LCD Video Wall

User's Manual

V1.0.0

Foreword

General

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

Safety Instructions

The following categorized signal words with defined meaning might appear in the manual.

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

Revision History

Version	Revision Content	Release Time
V1.0.0	First release.	December 2020

About the Manual

- The manual is for reference only. If there is inconsistency between the manual and the actual product, the actual product shall prevail.
- We are not liable for any loss caused by the operations that do not comply with the manual.
- The manual would be updated according to the latest laws and regulations of related jurisdictions. For detailed information, refer to the paper manual, CD-ROM, QR code or our official website. If there is inconsistency between paper manual and the electronic version, the electronic version shall prevail.
- All the designs and software are subject to change without prior written notice. The product updates might cause some differences between the actual product and the manual. Please contact the customer service for the latest program and supplementary documentation.
- There still might be deviation in technical data, functions and operations description, or errors in print. 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 the company names in the manual are the properties of their respective owners.
- Please visit our website, contact the supplier or customer service if there is any problem occurring when using the device.
- If there is any uncertainty or controversy, we reserve the right of final explanation.

Important Safeguards and Warnings

The manual helps you to use our product properly. To avoid danger and property damage, read the manual carefully before using the product, and keep it well for future reference.

Operating Requirements

- Do not place or install the Video Wall in a place exposed to sunlight or near the heat source.
- Keep the Video Wall away from dampness, dust or soot.
- Keep the Video Wall installed horizontally or on a stable place to prevent it from falling.
- 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 the Video Wall.
- Install the Video Wall in a well-ventilated place, and do not block the ventilation of the Video Wall.
- Operate the Video Wall within the rated range of power input and output.
- Do not dissemble the Video Wall.
- Transport, use and store the Video Wall under the allowed humidity and temperature conditions.

Electrical Safety

- Improper battery use might result in fire, explosion, or inflammation.
- When replacing battery, make sure that the same model is used.
- Use the recommended power cables in the region and use them under the rated specification.
- Use the power adapter provided with the Video Wall; otherwise, it might result in people injury and device damage.
- The power source shall conform to the requirement of the Safety Extra Low Voltage (SELV) standard, and supply power with rated voltage which conforms to Limited power Source requirement according to IEC60950-1. Note that the power supply requirement is subject to the device label.
- Connect device (type-I structure) to the power socket with protective earthing.
- The appliance coupler is a disconnection device. Keep a convenient angle when using it.

Table of Contents

1 Maintenance

1.1 Environmental Requirement

- 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
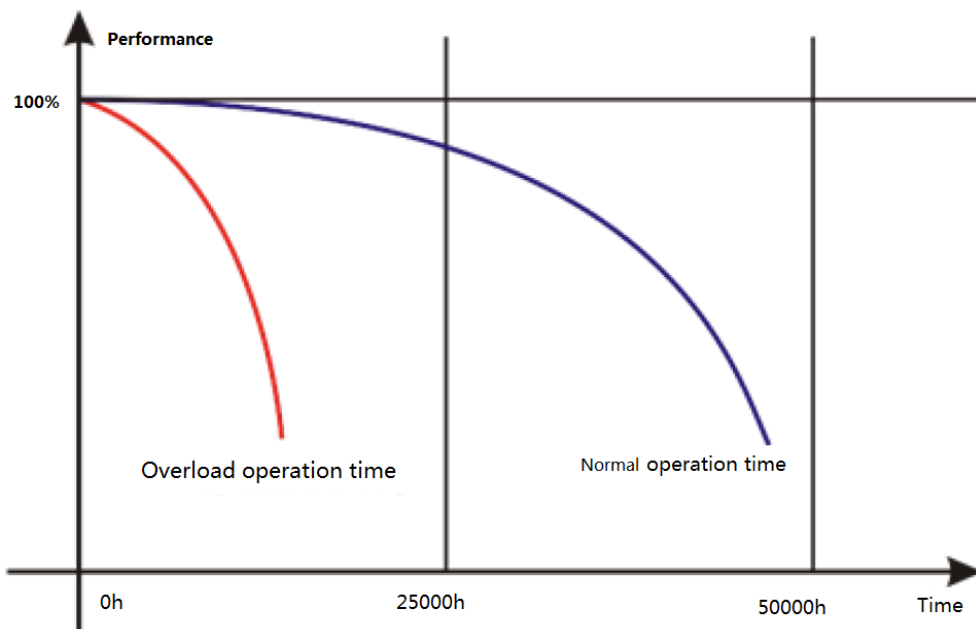
To prolong the life span of the video wall and save maintenance expenses, follow the suggestions bellow.
- If the video wall has worked for ten hours, turn it off and then turn it on after 15–30 minutes.
- If the video wall has worked for 7×24 hours, turn it off and then turn it on after two hours.

