ABERMAN

PROFESSIONAL AUDIO-VIDEO SOLUTIONS

MVS2 Series

HDMI 2.0 4K60 (4:4:4) Modular Matrix with Seamless Switching & VideoWall

Table of Contents

1. Introduction

Aberman MVS2 Series are Ultra High Definition Seamless Switching Video Modular Matrices with up to 18Gbps per channel bandwidth. The product line of MVS2 Series contains several sizes of chassises which allow building routing matrices from 4x4 to 36x36. Matrix allows to route signals with resolution up to 4K60 with 4:4:4 color sub sampling. The wide range of modules with modern ultra high bandwidth video interfaces could be used as inputs or outputs cards. Each video module contains four channels of similar inputs or outputs interfaces. The input modules could be HDMI, DVI, VGA, SDI for local sources connection or HDBaseT and Fiber for signals sent from the distances up to 10km. The range of output interfaces is also gives a good choose for user: HDMI, DVI, VGA, SDI, HDbaseT and Fiber. The seamless switching between sources ensures high quality of picture with no sync loses, glitches or visual artifacts. Each output of the matrix allows setting output resolution individually and independently. VideoWall mode allows building a video wall using any of connected displays. The product supports Audio follow Video routing. Audio embedding and de-embedding functions are also supported. Special Audio module with basic DSP functions and balances analog inputs and outputs provides easy and simple way to integrate the MVS2 matrix with external audio system. The product supports EDID and HDCP management.
Simple and powerful control abilities allow using unit in any modern system, thanks to IP and RS232 interfaces with open API. The full functional web-GUI opens a simple way of routing and scaling control. Optional Control Module with Monitoring feature could be used for remote checking the system using the standard streaming protocols. Redundant power supply gives additional stability and protection for the heart of your video system. Unit housed in robust metal case good enough for protecting and cooling the system components. The two types of front panel provided to customize system and satisfy the project needs. The standard front panel with LCD and buttons for local control and optional 7″ touch panel for more exacting cases.
Chassises could be mounted in the standard 19″ rack.

2. Features

- Modular Matrix System with Seamless Switching
- DVI 1.0, HDMI 1.4/2.0, HDBaseT Gen1 compliant
- Embedded conversion engine HDCP 1.4/2.2/2.3 and custom modes*
- Support 18 Gbps video bandwidth
- Color space: RGB, YCbCr 4:4:4, YCbCr 4:2:2, 4:2:0
- Input Modules automatically detects input signal type and resolution
- Independent scaler settings for each module output
- Output picture Rotation ability*
- Output OSD Display with labeling and subtitles functions*
- Test Pattern Signal Generator
- Smart VideoWall Signal Processing
- Embedding and De-embedding audio features and Optional DSP Audio Card
- Support EDID management
- Support front panel, IR, RS232, TCP/IP, web-GUI control

* - depends on the module card version and type

3. Package Contents

1x Modular Matrix Switcher Chassis
1x IR Remote
1x USB to RS232 converter cable (USB A to DB9 male)
1x RS232 converter cable (Phoenix 3-pin to DB9 male)
4x Rubber Foots
4x Screws M3*4
1x User Manual
2x AC Power Cord

4. Best Practice

Aberman engineers design products at the highest quality standards. To get the best results from our products, please read this manual carefully. We recommend using the best quality connectors, cables, and adapters. Consider the points below when you choose accessories and position equipment.
For best results with HDMI/DVI, use good quality cables up to 5 meters long for 4K and up to 15 meters for 1080p, or shorter if you are using any connection adapters. If you need to place your equipment more than 15 meters apart, we recommend using a signal extender. See Aberman HBT and EXT product lines of signal extenders to find correct one. Use only graded Speed HDMI cables. In industrial environments, use shielded cables. Shielded Ethernet cables are often marked as STP, FTP, F/UTP or S/FTP. Use shielded CAT 6 or higher category cable with HDBaseT extenders for best distance and maximum resolutions support.

5. Safety Instructions

WARNING: To reduce the risk of fire or electric shock, do not expose this device to rain or moisture. Do not use this device near water. Clean only with a dry cloth.
Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the device. This unit must be connected to an earthed mains socket outlet with the supplied cable. The AC wall outlet should be installed near to the unit and be easily accessible.
If using extenders which run a long distance, the protective earth circuit of the socket should be verified by a skilled person to ensure equipotential earth bonding. Do not use unit on objects or installations where power lines have grounding and/or different phase issues.
Unplug units during lightning storms or when unused for long periods of time.
Do not install unit near any heat sources such as radiators, heat registers, stoves, or devices (including amplifiers) that produce heat. Do not block any ventilation openings. This unit uses active cooling with fans. Do not install unit in dusty and/or dirty places. Use professional equipment racks with air condition and filters.

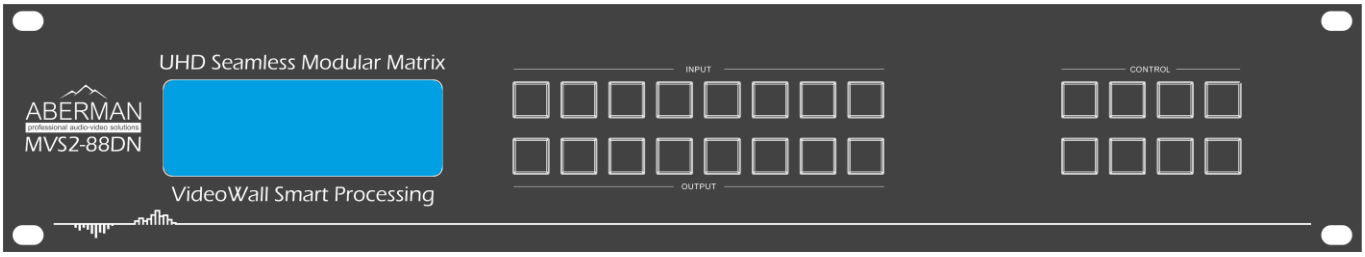
6. Warranty Information

Aberman warrants all units to be free from defects in workmanship and materials, under normal use and service, for a period of one (1) year from the date of purchasing from authorized reseller. The extended period for five (5) years could be provided for selected items.
If a product does not work as it warranted during standard period, Aberman will repair or replace the defective product or its part. Replacement products may be new or reconditioned.
Warranty ends if the product has been damaged due to abuse, misuse, neglect, accident, unusual physical or electrical stress, unauthorized modifications, tampering, alterations, or servicing other than by Aberman or its authorized centers, causes other than from ordinary use or failure to properly use the Product in the application for which said Product is intended.

