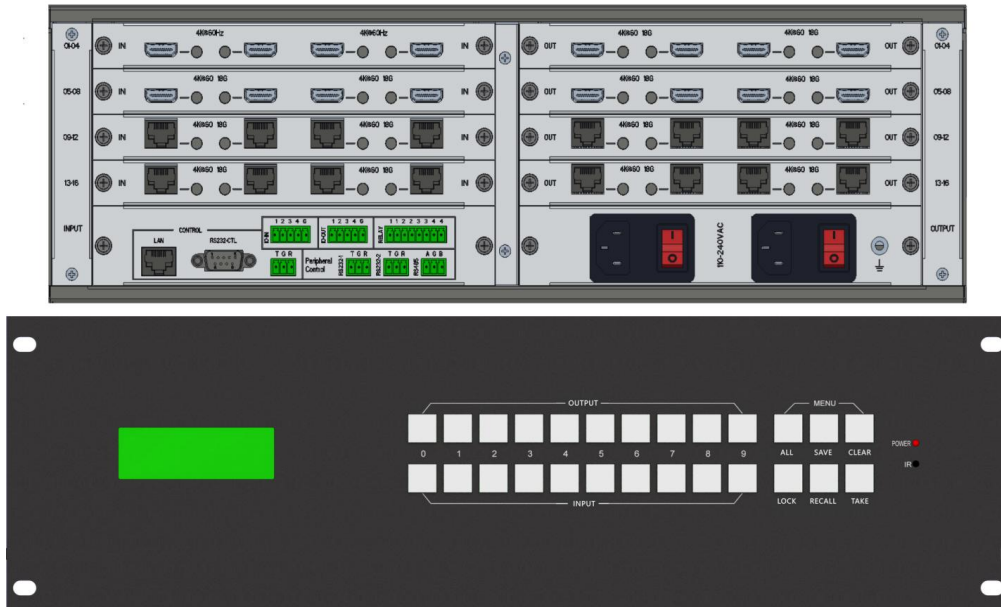


## 4K60 (4: 4: 4) Matrix Switcher

# User Manual



## Warning

- Do not expose this device to Rain, Moisture, and Dripping
- Only use accessories specified by the manufacture
- Unplug this device during Lightning Storms
- The manual is for reference only, maybe updated without further notice

# Content

|                                                               |    |
|---------------------------------------------------------------|----|
| 1. System description .....                                   | 2  |
| 1.1. Introduction .....                                       | 2  |
| 1.2. Features .....                                           | 2  |
| 1.3. Specification-main unit .....                            | 3  |
| 1.4. Specification-input card and output card .....           | 3  |
| 1.5. Output resolution and HEX index .....                    | 5  |
| 2. Panel introduction .....                                   | 6  |
| 2.1 Front view .....                                          | 6  |
| 2.2 Rear view .....                                           | 6  |
| 3. Package .....                                              | 8  |
| 4. PC Tool user guide .....                                   | 8  |
| 4.1 Connect tab .....                                         | 8  |
| 4.2 Matrix switch tab .....                                   | 9  |
| 4.3 Signal config tab .....                                   | 9  |
| 4.4 TV wall tab .....                                         | 10 |
| 4.5 Multiview tab .....                                       | 10 |
| 4.6 System tab .....                                          | 10 |
| 4.7 Peripheral tab .....                                      | 11 |
| 5. How to achieve multiview function of splicing wall .....   | 11 |
| 6. How to achieve point to point display with LED panel ..... | 12 |

# 1. System description

## 1.1. Introduction

MA5000 series modular matrix switcher is a high-performance ultra high definition video signal switching device that supports 4K@60Hz-4:4:4 processing of input, output, switching, multiview and wall splicing

This product adopts a dual power redundancy design and a plug-in single card 4-way structure, which can support up to 8-80 signal inputs and 8-80 signal outputs

