



UHD-416MVW

**4K@60hz 4x16 HDMI™ Matrix
w/ Video Wall (Seamless,
Audio Extract, MultiView)**

*Follow us on Youtube and
Facebook*



USER MANUAL

www.orei.com

Table of Contents

Introduction	04
Features	05
Package Contents	05
Specifications	06
Operation Controls and Functions	07
Common Applications	10
Video Resolution	13
PC Tool User Guide	14
Display Settings with LED Panel/Sender Card	23
MultiPanel Function	24
RS-232 Commands	26
Application Example	27

Thank you for purchasing this product

For optimum performance and safety, please read these instructions carefully before connecting, operating or adjusting this product. Please keep this manual for future reference.

Surge protection device recommended

This product contains sensitive electrical components that may be damaged by electrical spikes, surges, electric shock, lightning strikes, etc. Use of surge protection systems is highly recommended in order to protect and extend the service life of your equipment.

Registration Page

Please activate your warranty by registering our product through the link below
- www.orei.com/register

Technical Support

Need Help?

Our experienced Technical Support Team is here for you to answer your questions, give technical advice or help troubleshoot your project to get you installed on time and on budget. Call, email or chat with us now.

OREI Live Technical Support Hours

US team (US/Canada/Mexico): Monday-Friday, 9 a.m. - 5 p.m. Central Time

Support Email - info@orei.com | **Support Number** - 877-290-5530

Introduction

The UHD-416MVW HDMI Matrix is a versatile solution that connects up to 4 media devices and seamlessly switches between them across 16 outputs. It is HDCP 2.2 compliant, supporting 4K@60Hz resolution with 18Gbps bandwidth. This matrix offers seamless switching, Multiviewer, and Video Wall functionality, with Multiview window roaming for flexible screen positioning in video wall mode. It includes a 3.5mm/Optical output for audio extraction. It can be controlled via PC software through LAN or RS-232. Ideal for large-scale commercial setups like sports stadiums and conference rooms.



Features & Package Contents

Features

1. HDMI 2.0 & HDCP 2.2 compliant
2. Video resolution up to 4K@60Hz
3. 18Gbps video bandwidth
4. Seamless switching with Multiview functionality
5. Video Wall functionality with 180-degree rotation
6. 3.5mm/Optical output for audio extraction
7. RS-232 control

Package Contents

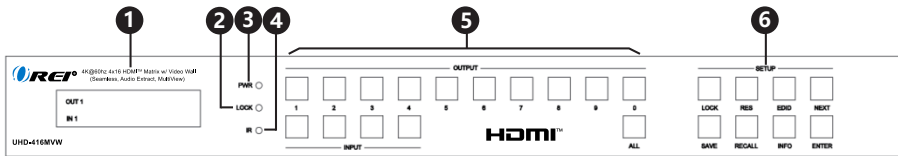
1.	UHD-416MWW	1pcs
2.	Remote	1pcs
3.	USB to RS-232 Cable	1pcs
4.	RJ45 Cable	1pcs
5.	AC Power Cord	1pcs
6.	User Manual	1pcs

Specifications

Technical	
HDMI Compliance	HDMI 2.0
HDCP Compliance	HDCP 2.2
Video Bandwidth	594MHz (18Gbps)
Video Resolution	Up to 3840x2160/4096x2160@60Hz
Color Space	RGB, YCbCr 4:4:4, YCbCr 4:2:2, YCbCr 4:2:0
Color Depth	8/10/12bit
IR Level	5Vp-p
IR Frequency	Wideband 38KHz
Audio Format	LPCM 2.0
ESD Protection	IEC 61000-4-2: ±8kV (Air-gap discharge) & ±4kV (Contact discharge)
Connection	
Input	4 × HDMI [Type A, 19-pin female]
Output	16 × HDMI [Type A, 19-pin female] 1 × LR / Optical [3.5mm Stereo Mini-jack]
Control	1 × RS-232 [3-pin phoenix connector] 1 × RS-232-CTL [D-Sub 9, female] 1 × LAN [RJ45]
Mechanical	
Housing	Metal Enclosure
Color	Black
Dimensions	L: 430mm / 16.92in W: 220mm / 8.66in H: 44mm / 1.73in
Weight	5kg / 11.02lbs
Power Supply	110~240VAC
Power Consumption	75W (Max)
Operating Temperature	32 - 104°F / 0 - 40°C
Storage Temperature	-4 - 140°F / -20 - 60°C
Operating Humidity	20%~80% relative humidity, non-condensing
Storage Humidity	10%~90% relative humidity, non-condensing