Temperature, Humidity and Ventilation

- The appropriate ambient temperature range for the video wall is 22°C±4°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 bellow 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.

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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 100V–240V 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^3.

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.

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The appearance, items, or quantity might be different depending on the model that you purchased, and the actual packing list shall prevail.
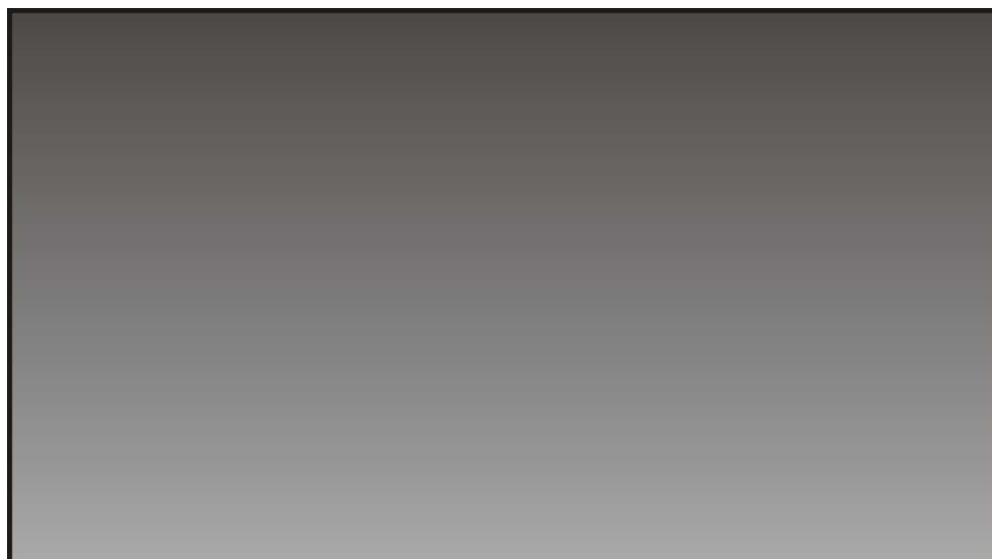
Table 2-1 Packing list

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

3 Device Introduction

3.1 LCD Video Wall

The LCD video wall is displayed in Figure 3-1.

Figure 3-1 LCD video wall

3.2 Port

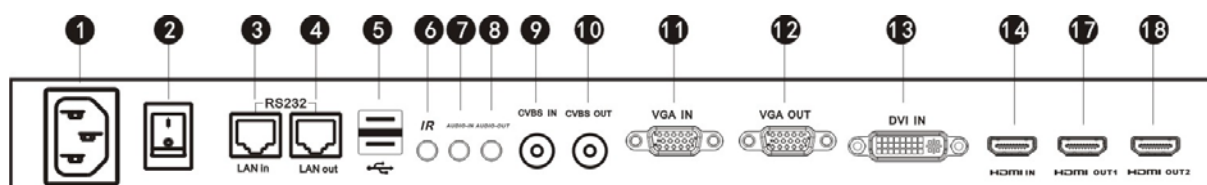Ports are displayed in Figure 3-2. For detailed parameters, see Table 3-1.