## 1.2. Features

1. Support seamless switching between different input resolutions
2. Comprehensive splicing display function, four screen window multiview function and zoom function
3. Support synchronization for all output ports, there are two options: general mode and sync delay mode
4. Supports 90°, and 180° rotation base on different output cards
5. Support auto output resolution and user define output resolution, suitable for LED panel display
6. RGB video processing, perfectly restoring true colors
7. Input cards: HDMI/HDBaseT/Fiber card , up to 3840x2160/4096x2160@60Hz input resolution  
SDI card, up to 1080p60 input resolution
8. Output cards : HDMI/HDBaseT/Fiber card , up to 3840x2160/4096x2160@60Hz output resolution
9. Support audio insert on input card and audio extracting on output card
10. Provide multiple control ports: front panel buttons, remote control, RS232, network and web
11. Dual power redundancy design



### 1.3. Specification-main unit

| Chassis      | 8x8, 2U                                                                           | 16x16, 3U                                                                         | 32x32, 5U                                                                          | 80x80, 11U                                                                          |
|--------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Front view   |  |  |  |  |
| Rear view    |  |  |  |  |
| Size (W*D*H) | 483x365x89mm                                                                      | 483x365x134mm                                                                     | 483x365x223mm                                                                      | 483x365x512mm                                                                       |
| Gross weight | 9Kg                                                                               | 13Kg                                                                              | 23Kg                                                                               | 60Kg                                                                                |
| Power module | 100W*2 or 200W*2 Redundancy                                                       | 200W*2 or 350W*2 Redundancy                                                       | 350W*2 or 500W*2 Redundancy                                                        | 350W*4 or 500W*4 Redundancy                                                         |

### 1.4. Specification-input card and output card

| Input Card | Interface | Signal                 | Resolution                                                                                                                                                                                |
|------------|-----------|------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|            | HDMI      | HDMI,DVI               | Up to 3840x2160@60                                                                                                                                                                        |
|            | RJ45      | HDbaseT                | Up to 3840x2160@60<br>Support POC                                                                                                                                                         |
|            | BNC       | SDI                    | 480i,576i,1080i50/60,720p50/60,<br>1080p24/25/29/30/50/60                                                                                                                                 |
|            | DVI       | HDMI,DVI               | Up to 1920x1200@60<br>If need external LR audio input, please use DVI to DVI+3.5mm adapter                                                                                                |
|            | VGA       | VGA,<br>YPbPr,<br>CVBS | VGA input card, support following three signals<br>VGA: From 640x480@60 to 1920x1200@60<br>YPbPr: Use VGA to YPbPr adapter<br>480i,576i,480p/576p,<br>1080i50/60,720p50/60,<br>1080p50/60 |

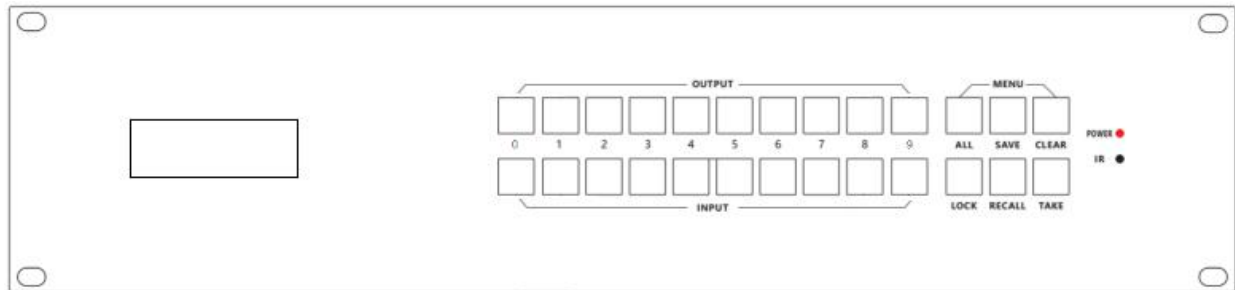
|             |           |                        |                                                                                                                                                                                                                   |
|-------------|-----------|------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|             |           |                        | CVBS: Use VGA to YPbPr adapter<br>PAL,NTSC                                                                                                                                                                        |
|             | Fiber     | LC                     | Sing mode and single cable<br>480p to 3840x2160p60<br>Transmission distance 10 kilometers                                                                                                                         |
| Output Card | Interface | Signal                 | Resolution                                                                                                                                                                                                        |
|             | HDMI      | HDMI,DVI               | From 480p to 3840x2160@60<br>Different daughter cards maybe have different resolution capability                                                                                                                  |
|             | RJ45      | HDBaseT                | From 480p to 3840x2160@60<br>Support POC<br>Different daughter cards maybe have different resolution capability                                                                                                   |
|             | BNC       | SDI                    | 1080i50/60,720p50/60,1080p50/60                                                                                                                                                                                   |
|             | DVI       | HDMI,DVI               | From 1024x768 to 1920x1200@60<br>If need stand alone LR audio output, please use DVI to DVI+3.5mm adapter                                                                                                         |
|             | VGA       | VGA,<br>YPbPr,<br>CVBS | VGA output card, support following three signals<br>VGA: From 1024x768@60 to 1920x1200@60<br>YPbPr: Use VGA to YPbPr adapter<br>1080i50/60,720p50/60,<br>1080p50/60<br>CVBS: Use VGA to YPbPr adapter<br>PAL,NTSC |
|             | Fiber     | LC                     | Sing mode and single cable<br>480p to 3840x2160p60<br>Transmission distance 10 kilometers                                                                                                                         |