Operation Controls and Functions

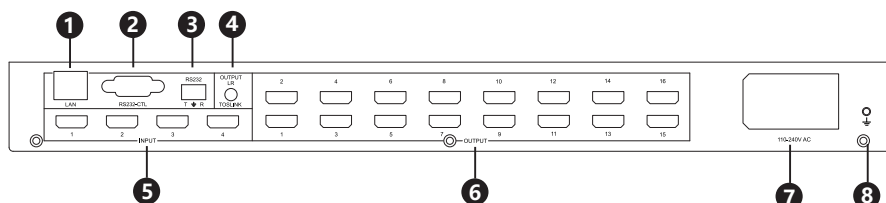
Front Panel



No.	Name	Function Description
1.	LCM screen	The LCM screen displays the routing status of each channel in the matrix. When used together with front panel buttons, users can view and set some parameters.
2.	LOCK LED	- Light on: Front panel buttons are locked. - Light off: Front panel buttons are unlocked.
3.	POWER LED	- Light on: The product is powered on. - Light off: The product is powered off.
4.	IR Window	IR signal receiving window. It can be disabled by RS-232 command.
5.	INPUT / OUTPUT buttons	Used to select the corresponding input and output channels. You need to press the output button (1, 2...9, 0, ALL) first, then press the input button (1, 2, 3, 4), and then press "ENTER" to complete the switching.
6.	SETUP buttons	LOCK: Press and hold the button more than 3 seconds, all fronts panel buttons will be locked and will not work. Press and hold it for more than 3 seconds again to unlock. SAVE: Used to save the current display scene. e.g. Press "SAVE→OUTPUT m (m=1, 2...9, 0)→ENTER" to save the current routing and screen layout to Scene m. RES: Used to change the output resolution. e.g. Press "RES→OUTPUT m→NEXT→ENTER" with guide of front LCM screen display, to change the output resolution of OUTPUT m. RECALL: Used to recall the saved scene. e.g. Press "RECALL→OUTPUT m→ENTER" to load the saved Scene m. EDID: Used to change the EDID mode of input. e.g. Press "EDID→INPUT n→NEXT→ENTER" with guide of front LCM screen display, to change the EDID mode of INPUT n. INFO: Continuously press INFO button, the LCM display screen will display IR ON/OFF, RS232 Baud Rate and IP parameters etc.. NEXT: Used to select the next item. ENTER: Used to confirm and execute the operation.

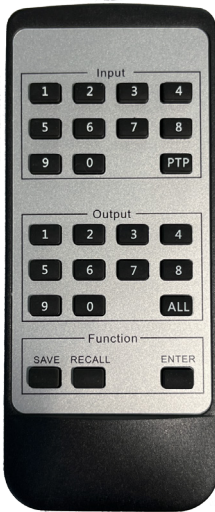
Operation Controls and Functions

Rear Panel



No.	Name	Function Description
1.	LAN port	Network port for TCP/IP or Web GUI control. IP address: 192.168.0.247; Submask: 255.255.255.0; Gateway: 192.168.0.1; Baud Rate: 9600; NetPort: 23 Web login account: admin; Password: admin
2.	RS232-CTL port	RS232 serial port, used for RS-232 command control. Baud Rate: 9600, Data Bits:8, Parity: 0, Stop Bits:1.
3.	RS232 port	RS232 serial port, used for RS-232 command control. 3-pin Phoenix: T: Main Unit -> PC; G: Ground; R: Main Unit <- PC
4.	LR / Optical output port	Connect an audio device with a 3.5mm/Optical input such as Soundbar, AVR, AMP, etc. 3.5mm Stereo Jack - 20Hz ~ 20kHz, 1.5Vrms max
5.	INPUT (1~4) port	Connect a media device such as DVD player, streaming device, etc.
6.	OUTPUT (1~16) port	Connect a display device such as TV, monitor, etc.
7.	Power input port & switch	Power input port: Connect to 110~240VAC power supply with the included AC power cord. Power switch: Press the switch to turn on/off the unit.
8.	GND	Connect the housing to the ground.