7. Unit's interfaces

7.1 Front Panel

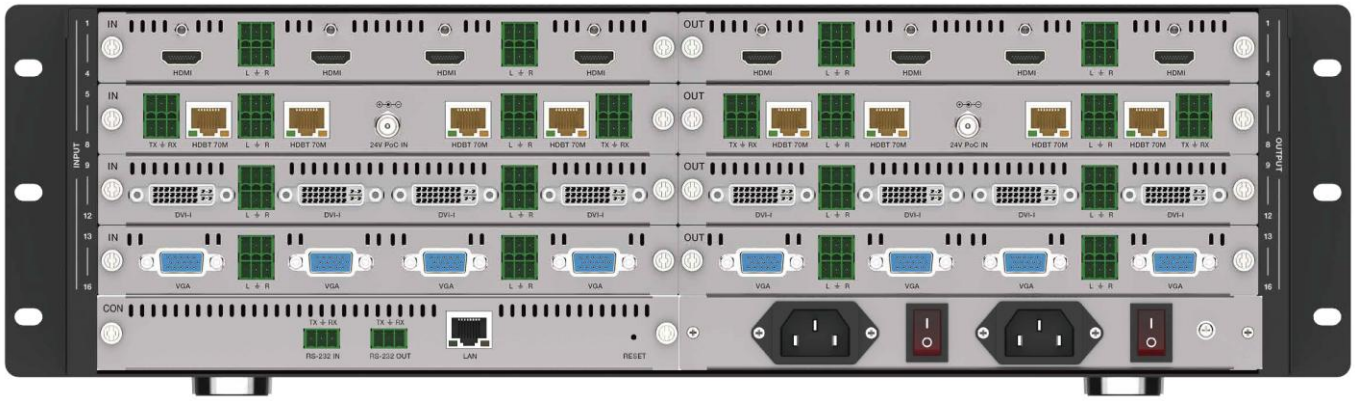
The standard version of the front panel gives basic access using the LCD display, front panel buttons and status indicators. By default the LCD display shows current routing state, other views depends on selected mode – managing presets and etc. This type of the front panel is available for all matrices sizes and versions from 8x8 to 36x36.This manual describes the basic functions with standard panel of 8x8 unit as example.



Control Element	Function
POWER	LED, shows power status (active when unit turned off)
IR	internal IR receiver
Display	LCD, displays unit status, routing information and etc.
Button	**Function**
OUTPUT/INPUT 1,2, 3, 4, 5, 6, 7, 8, 9, 0	use these keys to select output and input port numbers
SAVE	Used to save the current display scene (up to 64 scenes can be saved). For example, press SAVE button firstly, the LED screen will show "Save Config to: Preset n"(n=1,2,...64). Then press UP/DOWN button to select "Preset 1", finally press ENTER button to save the current display scene as Scene 1.
MENU	Short press MENU to enter various menu function setting options in turn. When entering a certain function menu, select the setting parameters or input/output channel values through the UP/ DOWN button circularly, and finally press ENTER to confirm.
UP	Press this button to select upwards on the display screen.
POWER	Press and hold this button for 3s to enter the standby mode, the power LED will light in red; In the standby state, press the button to resume starting, the power LED will light in green.
RECALL	Used to recall the saved scene as the current display scene. e.g. Press "RECALL→UP/DOWN (to select number 1 ~ n)→ENTER" to recall the saved Scene n as the current display scene.
ENTER	Used to confirm the operation and save the setting.
DOWN	Press this button to select downwards on the display screen.
LOCK	Short press this button to to lock the current setting status, other panel buttons will be locked. Press this button again to unlock, all panel buttons can be used normally.

7.2 Rear Panel

The rear panel of the unit is equipped with slots for input and output modules, control interfaces and power inlets. The actual number of slots depends on the chassis size and could vary from 2x2 to 9x9. By the default no input or output modules are installed.



Port Name	Connector type	Description
Input Slots	MultiPlex	Insert Input Modules
Output Slots	MultiPlex	Insert Output Modules
LAN	RJ45	Ethernet (10/100Mbit) control port, connect directly to PC or laptop, or through a network switch to control the unit via Software/Web-GUI/TCP
RS232 IN	Phoenix 3-pin	RS-232 serial signal input port, connected to the PC or the third party control processor to transmit RS-232 command and control the Matrix.
RS232 OUT	Phoenix 3-pin	RS-232 serial signal output port. (1) Connect to external device and control it through RS-232 command. (2) Connect to other Matrix for cascading.
Power Sockets	2x IEC C14	Connect to the power line, the connector is equipped with fuse and power switch

Powering the System

The chassis Power Supply System support the redundancy. Two power inlets on the rear panel are used to supply AC voltages to two (or four for higher matrix sizes) independent internal high efficient switching power supplies. Connect AC power cords to the unit's power socket inlets. Press both AC switches to the ON position. Each power switch has internal indication to check the power supply state. The each inlet is equipped with a exchangeable fuse.

NOTE: MVS2 Series are multifunctional matrices with Seamless Switching and Smart VideoWall Processing features. Some of these features could be controlled via Control Software, web-GUI or API only. Please refer to corresponding part of this manual to find the best way of using all functions of this unit.