## 1.5. Output resolution and HEX index

| Output card type               |    | 4K category<br>HDMI,HDBaseT,<br>Fiber | 2Kcategory<br>HDMI,HDBaseT | DVI          | 3G SDI       | VGA card     |              |      |
|--------------------------------|----|---------------------------------------|----------------------------|--------------|--------------|--------------|--------------|------|
|                                |    |                                       |                            |              |              | Signal type  |              |      |
| Resolution<br>And<br>Hex Index |    |                                       |                            |              |              | VGA          | YPbPr        | CVBS |
|                                | 00 | 4096x2160p60                          | 1920x1200p60               | 1920x1200p60 | 1920x1080p60 | 1920x1200p60 | 1920x1080p60 | PAL  |
|                                | 01 | 4096x2160p50                          | 1920x1080p60               | 1920x1080p60 | 1920x1080i60 | 1920x1080p60 | 1920x1080i60 | NTSC |
|                                | 02 | 3840x2160p60                          | 1920x1080p50               | 1920x1080i60 | 1920x1080p50 | 1680x1050p60 | 1920x1080p50 |      |
|                                | 03 | 3840x2160p50                          | 1920x1080p30               | 1920x1080p50 | 1920x1080i50 | 1600x1200p60 | 1920x1080i50 |      |
|                                | 04 | 3840x2160p30                          | 1680x1050p60               | 1920x1080i50 | 1920x1080p30 | 1360x768p60  | 1280x720p60  |      |
|                                | 05 | 3840x2160p25                          | 1600x1200p60               | 1920x1080p30 | 1280x720p60  | 1280x1024p60 | 1280x720p50  |      |
|                                | 06 | 3440x144p60                           | 1360x768p60                | 1680x1050p60 | 1280x720p50  | 1280x768p60  |              |      |
|                                | 07 | 2560x1600p60                          | 1280x1024p60               | 1600x1200p60 |              | 1280x720p60  |              |      |
|                                | 08 | 2560x1440p60                          | 1280x768p60                | 1360x768p60  |              | 1024x768p60  |              |      |
|                                | 09 | 1920x1200p60                          | 1280x720p60                | 1280x1024p60 |              |              |              |      |
|                                | 0A | 1920x1080p60                          | 1280x720p50                | 1280x768p60  |              |              |              |      |
|                                | 0B | 1920x1080p50                          | 1024x768p60                | 1280x720p60  |              |              |              |      |
|                                | 0C | 1920x1080p30                          | USER                       | 1280x720p50  |              |              |              |      |
|                                | 0D | 1680x1050p60                          | AUTO                       | 1024x768p60  |              |              |              |      |
|                                | 0E | 1600x1200p60                          |                            |              |              |              |              |      |
|                                | 0F | 1360x768p60                           |                            |              |              |              |              |      |
|                                | 10 | 1280x1024p60                          |                            |              |              |              |              |      |
|                                | 11 | 1280x768p60                           |                            |              |              |              |              |      |
|                                | 12 | 1280x720p60                           |                            |              |              |              |              |      |
|                                | 13 | 1280x720p50                           |                            |              |              |              |              |      |
|                                | 14 | 1024x768p60                           |                            |              |              |              |              |      |
|                                | 15 | USER                                  |                            |              |              |              |              |      |
|                                | 16 | AUTO                                  |                            |              |              |              |              |      |