Figure 3-2 Port

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	LAN in	An RJ-45 port, inputs RS-232 signals. It controls the screen.
4	LAN out	An RJ-45 port, outputs RS-232 signals.
5	USB2.0 port	For multimedia playing and upgrade.
6	IR port	Connected to the IR extension cord.
7	Audio in	The green, 3.5-diameter port is used to input audio signals.
8	Audio out	The red, 3.5-diameter port is used to output audio signals.

No.	Port	Function
9	CVBS input	Inputs CVBS signals.
10	CVBS output	Outputs CVBS signals.
11	VGA in	Inputs VGA signals.
12	VGA out	Outputs VGA signals.
13	DVI in	Inputs DVI signals.
14	HDMI in	Inputs HDMI signals.
15	HDMI out 1	Outputs HDMI signals.
16	HDMI out 2	Outputs HDMI signals.

3.3 Remote Control

Remote control is a must-have device. For functions of its buttons, see Table 3-2.

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. ● TV1: Switch signals to CVBS signal. ● TV2: Switch signals to CVBS signal. ● VGA: Switch signals to VGA signal. ● HDMI: Switch signals to HDMI signal. ● DVI: Switch signals to DVI signal.
	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 **Menu** to display or exit the menu interface.
			Press **Menu** to confirm the operation you have done.

Picture	No	Name	Function
	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).
			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 **Enter** to confirm and enter the multimedia interface.
	13	Return	Press **Return** to exit the multimedia interface.

4 Interface 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
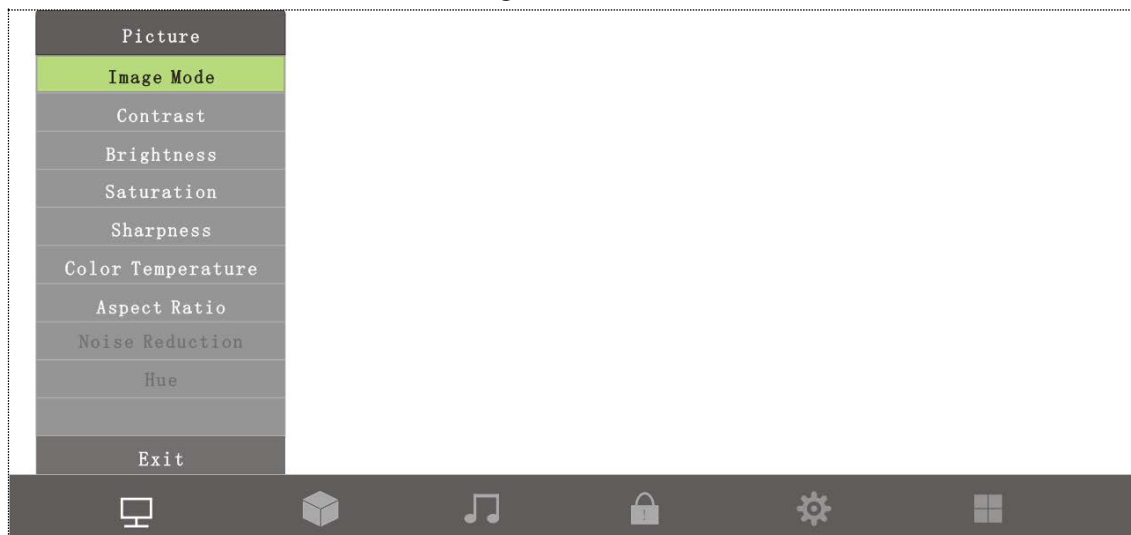
For introductions of icons on the interface, see Table 4-1.

Table 4-1 Icon description

Icon	Description
	Image icon, used to set imaging effect for the video wall.
	Geometric icon, used to set positions for images.
	Sound icon, used to adjust volume for the videos played on the video wall.
	Advanced icon, used to do advanced settings to images. 📖 Advanced options must be set by professional personnel.
	System icon, used to configure parameters for the system.
	Input source icon, used to select signal mode.

