

# LCD Video Wall

## User's Manual








# Foreword

## General

This manual introduces the maintenance and configuration of the LCD Video Wall (hereinafter referred to as "the video wall").

## Safety Instructions

The following signal words might appear in the manual.

Signal Words	Meaning
 <b>DANGER</b>	Indicates a high potential hazard which, if not avoided, will result in death or serious injury.
 <b>WARNING</b>	Indicates a medium or low potential hazard which, if not avoided, could result in slight or moderate injury.
 <b>CAUTION</b>	Indicates a potential risk which, if not avoided, could result in property damage, data loss, reductions in performance, or unpredictable results.
 <b>TIPS</b>	Provides methods to help you solve a problem or save time.
 <b>NOTE</b>	Provides additional information as a supplement to the text.

## Revision History

Version	Revision Content	Release Time
V1.0.0	First release.	December 2021

## Privacy Protection Notice

As the device user or data controller, you might collect the personal data of others such as their face, fingerprints, and license plate number. You need to be in compliance with your local privacy protection laws and regulations to protect the legitimate rights and interests of other people by implementing measures which include but are not limited: Providing clear and visible identification to inform people of the existence of the surveillance area and provide required contact information.

## About the Manual

- The manual is for reference only. Slight differences might be found between the manual and the product.
- We are not liable for losses incurred due to operating the product in ways that are not in compliance with the manual.
- The manual will be updated according to the latest laws and regulations of related jurisdictions.

For detailed information, see the paper user's manual, use our CD-ROM, scan the QR code or visit our official website. The manual is for reference only. Slight differences might be found between the electronic version and the paper version.

- All designs and software are subject to change without prior written notice. Product updates might result in some differences appearing between the actual product and the manual. Please contact customer service for the latest program and supplementary documentation.
- There might be errors in the print or deviations in the description of the functions, operations and technical data. If there is any doubt or dispute, we reserve the right of final explanation.
- Upgrade the reader software or try other mainstream reader software if the manual (in PDF format) cannot be opened.
- All trademarks, registered trademarks and company names in the manual are properties of their respective owners.
- Please visit our website, contact the supplier or customer service if any problems occur while using the device.
- If there is any uncertainty or controversy, we reserve the right of final explanation.

# Important Safeguards and Warnings

This section introduces content covering the proper handling of the video wall, hazard prevention, and prevention of property damage. Read carefully before using the video wall, comply with the guidelines when using it, and keep the manual safe for future reference.

## Installation Requirements



- This is a class A product. In a domestic environment this may cause radio interference in which case you may be required to take adequate measures.
- Do not place the video wall in a place exposed to sunlight or near heat sources.
- Keep the video wall away from dampness, dust, and soot.
- Install the video wall on a stable surface to prevent it from falling.
- Install the video wall in a well-ventilated place, and do not block its ventilation.
- The power supply must conform to the requirements of ES1 in IEC 62368-1 standard and be no higher than PS2. Note that the power supply requirements are subject to the device label.
- The video wall is a class I electrical appliance. Make sure that the power supply of the video wall is connected to a power socket with protective earthing.
- The appliance coupler is a disconnection device. Keep it at a convenient angle when using it.

## Operation Requirements



### WARNING

- Improper use of the battery might result in a fire or explosion.
- Replace unwanted batteries with new batteries of the same type and model.
- Use the standard power adapter. We will assume no responsibility for any problems caused by the use of a nonstandard power adapter.
- Use the power cords that are recommended for the region and conform to the rated power specifications.



- Do not drop or splash liquid onto the video wall, and make sure that there is no object filled with liquid on the video wall to prevent liquid from flowing into it.
- Operate the video wall within the rated range of power input and output.
- Do not disassemble the video wall without professional instruction.
- Use the video wall under allowed humidity and temperature conditions.
- Operating temperature: 0 °C–50 °C (32 °F–122 °F).