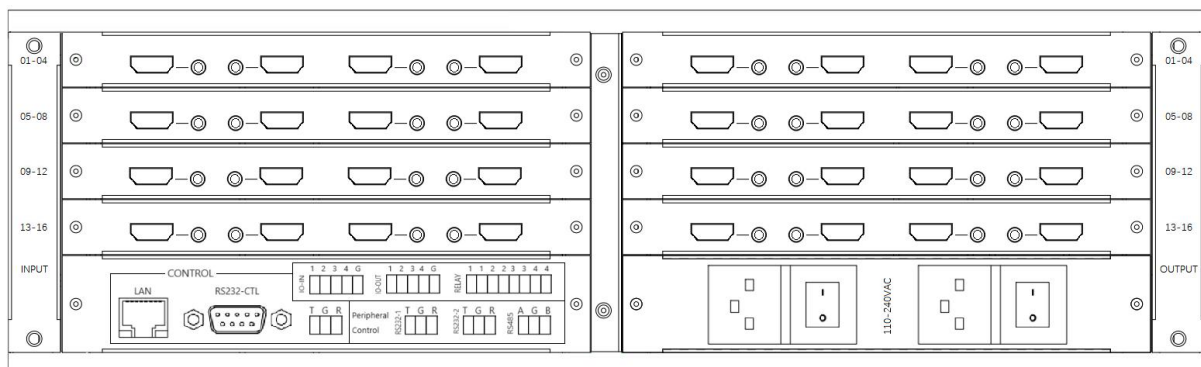
## 2. Panel introduction

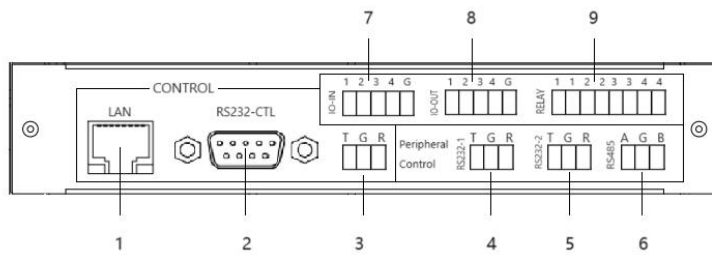
### 2.1 Front view



1. Installation screw: used to fix the control panel to the rack
2. LCM display screen: displays the routing status of each channel in the matrix.
3. Lock button : When activated, the inside light will be on, then all the buttons on the front panel will be locked and will not work. Press the button again, the light will turn off and unlock
4. TAKE/ENTER button: Execution action
5. OUT SELECT: Output 0, 1, 2...9, 10, 11... ,16
6. IN SELECT: Input 0, 1, 2...9, 10, 11... ,16  
Press OUTPUT m +INPUT n +TAKE, switch input n to output m
7. ALL button: Press ALL + INPUT n +TAKE, switch input n to all output ports
8. SAVE button : Press SAVE+ OUTPUT n +TAKE, save current routing and screen layout to scene n
9. RECALL button: Press RECALL+ OUTPUT n +TAKE, load scene for current displaying
10. IR: IR receiver, can be disabled by RS232 command
11. Directly press TAKE button, front LCD panel will loop display IR ON/OFF,RS232 Baud Rate and IP parameters

