Matrix switcher system

User manual

Please read this manual carefully before using this system

CONTENTS

THE MATRIX SYSTEM DESCRIPTION

1.1 About the Matrix System

The matrix switcher is a high-performance video signal professional switching device for cross-switching of multiple video signal input and output. It adopts advanced high-performance image processing chip to minimize signal transmission attenuation, image and The sound signal can be high fidelity output.

The matrix is mainly used in broadcasting and television engineering, multimedia conference halls, large-screen display engineering, television teaching, command and control centers and other occasions. This product supports chassis keys, infrared remote control, RS-232 serial port, TCP/IP (non-standard) and open control code for central control.

The matrix switcher is divided into 2U chassis and 3U chassis , 6U chassis according to the input and output scale. This user manual uses 16x16 matrix switcher as an example to describe the operation instructions. Other series matrix switchers operate in the same way.

Figure 1-1 1616 Mixed matrix switcher

MATRIX SYSTEM PACKAGING INSTRUCTIONS

Hybrid matrix switcher host

Infrared remote control

RS-232 communication cable

power cable

TK-MT matrix control software CD

Equipment user manual and warranty card

MATRIX HOST INSTALLATION

The matrix host is housed in an all-metal chassis that can be placed with a variety of devices. In addition, thes matrix mainframe also provides standard machine mounting brackets, which users can install on standard industrial cabinets.

FRONT AND REAR PANEL SCHEMATIC

4.1 1616 the front panel schematic

MATRIX AND PERIPHERAL DEVICE CONNECTION

5.1 Input and Output Interface Description

The product adopts the plug-in design method, and the input and output can be freely

configured according to the demand. The input and output modules of matrix switcher are single card 4 channels. Currently, HDMI input board, DVI input board, HDMI output board, DVI output board can be configured.。

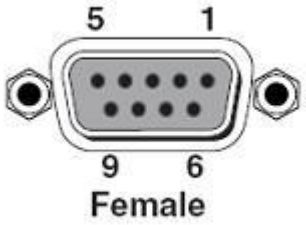
5.2 Communication port and connection method

The matrix provides a standard RS-232 serial communication port and a LAN network control port. In addition to the front panel buttons for switching operations, the matrix allows users to control using various control systems or remotely via Ethernet. Ethernet control can be expanded with optional Ethernet interface accessories.

5.2.1 matrix connection to control system

The matrix can be controlled using a variety of control systems to control the matrix via an RS-232 serial interface or an optional Ethernet control port.

The RS-232 port is a 9-pin female connector with the following pin descriptions:



Number	Pin	Description
1	N/u	null
2	Rx	receive
3	Tx	send
4	N/u	null
5	Gnd	gnd
6	N/u	null
7	N/u	null
8	N/u	null
9	N/u	null

5.2.2 The matrix and control computer connection

Use the RS-232 cable to connect the serial communication port (COM1 or COM2) of the computer to the RS-232 communication port of the HDMI matrix host. After installing the application software, you can use the computer to control the mixing matrix. Users can use the application software that comes with the matrix as the computer control software, or theycan write their own control software.

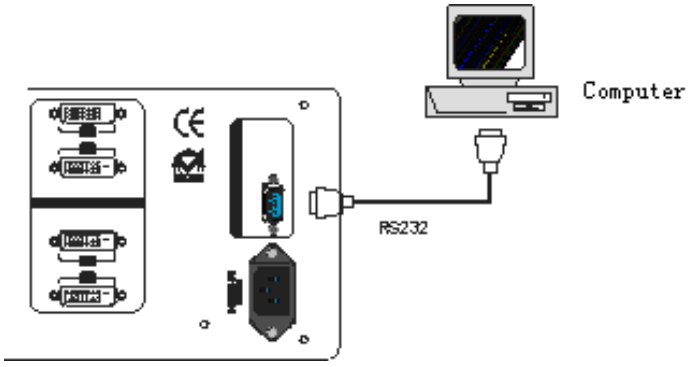


Figure 5-1 RS-232 connection between HDMI matrix and computer

5.3 Connection method between matrix and computer signal input and output device

The matrix switcher can be equipped with DVI and HDMI input/output modules. Users can connect various computer signals, audio and video signal devices, such as DVD players, desktop computers, graphics workstations, digital display consoles, etc. according to different occasions. The terminals can be connected to projectors, video recorders, computer monitors, amplifiers, etc.

System topology:

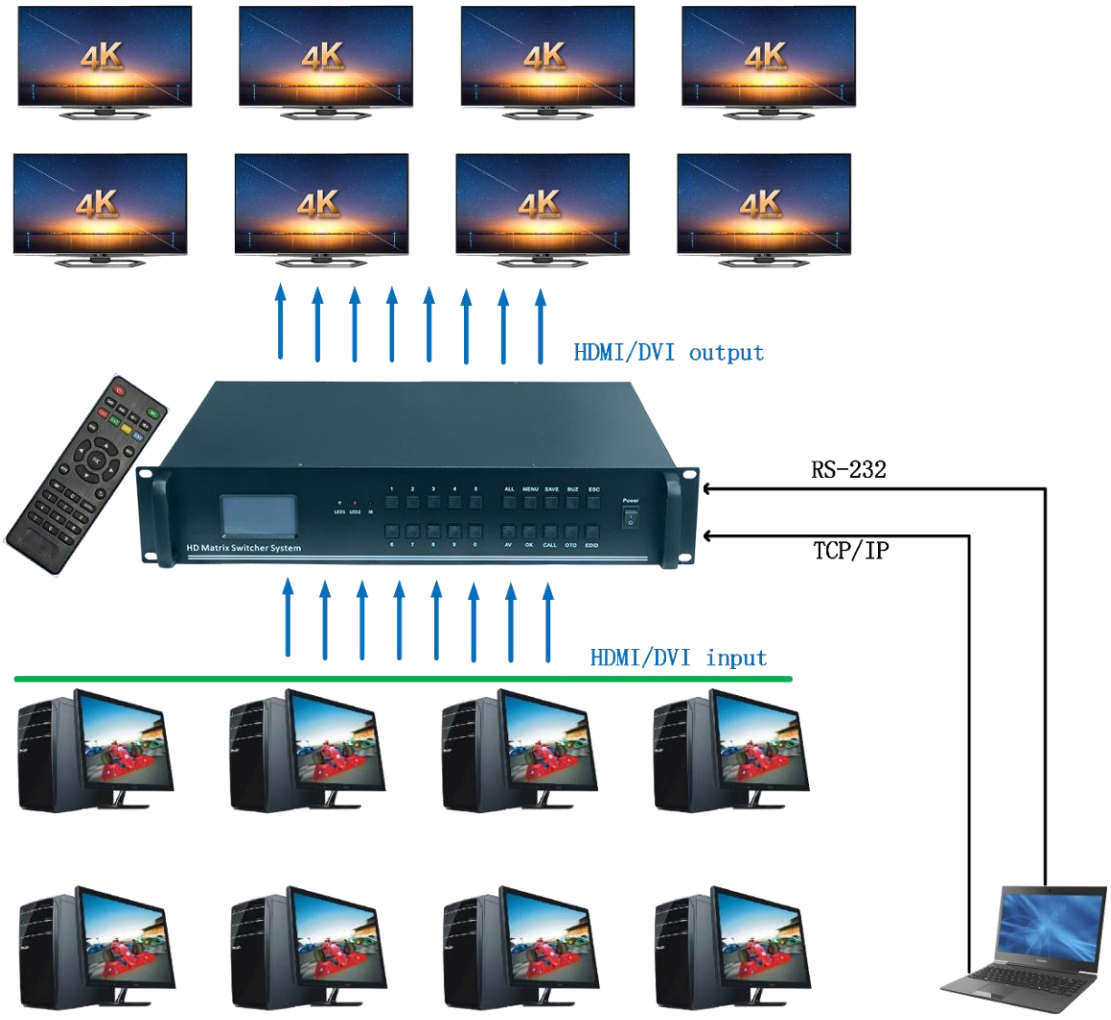


Figure 5-4 System connection diagram of TK-MT series matrix switcher

CONTRON PANEL INSTRUCTIONS

6.1 Front panel schematic

6.2 Front panel function operation

The small LCD screen on the back panel of the matrix boot shows the WELCOME menu, as shown in the small LED screen above.

The following is the front panel operation mode：

6．2．1 Key Description：

1, 2, 3, 4, 5, 6, 7, 8, 9, 0: number keys, fast switching scene keys, number selection keys;

In the operation interface, directly press the No. 1-3 button on the host or remote control, which means to select the item;

In the WELCOME menu, press the 1-9 button on the main unit or remote control to quickly switch the saved scene number.

AV：Signal switching setting；

ALL：Switch to all；

MENU：MENU；

SAVE：save the scene mode;

BUZ：scene mode setting;

ESC：Exit/cancel；

EDID：EDID information binding setting key;

CALL：scene mode call;

OTO: corresponding to switch, input 1, 2, 3, 4 switch to output 1, 2, 3, 4, and so on;

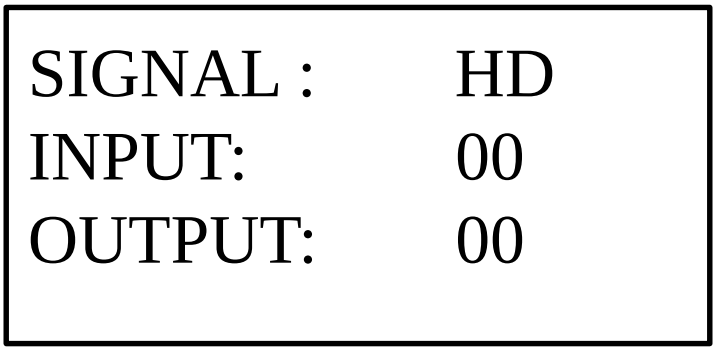
OK：Confirm / select；

6．2．2 Signal switching

Press the number keys to select the input signal channel to be switched. After selecting the LED screen cursor, it will automatically move to the output channel column, press the channel you want to switch to, and then press OK key, the switch is completed.

