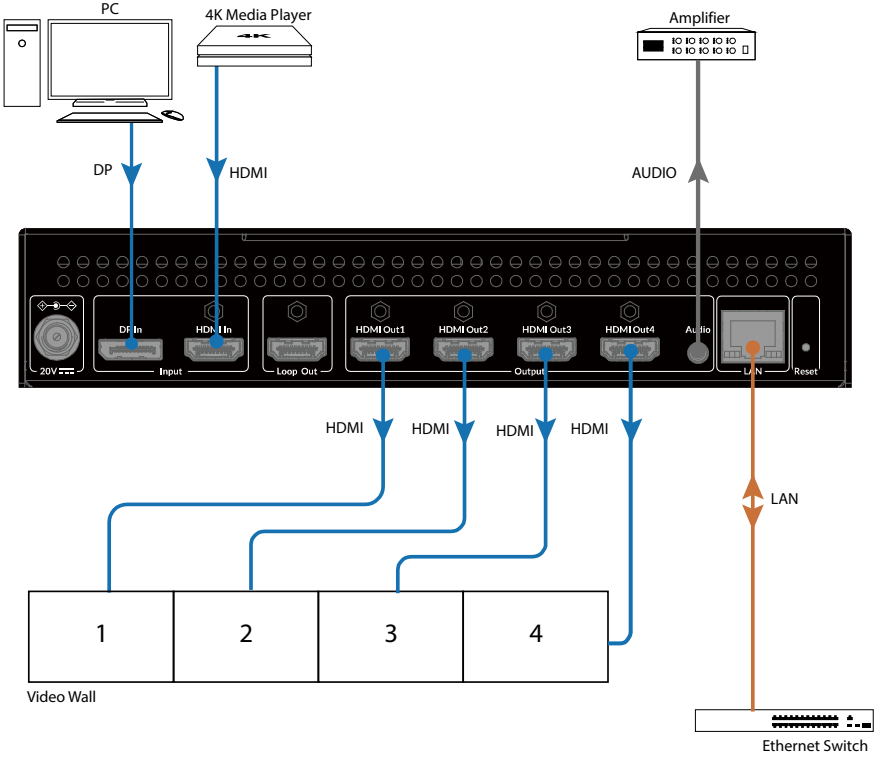
from all the outputs in the cascading connection via web UI.

Note:

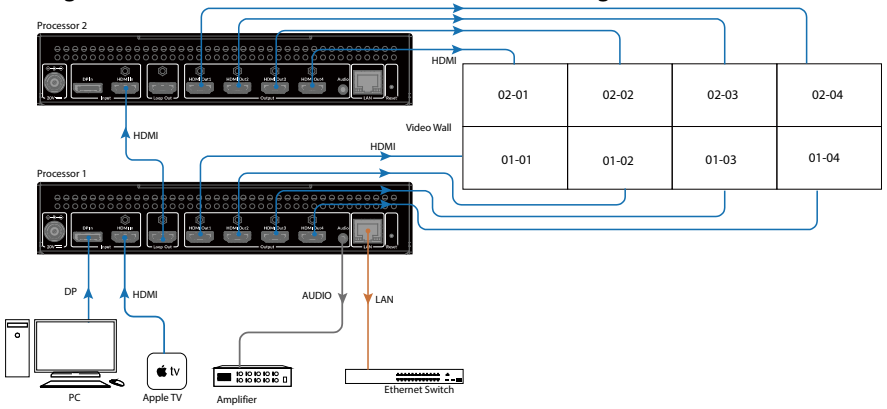
- Please refer to the "Web UI Control" section or the separate document "*API Command Set_4KVW24*" to get detail mode and configuration information.
- In preset video wall mode, when setting the video wall to Mx1 (row x column, M = 2, 3, 4) portrait mode, the input resolution must be less than 4K.

Wiring Example:

Wiring 1: 1 x 4 (row x column) video wall mode in non-cascading mode



Wiring 2: 2 x 4 (Row x Column) Video Wall in Cascading Mode



Note: The devices in a same network can also be cascaded together, and can be found and set via web UI.

Auto Switching

The device supports auto switching function. By default, the auto switch function is set to enable.

This function follows the principles:

1. When a new active source is inserted, it will be switched to the new inserted source automatically.
2. When current selected input source is removed, if other input source has active signal, it will be switched to the other source automatically, and if other input source has no active signal, the current source will remain selected.
3. When the device is powered on again, if the source last time selected has active signal, this source will remain selected.

Note:

- Auto switching function can be set to enable/disable through API commands or Web UI, please refer to the separate document "*API Command Set_4KVW24*" or "Web UI Control" section to get detail information.
- When the device is in cascading mode, the auto switching of input is only for the device with ID 1 (ID can be set via web UI).

OSD

The device supports OSD (On Screen Display) function. Users can set the function to enable or disable through web UI or API commands. Please refer to the "Web UI Control" section or the separate document "*API Command Set_4KVW24*" to get setting information.

- In cascading mode, the OSD information includes IP address, HDMI output, and cascading information.
- In non-cascading mode, the OSD information includes IP address and HDMI output.

Note: If the OSD function is not set to enabled or disabled through web UI or API command, when the screens of the current selected video wall have no output configured or no active signal input, the OSD information will be displayed on the screens of the video wall, and if there's active signal input, the OSD information will be hided.