# Table of Contents

Foreword.....	I
Important Safeguards and Warnings.....	III
<b>1 Maintenance.....</b>	<b>1</b>
1.1 Environmental Requirement .....	1
1.2 Maintenance Tips.....	1
<b>2 Packing List.....</b>	<b>4</b>
<b>3 Device Introduction .....</b>	<b>5</b>
3.1 Video Wall.....	5
3.2 Ports .....	5
3.3 Remote Control.....	6
<b>4 Local Configuration.....</b>	<b>8</b>
4.1 Picture .....	9
4.2 System .....	10
4.3 Input Source.....	12
<b>5 System Update .....</b>	<b>14</b>
<b>6 FAQ .....</b>	<b>15</b>
Appendix 1 Cybersecurity Recommendations .....	16

# 1 Maintenance

## 1.1 Environmental Requirements

- The video wall can only be installed indoors. It is recommended that the room where the video wall is installed be equipped with air conditioner. The video wall cannot be operated in environment with high humidity and heavy dust.
- Do not block the vent of the video wall and the airflow around it; otherwise the temperature of the video wall will increase, and fire might occur.

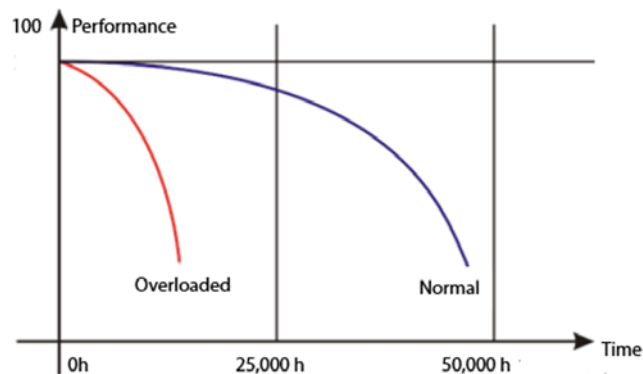
## 1.2 Maintenance Tips

Comply with the maintenance rule strictly to prolong the life span of the video wall and to implement energy conservation and emission reduction.

### Operating Time

Because of high temperature, electronic products will age rapidly if they are operated for a long time. The relation of operating time and performance of the video wall is as follows.

Figure 1-1 Performance



To prolong the life span of the video wall and save maintenance expenses, follow the suggestions below.

- If the video wall has worked for ten hours, turn it off and then turn it on after 15–30 minutes.
- If the video wall has worked for  $7 \times 24$  hours, turn it off and then turn it on after two hours.

### Temperature, Humidity and Ventilation

- The appropriate ambient temperature range for the video wall is  $22\text{ }^{\circ}\text{C} \pm 4\text{ }^{\circ}\text{C}$ , and the appropriate relative humidity range is 30%–70%, no condensation. There must be no great temperature and humidity difference.

- If the video wall is used in environment with high temperature and humidity, there will be tiny water drops on the surface and frame of the video wall. The water drops will flow inside the video wall. As a result, the glass structure will be damaged, and the liquid crystal molecule aggregation and outflow will occur. The phenomenon is displayed in Figure 1-2.

Figure 1-2 Liquid crystal leakage



During the operation, pay attention to the following points.

- Before turning off the video wall, make sure that the temperatures of the air conditioners in the server room and the room where the video wall is installed are the same.
- If the video wall has been off for a long time, check if there are water drops on the surface. If there are water drops, do not dry the surface with wet cloth. Dry the surface with absorbent paper, do not power the device, and contact the after-sales personnel.



Free warranty service is not applicable to damage (includes but not limited to the damage to the video wall and damage to the user or the third party) caused by incorrect use and maintenance.

## Cleaning

- Use degreasing cotton or cloth to clean the screen.
- The ideal detergent is isopropanol or n-hexane. Do not use ketone (such as acetone) to clean the screen.
- Before you clean the screen, pull the plug out of the socket.
- Wet cloth is not allowed to clean the video wall because there will be tiny water drops on the surface and frame of the video wall. The water drops will flow inside the video wall. As a result, the glass structure will be damaged, and the liquid crystal molecule aggregation and outflow will occur.
- The panel is fragile. As a result, you cannot press or scratch the surface of the screen with great force.

## Power Supply

Stable 100–240 VAC single phase power supply is needed; otherwise the video wall cannot work normally. To get stable voltage and prevent damage result from electrical surge, use the stabilized voltage supply.

## Storage Requirement

- If the video wall is not in use for a long time, cover it with the dust-cloth.

- If the video wall has not been used for over six months before you start to use it again, do dust removal first, or contact professional company to do the maintenance.



If the video wall is not in use for a long time, it will gather dust and heat radiation will be influenced.

## Dust-Proof Requirement

During debugging and operation, the dust concentration of the working area should not exceed 10 mg/m<sup>3</sup>.