Example 1, such as switching from input 2 port to output 3 interface: 0→2→0→3, the cutting is completed;

Example 2: If the input 2 port is switched to all output interface switching modes: 0→2→All the cutting is completed;



6．2．3 Scene save

Save the set channel switching mode in the matrix switcher so that you can quickly call the mode later. For example, save the switched mode in the 3rd key, press the chassis button BUZ button to enter the system operation and select the scene save. as follows:

BUZ→2→OK→0→3→Enter, End of save；

or SAVE→0→3→OK, End of save；

6．2．4 Scene call

Recall the saved channel switching mode test, press the BUZ key to enter the system operation, select the scene recall through the number keys, enter the scene number that needs to be recalled, and then press the OK key to complete; or press the CALL key to enter the shortcut recall, enter all After the scene number to be recalled, press OK to complete;

6．2．5 reset

To completely restore the machine to the factory settings, press the BUZ button to enter the system operation, select to restore the factory press OK to complete;

6．2．6 Buzzer setting

Turn on or cancel the prompt sound when the matrix switcher is operating, press the MENU button to enter the system settings and select the buzzer setting, select on/off by the number 1 button and press the OK button to complete the setting;

6．2．7 Identification code setting

Many times, it is necessary to control multiple matrix switchers through one computer, so it is necessary to set the code of each machine to selectively control and control a certain machine. Press the Menu button to enter the system setting selection ID setting, enter the identification code number and press the OK button to complete the setting;

6．2．8 language settings

The matrix switcher can be set to two languages, simplified Chinese and English, enter the system setting through the MENU button, select the language setting, and switch the required language through the number 1 button; the specific operations are as follows:

MENU→3→OK→1→OK, End of save；

Infrared remote control instructions

The device can be set by infrared remote control. The function is the same as the setting of the chassis key. This section lists the buttons and profiles corresponding to the remote control and the chassis keys.;

Switch：Signal switching key, the same function as the AV button of the chassis. After pressing the Switch button, press the number to set the input and output ports, and press the OK button to complete the switch;

Menu：Same chassis button Menu button；


：Same chassis button Esc button function；

OK: Same as the chassis button OK;

SOURCE: BUZ with the chassis button, press to enter the system operation；

Number key: same as the number selection key of the chassis;

AUTO: Same as the EDID key of the chassis;