7.3 Remote control interfaces

7.3.1 Network interface

Many of unit functions could be controlled using different protocols based on network connection. The unit's network controller supports for Static and Dynamic modes for IP protocol. The IP settings could be changed using Control Software or web-GUI or API.

Default TCP/IP settings

Parameter	Value
Mode	Static
Address	192.168.0.100
Mask	255.255.255.0
Gateway	192.168.0.1
TCP Port	800
Telnet	32

Unit could be controlled via TCP connection using API. Before attempting to use TCP control, please ensure that both the unit and the PC are connected to the same network. Use IP address of the unit and the TCP port number, the default port is 32.

7.3.2 RS232 interface

The RS232 port allows to access unit's functions using its API or Control Software. It also ensures possibility to easy control from a third party control system.

Default RS232 port settings

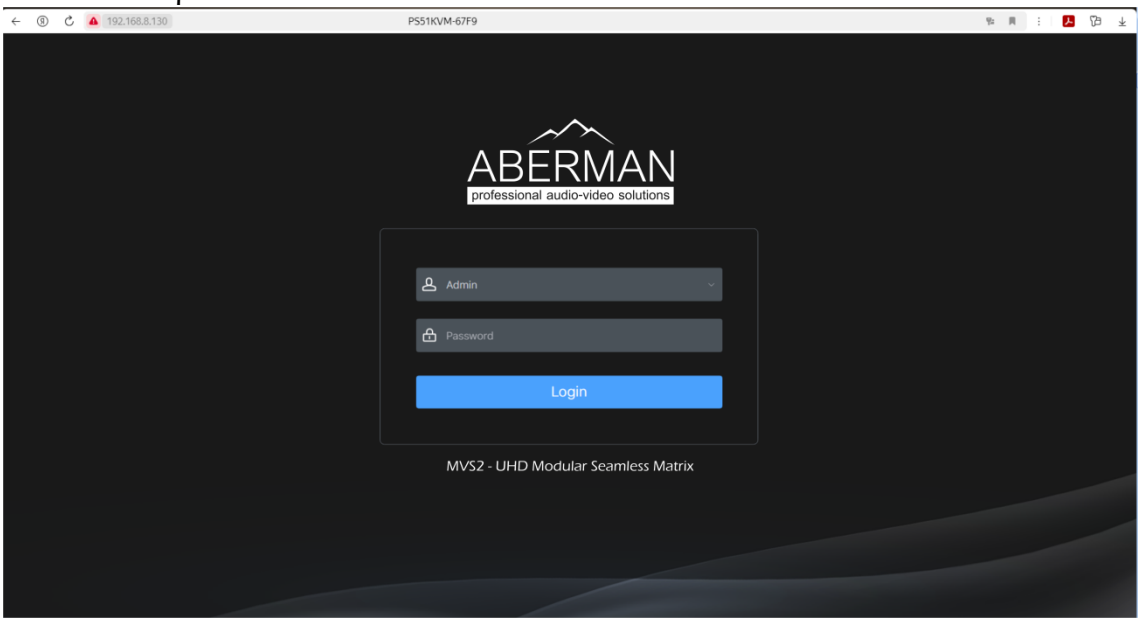
Parameter	Value
Baud Rate	115200
Parity	None
Stop bit	8
Data bit	1
Flow Control	None

Please use active USB to RS232 cable converter from the unit's set for connection to the PC.

NOTE: please be informed that actual unit settings, functions, API command list, web-GUI interface view, controls including the resolution list may differ because of hardware and firmware versions installed in the particular matrix unit and used card modules.

8. Web-GUI Interface

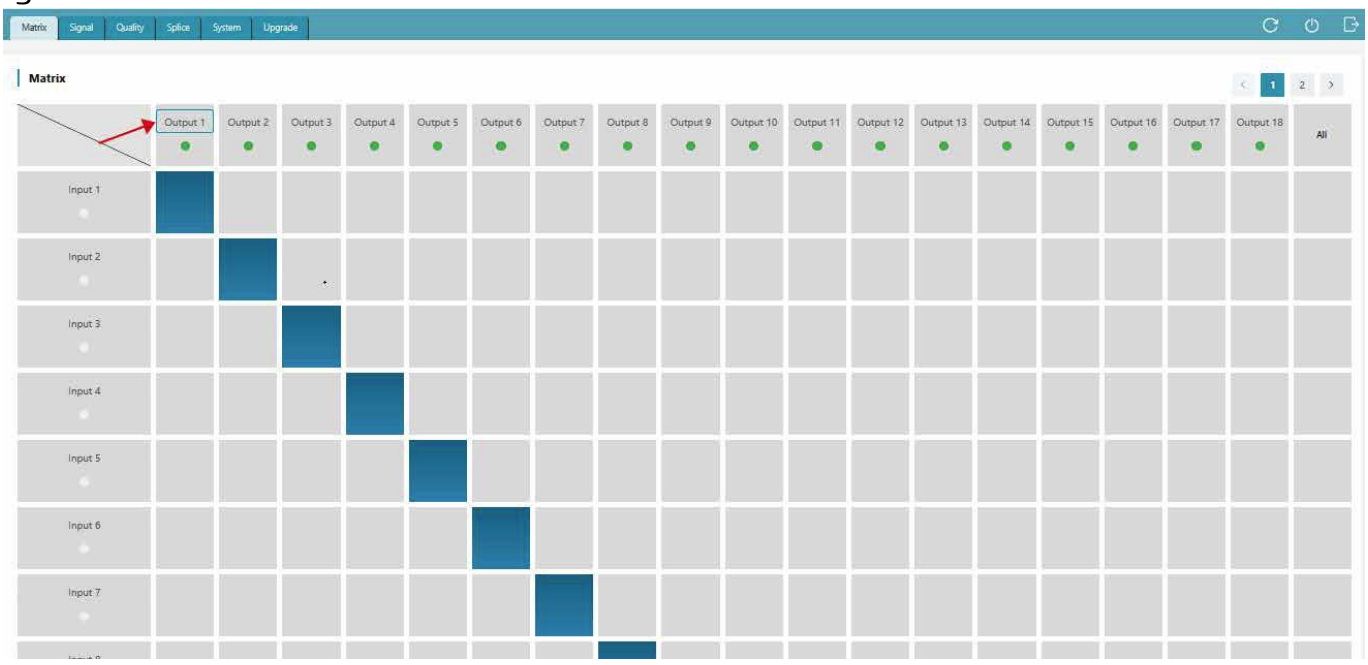
The built-in Web Interface allows user to access the most frequently used and some advanced functions of the unit. To access these settings pages - user should enter the unit IP address in the browser address bar. After connecting to the unit, user needs to login. The default login is 'admin' and default password is 'admin'.