Operation Controls and Functions



Input 1/2/3/4:

Select the input channel.

PTP:

Perform one-to-one switching, that is, switch input 1 to output 1, input 2 to output 2, and so on.

Output 1/2/3/4/5/6/7/8/9/0:

Select the output channel.

e.g. Press "OUTPUT m (m=1, 2...9, 0)→INPUT n (n=1, 2, 3, 4)→ENTER": Switch input n to output m

ALL:

Perform one-to-all switching.

e.g. Press "ALL→INPUT n (n=1, 2, 3, 4)→ENTER": Switch input n to all outputs.

SAVE:

Save the current display scene.

e.g. Press "SAVE→OUTPUT m (m=1, 2...9, 0)→ENTER" to save the current routing and screen layout to Scene m.

RECALL:

Recall the saved scene.

e.g. Press "RECALL→OUTPUT m (m=1, 2...9, 0)→ENTER" to load the saved Scene m.

ENTER:

Confirm and execute the operation.

Common Applications

The product supports matrix switching, video wall splicing and multiview layout, therefore, there are multiple application cases for users to select.

1) General Seamless Matrix Switcher (4x inputs + 16x outputs). Users can also set Multiview output as needed.



2) One Non-Multiview View Video Wall: 3x3, 3x4, 3x5, 4x4, etc..



3) Two or more Non-Multiview View Video Wall and standalone outputs, total screens shall not exceed 16.



Common Applications

4) One Multiview Video Wall, total screens shall not exceed 12.



5) One Multiview Video Wall, and standalone outputs.



Limitation:

1) 4 groups of multiview display are supported. Output 1,2,3,4 can be the first group, output 5,6,7,8 can be the second group, output 9,10,11,12 can be the third group, output 13,14,15,16 can be the fourth group.

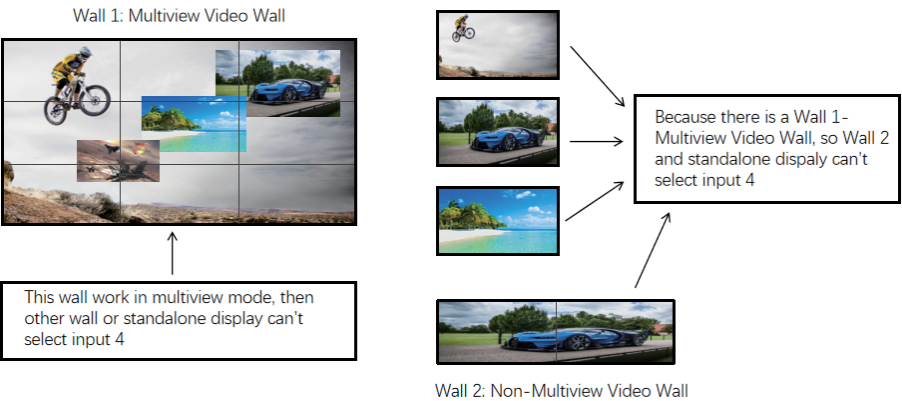
If one output of one multiview group is enabled as multiview mode, then the other three will display the same content with the same output resolution.

2) If user want to display multiview video on a video wall, he must enable multiview function on output 13 and control the multiview layout on output 13 for the video wall multiview layout.

3) If a video wall works in multiview mode, then input 4 can't be a source for standalone output display or non-multiview video wall display.

Common Applications

If a video wall works in multiview mode, the maximum screen number is 12, because output 13,14,15,16 need work in multiview mode and can't be the member of video wall outputs.



Video Resolution

The product supports 21 default output resolution, as well as Auto and User Define output resolution, which can be flexibly applied to the display of LED wall. The output resolution list is as following.