If the video wall must be used in environment with high temperature and high humidity, or the video wall must be in single display mode for a long time, we strongly recommend you to contact engineers of our company to get suggestions. Otherwise the reliability and performance could be greatly influenced.



Airports, banks and stock markets are places with great dust and wide differences in temperature and humidity.



Playing a static image for a long time can cause a burning screen. If you want to play a static image, switch to a dynamic video every two hours and play it for more than 15 minutes.



# 2 Packing List

Check Table 2-1 to see whether the components are complete.



The appearance, items, or quantity might be different depending on the model that you purchased.

Table 2-1 Packing list

Component	Quantity
Liquid crystal video wall	1
AC power cable	1
Network cable	1
Remote control	1
AAA battery	2

# 3 Device Introduction

## 3.1 Video Wall

The video wall is displayed in Figure 3-1.

Figure 3-1 Video wall



## 3.2 Ports

Figure 3-2 Ports

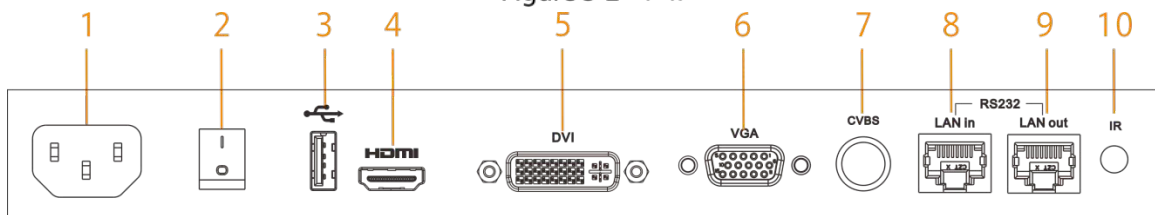


Table 3-1 Port description

No.	Port	Function
1	Power input port	Inputs AC power.
2	Power switch	Controls the on and off of the AC input port.
3	USB port	Used for system update.
4	HDMI in	Inputs HDMI signals. Supports up to 1080p@60 Hz.
5	DVI in	Inputs DVI signals. Supports up to 1080p@60 Hz.
6	VGA in	Inputs VGA signals. Supports up to 1080p@60 Hz.
7	CVBS input	Inputs CVBS signals.
8	LAN in	An RJ-45 port that inputs RS-232 signals. It controls the screen.
9	LAN out	An RJ-45 port that outputs RS-232 signals. It controls signal loop-through.

No.	Port	Function
10	IR port	Connected to the IR extension cord.

### 3.3 Remote Control

Remote control is a must-have device.