<u>In Cascading mode, take 2x2 (row x column) as example:</u>

2x2



- IP Address: Shows the current IP address of the device the display connected.
- Output: Shows the HDMI output port the display connected.
- Cascading Info: take "Dev-03:01" as an example: 03: indicates the device's ID is 3; 01 indicates current connected HDMI output port. 03:01 indicates the current display is connected to the ID 3 device's HDMI Out 1 port. The device's cascading ID can be set via web UI or API commands.

<u>In non-cascading mode, take 1x4 layout mode as example:</u>

1x4



Control the Video Processor

The device supports multiple control options, including front panel buttons and LAN (telnet & web UI).

Front Panel Button Control

The device features one Input Select button and one Layout Select button on front panel for source selection and layout selection, and also equips with one Lock button to lock the two buttons.

- Select Input source: Press the Input Select button to select DP In or HDMI In as input source, and the corresponding LED will be lit up.
- Select layout mode: Press Layout Select button to select one layout mode among 2x2 (by pass), 1x2, 1x3, 1x4, 2x2, 1x2 (60°), 2x1, 3x1, 1x4 (90°), 4x1, 2x2 (the upper two windows flip) (row x column), and Preset cyclically. Preset video wall is the video wall layout after applying in Preset video wall mode on the web UI. By default, it is not configured, and when switching to this mode, all displays connected display black image.

Note: Please refer to "Web UI Control" section to get detail information about preset video wall mode.

- Lock/Unlock the front panel buttons: Slide the Lock switch to lock position, the Input Select button and Layout Select button are locked and can't be operated. Slide the Lock switch to unlock position to exit the lock mode.

Note: In lock status, users can also switch input and layout through web UI or API commands.

LAN Control

Obtain IP address

Users can obtain IP address via OSD information. See "OSD" section to get detail information.

Telnet Control

Connect a control PC to the LAN port of the device. Before you intend to control the device through telnet API, you shall establish connection between this device and your computer.

The form of the command for telnet connection is below:

telnet ip (port)

- *ip*: The device's IP address.
- *port*: The device's port number, this is non-required for some Telnet control

tools. Default setting is 23.

For example, if the device's IP address is 192.168.11.143, the command for telnet connection shall be the following:

telnet 192.168.11.143

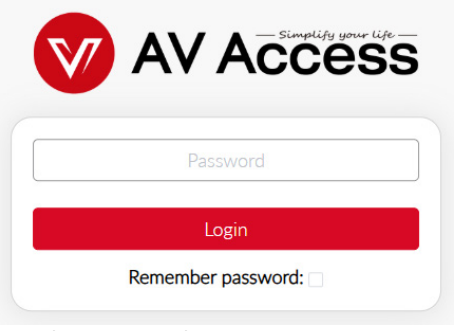
Web UI Control

The Web UI designed for the video wall processor allows basic controls and advanced settings and can be accessed through a browser with latest version, e.g., Chrome, Safari, Firefox, Opera, IE10+, etc.

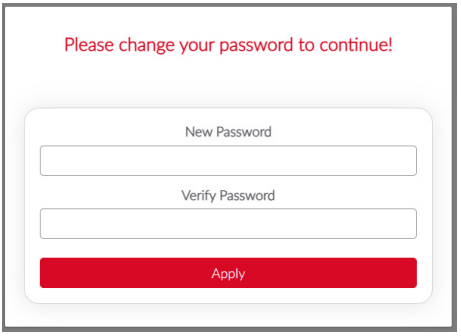
The default IP mode of the video wall processor is DHCP. Default login password for Web UI is "admin".

To get access to Web UI

1. Connect the LAN port of the device to the Ethernet switch with DHCP server, and connect the PC to the same Ethernet switch.
2. Get the IP address through the OSD information on the display connected.
3. Input the IP address obtained in the last step in the browser and press "Enter" key on keyboard.
4. The following window pops up. Input the password (default password: admin) and click Login:



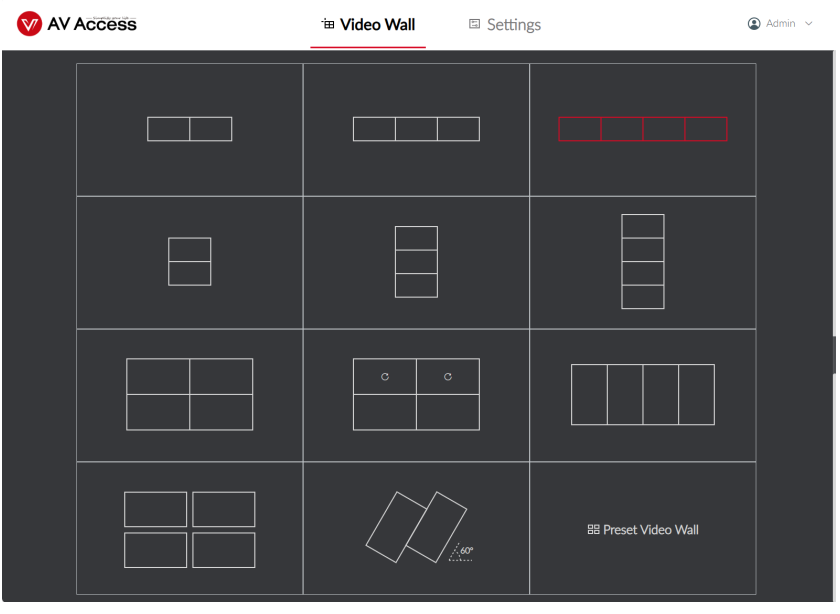
When login web UI first time, after clicking "Login", users will enter the following window to change login password. Input new password and click "Apply" to enter the main page.