：Same as chassis OTO button；

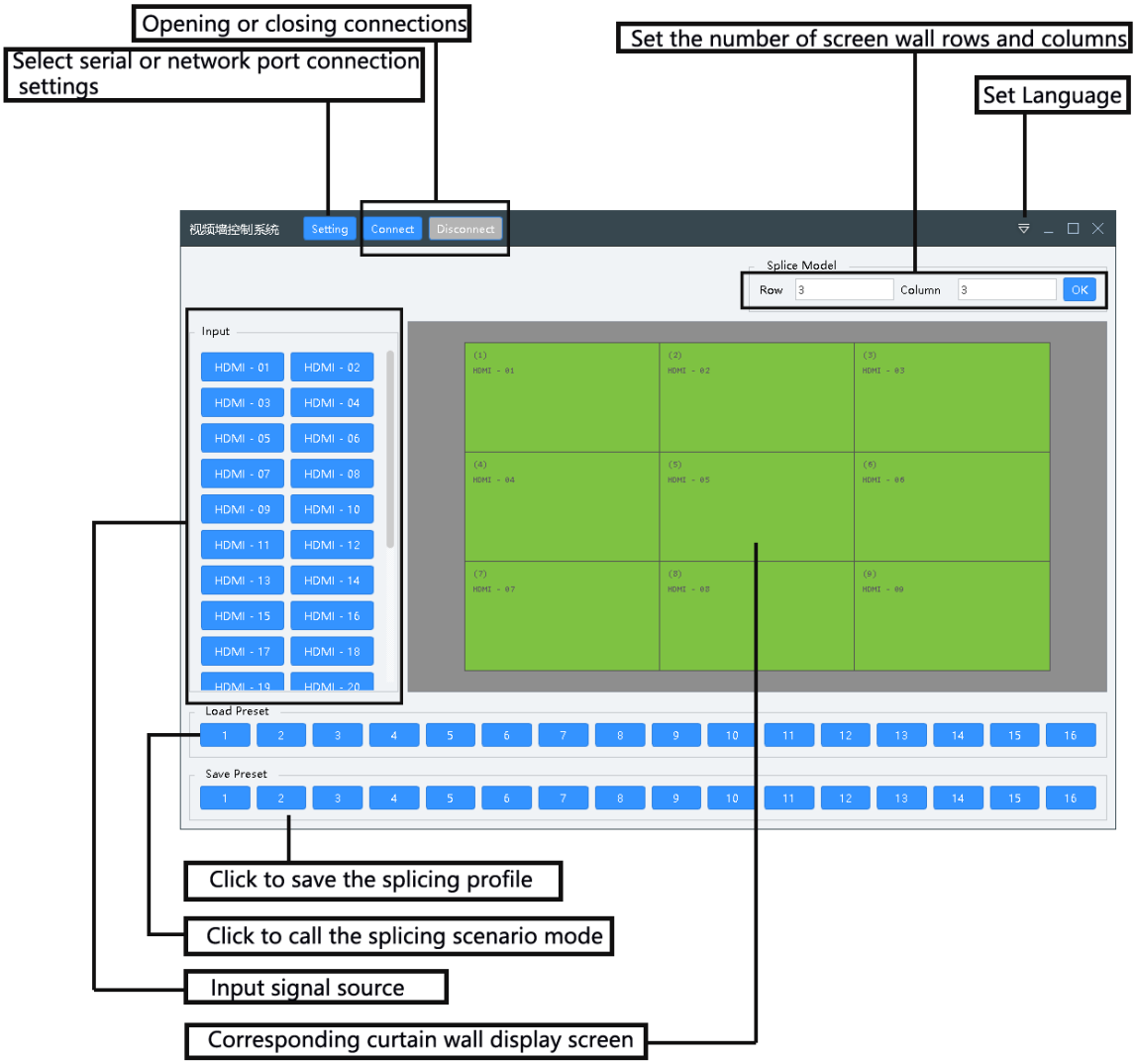
：Same as the case SAVE button；


：CALL key in the same chassis；


： Same as the chassis All button, set to switch to all outputs；

HOST CONPUTER OPERATION INSTRUCTIONS

Communication via RS-232 serial port or TCP/IP, control the device through the control software on the computer, and the lower computer diagram：



1、 Communication connection: First, connect the computer and device through RS-232 serial cable, or connect the device directly to the computer or connect to the local area network through a network cable;The RS-232 connection must correspond to the corresponding COM port number on the computer. The serial port number can be queried on the device manager of the control panel.;

2、 The RS-232 connection must correspond to the corresponding COM slogan on the computer. The serial port number can be queried on the Device Manager of the control panel;

3、 Through TCP/IP control, the LAN or computer IP network segment must initially be set to 1 segment;

4、 Open the control software: Open the MatrixController.exe files in the Software file, and the following software interface will pop up. Click on Settings, click on Serial Port Connection, or select the IP address of the IP machine, and then click Connect to operate the matrix switch.

5、 Channel naming: For the convenience of memory, the input and output channels of the control software can be renamed in Chinese or English. The naming method is to right-click on the corresponding input or output

channel with the mouse;

6、 Rename scenario saving or scenario loading: right-click the corresponding button to rename the scenario;

7、 Modification of matrix IP address - The default IP address of the matrix is 192.168.1.168. If you need to modify the IP address for other reasons, please follow the following steps to modify it:

7.1. First ensure that the device can communicate normally through the serial port;

7.2. Perform the following steps to modify the IP address:

7.2.1. Open the control software and connect to the serial port.

7.2.2, click Add to pop up the network settings window;

7.2.3. After modifying the IP address, make sure that the IP address must be on the same network segment as the control computer or LAN.

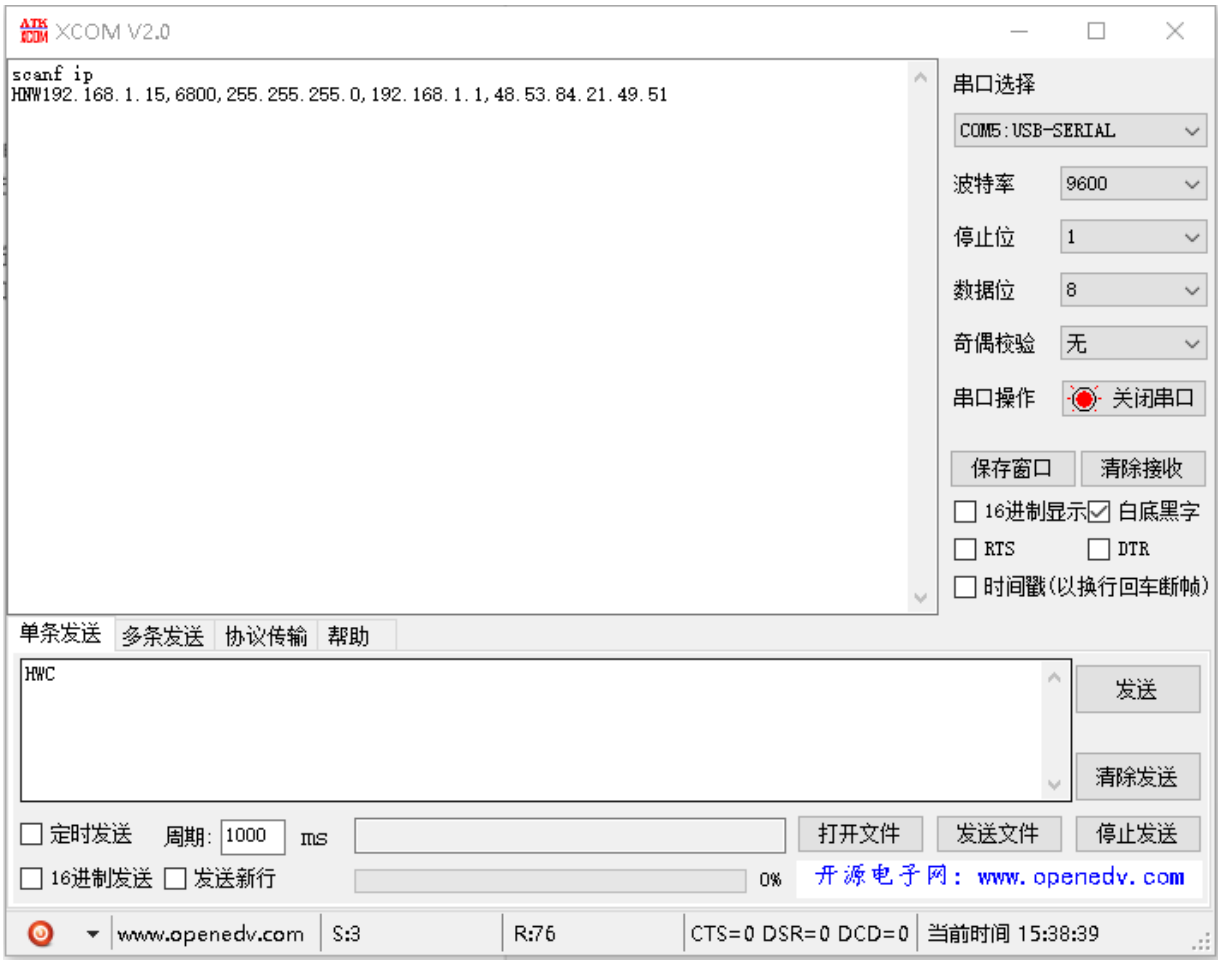
7.2.4, right click on the IP address, pop up the settings window again, and then click OK again (Note: IP can not be selected before clicking the IP address);