Hex Index	Output Resolution	Hex Index	Output Resolution
00	4096x2160p 60Hz	0C	1920x1080p 30Hz
01	4096x2160p 50Hz	0D	1680x1050p 60Hz
02	3840x2160p 60Hz	0E	1600x1200p 60Hz
03	3840x2160p 50Hz	0F	1360x768p 60Hz
04	3840x2160p 30Hz	10	1280x1024p 60Hz
05	3840x2160p 25Hz	11	1280x768p 60Hz
06	3440x1440p 60Hz	12	1280x720p 60Hz
07	2560x1600p 60Hz	13	1280x720p 50Hz
08	2560x1440p 60Hz	14	1024x768p 60Hz
09	1920x1200p 60Hz	15	USER
0A	1920x1080p 60Hz	16	AUTO
0B	1920x1080p 50Hz		

PC Tool User Guide

The PC tool is an installation-free control software. It consists of seven parts: Connect, Matrix, Signal Config, TV Wall, System, Multiview.

The initial login password is 111111.

PC Tool User Guide

■ Connect

The screenshot shows the 'Connect' tab of the PC Tool interface. It is divided into two main sections: RS232 and Network. The RS232 section includes fields for Uart (COM3), Baudrate (9600), DataBit (8), Parity (None), StopBit (1), and FlowControl (None). The Network section includes fields for Network (TCP-Server), IP (192.168.0.247), Port (23), SubMask (255.255.255.0), and Gateway (192.168.0.1). There are 'Connect' and 'Disconnect' buttons. On the right, there is a 'Status' window showing a list of messages (Sync Input-16 Message, Sync Output-1 Message, etc.) and a 'Clear' button. Below these sections is a 'Search List' table with columns for Number, Device Name, IP, MAC, and Version. The table contains one entry: 1, LQ5X_N8, 192.168.0.247, 50-0A-00-34-00-62, 24. A 'Search Device' button is located below the table. At the bottom, there is a 'PC Network Info' section showing the PC IP (192.168.0.108) and a green checkmark icon.

Number	Device Name	IP	MAC	Version
1	LQ5X_N8	192.168.0.247	50-0A-00-34-00-62	24

Search Device

PC Network Info

PC IP: 192.168.0.108 <WLAN>

On this interface, you can connect to the matrix through two ways.

Method 1: Serial port connection.

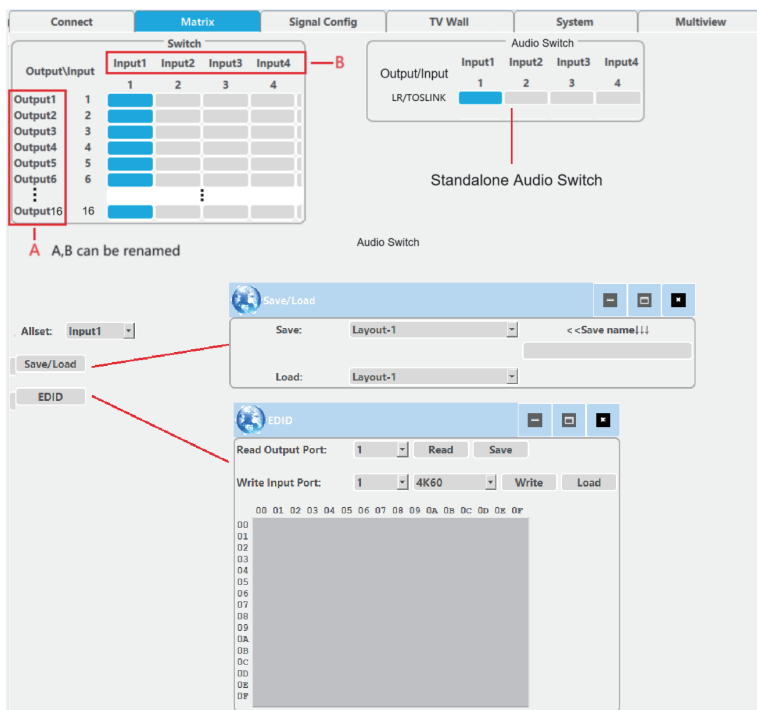
Connect the RS232 port of the Matrix to a PC with the included USB to RS-232 cable, and select the Uart, Baudrate, DataBit, Parity, StopBit and Flow-Control on the Connect interface. Then click “Connect” to connect the device. Note: When using the serial port connection, the network port connection must be disconnected, and vice versa.

Method 2: Network port connection.