The Web interface is divided into the several tabs. The selection could be made at the top side of the screen by simple clicking on the desired item: Matrix, Signal Config, TV Wall, Mutliview, Audio and Peripheral.

8.1 Matrix Tab

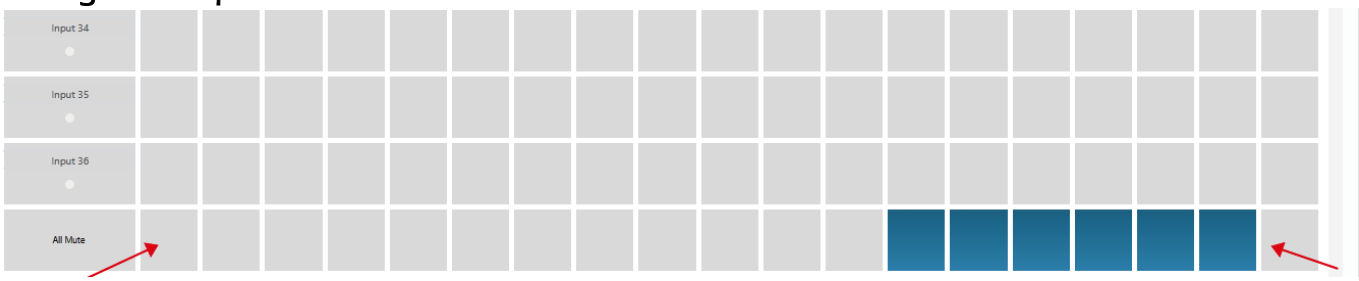
This tab gives access to the common functions includes: Routing, Preset Control and EDID Management. By default the matrix is represented as crosspoint table with outputs in rows and inputs in columns. The switching could be made by simple clicking on the corresponding crossing output (in rows) and input (in columns) ports. Current matrix routing state is shown by light blue bars.



Switching All Outputs to the same input at once

When all outputs of the unit should be routed to the one of input – click on the **All Set** button at the bottom of the cross table to select corresponding input for routing.

Muting the Outputs

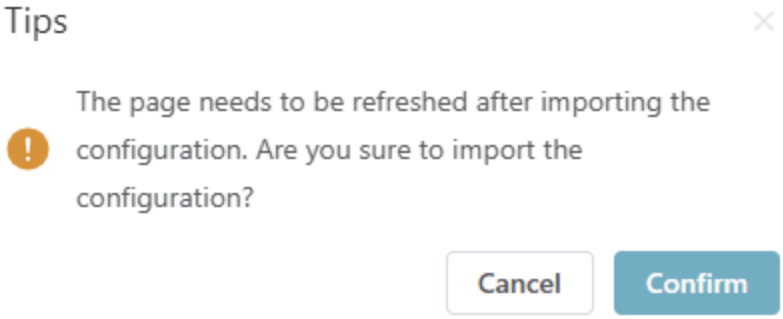


Preset Control

The state of unit, including routing table and VideoWall settings could be saved or loaded as preset at once. These states doesn't contain unit interface settings such signal Type or Resolution. Use **Save** and **Load** buttons at the top right corner of the cross table to save current sate as preset or load a previously saved one.

Configuration Management

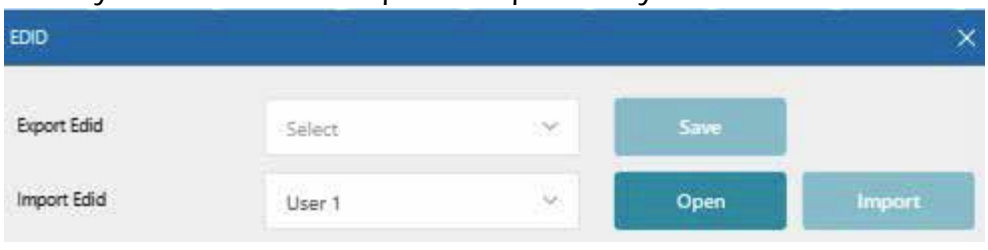
Import Config: Click the Import Config button, select the configuration file, it will prompt as shown in the lower left figure. Then click Confirm to import the configuration. After successful import, a prompt will appear, as shown in the lower right figure. After clicking Confirm, the system will automatically switch to the login interface.



Export Config: Click the Export Config button, select the address to save the configuration, and then click "Confirm" to download the corresponding EDID file successfully.