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- 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 interface is displayed on the video wall. The default menu bar is **Picture** menu bar.

Figure 4-2 Picture

```
┌─────────────────────────────┐
│          Picture            │
├─────────────────────────────┤
│         Image Mode          │
├─────────────────────────────┤
│          Contrast           │
│         Brightness          │
│         Saturation          │
│          Sharpness          │
│      Color Temperature      │
│        Aspect Ratio         │
│       Noise Reduction       │
│            Hue              │
│                             │
├─────────────────────────────┤
│            Exit             │
└─────────────────────────────┘
```

4.1.1 Image Mode

You can adjust the overall effects of images through image mode.

Step 1   Press **Menu** on the remote control.

Figure 4-3 Image mode

```
  ◄ ┌──────────────────────────┐ ►
    │  Image Mode       User   │
    ├──────────────────────────┤
    │      Contrast  50         │
    │      Brightness  50       │
    │      Saturation  50       │
    │      Sharpness  50        │
    │        Tint 50            │
    │                          │
    ├──────────────────────────┤
    │         ← MENU           │
    └──────────────────────────┘
```

Step 2   Adjust the image mode by the left and right buttons on the remote control according to your requirement.

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- There are four image modes: user mode, dynamic mode, standard mode, and soft light mode.
- You can only adjust contrast, brightness, saturability, and acutance in the User Mode.

4.1.2 Contrast

You can adjust the luminance or color of images to make objects in images distinguishable by adjusting contrast.

Step 1　Select **Image** > **Contrast**.

Figure 4-4 Contrast

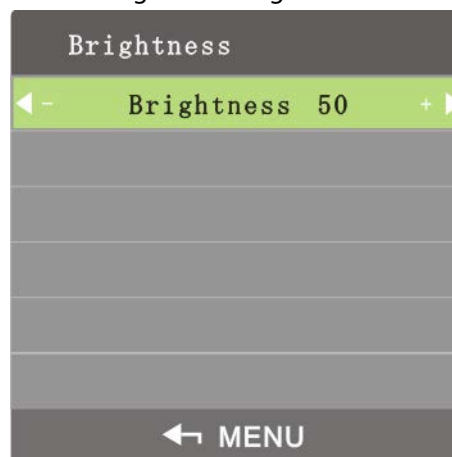Step 2　Adjust the contrast by the left and right buttons on the remote control according to your requirement.

The range of contrast is 0–100.

4.1.3 Brightness

You can adjust the brightness of images.

Step 1　Select **Image** > **Brightness**.

Figure 4-5 Brightness

Step 2　Adjust the brightness by the left and right buttons on the remote control according to your requirement.

The range of brightness is 0–100.

4.1.4 Saturability

You can adjust lightness and darkness of images by adjusting sautrability.

Step 1   Select **Image** > **Saturability**.

Figure 4-6 Saturability

Step 2   Adjust the Saturability by the left and right buttons on the remote control according to your requirement.

The range of saturability is 0–100.

4.1.5 Sharpness

Definition of images can be adjusted by adjusting sharpness. The higher the sharpness is, the clearer the images are, and image noise might occur.

Step 1   Select **Image** > **Sharpness**.

Figure 4-7 Sharpness

Step 2   Adjust the sharpness by the left and right buttons on the remote control according to your requirement.

The range of sharpness is 0–100.

4.1.6 Color Temperature

You can adjust color temperature of images.

Step 1   Select **Image** > **Color Temperature**.

Figure 4-8 Color temperature

Step 2   Adjust color temperature by the left and right buttons on the remote control according to your requirement.

- Color temperature has four types: cool, standard, warm, and personal.
- Only in user mode can you adjust the value of red, green, and blue.

4.1.7 Aspect Ratio

Display scales can be adjusted by adjusting aspect ratio.

Step 1   Select **Image** > **Aspect Ratio**.

Figure 4-9 Aspect ratio

Step 2   Select **Aspect Ratio** by the up and down buttons on the remote control according to your requirement.