7.2.5, check the IP, click on the connection, the connection shows the disconnected state, and the IP setting is successful;

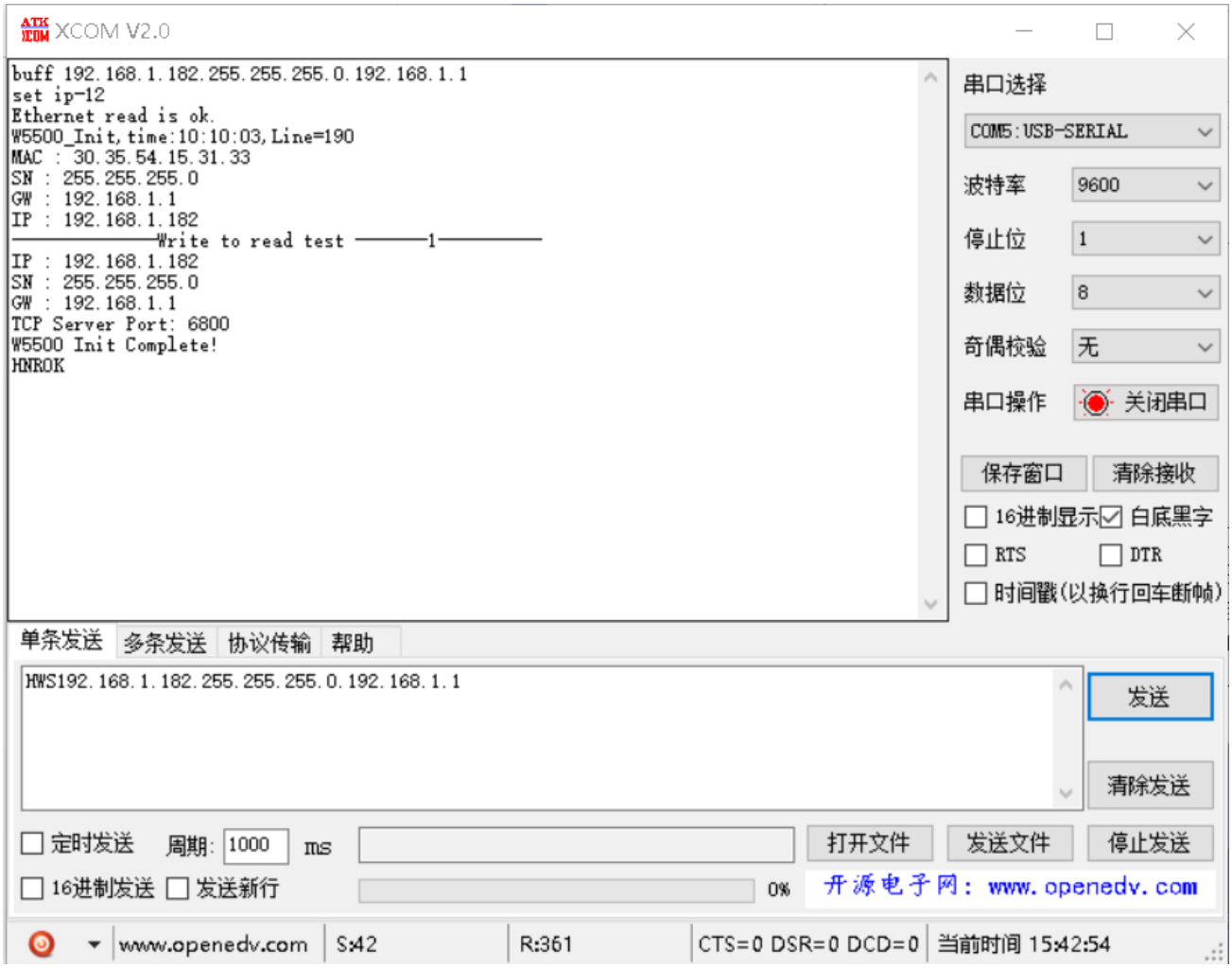
8、 IP address query: through the serial port assistant input HWC point can be sent to view the existing IP address in the assistant window;