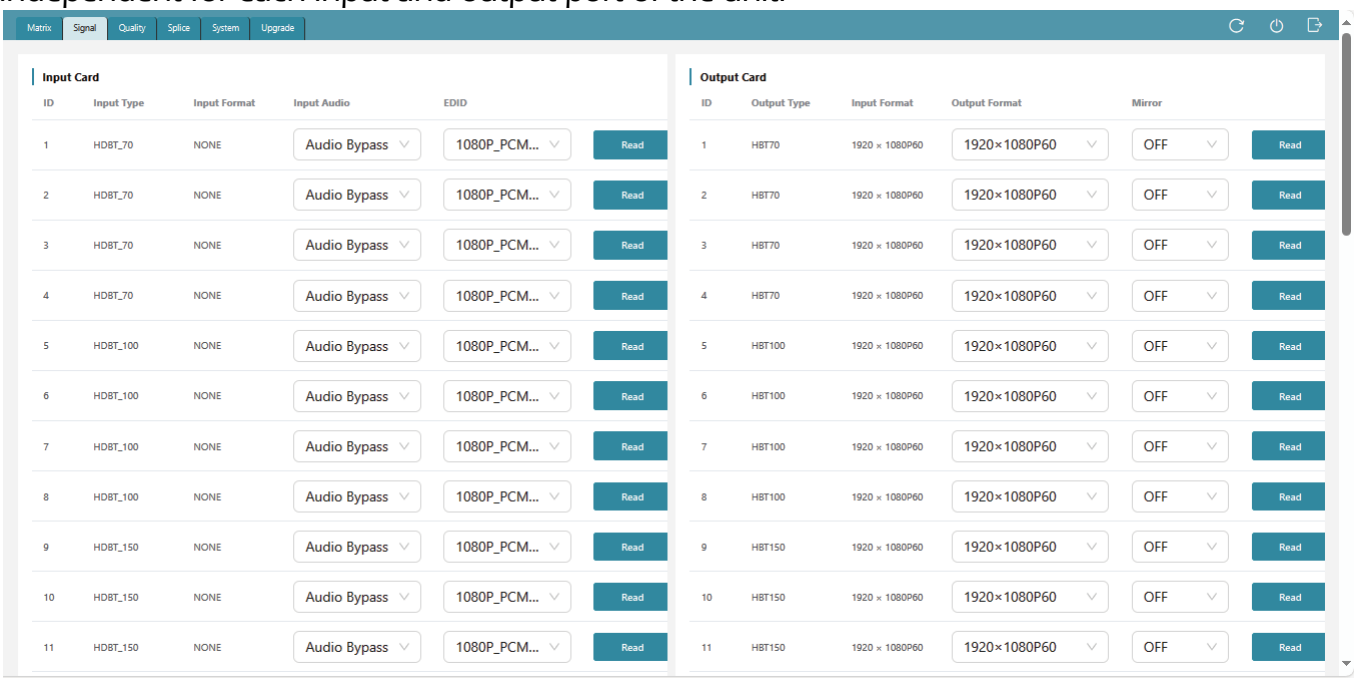
EDID Management

The system allows managing EDID information. Download data from the outputs and upload it to the input memory blocks of the each port independently. Click **Save** button for the details.



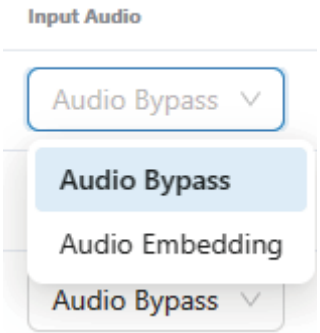
8.2 Signal Config Tab

This section allows user to control and set various parameters of the system. Each setting is independent for each input and output port of the unit.



Input Interface Settings

Input Interfaces table contains information about module input type, number, signal type and measured resolution for the each input. User can select audio mode for each input by clicking on the drop-down list button in the **Input Audio** column. This page is mainly used to view and configure the relevant parameters of the I/O card. The input card supports the configuration of audio source (bypass or embedding) and EDID.



EDID Management

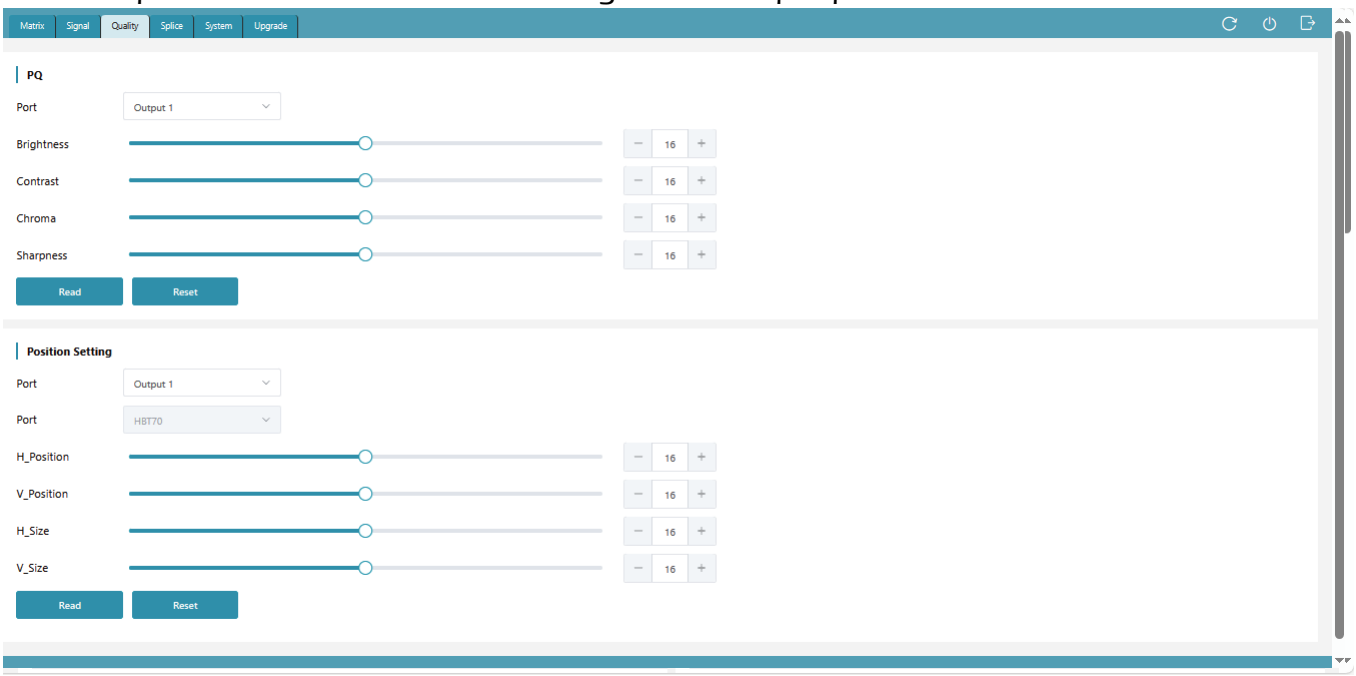
The system allows managing EDID information for Inputs

Output Interface Settings

To check current output signal parameters on the specified output click on the **Output Type** drop-down list button to select desired format. The output card supports the configuration of output resolution and mirroring.