Table 4-2 Parameters of zoom mode

Parameter	Descriptions
Auto	Display scales are automatically adjusted.
4:3	Images are displayed on the scale of 4:3.
16:9	Images are displayed on the scale of 16:9.
Zoom 1	Magnifies images on a certain scale.
Zoom 2	Magnifies images on a certain scale. Scales in Zoom 2 are larger than scales in Zoom 1.
Just Scan	Display the same native resolution as the video source.
Panorama	Display in full screen.

PointToPoint	Point to point display.

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Different signal modes have different zoom modes.

Step 3   Press **Menu** on the remote control to complete the setting.
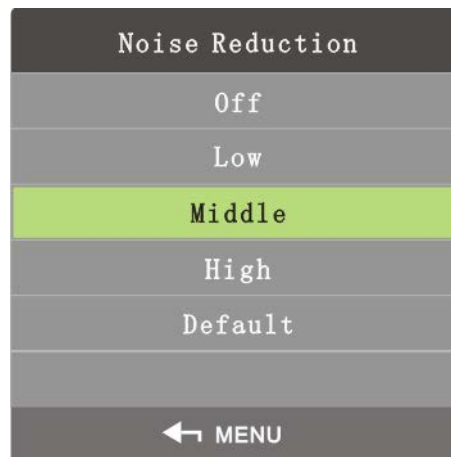
4.1.8 Noise Reduction

To improve quality of images, adjust the noise reduction.

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Only in CVBS signal mode can you select image noise deduction function.

Step 1   Select **Image** > **Noise Reduction**.

Figure 4-10 Noise reduction

Step 2   Select noise reduction parameters by the up and down buttons on the remote control according to your requirement.

Step 3   Press **Menu** on the remote control to complete the setting.

4.2 Geometry

Different signal modes have different geometry parameters.

DVI/HDMI/CVBS Signal

You can not set Geometry parameters in DVI, HDMI, and CVBS signal modes.

VGA Signal

On the main menu, press the left and right direction buttons until the **Geometry** interface is displayed.

Figure 4-11 Geometry (VGA)

H-Position

H-Position is used to adjust the horizontal position of the video wall.

Step 1   On the **Geometry** menu, select **H-Position**.

Figure 4-12 H-position

Step 2   Adjust the horizontal position by the left and right buttons on the remote control according to your requirement.

V-Position

You can adjust the vertical position of the video wall by adjusting v-position.

Step 1   On the **Geometry** menu, select **V-Position**.
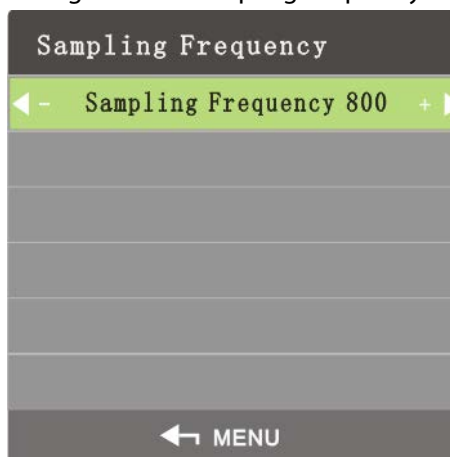
Figure 4-13 V-Position

Step 2 Adjust the vertical position by the left and right buttons on the remote control according to your requirement.

Sampling Frequency

Sampling frequency is the number of samples per second taken from a continuous signal. The higher the frequency, the more accurate the signals are.

Step 1 On the **Geometry** menu, select **Sampling Frequency**.

Figure 4-14 Sampling frequency

Step 2 Adjust the sampling frequency by the left and right buttons on the remote control according to your requirement.

Phase

Phase is the position of a point in time on a waveform cycle.

Step 1 On the **Geometry** menu, select **Phase**.

Figure 4-15 Phase

Step 2   Adjust phase by the left and right buttons on the remote control according to your requirement.

Auto Adjust

The position of video wall can be automatically adjusted.