9、 IP address query: After entering the HWC point and sending it through the serial port assistant, you can view the existing IP address in the assistant window;

Set the baud rate to 9600 and send in non hexadecimal format. Please refer to the following figure for details:



10. Modify IP address: Enter the command HWS192.168.182.255.255.255.0.192.168.1.1 through the serial assistant, and then send it to modify the IP address. The first 192.168.1.182 is the IP address, and the last 192.168.1.1 is the gateway



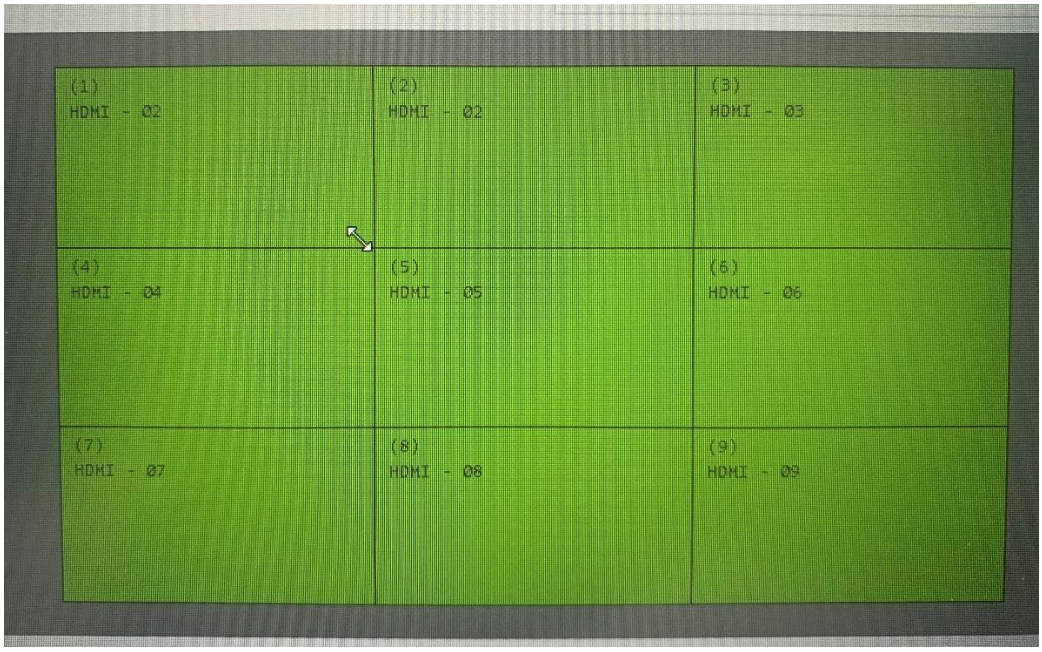
Operating steps:

After successful connection, signal source switching and splicing operations can only be carried out.

2. Switch signal sources, hold down the signal source with the mouse and drag it to the corresponding display screen on the right curtain wall.

3. Screen splicing, first set the number of rows and columns of the curtain wall, move the mouse to the bottom right corner of screen 1, and hold down the left mouse button to drag,

Then drag the signal source on the left to the curtain wall for splicing. As shown in the figure:

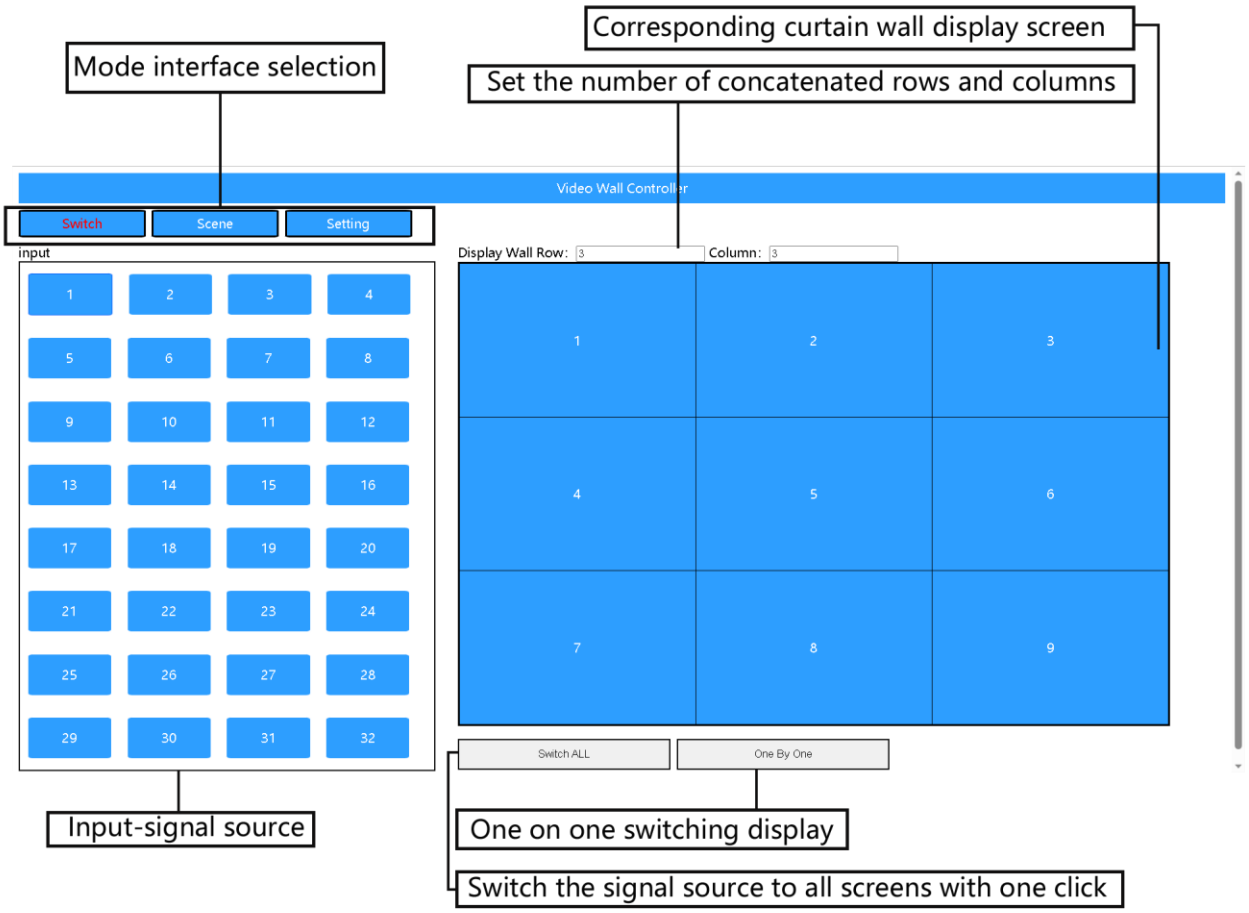


4. Double click on the splicing screen to restore it to a single screen state, and you can drag and splice again.
5. Mode saving: After setting up the splicing screen, click the Save Scenario column button to save the scenario in the corresponding mode. Click the corresponding button in the Call Scenario column to call it up.

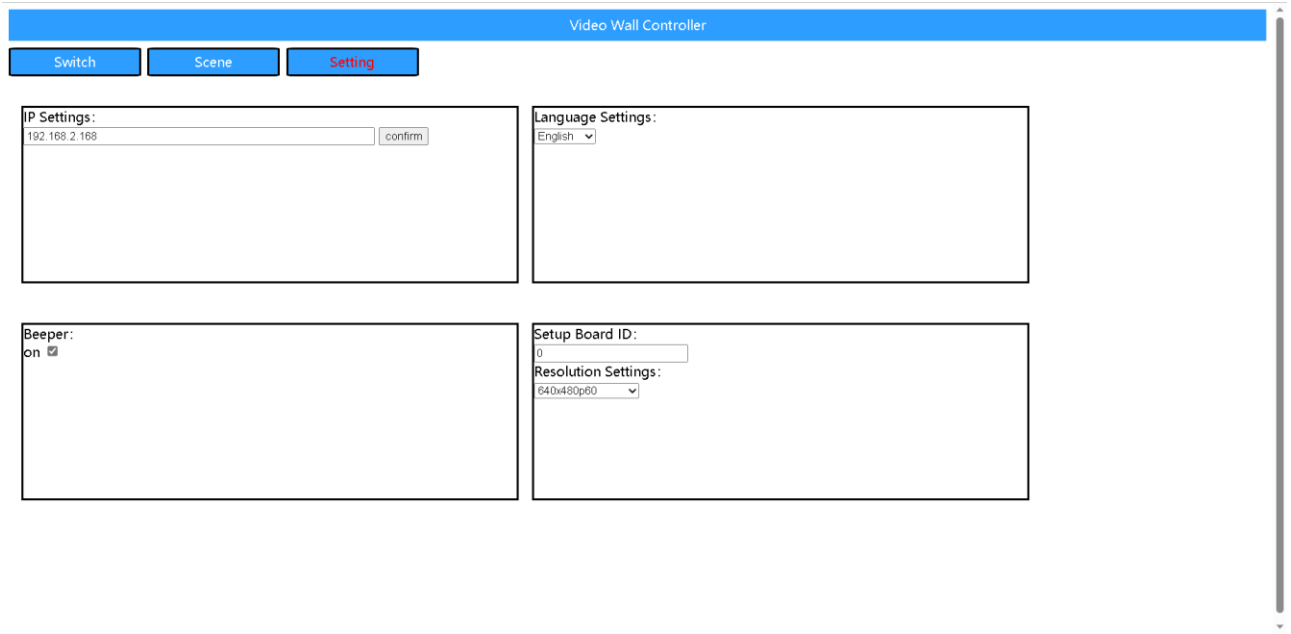
Regarding WEB control:
1. Both seamless matrix and seamless matrix can be optionally equipped with web control function;
2. After customizing the web page control function at the factory, it is not possible to send commands through the TCP/IP port to achieve central control. The PC control software cannot control the matrix through TCP/IP, but the central control and PC control software can control the device through the serial port;
3. Factory customized routine program, which can be controlled through TCP/IP network port and serial port for central control and PC software control, but cannot be controlled through web pages;
4. Only one can choose between web control and regular shipping procedures, and once shipped from the factory, users cannot choose between web and regular procedures;

web control

Connect and communicate through the network cable, and control the device through the web page on the computer or tablet or mobile phone. The following is the illustration of the web end:


Mode interface selection
Corresponding curtain wall display screen
Set the number of concatenated rows and columns
Video Wall Controller
Switch
Scene
Setting
input
Display Wall Row: 3
Column: 3
Switch ALL
One By One
Input-signal source
One on one switching display
Switch the signal source to all screens with one click


Video Wall Controller
Switch
Scene
Setting
Load Scene:
Save Scene:
Scene Polling:
Poll Time: 2 S OFF
Click to call the splicing scenario mode
Click to name and click submit again to save
Scenario polling module



Tip: Mobile phones, computers, and machines should be on the same local area network.
The initial IP address of the machine is 192.168.2.168
Operating steps:
1. Open the browser, enter 192.168.2.168 in the address bar, and enter the login password 123456 in the pop-up login interface.
2. Switch signal sources, hold down the signal source with the mouse and drag it to the corresponding display screen on the right curtain wall.
3. Screen splicing: First, set the number of rows and columns for the curtain wall. Move the mouse to 1 screen, press and hold the left mouse button to drag, drag to the corresponding screen and release to complete the splicing. Then, drag the signal source to the curtain wall on the left to switch.
4. Double click on the splicing screen to restore it to a single screen state, and you can drag and splice again.
5. One click to switch to all, first click on the signal source, and then click on the one click to switch to all buttons; One to one switching, click to switch signal sources one by one.
5. Mode saving: After setting up the splicing screen, click the scenario save button, enter the scenario name, click submit, and the scenario will be saved in the corresponding mode. Click the corresponding button in the scenario call column to call it up.
6. Scenario polling function: Click on the corresponding scenario mode above the arrow of the polling module to add it to the polling column below the arrow. If you want to cancel, click on the corresponding scenario in the polling column below the arrow, enter the time, click check to start polling.
7. Language settings, click on the dropdown box to select the language; Buzzer switch, click to check to turn on and off the buzzer; To set the resolution, first select the board ID and click the drop-down box to select the resolution.

Common problem

Q：Why can't the serial port be recognized and connected?
A：Reinstall the serial port driver

Q：Why can't the web be controlled?
A：Firstly, confirm whether the input IP address matches the IP address of the machine，The IP address can be queried by connecting to the serial port assistant to send HWC queries，Finally, enter the queried IP address on the webpage.

Q:The machine network segment is different from the computer and mobile LAN segments, resulting in the inability to open WEB?
A：After connecting to the machine through the serial port, open the serial port assistant and send the command HWS192.168.1.168.255.255.255.0.192.168.1.1 to modify the machine's IP address，192.168.1.168 is a non fixed address that can be changed freely.

Q：No image display after connecting the signal?
A：Check and replace the input signal source, HDMI cable, monitor, etc. If the HDMI cable exceeds 10 meters, an HDMI fiber optic cable is required

Communication control parameter protocol

1. Network control parameter
1.1. Query IP command: HWC
HNW192.168.1.172,6800,255.255.255.0,192.168.1.1,54.82.52.115.119.23
1.2. Reset operation Instruction: HWR
1.3. Set the IP command: HWS
Example: HWS192.168.1.172.255.255.255.0.192.168.1.1
After setting the IP, the host computer communication needs to be reconfigured and reconnected in order to normal communication control.
1.4: Port number support: 6800 / 6900 / 7000 / 7100

2. Serial port control parameters
The baud rate is set to 9600, 8-bit data bit, 1 stop bit, no parity bit, communication mode: asynchronous half-duplex serial communication.
3. Communication control protocol
The following protocols support matrices for all models, including the VGA series, DVI series, and HDMI series:

Matrix ID	ID identifier	Enter ID	Switch identifier	Output ID1	Separator	Output ID2	Terminator
ID	D	IN	V	OUT1	,	OUT2	.

Example: 1D1V1, 2, 3.
When the ID is 0, all matrices can be used. The ID value is 0~99.
Put the matrix with matrix ID 1 and input channel 1 to switch to output 1, 2, 3 channels.
16X16 matrix.
12D12V12, 2, 14, 1.
Put the matrix ID 12 into a matrix, and switch the input channel 12 to the output channel 12, 2, 15, and 1 channels at a time.
Switch one input channel to all output channels

Matrix ID	ID identifier	IDH	IDL	T	O	A	L	L
ID	D	INPUT ID		Protocol identification				

12D01TOALL sets the matrix with matrix ID 12, and switches input channel 1 to all output channels.
12D12TOALL puts a matrix with a matrix ID of 12, switching input channel 12 to all output channels
Switch one input channel to one-to-one correspondence

Matrix ID	T	O	O	N	E
ID	Protocol identification				

12TOONE puts the matrix with the matrix ID as 12, and the input channels are one-to-one corresponding to the output channel.
Calling a profile

Matrix ID	CALL	ID
ID	Protocol identification	Profile ID

Example: 12CALL2 calls scene mode 2 with matrix ID 12
Save profile

Matrix ID	S	A	V	E	ID
ID	Protocol identification				Profile ID

Example: 12SAVE2 saves scene mode 2 with matrix ID 12
12BUZON matrix ID is 12, buzzer on
12BUZOFF matrix ID is 12, buzzer off