Note: The new password must be 4 to 16 characters in length, alphanumeric only.

Note: If users forget the login password, the following methods can reset the password to default "admin":

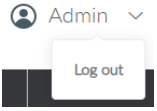
- Hold the Reset button on the rear panel for about 15s to reset the device to factory defaults including the login password.
- Send the command "RESET<CR><LF>" via telnet to reset the device to factory defaults including the login password.



The main page includes Video Wall and Settings.

Web UI Introduction

Admin : Click the button on the up right corner, and click "Log out" of the drop-down menu to log out and back to login page.



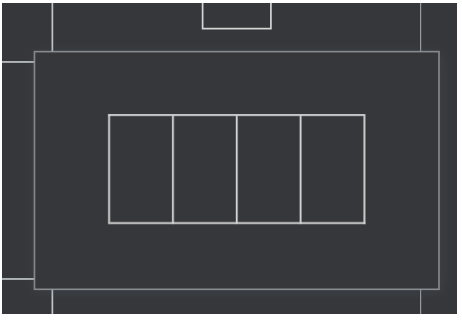
1. Video Wall

This section allows users to set video wall mode and set the configurations of the selected video wall.

Video wall modes include 2x2 (by pass), 1x2, 1x3, 1x4, 2x2, 1x2 (60°), 2x1, 3x1, 1x4 (90°), 4x1, 2x2 (the upper two windows flip) (row x column), and Preset Video Wall Mode. By default, the video wall mode is set to 1x4 (the frame of this mode's diagram and the name of this mode are red).

Select 2x2 (by pass), 1x2, 1x3, 1x4, 2x2, 1x2 (60°), 2x1, 3x1, 1x4 (90°), 4x1, 2x2 (the upper two windows flip) (row x column) as current video wall mode, take select "1x4 (90°)" as an example:

1) Move the mouse to the icon of 1x4 (90°) button, when the mouse becomes the shape of hand, and the button is as the following figure shows, click it to enter the 1x4 (90°) page.

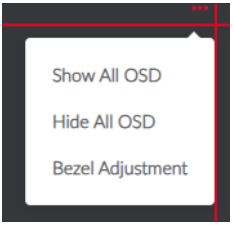




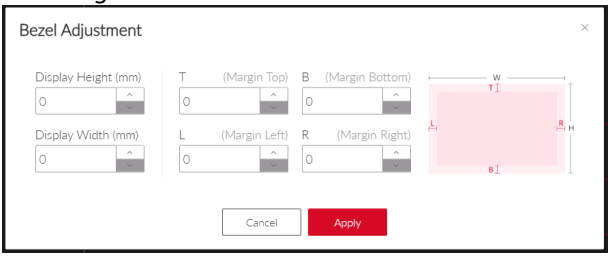
2) Click "Apply" to select the mode as current video wall mode. The video wall diagram border turns from white to red.



3) Move the mouse to the icon on the bottom right corner of each screen, and click the item on the drop-down menu to configure the OSD, and bezel adjustment.
Note: These configurations can only be set after clicking "Apply". Before clicking Apply, they are gray and can't be selected.



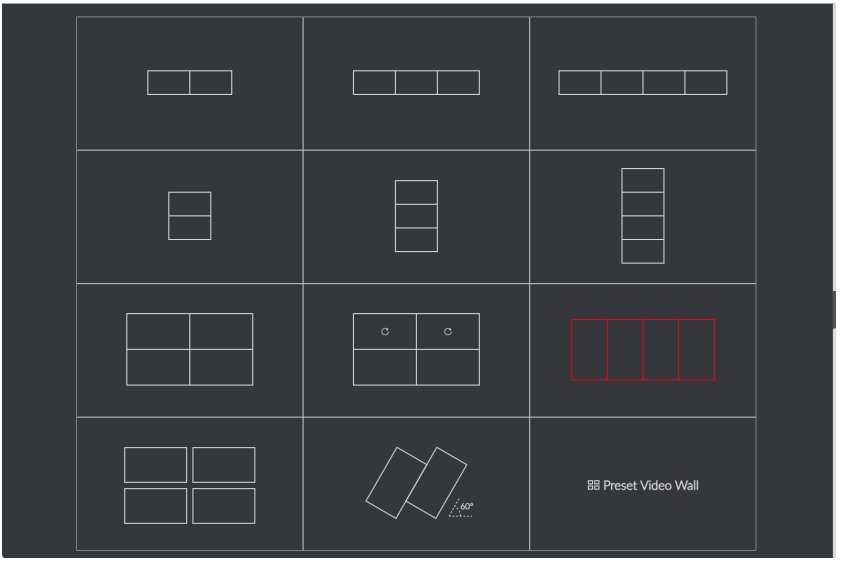
- Show All OSD: Click to show the OSD information on all screens of the video wall.
- Hide All OSD: Click to hide the OSD information on all screens of the video wall.
- Bezel Adjustment (2x2 (by pass) mode doesn't support this configuration item): Click to enter bezel adjustment window to set bezel compensation of the current screen, so that there is no position deviation of image from each screen in the video wall.