8.3 Picture Quality Tab

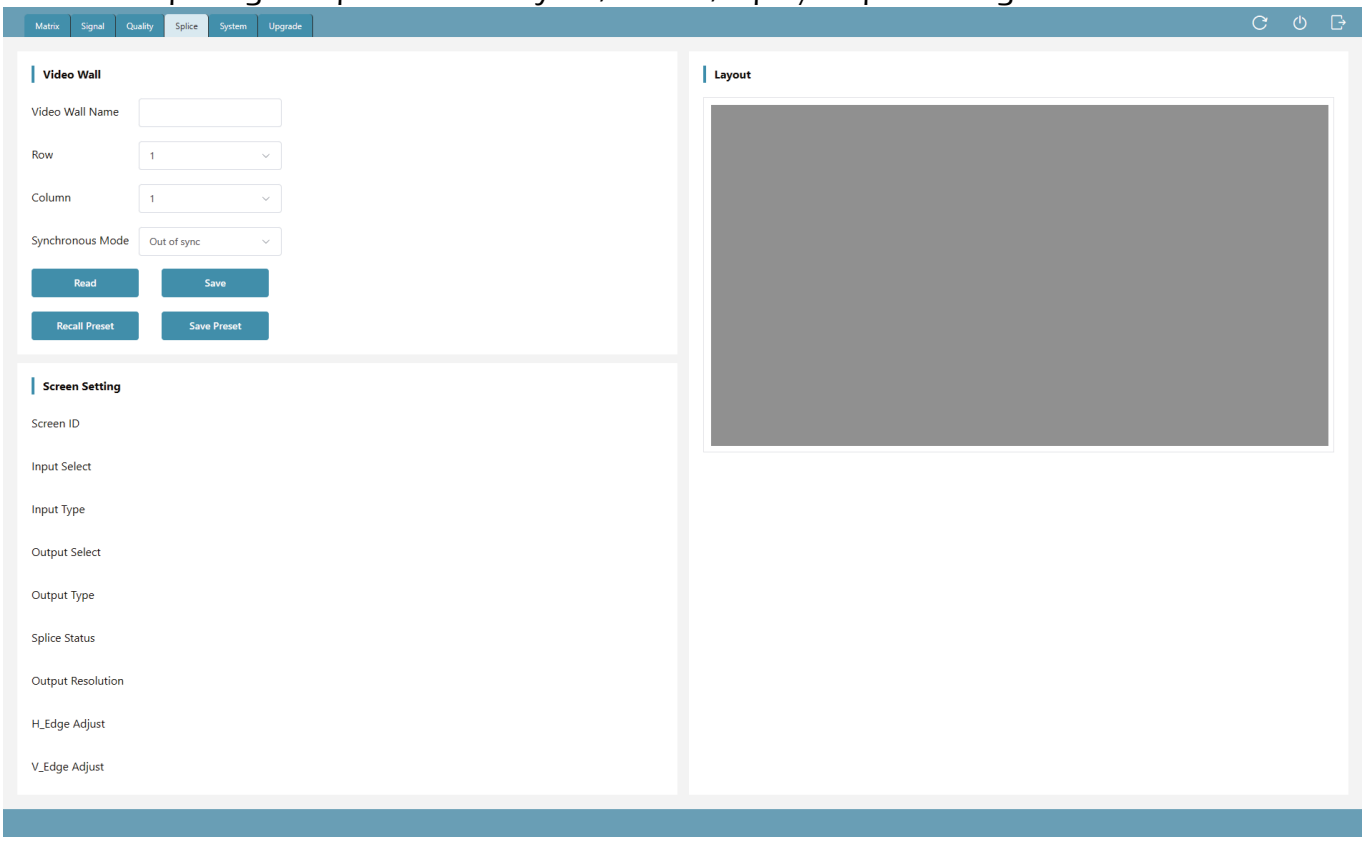
This tab opens access to the Pictures settings of the output ports.



Click the drop-down list to select the output port, set the brightness, contrast, chroma and sharpness, then click "Read" to take effect. Finally, click the refresh icon to refresh the data.
Notes:
(1) The 2K HDMI-V output card, 2K SDI output card and 2K FIBER output card do not support mirroring.
(2) When the output resolution is set to CVBS/YPbPr, the 2K DVIU output card do not support mirroring.
1. Picture Quality Setting
2. Picture Position Setting
Click the drop-down list to select the output port and port type, set the H_Position, V_Position, H_Size and V_Size, then click "Read" to take effect. Finally, click the refresh icon to refresh the data.