Table 3-2 Button functions

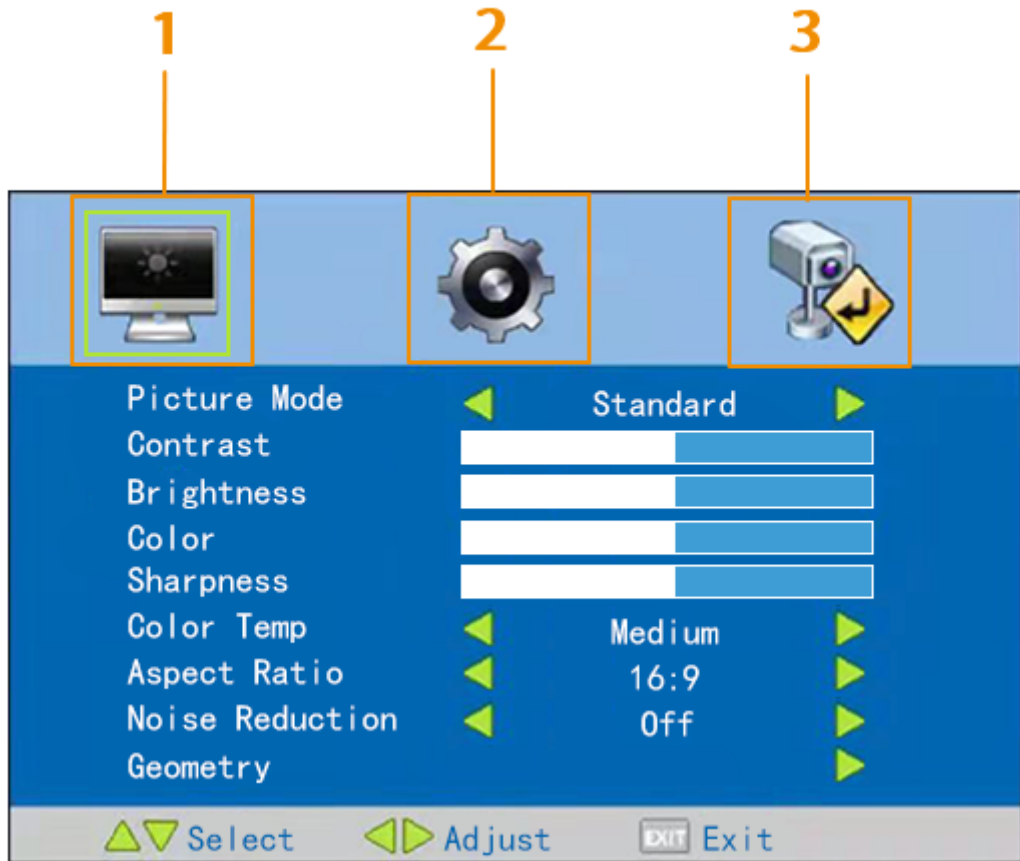
Picture	No.	Name	Function
	1	Power	Power on/Standby.
	2	Address	Address setting (dedicated to monitors).
	3	Signal source	Signal source selection. <ul style="list-style-type: none"> <li>TV1: Switch signals to CVBS signal.</li> <li>TV2: Not available.</li> <li>VGA: Switch signals to VGA signal.</li> <li>HDMI: Switch signals to HDMI signal.</li> <li>DVI: Switch signals to DVI signal.</li> </ul>
	4	FRZ	Pause button, used to stop playing videos.
	5	Signal format	Displays current input signals.
	6	Version info	Displays version of the system.
	7	Menu	Press <b>Menu</b> to display or exit the menu interface. Press <b>Menu</b> to confirm the operation you have done.
	8	Direction button	Left and right direction button: Use direction buttons to select items on the left or right of the current parameter on the screen (if you have selected voice, you can use these buttons to adjust the volume).
	9	Image Mode	Image Mode button.
	10	Brightness	Brightness button.
	11	Numeric Keypad	Numeric keypad (1-9).
	12	Enter	Enter button.
	13	Return	Return button.

Picture	No.	Name	Function
			Up and down direction button: Use it to select items up or below the current item you have selected on the screen.
	9	Image mode	Select image mode.
	10	Brightness	Select brightness mode.
	11	Number buttons	Press number buttons to enter numbers.
	12	Enter	Press <b>Enter</b> to confirm and enter the multimedia interface.
	13	Return	Press <b>Return</b> to exit the multimedia interface.

# 4 Local Configuration

Use the remote control to configure parameters for the video wall. Press the menu button, the menu of the video wall is displayed in Figure 4-1.

Figure 4-1 Menu



For introduction of icons on the menu, see Table 4-1.

Table 4-1 Icon description

No.	Menu	Description
1	Picture	Set imaging effect for the video wall.
2	System settings	Configure parameters for the system.
3	Input source	Select signal mode.



- Press **Menu** on the remote control, the menu bar is displayed on the video wall, and then you can adjust relevant parameters.
- Press **Menu** on the remote control or select **Menu** on the menu bar to exit the current menu.

## 4.1 Picture

Press **Menu** on the remote control, the menu bar is displayed on the video wall. The default menu bar is **Picture** menu bar.