Connect the LAN port of the Matrix to a PC with an ethernet cable, and set the IP address of the PC to be in the same network segment with the Matrix (default IP address: 192.168.0.247).

Then click “Search Device” to search the device. Then the searched device will appear in the Serach List. Click to select the device, and click “Connect” to connect the device.

■ Matrix



1. Matrix Switching

The Switch part displays the names and mapping status of all input and output ports. Users can rename the input/output port and switch the matrix correspondence.

- ① Modify the name: Click the input/output port to rename it. Click outside the input box to complete the name modification.
- ② Switch matrix correspondence: Use the grid to set the desired input for each output.

PC Tool User Guide

2. Audio Switching

The Audio Switch section allows you to set which input the audio will be coming from to be output via the 3.5mm/Optical port.

3. “One-to-many” Switching Setting

In the dropdown next to “Allset” select the input which should go to all outputs.

4. Save/Load Scene

Click the Save/Load button to pop up a scene setting window. You can then Save the current layout as Layout X (up to 30 scenes are supported) or use the the Load dropdown to select a previously saved scene.

5. EDID Settings

Click the EDID button to pop up the EDID control window.

- a) Read EDID: Select the output port, then click the Read button to read the EDID information of the connected display device.
- b) Save EDID: After reading EDID successfully, click the Save button, and select the save path and file name for saving.
- c) Write EDID: First read the EDID from an output port, or open an EDID file that was saved before, then select the input port, and click the Write button to write the EDID to that input port. The written EDID will be saved as “User EDID”, which can be selected or canceled through front panel buttons.

■ Signal Config

1. Input Settings

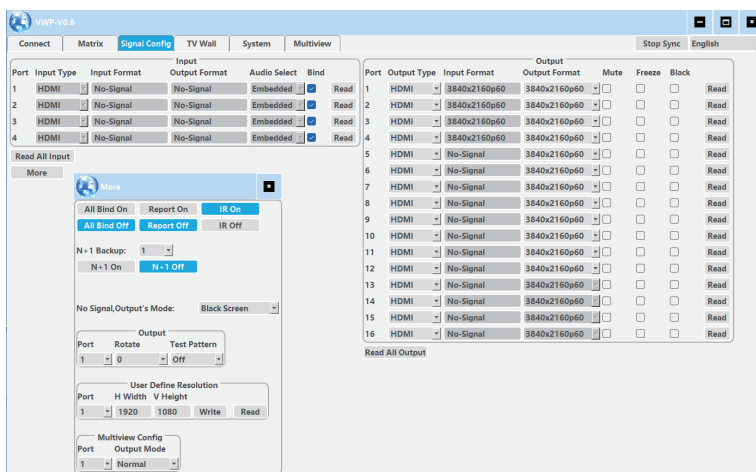
The Input section allows users to read the input format, output format, audio select, and set the audio select.

2. Output Settings

The Output section allows users to read the input format, set the output type, output format, mute, or freeze each output port.

3. Read Settings

You can click the Read button to read the information of each input/output port, or click the Read All Input/Output to read the information of all input/output ports.



4. More Settings

Click the More button to pop up a setting window.

a) Report On/Off: When set to Report On, the device will report the current signal status of all inputs after being powered on. When a certain input signal changes (no signal -> signal valid, or signal valid -> no signal), the device will automatically report the status.

Note: It is suggested to set it to Report Off if you do not need to know the status of the inputs.

PC Tool User Guide

b) All Bind On/Off: If the Report is set to On, then All Bind On can be enabled.

The IN1 would be bound with IN2 and IN3 with IN4 (Odd/Even binding).

Port	Input Type	Input Format	Input Output Format	Audio Select	Bind	
1	HDMI ☒	No-Signal	No-Signal	Embedded ☒	☒	Read
2	HDMI ☒	No-Signal	No-Signal	Embedded ☒	☒	Read
3	HDMI ☒	No-Signal	No-Signal	Embedded ☒	☒	Read
4	HDMI ☒	No-Signal	No-Signal	Embedded ☒	☒	Read

Read All Input

More

After setting All Bind On, when the odd input signal(IN 1 & 3) is lost, the corresponding output port will automatically switch to the even input signal (IN 2 & 4), and vice versa

Note: It is suggested to keep All Bind Off.

c) IR On/Off: Click the IR On/Off button to enable or disable the IR window of the unit.

d) N+1 Backup: If the Report is set to On, then N+1 Backup can be enabled. For example, if input 1 is set as the backup source, when input 2, 3, or 4 lose signal, the corresponding output will automatically switch to input 1, and when input 2 signal is recovered, the output will switch back to input 2.