Step 1   On the **Gemetry** menu, select **Auto Adjust.**
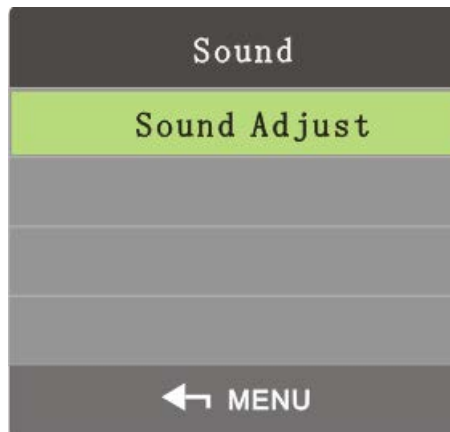
Figure 4-16 Auto adjust

Step 2   Press **Menu** on the remote control, and then the position of the screen will be automatically adjusted.

4.3 Sound

On the main menu, press the left and right direction buttons until the **Sound** interface is displayed.
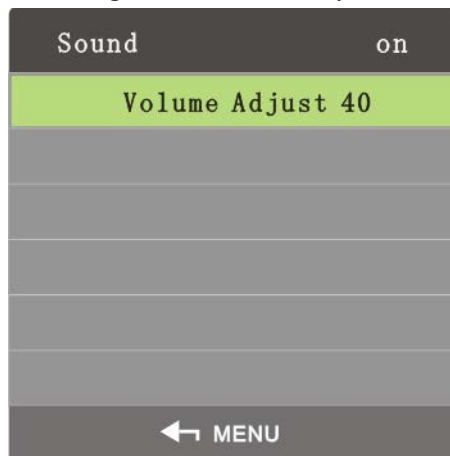
Step 1   Press the left and right direction buttons on the remote control to select **Sound**.

Figure 4-17 Sound

Step 2   Select **Sound** > **Sound Adjust**.

Figure 4-18 Sound adjust

Step 3   Adjust the on and off status of the sound adjust by the left and right buttons on the remote control.

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If you select off, then the video wall is in silent mode.

4.4 Advanced

On the main menu, press the left and right direction buttons until the **Advanced** interface is displayed.
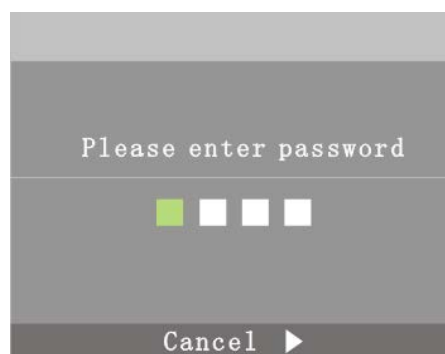
Figure 4-19 Advanced

4.4.2 Advanced Menu

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If you are not professional personnel, do not change parameters in the Advanced menu.

You can select **Advanced** by the up and down buttons on the remote control.

Figure 4-20 Enter passwords

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The default password is 8888.

On the **Advanced** interface, technical personnel can configure parameters for ADC calibration, image mode, white balance, special settings, screens and more.

Figure 4-21 Advanced

4.4.3 Software Update (USB)

Press the up and down direction buttons on the remote control to select **Software Update (USB)**, and the system will search USB storage device.

The software update files must be stored at the first level directory; otherwise, the files cannot be identified.

4.4.4 Mirror Image

Press the up and down direction buttons on the remote control to select **Mirror Image**. And then the image will be inverted, and you can do actions according to your requirement.

4.5 System

On the main menu, press the left and right direction buttons until the **System** is displayed.

Figure 4-22 System

4.5.1 OSD Language

You can set on screen display language.

<u>Step 1</u>   Select **System** > **OSD Language**.

Figure 4-23 OSD language

<u>Step 2</u>   Select the OSD language by the left and right buttons.

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OSD language includes English and Chinese.

<u>Step 3</u>   Press **Menu** on the remote control to complete the setting.

4.5.2 OSD Duration

OSD duration is the time displayed on the screen.

<u>Step 1</u>   Select **System** > **OSD Duration**.