Figure 4-2 Picture

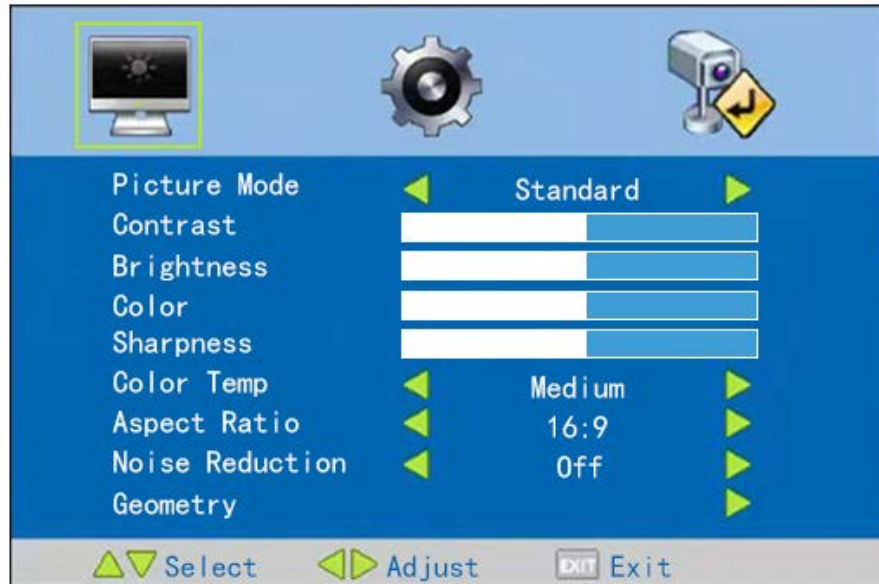
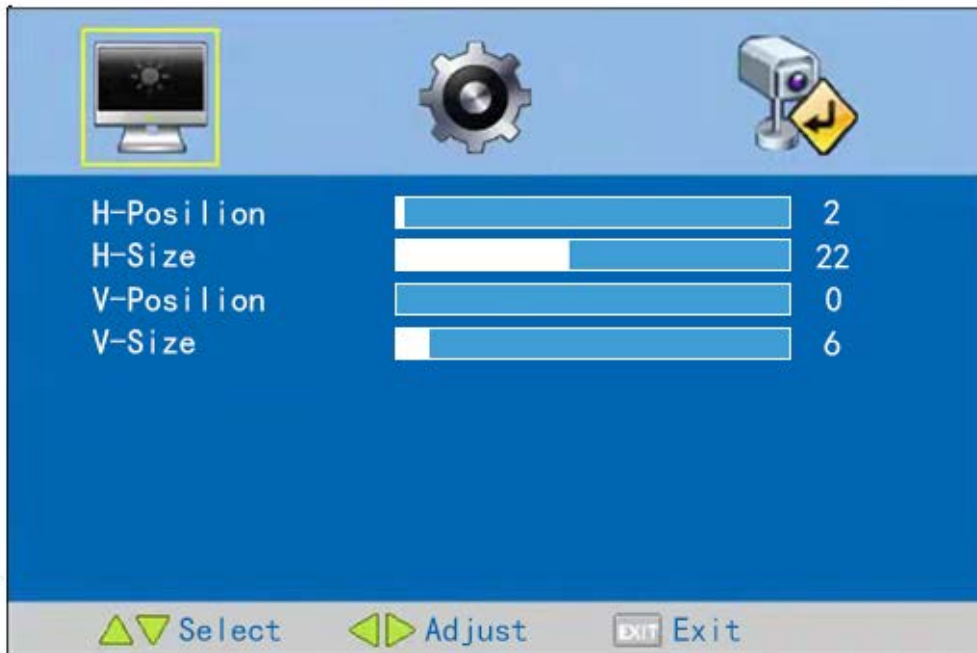


Table 4-2 Picture parameters

Parameter	Description
Picture Mode	Select a mode for the overall effects of images. There are four image modes: User mode, dynamic mode, standard mode, and soft light mode.
Contrast	Adjust contrast to make objects in images distinguishable. The value ranges from 0 through 100.
Brightness	Adjust the brightness of images. The value ranges from 0 through 100.
Color	Adjust color saturation. The value ranges from 0 through 100.
Sharpness	The higher the sharpness, the clearer the images but meanwhile the more noise. The value ranges from 0 through 100.
Color Temp	Adjust the color temperature of images.
Aspect Ratio	Adjust the display scales of images. You can select 16:9, 4:3 or panorama.
Noise Reduction	Reduce noise to improve image quality. You can select the level of noise reduction from <b>Off, Low, Middle, and High</b> .
Geometry	Adjust the position and size of images. <ol style="list-style-type: none"> <li>1. Press ▲ or ▼ to select <b>Geometry</b>, and then press ▶.</li> <li>2. Press ▲ or ▼ to select the geometry parameter to be adjusted.</li> <li>3. Press ◀ or ▶ to adjust the value. The value ranges from 0 through 50.</li> </ol>

Figure 4-3 Geometry



## 4.2 System

On the main menu, press ◀ or ▶ to select .

Figure 4-4 System settings



Table 4-3 Parameters of system settings

Parameter	Description
Osd Language	Select a system language from Chinese and English.