Default settings: 0; Range: 0-10000

- ➢ Display Height (mm) (H): This is the outside vertical length (height) of each video wall display.
- ➢ Display Width (mm) (W): This is the outside horizontal length (width) of each video wall display.
- ➢ T (Margin Top): This is the top border width of each video wall display.
- ➢ L (Margin Left): This is the left border width of each video wall display.
- ➢ B (Margin Bottom): This is the bottom border width of each video wall display.
- ➢ R (Margin Right): This is the right border width of each video wall display.
- ➢ Apply / Cancel: Click to perform / cancel the settings.

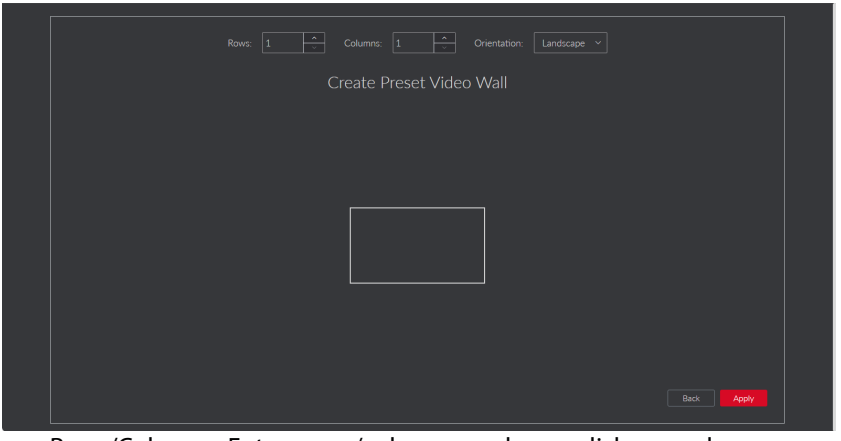
4) Click "Back" to return to the main page, the diagram border of the current selected video wall mode turns red.



When select Preset Video Wall mode:

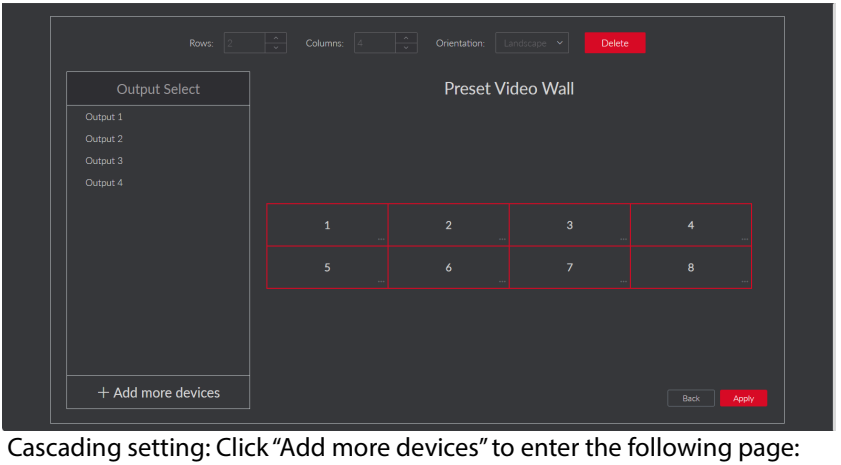
1) Move the mouse to the icon of Preset Video Wall button, when the mouse becomes the shape of hand, and the button is as the following figure shows, click it to enter the Preset Video Wall page. Click to enter the Preset Video Wall mode setting page, and take setting a 2x4 landscape video wall as an example:



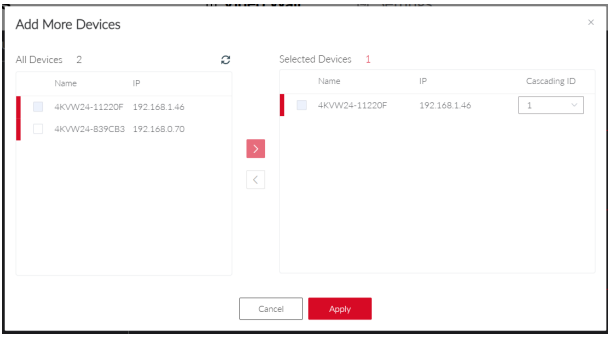


- Rows/Columns: Enter a row/column number or click up or down arrow to select a row and column number of the created video wall. The number must be in the range of 1~6, and row x column can't be exceed 24.
- Orientation (Landscape / Portrait): Click to set the video orientation to landscape or portrait from the drop-down menu. The diagram after the two items shows the selected video wall orientation.