### 2.2 Rear view





| Index | Function                                                                            | Description                | Details                                                                                                                                               |
|-------|-------------------------------------------------------------------------------------|----------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1     | <b>Main Control</b><br>Use PC to control this matrix switcher                       | TCP/IP or Web Control      | IP address:192.168.0.247<br>Submask:255.255.255.0<br>Gateway:192.168.0.1<br>Baud Rate:9600<br>Web login account : admin<br>Web login password : admin |
| 2     |                                                                                     | RS232 Control              | Baud Rate:9600                                                                                                                                        |
| 3     |                                                                                     | PS232-Phoenix control      | T: Matrix Switcher -> PC<br>G: Ground<br>R: Matrix Switcher <- PC                                                                                     |
| 4     | <b>Peripheral Control</b><br>Control other peripherals through this matrix switcher | RS232-1 Peripheral Control | T: Matrix Switcher -> Peripheral<br>G: Ground<br>R: Matrix Switcher <- Peripheral                                                                     |
| 5     |                                                                                     | RS232-2 Peripheral Control | T: Matrix Switcher -> Peripheral<br>G: Ground<br>R: Matrix Switcher <- Peripheral                                                                     |
| 6     |                                                                                     | RS485 Peripheral Control   | Connect to peripheral's RS485 port<br>G: Ground                                                                                                       |
| 7     |                                                                                     | GPIO-Input                 | 4 inputs level detect,high or low<br>G: Ground<br>$V_{IL} : 0 \sim 2.0V$<br>$V_{IH} : 3.0 \sim 5.0V$                                                  |
| 8     |                                                                                     | GPIO-Output                | 4 outputs,high or low<br>G: Ground<br>$V_{OL} : 0 \sim 0.5V$<br>$V_{OH} : 4.5 \sim 5.0V$                                                              |
| 9     |                                                                                     | Relay Control              | 4 relays control, on or off<br>G: Ground<br>Rating: 48V/1A                                                                                            |

### 3. Package

| Content              | Quantity |
|----------------------|----------|
| Matrix switcher unit | 1        |
| AC cord              | 2        |
| USB to RS232 cable   | 1        |
| 1-meter net cable    | 1        |

### 4. PC Tool user guide

This PC tool is an installation free control software. It is divided into seven tabs according to different functions: Connect, Matrix, Signal, TV wall, System, Multiview and Peripheral.

The initial login password is: 111111

#### 4.1 Connect tab

Please note:

1. Use serial cable (straight line) or Ethernet cable
2. When using a serial port connection, the network port connection must be disconnected, and vice versa
3. When connecting through the network port, you must first search for and select the device before connecting

The screenshot displays the 'Connect' tab of the PC Tool software. The interface is divided into several sections:

- RS232 Configuration:** Includes fields for Uart (COM3), Baudrate (9600), DataBit (8), Parity (None), StopBit (1), and FlowControl (None). A 'Connect' button is at the bottom.
- Network Configuration:** Includes fields for Network (TCP-Server), IP (192.168.0.247), Port (23), SubMask (255.255.255.0), and Gateway (192.168.0.1). A 'Disconnect' button is at the bottom.
- Search List:** A table with columns: Number, Device Name, IP, MAC, and Version. It contains one entry: 1, LQSX\_N8, 192.168.0.247, 50-0A-00-34-00-62, 24. A 'Search Device' button is below the table.
- Status:** A log area showing various sync messages, including 'Sync Input-16 Message', 'Sync Output-1 Message', 'Sync Output-2 Message', 'Sync Output-3 Message', 'Sync Output-4 Message', 'Sync Output-5 Message', 'Sync Output-6 Message', 'Sync Output-7 Message', 'Sync Output-8 Message', 'Sync Output-9 Message', 'Sync Output-10 Message', 'Sync Output-11 Message', 'Sync Output-12 Message', 'Sync Output-13 Message', 'Sync Output-14 Message', 'Sync Output-15 Message', 'Sync Output-16 Message', and 'Sync TV Wall Message'. A 'Clear' button is at the bottom.
- PC Network Info:** A field showing '192.168.0.108 <WLAN>'.