Figure 4-24 OSD duration

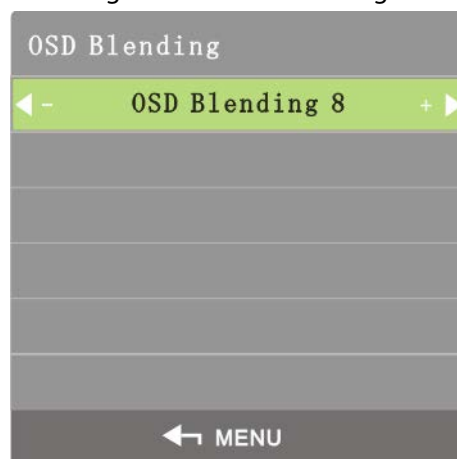Step 2 Set OSD duration by the left and right buttons on the remote control according to your requirement.

- There are four choices for the OSD duration: OFF, 30s, 60s, and 180s.
- If you select OFF, the menu will not disappear automatically.

4.5.3 OSD Blending

OSD blending is used to set the transparency for the menu.

Step 1 Select **System** > **OSD Blending**.
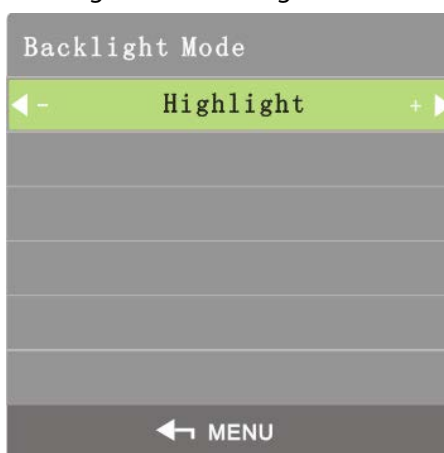
Figure 4-25 OSD blending

Step 2 Adjust the menu transparency by the left and right buttons on the remote control according to your requirement.

4.5.4 Backlight Mode

Backlight mode is used to set the backlight luminance for screens.

Step 1 Select **System** > **Backlight Mode**.

Figure 4-26 Backlight mode

Step 2   Adjust backlight mode by the left and right buttons on the remote control according to your requirement.
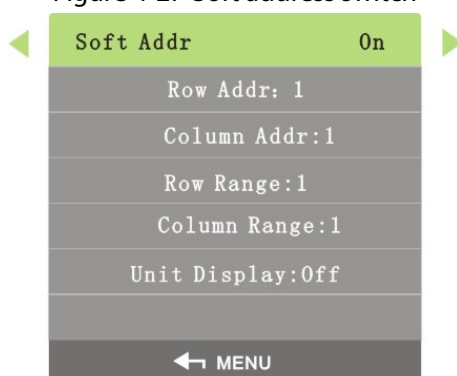
There are three backlight modes: Highlight, Normal, and Eco.

4.5.5 Soft Address Switch

Soft address switch is used to set soft address switch.

Step 1   Select **System** > **Soft Address Switch**.

Figure 4-27 Soft address switch

Step 2   Set soft address by the left and right buttons on the remote control according to your requirement. For detailed parameters.

Table 4-3 Soft address parameters.

Parameter	Descriptions
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	There are two options: On and Off.

4.5.6 Restore Settings

Restore settings is used to restore the system to factory settings.

Step 1   Select **System** > **Restore Settings**.

Figure 4-28 Restore to factory settings

Step 2　Select whether to restore to factory settings by the left and right buttons on the remote control according to your requirement.
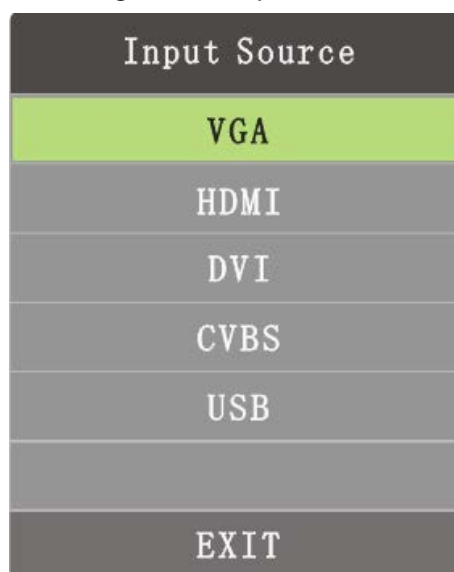
Step 3　Press **Menu** on the remote control to complete the setting.