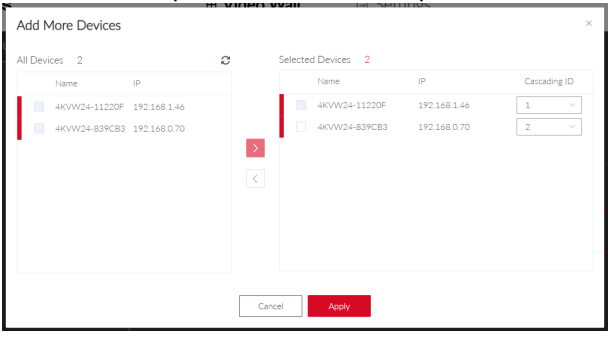
2) Click "Apply" to perform the settings. The 2x4 video wall has been created. The frame of the video wall is red when the setting is done.
Note: Only one video wall can be created simultaneously. Click "Delete" button to delete current created video wall.

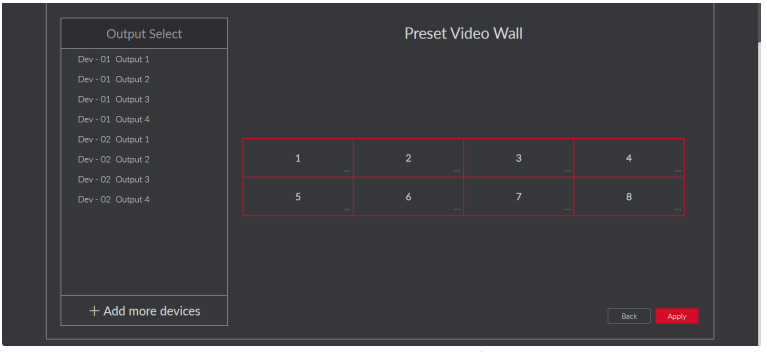


3) Cascading setting: Click "Add more devices" to enter the following page:

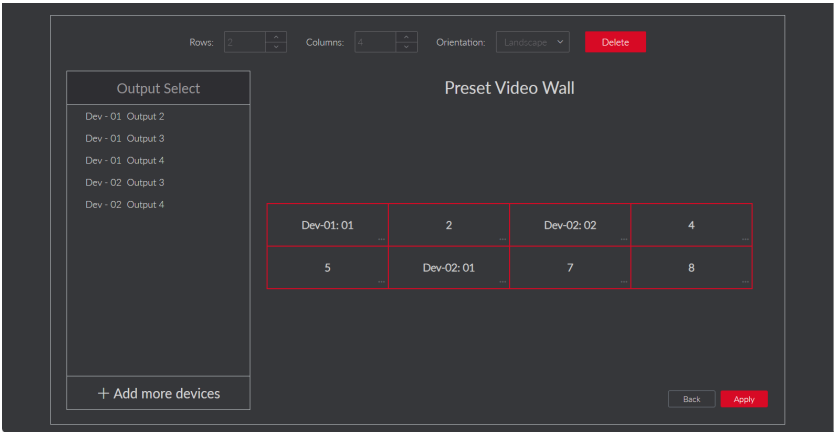


- All Devices: Shows the current devices' names and IP addresses that can be cascaded. Check the box before the name of the device, and click ">" button to select it to cascade. It will be displayed in "Selected Devices" field. When one device is cascaded already, the line of it will become grey and can't be selected. The current device line also shows grey.
- : Click the button to refresh the devices showed in "All Devices" field.
- Selected Devices: Shows the name, IP address, and selects cascading ID of current device and cascaded device.
- Cascading ID: Click to select cascading ID from the drop-down menu.
- Check the box of the cascaded device name, and click "<" button to remove the cascaded device.
- Apply / Cancel: Click to perform / cancel the operation.

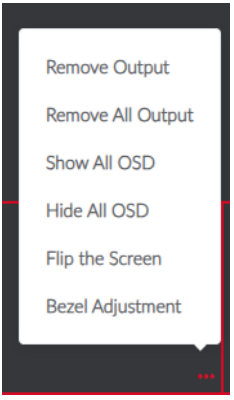




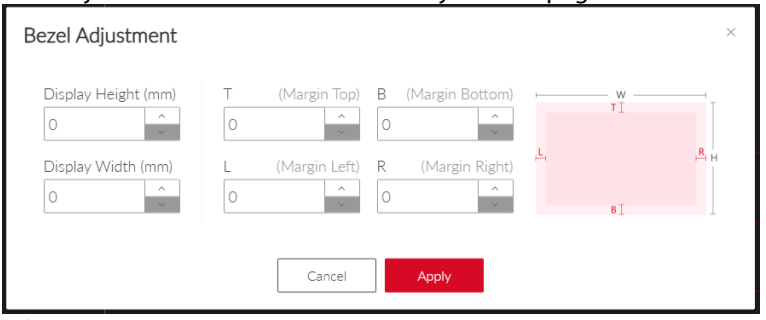
4) Drag the output name on “Output Select” field to the corresponding screen in “Preset Video Wall” field according to the actual connection to make the screen show the corresponding image of the video wall.



5) Move the mouse to the ■■■ icon on the bottom right corner of each screen, and click the item on the drop-down menu to configure the OSD, and bezel adjustment.