A green checkmark icon is located in the bottom right corner of the interface.

## 4.2 Matrix switch tab

Connect **Matrix** Signal Config TV Wall System Multiview

Switch

| Output\Input |   | Input1                              | Input2 | Input3 | Input4 | Input5 | Input6 | Input7 | Input8 |
|--------------|---|-------------------------------------|--------|--------|--------|--------|--------|--------|--------|
| Output1      | 1 | <input checked="" type="checkbox"/> |        |        |        |        |        |        |        |
| Output2      | 2 | <input checked="" type="checkbox"/> |        |        |        |        |        |        |        |
| Output3      | 3 | <input checked="" type="checkbox"/> |        |        |        |        |        |        |        |
| Output4      | 4 | <input checked="" type="checkbox"/> |        |        |        |        |        |        |        |
| Output5      | 5 | <input checked="" type="checkbox"/> |        |        |        |        |        |        |        |
| Output6      | 6 | <input checked="" type="checkbox"/> |        |        |        |        |        |        |        |
| Output7      | 7 | <input checked="" type="checkbox"/> |        |        |        |        |        |        |        |
| Output8      | 8 | <input checked="" type="checkbox"/> |        |        |        |        |        |        |        |

**A** A,B can be renamed

Allset:  — Set one input to all output ports

Save/Load — Save or load scene, include video routing, wall splicing, multiview information

EDID — 1. Read EDID of displayer 2. Load one EDID file 3. Write EDID to input port

Allset:  — Set one input to all output ports

Save/Load — Save or load scene, include video routing, wall splicing, multiview information

EDID — 1. Read EDID of displayer 2. Load one EDID file 3. Write EDID to input port

## 4.3 Signal config tab

Connect Matrix **Signal Config** TV Wall System Multiview English

| Port | Input Type | Input Format | Input | Output Format | Audio Select | Bind                     | Port | Output Type | Input Format | Output       | Output Format | Mute                     | Freeze                   |
|------|------------|--------------|-------|---------------|--------------|--------------------------|------|-------------|--------------|--------------|---------------|--------------------------|--------------------------|
| 1    | HDMI       | 3840x2160p30 |       | 3840x2160p30  | Embedded     | <input type="checkbox"/> | Read | 1           | HDMI         | 3840x2160p30 | 3840x2160p60  | <input type="checkbox"/> | <input type="checkbox"/> |
| 2    | HDMI       | No-Signal    |       | No-Signal     | Embedded     | <input type="checkbox"/> | Read | 2           | HDMI         | No-Signal    | 3840x2160p60  | <input type="checkbox"/> | <input type="checkbox"/> |
| 3    | HDMI       | No-Signal    |       | No-Signal     | Embedded     | <input type="checkbox"/> | Read | 3           | HDMI         | No-Signal    | 3840x2160p60  | <input type="checkbox"/> | <input type="checkbox"/> |
| 4    | HDMI       | No-Signal    |       | No-Signal     | Embedded     | <input type="checkbox"/> | Read | 4           | HDMI         | No-Signal    | 3840x2160p60  | <input type="checkbox"/> | <input type="checkbox"/> |
| 5    | HDMI       | No-Signal    |       | No-Signal     | Embedded     | <input type="checkbox"/> | Read | 5           | HDMI         | No-Signal    | 3840x2160p60  | <input type="checkbox"/> | <input type="checkbox"/> |
| 6    | HDMI       | No-Signal    |       | No-Signal     | Embedded     | <input type="checkbox"/> | Read | 6           | HDMI         | No-Signal    | 3840x2160p60  | <input type="checkbox"/> | <input type="checkbox"/> |
| 7    | HDMI       | No-Signal    |       | No-Signal     | Embedded     | <input type="checkbox"/> | Read | 7           | HDMI         | No-Signal    | 3840x2160p60  | <input type="checkbox"/> | <input type="checkbox"/> |
| 8    | HDMI       | No-Signal    |       | No-Signal     | Embedded     | <input type="checkbox"/> | Read | 8           | HDMI         | No-Signal    | 3840x2160p60  | <input type="checkbox"/> | <input type="checkbox"/> |