4.6 Input Source

You can select input signal source types for video walls.

Step 1　On the main menu, press the left and right direction buttons until the **Input Source** interface is displayed.

Figure 4-29 Input source

Step 2　Select input signal source types by the up and down buttons.

- VGA, HDMI, DVI, and CVBS

  Press **Menu** to select the needed input signal source types.

- USB

1)　Press **Menu**, and the multimedia play setting interface is displayed.

Figure 4-30 Multimedia (1)

2) Select photo, music, movies, and texts by the left and right buttons on the remote control, and then press **Enter**, the interface of items you selected is displayed.

Figure 4-31 Multimedia (2)
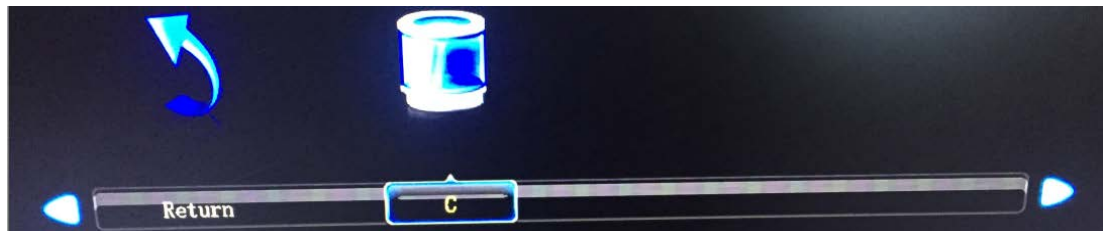
3) You can also change settings for the pictures, music, movies, and files that are to be played.

Figure 4-32 Multimedia (3)

5 FAQ

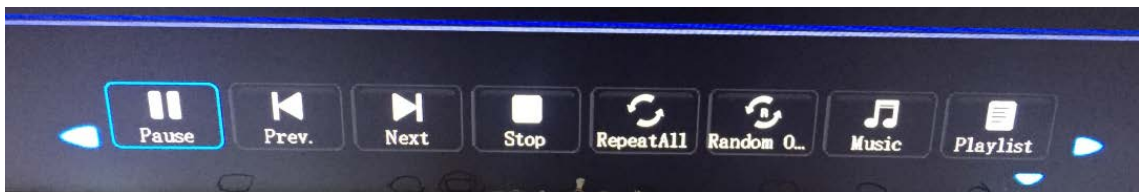Most problems can be solved by the following solutionss. If problems that you encountered do not belong to the following descriptions, contact after sales personnel.

Problems	Solutions
When you turn on the LCD video wall, there are no images on the screen (blank screen).	● Check whether the power source (220V AC) is connected to alternating current. ● Check whether the power cable is broken. ● Check whether the power switch is on. ● Check whether the power switch is broken. ● Check whether the indicator light is on.
Blank screen (no signal displayed).	● Check whether the signal wires are in bad contact. ● Check whether there is signal source output. ● Check whether the signal wires are broken. ● Check whether the input signal type does not belong to the types allowed by the video wall.
Color missing.	● Check whether the signal wires are in bad contact. ● Check whether the signal wires are broken.
Remote control cannot control the screen.	● Check whether buttons on the remote control is broken or stuck. ● 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

Cybersecurity is more than just a buzzword: it's something that pertains to every device that is connected to the internet. IP video surveillance is not immune to cyber risks, but taking basic steps toward protecting and strengthening networks and networked appliances will make them less susceptible to attacks. Below are some tips and recommendations on how to create a more secured security system.

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.