- Remove Output: Remove the current selected output from the corresponding display of the video wall.
- Remove All Output: Remove all selected outputs from the video wall.
- Show All OSD: Shows OSD information on all displays of the current video wall.
- Hide All OSD: Hide OSD information on all displays of the current video wall.
- Flip the Screen: Click to flip the current image of the corresponding display.
- Bezel Adjustment: Click to enter bezel adjustment page:

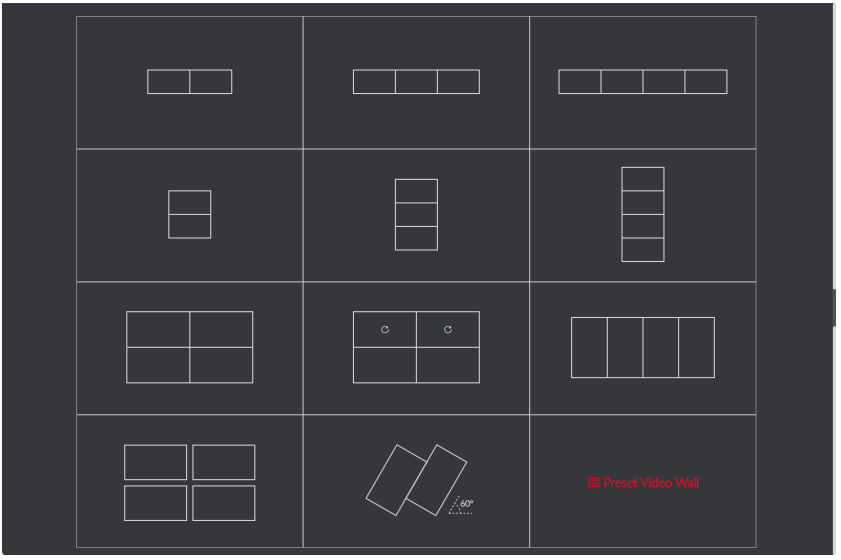


Default settings: 0; Range: 0-10000

- Display Height (mm) (H): This is the outside vertical length (height) of each video wall display.
- Display Width (mm) (W): This is the outside horizontal length (width) of each video wall display.
- T (Margin Top): This is the top border length of each video wall display.
- L (Margin Left): This is the left border length of each video wall display.

- B (Margin Bottom): This is the bottom border length of each video wall display.
- R (Margin Right): This is the right border length of each video wall display.
- Apply / Cancel: Click to perform / cancel the settings.

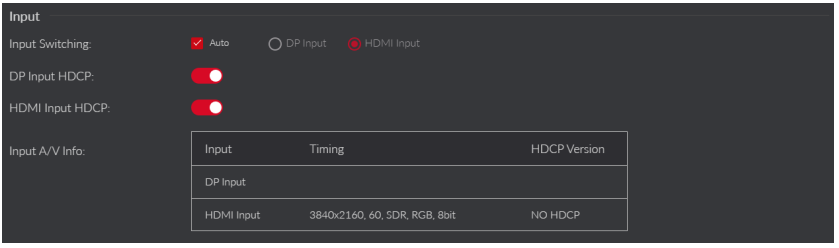
6) Click "Back" to return main page.



Note: In preset video wall mode, when setting the video wall to Mx1 (row x column, M = 2, 3, 4) portrait mode, the input resolution must be less than 4K.

2. Settings

1) Input



This section allows users to set input switching mode, set HDCP of each input, and get A/V information of each input.

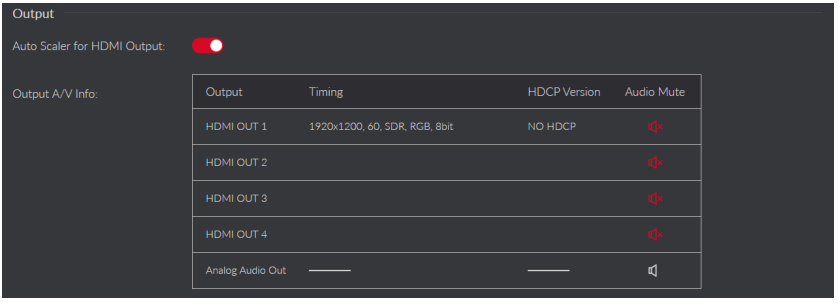
- Input Switching: Check the box before "Auto" to set auto switching

function to on/off. Default setting: Auto, input switching follows auto switching function. When auto switching is unchecked, users can select DP Input or HDMI Input as input source.

- DP Input/HDMI Input HDCP On/Off: Click to set HDCP function to on/off of the corresponding input. Default setting: On.
- Input A/V Info: Shows the current A/V information and HDCP version of DP Input and HDMI Input.

Note: When the device is in cascading mode, both auto and manual switching are switching inputs of the device whose ID is set to 1. Users can set device ID on the page of "Preset Video Wall" mode settings.

2) Output

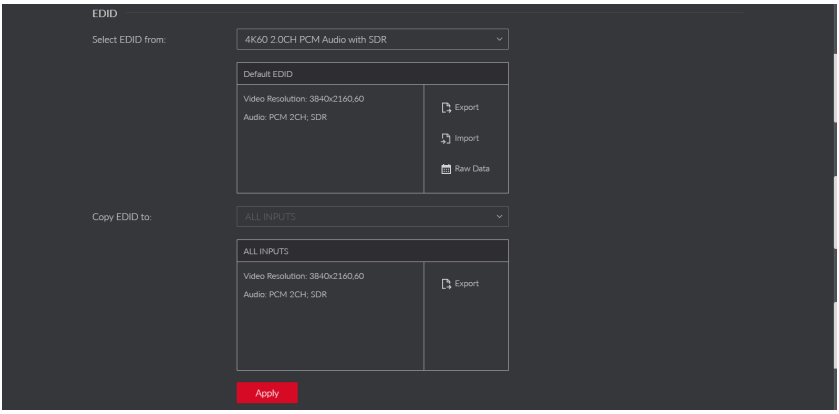


This section manages resolution configurations for output video wall, shows A/V information of outputs and set audio mute of each HDMI output and analog audio output.