Parameter	Description
Osd Duration	Set how long the menu is displayed on the screen. You can select 15 s, 30 s, off or 5 s.
Backlight	Select a backlight mode for the screen.
Turn Off Auto	If the function is enabled, the screen will automatically become off when there is no input signal.
Restore Default	Restore all the parameters except language to default settings.
White Balance	Adjust the white balance to balance the color temperature of images. 1. Press ▲ or ▼ to select <b>White Balance</b> , and then press ►. 2. Select a white balance color and then adjust the value.
Address Set	1. Press ▲ or ▼ to select <b>Address Set</b> , and then press ►. 2. Select the parameter to be adjusted. 3. Press ▲ or ▼ to adjust the value.

Figure 4-5 White balance

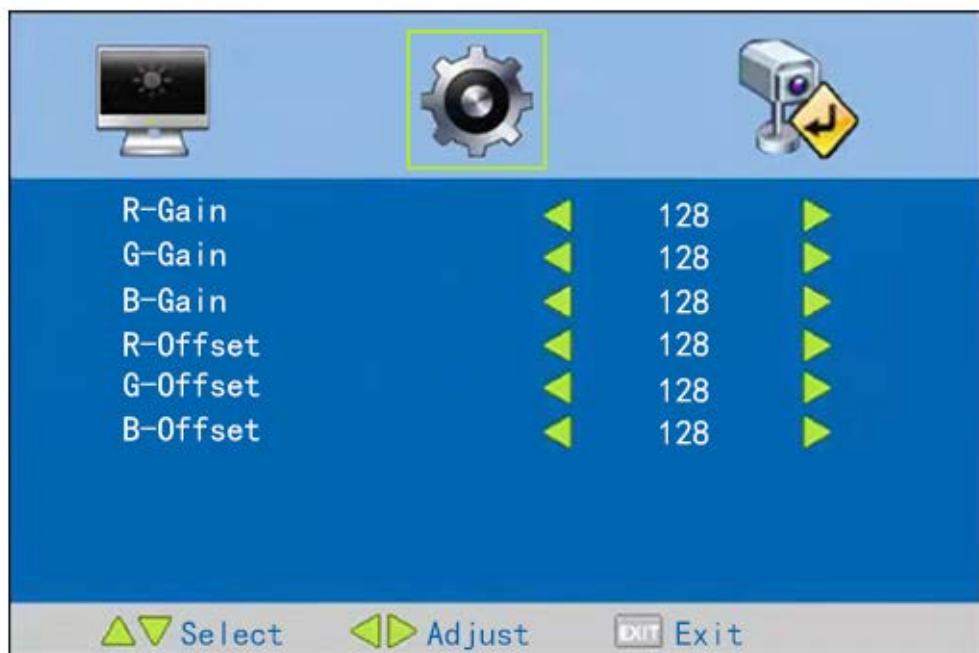




Figure 4-6 Address setting

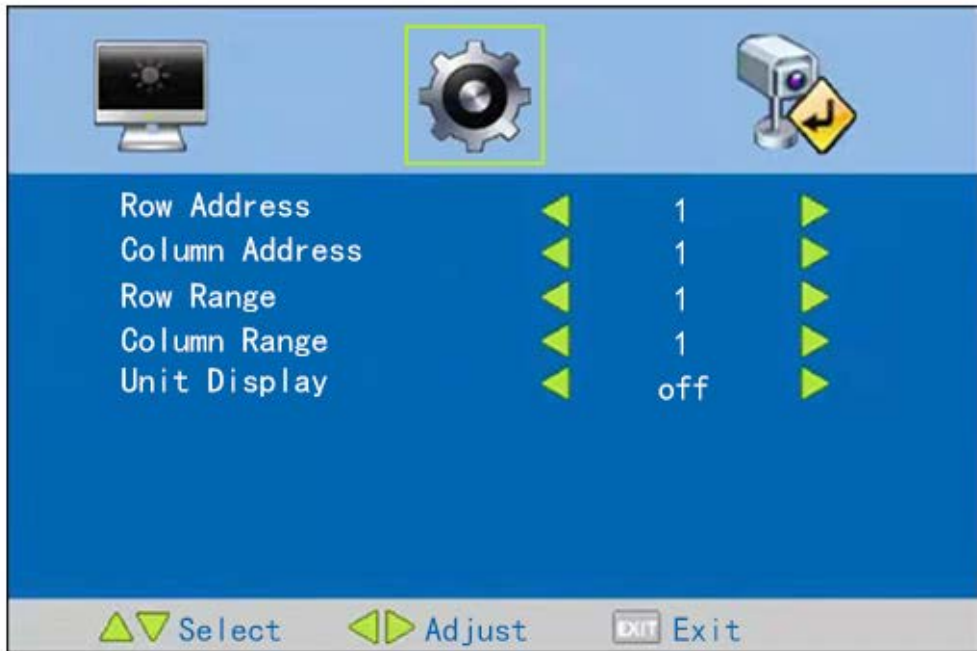


Table 4-4 Soft address parameters.

