

# X20

## LED Video Controller

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### User Manual v2.0

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## Cautions

To prevent personal injury and equipment damage, read and follow the safety precautions below.

### Power safety

- Please do not squeeze the power cord and equipment with heavy objects.
- The device must use a grounded power supply.
- There are live parts in the device, non-professionals are not allowed to disassemble the device without permission to avoid electric shock.
- Please do not disassemble the device when it is powered on or running to avoid the risk of electric shock.
- Please turn off the main power of the device when it is not in use for a long time in a humid environment.
- When the device is not in use, please disconnect the power supply from the device and unplug the power plug from the power outlet.

### Operational safety

- Please do not place the device on an unstable surface to avoid the device falling and causing damage, which may cause serious personal injury or death.
- Please do not operate with wet hands to prevent electric shock.
- Please do not use the product in an environment containing flammable substances, explosive gases or heat sources.
- Please do not spill any corrosive chemicals or liquids on or near the equipment.
- Please check and test before using it if the equipment is stored for a long time.
- Please power off the device and use a dry rag to clean the device before cleaning the device.
- Please do not block the heat dissipation holes, and keep the working environment well ventilated, so that the heat generated by the equipment during operation can be discharged in time, so as to avoid equipment damage caused by poor heat dissipation.
- Please use appropriate packaging or original packaging during transportation in order to prevent the equipment from being damaged by strong vibration during transportation.
- Please be careful not to drop the equipment to avoid personal injury or equipment damage when carrying the equipment.

### FCC statement

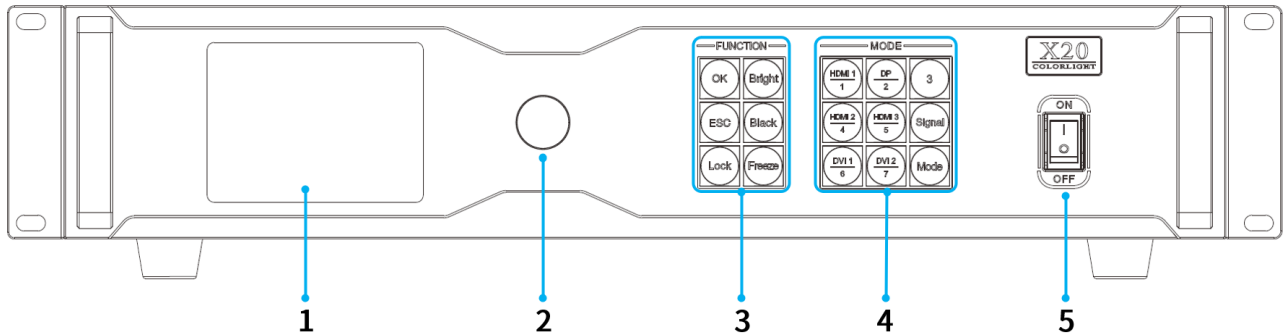
- Operation is subject to the following two conditions: this device may not cause harmful interference, and this device must accept any interference received, including interference that may cause undesired operation.
- Please do not dispose of this device and its accessories as ordinary household waste. Discarded equipment should be treated as industrial waste, and incineration is strictly prohibited.

### Environmental protection

- Please do not dispose of this device and its accessories as ordinary household waste. Discarded equipment should be treated as industrial waste, and incineration is strictly prohibited.