- Auto Scaler for HDMI Output: When it is set to on, the device will automatically adapt to display EDID and resolution. E.g., if the display supports up to 4K@30Hz, the device will output signal with 4K@30Hz. When it is set to off, users can select a desired output resolution from the Resolution dropdown menu for the output ports. Default setting: On.
- Output A/V Info: Check the A/V information, and HDCP information of each HDMI outputs.
  : Mute;
  : Unmute.
  Click the button to change mute and unmute status of each HDMI output and analog audio output.

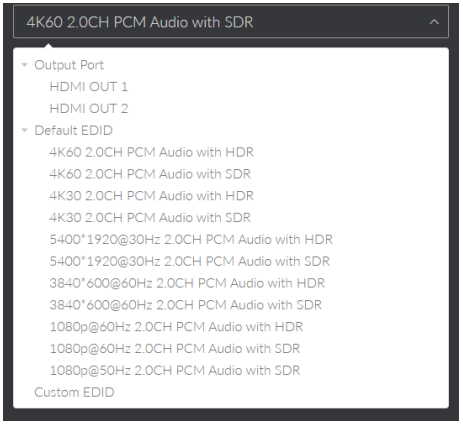
Default setting: HDMI OUT 1~4: Mute; Analog Audio Out: Unmute.

3) EDID



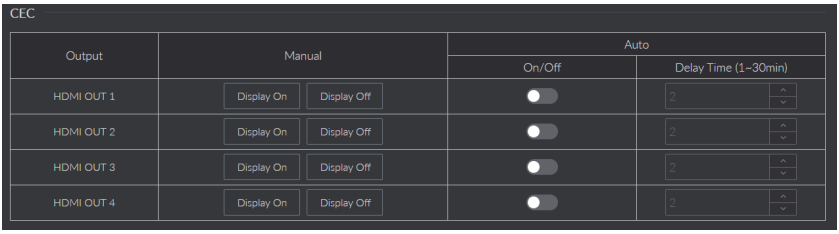
This section allows users to manage EDID configurations.

- Select EDID from: Select an EDID from the drop-down menu for all inputs. Selectable EDID includes:



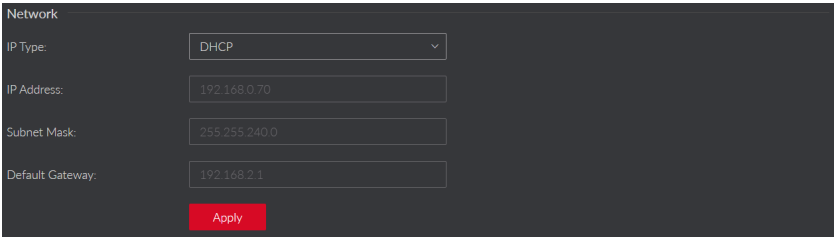
- Export: Click to export the current selected EDID as a bin file to local PC.
- Import: When select custom EDID, click the button to import an EDID bin file.
- Raw Data: Click to show the raw data of current selected EDID.
- Copy EDID to All INPUTS: Click "Apply" to write the selected EDID in "Select EDID from" bar to both DP input and HDMI input.
- Export: Click to export the current written EDID as a bin file to local PC.

4) CEC



- Display On: Click to power on the display connected to the output selected.
- Display Off: Click to power off the display connected to the output selected.
- Auto On/Off: Select to enable or disable CEC Auto Control.
  Default setting: Off.
- Auto Delay Time (1~30min): When Set "Auto On/Off" to On, click the up/down arrow to set the time for the display to power off automatically when no signal is present. For example, if the time is set to 2 minutes, the output display will power off automatically when there's no signal at the display for 2 minutes.

5) Network

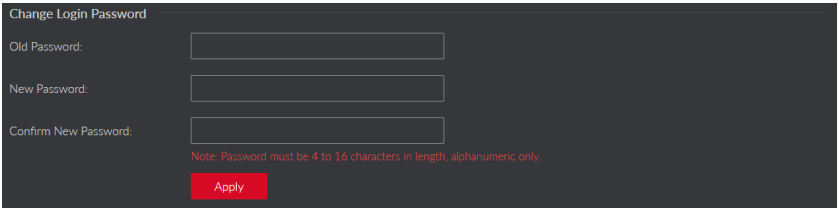


This section is to set between the static and dynamic IP address.
IP Type:

- DHCP: When enabled, the IP address of the device is assigned automatically by the DHCP server connected.
- Static: When enabled, you need to set up the IP address manually.
  Default setting: DHCP.
- Save: Click to save and perform the network setting, and the setting change will take effect immediately.