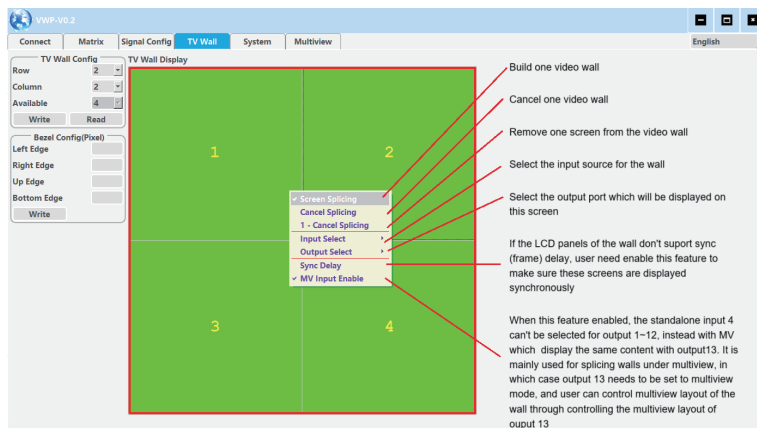
Notes:

- (1) All Bind On and N+1 Backup cannot be enabled at the same time.
- (2) It is suggested to set all these three functions (Report, Bind, N+1 Backup) to Off if not needed.

PC Tool User Guide

- e) No Signal Output Mode: Select an option from the dropdown list to show either a black screen, blue screen or no signal screen when there is no input signal on any output.
- f) Output rotation: Click the dropdown list to select the rotation angle (0°/180°) and test pattern for each output port.
- g) User define resolution: This part allows you to set one user-defined output resolution for each output port.
- h) Multiview configuration: Click the dropdown list to select the output mode (normal/multiview) for each output port. If you want to build a multiview layout for one output in the Multiview section of the software, the multiview function for that port must be enabled here.

■ TV Wall



1. Video Wall Configuration

Follow the following steps to built and configure a video wall.

Step 1. Click on the Available dropdown list to set how many outputs will be used for the Video Wall.

PC Tool User Guide

Step 2. Select the number of Rows and Columns.

Step 3. Press and hold the left mouse button to drag and select the screens that will be used for the video wall. The selected screens will be shown as bright blue.

Step 4. Right-click the mouse to select “Screen Splicing” from the drop-down menu to build the video wall. The selected screens will now be shown as bright green.

After successful splicing, the following splicing parameters can also be adjusted (right-click on the display screen to pop up the settings menu).

Cancel Splicing: Cancel the video wall, and restore the outputs to normal.

1- Cancel Splicing: Remove one screen from the video wall.

Input Select: Select the input source for the video wall.

Output Select: Select the output port which corresponds to this screen.

Sync Delay: Enable this option to make sure that all outputs run completely synced to avoid any issues with the video wall experience.

Note: To ensure that all splicing display screens work synchronously, if the resolution of a certain output port is changed, please repower the device.

MV Input Enable: When this feature is enabled, the input 4 cannot be selected for output 1~12, instead with Multiview which displays the same content on output 13. It is mainly used for splicing walls under multiview, in which case output 13 needs to be set to multiview mode, and user can control multiview layout of the wall by controlling the multiview layout of output 13.

2. Bezel Configuration (Pixel)

This section allows users to set the left edge, right edge, up edge and bottom edge for the video wall. Click the Write button for the settings to take effect.