Parameter	Description
Row Address	Row address of the screen.
Column Address	Column address of the screen.
Row Range	Row range of the screen.
Column Range	Column range of the screen.
Unit Display	Enable or disable unit display.

## 4.3 Input Source

You can select a type of input signal source for the video wall. **HDMI, DVI, VGA, AV,** and **USB** are available.


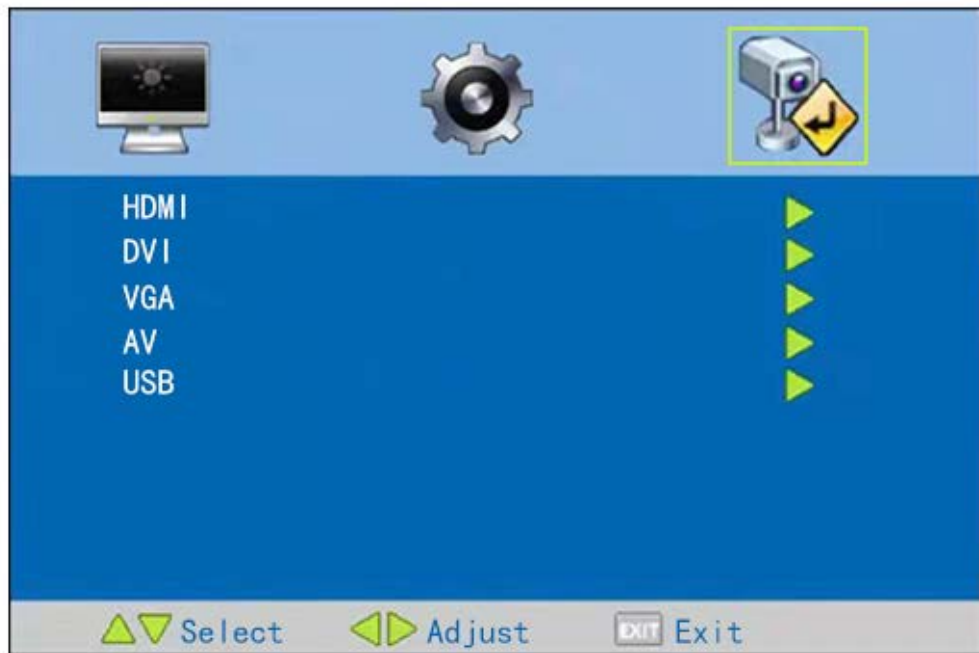
**Step 1** On the main menu, press ◀ or ▶ to select .

Figure 4-7 Input source



Step 2 Press ▲ or ▼ to select an input signal type, and then ► to configure the parameters.



You can press the signal source buttons to set the input source.

# 5 System Update

The product involves complicated operations. To protect the rights of the customer, update and maintenance must be conducted by our technicians. Do not dismantle the video wall or update the system on your own. We are not liable for any errors or damages incurred therefrom.

## 6 FAQ

Most problems can be solved by the following solutions. If problems that you encountered are not covered in the following table, contact after-sales personnel.

Table 6-1 FAQ

Problems	Solutions
When you turn on the video wall, there are no images on the screen (blank screen).	<ul style="list-style-type: none"><li>● Check whether the power source (220 VAC) is connected to alternating current.</li><li>● Check whether the power cord is broken.</li><li>● Check whether the power switch is on.</li><li>● Check whether the power switch is broken.</li><li>● Check whether the indicator light is on.</li></ul>
Blank screen (no signal displayed).	<ul style="list-style-type: none"><li>● Check whether the signal wires are in bad contact.</li><li>● Check whether there is signal source output.</li><li>● Check whether the signal wires are broken.</li><li>● Check whether the input signal type does not belong to the types allowed by the video wall.</li></ul>
Color missing.	<ul style="list-style-type: none"><li>● Check whether the signal wires are in bad contact.</li><li>● Check whether the signal wires are broken.</li></ul>
Remote control cannot control the screen.	Check whether batteries of the remote control are installed correctly.
Temperature of the video wall is too high.	Check whether the ventilation around the video wall is good.