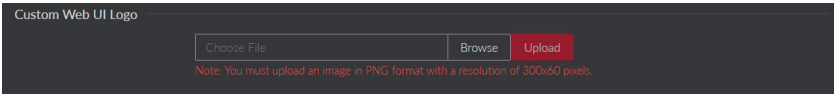
Note: When "Static" is selected, please ensure your PC is in the same network segment as the device.

6) Change Login Password



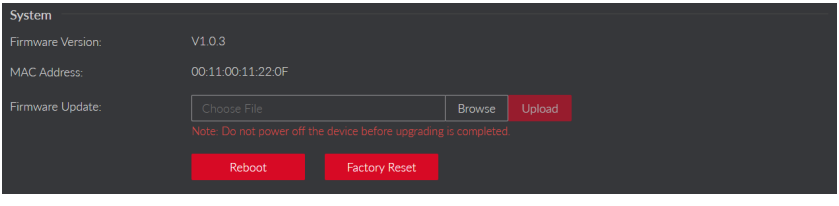
This section is to change login password.
Default password: admin.
Note: Password must be 4 to 16 characters in length, alphanumeric only.

7) Custom Web UI Logo



This section allows you to create your own logo for the Web UI.
To create customized Web UI logo: click "Browse" for the new logo file, and click "Upload".
Note: The new logo used should be in PNG format with a resolution of 300x60 pixels.

8) System



- Firmware Version: Shows current firmware version.
- Mac Address: Shows mac address.
- Firmware Update:
  1) Click "Browse" for the update bin file.
  2) Click "Upload" to proceed. The update will be completed when the progress bar reaches 100%.

  Note:
  - The device will reboot automatically when firmware update is completed successfully. Please wait for about 2-3 minutes, then refresh and log in again.

➢ DO NOT power off the device during the updating process.

- Reboot: Click to reboot the device.
- Factory Reset: Click to reset the device to factory defaults.

9) Log



This section displays system setting change records. Click "Export Log" to download the log to your local computer.

Specifications

Technical	
Input/Output Video Signal	4K@60Hz 4:4:4 8bit, HDCP 2.3
Input/Output Resolutions	Input Resolution: Wide-screen resolution: 5400x1920P[5]; 800 x 600[8], 1024 x 768[8], 1280x720P[6,7,8], 1280 x 768[8], 1280 x 800[8], 1280 x 960[8], 1280 x 1024[8], 1360 x 768[8], 1366 x 768[8], 1440 x 900[8], 1600 x 900[8], 1600 x 1200[8], 1680 x 1050[8], 1920x1080P[6,7,8], 1920 x 1200[8], 3840x2160P[2,3,5,8], 3840 x 600[8], 4096x2160P[2,3,5,8] Output Resolution: Auto Scaler: According to the EDID of the display to output the recommended resolution. Manual: 1280x720P[6], 1280x720P[8], 1920x1080[6], 1920x1080[8], 3840x2160[5], 3840x2160[8], 4096x2160[5], 4096x2160[8] 2 = at 24 Hz, 3 = at 25 Hz, 5 = at 30 Hz, 6 = at 50 Hz, 7 = at 59.94 Hz, 8 = 60 Hz
Audio Format	DP In/HDMI In/HDMI Out: PCM 2.0 Audio Out: Stereo
Maximum Data Rate	18Gbps
Control Method	Front panel buttons, LAN (Telnet API & Web UI)

General	
Operating Temperature	0°C to 45°C (32°F to 113°F)
Storage Temperature	-20°C to 70°C (-4°F to 158°F)
Humidity	20% to 90%, non-condensing
ESD Protection	Human-body Model: ±8kV (Air-gap discharge)/

General	
	±4kV (Contact discharge)
Power Supply	DC 20V, 3A
Power Consumption (Max)	26.2W
Device Dimensions (W x H x D)	220mm x 42mm x 175mm/8.66" x 1.65" x 6.89"
Product Weight	0.99kg/2.18lbs

Transmission Distance

Cable Type	Range	Supported Video
HDMI	Input: 15m/50ft Output: 10m/33ft	1080P@60Hz 24bpp
	Input/Output: 10m/33ft	4K@30Hz 4:4:4 24bpp 4K@60Hz 4:2:0 24bpp
	Input/Output: 5m/16ft	4K@60Hz 4:4:4 24bpp

Warranty

Products are backed by a limited 1-year parts and labor warranty. For the following cases AV Access shall charge for the service(s) claimed for the product if the product is still remediable and the warranty card becomes unenforceable or inapplicable.

1. The original serial number (specified by AV Access) labeled on the product has been removed, erased, replaced, defaced or is illegible.
2. The warranty has expired.
3. The defects are caused by the fact that the product is repaired, dismantled or altered by anyone that is not from an AV Access authorized service partner. The defects are caused by the fact that the product is used or handled improperly, roughly or not as instructed in the applicable User Guide.
4. The defects are caused by any force majeure including but not limited to accidents, fire, earthquake, lightning, tsunami and war.
5. The service, configuration and gifts promised by salesman only but not covered by normal contract.
6. AV Access preserves the right for interpretation of these cases above and to make changes to them at any time without notice.

Thank you for choosing products from AV Access.

If you have any question, please contact us via the following emails:
General Enquiry: info@avaccess.com
Customer/Technical Support: support@avaccess.com



AV Access