8.4 VideoWall Tab

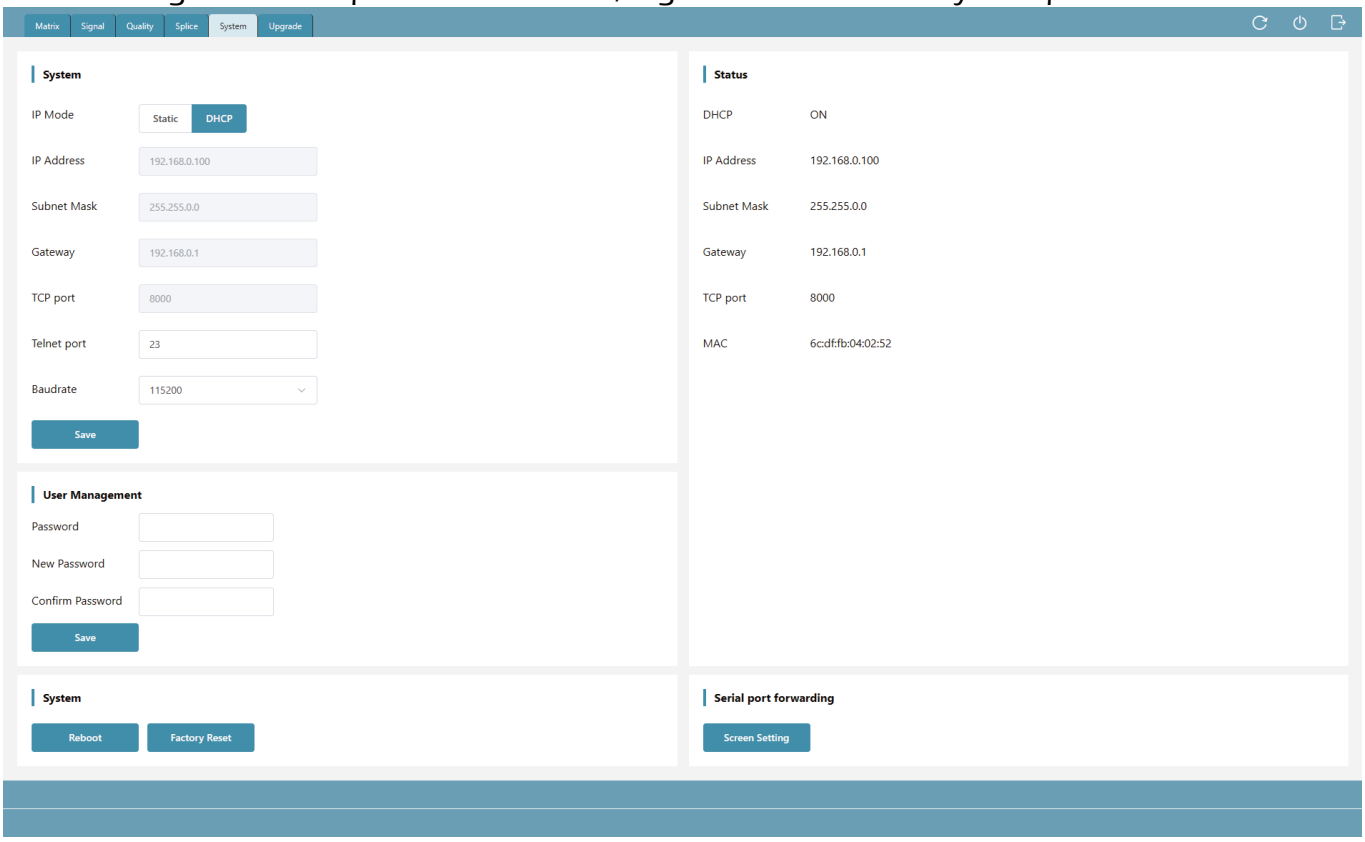
MVS2 Series Matrices support VideoWall Mode (TW Wall controller feature). This greatly expands unit functionality and allows building videowalls using any generic display device. This tab set the splicing wall parameters: layout, border, input/output settings and so on.



Follow the steps below to create a video wall.
Step 1. Input the video wall name (The maximum length is 32 English characters or 16 Chinese characters).
Step 2. Set the number of rows and columns of the video wall (ranging from 1 to 36). After the creation, parts with more than 36 screens will not be displayed.
Step 3. Click the drop-down list of "Synchronous Mode" to set the synchronous mode.
Step 4. Click the "Save" button, then the layout interface on the right side will display the corresponding windows.
Step 5. Set the splicing. Hold down the left mouse button and drag to select the desired screens. The selected area is displayed as a gray curtain, and the screens covered by the gray curtain will be added to the current group, as shown in the following figure.
NOTE: If the screen covered by the grey curtain is already occupied by other groups at this time, there will be no response.
Step 6. After releasing the mouse, the selected screens will turn blue. Then click the right mouse button and select "Screen Splicing" from the settings menu to complete the splicing.
NOTE: The 2K DVIU output card (when the output resolution is set to CVBS/YPbPr), 2K SDI output card and 2K FIBER output card do not support splicing settings.

8.5 System Tab

These settings allow setup the unit network, login and some other system parameters.



Modify Network Setting

If the IP Mode is set to "Static", you can modify the IP Address, Subnet Mask, Gateway, TCP Port, Telnet Port and Baudrate as required, and click "Save" to take effect. Then the system will switch to the corresponding IP Address automatically. If the IP Mode is set to "DHCP", it will automatically search and switch to the IP Address assigned by the router.

Modify User Password

You can modify the login password in User Management as required. Enter the correct Old Password, New Password and Confirm Password, then click "Save" to pop up a window as shown below. Click "Confirm" to take effect, then the system will switch to the login interface automatically, and you need to log in with the new password.