# Appendix 1 Cybersecurity Recommendations

## **Mandatory actions to be taken for basic device network security:**

### **1. Use Strong Passwords**

Please refer to the following suggestions to set passwords:

- The length should not be less than 8 characters.
- Include at least two types of characters; character types include upper and lower case letters, numbers and symbols.
- Do not contain the account name or the account name in reverse order.
- Do not use continuous characters, such as 123, abc, etc.
- Do not use overlapped characters, such as 111, aaa, etc.

### **2. Update Firmware and Client Software in Time**

- According to the standard procedure in Tech-industry, we recommend to keep your device (such as NVR, DVR, IP camera, etc.) firmware up-to-date to ensure the system is equipped with the latest security patches and fixes. When the device is connected to the public network, it is recommended to enable the "auto-check for updates" function to obtain timely information of firmware updates released by the manufacturer.
- We suggest that you download and use the latest version of client software.

## **"Nice to have" recommendations to improve your device network security:**

### **1. Physical Protection**

We suggest that you perform physical protection to device, especially storage devices. For example, place the device in a special computer room and cabinet, and implement well-done access control permission and key management to prevent unauthorized personnel from carrying out physical contacts such as damaging hardware, unauthorized connection of removable device (such as USB flash disk, serial port), etc.

### **2. Change Passwords Regularly**

We suggest that you change passwords regularly to reduce the risk of being guessed or cracked.

### **3. Set and Update Passwords Reset Information Timely**

The device supports password reset function. Please set up related information for password reset in time, including the end user's mailbox and password protection questions. If the information changes, please modify it in time. When setting password protection questions, it is suggested not to use those that can be easily guessed.

### **4. Enable Account Lock**

The account lock feature is enabled by default, and we recommend you to keep it on to guarantee the account security. If an attacker attempts to log in with the wrong password several times, the corresponding account and the source IP address will be locked.

### **5. Change Default HTTP and Other Service Ports**

We suggest you to change default HTTP and other service ports into any set of numbers between 1024–65535, reducing the risk of outsiders being able to guess which ports you are using.

### **6. Enable HTTPS**

We suggest you to enable HTTPS, so that you visit Web service through a secure communication channel.

### **7. MAC Address Binding**

We recommend you to bind the IP and MAC address of the gateway to the device, thus reducing

the risk of ARP spoofing.

#### **8. Assign Accounts and Privileges Reasonably**

According to business and management requirements, reasonably add users and assign a minimum set of permissions to them.

#### **9. Disable Unnecessary Services and Choose Secure Modes**

If not needed, it is recommended to turn off some services such as SNMP, SMTP, UPnP, etc., to reduce risks.

If necessary, it is highly recommended that you use safe modes, including but not limited to the following services:

- SNMP: Choose SNMP v3, and set up strong encryption passwords and authentication passwords.
- SMTP: Choose TLS to access mailbox server.
- FTP: Choose SFTP, and set up strong passwords.
- AP hotspot: Choose WPA2-PSK encryption mode, and set up strong passwords.

#### **10. Audio and Video Encrypted Transmission**

If your audio and video data contents are very important or sensitive, we recommend that you use encrypted transmission function, to reduce the risk of audio and video data being stolen during transmission.

Reminder: encrypted transmission will cause some loss in transmission efficiency.

#### **11. Secure Auditing**

- Check online users: we suggest that you check online users regularly to see if the device is logged in without authorization.
- Check device log: By viewing the logs, you can know the IP addresses that were used to log in to your devices and their key operations.

#### **12. Network Log**

Due to the limited storage capacity of the device, the stored log is limited. If you need to save the log for a long time, it is recommended that you enable the network log function to ensure that the critical logs are synchronized to the network log server for tracing.

#### **13. Construct a Safe Network Environment**

In order to better ensure the safety of device and reduce potential cyber risks, we recommend:

- Disable the port mapping function of the router to avoid direct access to the intranet devices from external network.
- The network should be partitioned and isolated according to the actual network needs. If there are no communication requirements between two sub networks, it is suggested to use VLAN, network GAP and other technologies to partition the network, so as to achieve the network isolation effect.
- Establish the 802.1x access authentication system to reduce the risk of unauthorized access to private networks.
- Enable IP/MAC address filtering function to limit the range of hosts allowed to access the device.