Read All Input

More

No Signal, Input's Mode:

No Signal, Output's Mode:

Output

Port Rotate Test Pattern

1 0 Off

Multiview Config

Port Output Mode

1 Normal

User Define Resolution

Port H Width V Height

1 Write Read

Video Keep Alive mode when no signal input  
1. BlackScreen 2. Bluescreen 3. No output

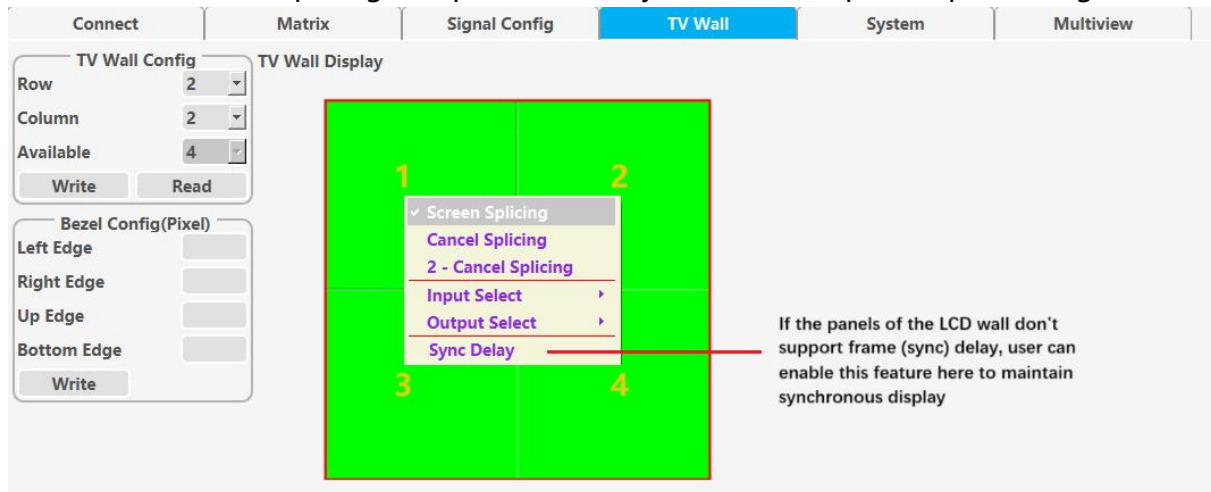
Rotate selection for one output  
1. 0° 2. 90° 3. 180°

Config the output mode for the first output port of one output slot  
1. Normal 2. Multiview

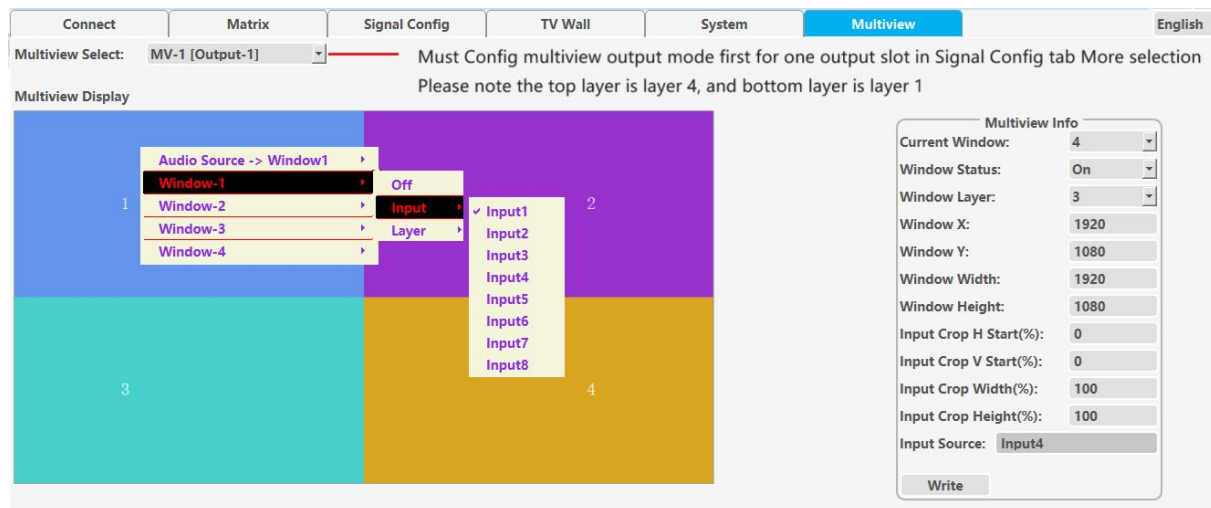
When the first port of one output slot works on multiview mode, the other three output the same with the first port, including output resolution