■ System

Search List				
Number	Device Name	IP	MAC	Version
1	LQ5X N8	192.168.0.247	50-0A-00-34-00-62	24

Basic Config	
UPNP Port	6432
HTTP Port	80
Device ID	1
Device ID Type	0
User Name	admin
Password	admin
Device Name	LQ5X N8
MAC	50-0A-00-34-00-62
IP Type	Static IP
Static IP	192.168.0.247
Subnet Mask	255.255.255.0
Gateway	192.168.0.1

Port Config	
Baud Rate	9600
Baud Rate Param	None
Flow Control	None
Work Mode	TCP Server
Remote IP	192.168.0.247
Remote Port	23
Local Port	23
Server Connect Count	3
TCP Server Style	0
Modbus TCP	None
Pack Time	10
Pack Len	200
Sync Baud Rate	☐

1. Search List

If you do not know the IP address of the unit, go to the System section, and click “Search Device”, and then select the searched device, click “Open Web-site” to open the web control site, or you can input the IP on the web browser. Enter the username (admin) and password (admin) to enter the web site and control the matrix.

Note: The computer IP and matrix IP must be in the same segment and the same local area network.

2. Basic Config

This section allows you to view/set the basic configuration for the device. If the IP type is set to “Static IP”, users can manually set the IP Address, Subnet Mask and Gateway as required, then click “Write” to take effect. If the mode is set to “DHCP”, the system will search and fill the IP Address with the one assigned by the network automatically. You will not be able to change it now.

PC Tool User Guide

3. Port Config

This section allows you to view/set the port configuration for the unit.

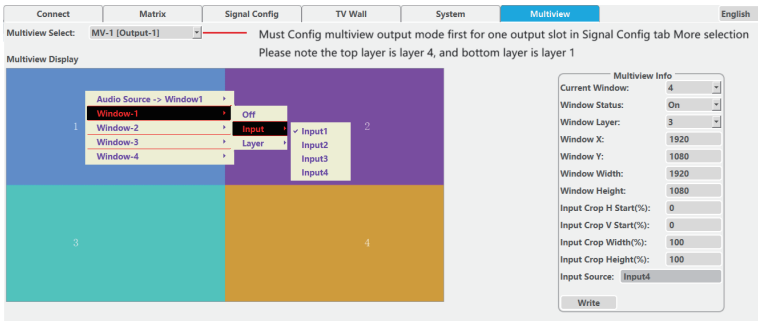
4. Reset

Click the Reset button to restore the unit to factory settings.

5. Firmware Version

This section allows you to view the firmware versions.

■ Multiview



1. Multiview Select

Click the dropdown list to select the multiview to be set.

Notes:

- (1) Before selecting the multiview, the multiview function for the specific output should be enable on the Signal Config page.
- (2) Please note that the top layer is layer 4, and bottom layer is layer 1.

2. Multiview Info

This section allows you to view/set the multiview information. After setting, please click the Write button to take effect.

Display Settings with LED Panel/Sender Card

3. Multiview Display

This section displays the current multiview. You can right-click on the display screen to pop up the settings menu to set each window, such as change the audio source, video source, layer layout, or turn on/off window display.

Note: When an output port is part of a video wall, to change that output to a Multiview, you need to disable the video wall first.

Display Settings with LED Panel/Sender Card

Follow the steps below to set pixel to pixel display with LED panel/sender card.

Step 1. Connect one input port of the matrix switcher with a source device through an HDMI cable.

Step 2. Connect one output port of the matrix switcher with the LED panel/sender card through an HDMI cable.

Step 3. Read the EDID of LED panel/sender card with PC Tool and download this EDID to the input port of the matrix switcher.

Step 4. Set the output resolution of this output port as USER or AUTO. When set to USER, please configure the user define resolution first, and make the user defined resolution match the physical resolution of the LED panel unit.

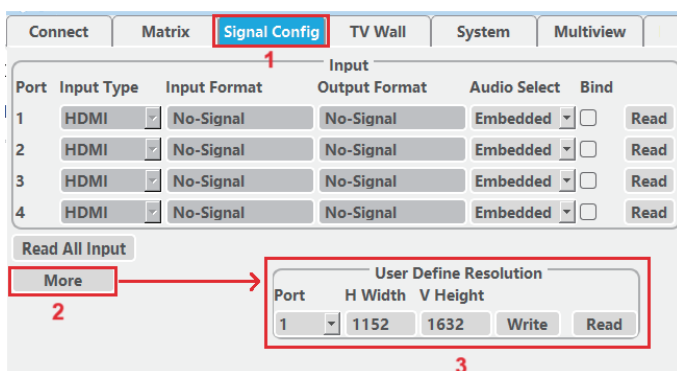
MultiPanel Function

Sometimes we may encounter situations where the width or height of the LED splicing panel units are different. In this case, in addition to setting up the relevant splicing operations, we also need to make the following configurations.