System Operation

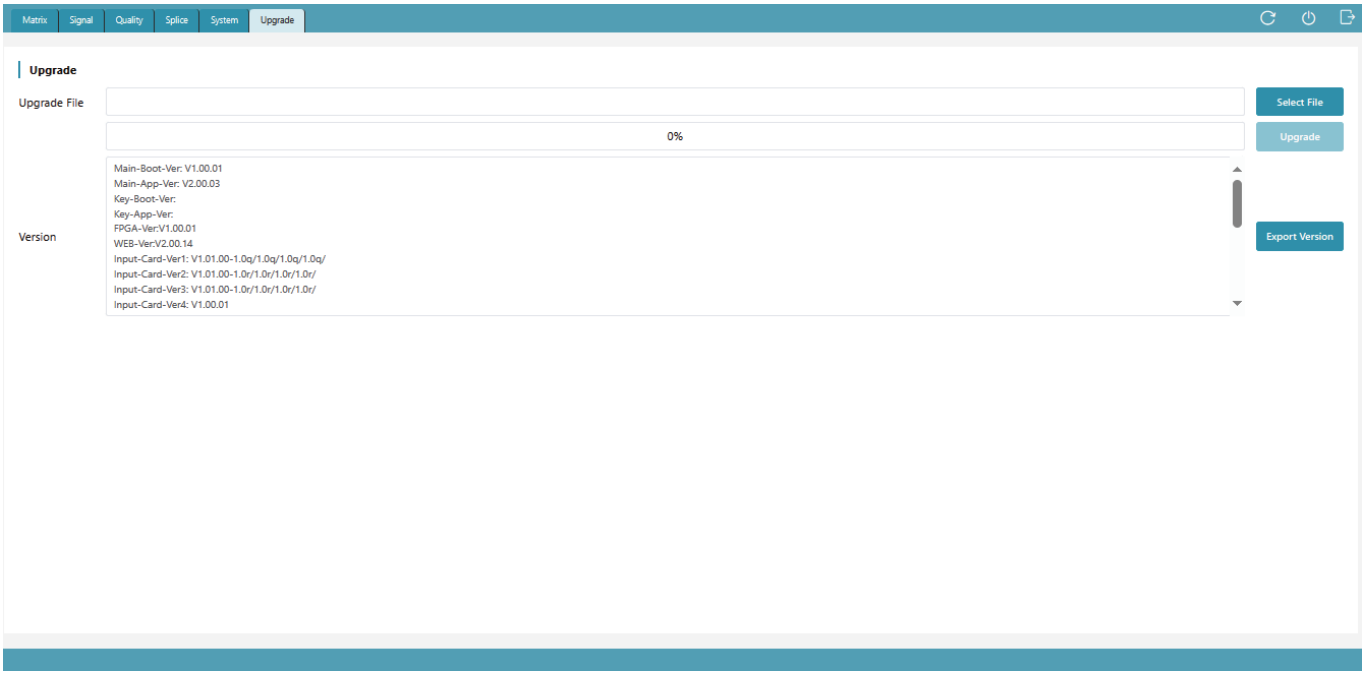
You can click "Reboot" to pop up the window below, then click "Confirm" to reboot the system. After reboot, the system will automatically switch to the login page.
You can click "Factory Reset" to pop up the window below, then click "Confirm" to reset the device to factory defaults. After reset, the system will automatically switch to the login page.

Serial Port Pass-through

The system setting with the main control card (optional 2) supports serial port pass-through function. Click "Screen Setting" to enter the Screen Setting page, in which you can add the command (ASCII/HEX) for the manufacture and select the baud rate, then click "Send" to send commands through the external serial port.

8.6 Upgrade Tab

Click "Select File" to select the upgrade file, then click "Upgrade" to start the system upgrade. After the progress bar reaches 100%, the upgrade is successful, and the device will reboot automatically. You can click "Export Version" to export the current upgrade version information.



9. Specifications

SKU	MVS2-88 / 1616 / 3636DN
Type	Fixed HDMI Video Matrix
HDMI Compliance	DVI1.0, HDMI1.4/2.0
HDCP Compliance	HDCP 1.4, HDCP2.2/2.3
Video Bandwidth	18Gbps
Interfaces	
Video Matrix	8x8 / 16x16 / 36x36 Seamless Switching, VideoWall
Video Inputs	from 4x to 36x
Color Subsampling	RGB, YUV, 4:2:0, 4:2:2, 4:4:4
Color Depth	8 , 10, 12-bit
Input Resolutions	800x600@60Hz, 1024x768@60Hz, 1280x768@60Hz, 1280x800@60Hz, 1280x1024@60Hz, 1360x768@60Hz, 1366x768@60Hz, 1400x1050@60Hz, 1440x900@60Hz,1600x1200@60Hz, 1680x1050@60Hz,1920x1200@60Hz, 480p, 576p, 720p, 1920x1080i, 1920x1080p, 3840x2160@24Hz/25Hz/30Hz/50Hz/60Hz, 4096x2160@24Hz/25Hz/30Hz/50Hz/60Hz
Video Outputs	from 4x to 36x
Color Subsampling	RGB 4:4:4
Color Depth	8-bit
Output Resolutions	1024x768 60Hz, 1280x768 60Hz, 1280x1024 60Hz, 1360x768 60Hz, 1366x768 60Hz, 1400x1050 60Hz, 1600x1200 60Hz, 1920x1200 60Hz, 1280x720p50Hz, 1280x720p60Hz, 1920x1080p50Hz, 1920x1080p60Hz, 3840x2160p25Hz, 3840x2160p30Hz, 3840x2160p50Hz, 3840x2160p60Hz, 4096x2160p50Hz, 4096x2160p60Hz
Control	
Local	Front Panel Buttons with LCD
Remote	IR, RS232, TCP/IP, web-GUI
Presets	up to 64
Electrically	
ESD Protection	±8kV air-gap, ±4kV contact (human body model discharge)
Power Consumption	8x8 Matrix: 40W~190W (Match with different input/output cards) 16x16 Matrix: 80W~320W (Match with different input/output cards) 36x36 Matrix: 200W~840W (Match with different input/output cards)
Power Supply	AC 110 - 240V
Mechanical	
Dimensions, (LxWxH)	8x8 Matrix: 483mm (W) × 377mm (D) × 89mm (H) 16x16 Matrix: 483mm (W) × 379mm (D) × 133mm (H) 36x36 Matrix: 483mm (W) × 378mm (D) × 266mm (H)
Housing / Color	Metal Enclosure / Black
Weight	4.2 kg (without rack ears)
Enviroments	
Operating Temperature	0°C ~ 40°C
Storage Temperature	-20°C ~ 70°C
Relative Humidity	10%~50% RH (non-condensing)