## 4.4 TV wall tab

This tab set the splicing wall parameters: layout, border, input/output settings, etc



## 4.5 Multiview tab



## 4.6 System tab

This tab sets network parameters, resets, reads software versions, etc

Connect Matrix Signal Config TV Wall **System** Multiview

Network Module

| Number | Device Name | IP            | MAC               | Version |
|--------|-------------|---------------|-------------------|---------|
| 1      | LQSX_N8     | 192.168.0.247 | 50-0A-00-34-00-62 | 24      |

Search Device Open Website Load Default

UPNP Port: 6432 HTTP Port: 80 Device ID: 1 Device ID Type: 0 User Name: admin Password: admin

Basic Config

Device Name: LQSX\_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: ☐ Write

Reset: Reset Firmware Version: Main

## 4.7 Peripheral tab

Connect Matrix Signal Config TV Wall System Multiview **Peripheral** English

IO-IN: 1 High Low 2 High Low 3 High Low 4 High Low

IO-OUT: 1 High Low 2 High Low 3 High Low 4 High Low

Relay: 1 On Off 2 On Off 3 On Off 4 On Off

Read Write Read Write

User Cmd Line

Set Cmd Line Num: 4 Loop Send Import Config Export Config

| Peripheral | Port   | Baudrate                            | HEX                      | Command Line          | Send | Order | Delay(ms) |
|------------|--------|-------------------------------------|--------------------------|-----------------------|------|-------|-----------|
| Peripheral | 9600   | <input checked="" type="checkbox"/> | 0A 99 55 44              | Power off projector 1 | Edit | 1     | 1000      |
| Peripheral | 57600  | <input checked="" type="checkbox"/> | 44 0A 55 99              | Note2                 | Edit | 2     | 1000      |
| Peripheral | 115200 | <input checked="" type="checkbox"/> | 99 55 44 0A              | Note3                 | Edit | 3     | 1000      |
| Output     | 1      | 115200                              | <input type="checkbox"/> | SET ON                | Edit | 4     | 1000      |

Click here to send single command

Click here to send the command list one by one

Send

Peripheral Input Output

ASCII command

Select peripheral control interface.

Peripheral selection means use rear RS232-1, RS232-2 or RS485 port to control

Input selection means control peripheral through input port such as HDBaseT card

Output selection means control peripheral through output port such as HDBaseT card

## 5. How to achieve multiview function of splicing wall

**Step 1**, set a certain output card ( suggest to use the last output card ) to work on the multiview mode. We call one of the output ports on this card as output port M

**Step 2**, use one of the input ports of a certain input card ( suggest to use the last input port of the last input card ) as the multiview source input port, called input port N

**Step 3**, connect an external HDMI short cable between output port M and input port N

**Step 4**, set the parameters of the splicing wall and select the input source of the splicing wall as input N

## 6. How to achieve point to point display with LED panel

**Step 1**, connect input cable between source and one input port of the matrix switcher.

**Step 2**, connect output cable between LED panel and one output port of the matrix switcher.

**Step 3**, read the EDID of LED panel 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 AUTO, or USER. When set USER, need configure the user define resolution first, and make the user defined resolution to match the physical resolution of the LED panel perfectly