LED Wall

1152x1632	1152x1632	1152x1632	1152x1632	576x1632
Panel 1	Panel 2	Panel 3	Panel 4	Panel 5
Out 1	Out 2	Out 3	Out 4	Out 5
1152x1440	1152x1440	1152x1440	1152x1440	576x1440
Panel 6	Panel 7	Panel 8	Panel 9	Panel 10
Out 6	Out 7	Out 8	Out 9	Out 10

Step 1. Set user defined output resolution to match the actual display resolution of all the displays which are used in the video wall.

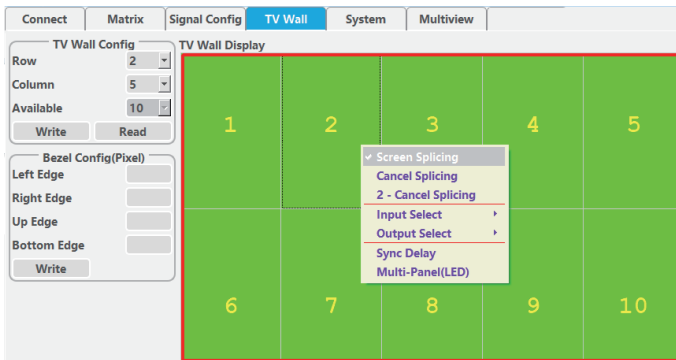


MultiPanel Function

Step 2. Go to the TV Wall section and press “Alt+Q” on your keyboard.

Step 3. Right-click on the TV Wall display area to pop up the settings menu, and select Multi-Panel(LED), then the system will automatically fit the different panels.

Step 4. Restart the system to take effect.



Notes:

- (1) If you want to exit the MultiPanel function, you need to disable the video wall first.
- (2) Please note that MultiPanel function is not available for scene save or recall.

RS-232 Commands

The product also supports RS-232 command control. Connect the RS232-CTL port of the product to a PC with the included USB to RS-232 cable. Then open a Serial Command tool on PC to send the commands to control the unit. The RS-232 commands of the unit are mentioned below.

ASCII Command			
Serial port protocol: Baud rate: 9600, Data bits: 8bit, Stop bits: 1, Parity bit: 0			
IP address:192.168.0.247 Port address: 23 Submask:255.255.255.0 Gateway:192.168.0.1			
Command Code	Example	Feedback	Function Description
[x]All.	Send: 1All.	Return: 001 To All	Switch input x to all outputs
All#.	Send: All#.	Return: All Through	Switch in1->out1, in2->out2,.....,n->n
[x]#.	Send: 1#.	Return: 001 Through	Switch input x to output x
[x]VALL.	Send: 1VALL.	Return: V:001 To All	Switch input x to all outputs
[x]BALL.	Send: 1BALL.	Return: V:001 To All	Switch input x to all outputs
[x1]V[x2].	Send: 1V1.	Return: V:001->001	Switch input x1 to output x2
[x1]B[x2].	Send: 1B1.	Return: AV:001->001	The same with [x1]V[x2].
[x1]V[x2],[x3].	Send: 1V1,2,3.	Return: V:001->001,002,003	Switch input x1 to output x2 and x3
[x1]B[x2],[x3].	Send: 1B1,2,3.	Return: AV:001->001,002,003	The same with [x1]V[x2],[x3].
[x]A.	Send: 1A.	Return: A:001	Audio selection for beak away output
#Save[x].	Send: #Save1.	Return: #Save->01	Save to scene x
#Recall[x].	Send: #Recall1.	Return: #Recall->01	Recall scene x

Application Example



HDMI™
HIGH-DEFINITION MULTIMEDIA INTERFACE

The terms HDMI, HDMI High-Definition Multimedia Interface, HDMI trade dress and the HDMI Logos are trademarks or registered trademarks of HDMI Licensing Administrator, Inc.



**4K@60hz 4x16 HDMI™ Matrix
w/ Video Wall (Seamless, Audio
Extract, MultiView)**

UHD-416MVW

www.orei.com

© 2025