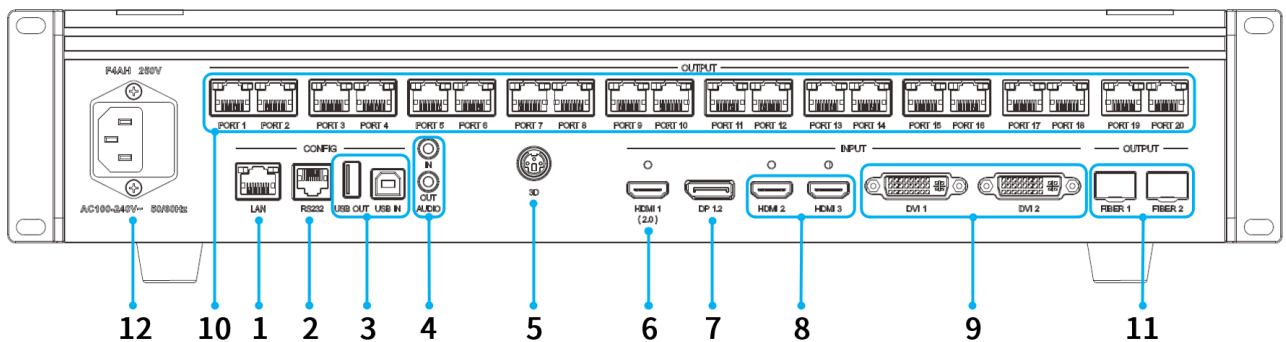
# 1 Hardware

## 1.1 Front panel



No.	Item	Function
1	LCD	Display the operation menu and system information.
2	Knob	Select an item or adjust the parameter, press the knob to confirm.
3	Function Keys	<ul style="list-style-type: none"> <li>• <b>OK:</b> Enter.</li> <li>• <b>Bright:</b> Brightness adjustment.</li> <li>• <b>ESC:</b> Exit the current operation.</li> <li>• <b>Black:</b> Black the screen.</li> <li>• <b>Lock:</b> Lock the front panel keys.</li> <li>• <b>Freeze:</b> Freeze the output screen.</li> </ul>
4	Mode Keys	<ul style="list-style-type: none"> <li>• <b>HDMI 1 / DP/HDMI 2 / HDMI 3 / DVI 1 / DVI 2:</b> Set video signal in single-window mode.</li> <li>• <b>Signal:</b> View signal status.</li> <li>• <b>Mode:</b> Enter/exit scene selection mode.</li> <li>• <b>1~7:</b> Load a preset scene in scene selection mode.</li> </ul>
5	Power Switch	Switch the device on or off.

## 1.2 Rear panel

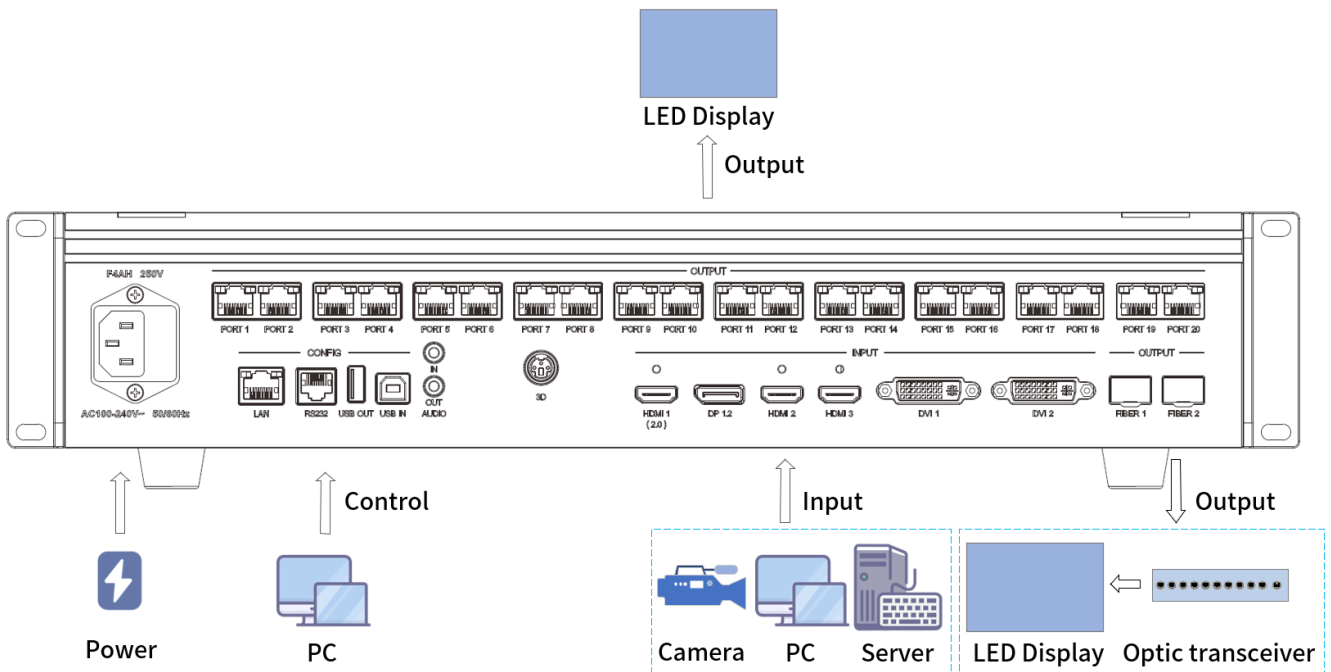


<b>Control</b>		
1	LAN	RJ45 port, connect to a switch for accessing local area network.
2	RS232	*RJ11 port(6P6C), connect to central control.
3	USB IN	USB2.0 Type B port, connect to PC for debugging.
	USB OUT	USB2.0 Type A port, as cascading output.
<b>Audio</b>		
4	AUDIO IN	<ul style="list-style-type: none"> <li>Interface type: 3.5mm.</li> <li>Receive audio signals from computers and other equipment.</li> </ul>
	AUDIO OUT	<ul style="list-style-type: none"> <li>Interface type: 3.5mm.</li> <li>Support HDMI, DP audio decoding and output audio to device such as active speakers.</li> </ul>
<b>3D</b>		
5	3D (Optional)	Output 3D sync signal, connect to the 3D emitter (use with active 3D glasses).
<b>Input</b>		
6	HDMI 1 (2.0)	<ul style="list-style-type: none"> <li>1x HDMI2.0 input, support HDMI1.4/HDMI1.3.</li> <li>Maximum 4096x2160@60Hz, maximum pixel clock 600MHz.</li> <li>Customized resolution: up to 8192 pixels in width or in height.</li> <li>Support EDID settings.</li> <li>Support audio input.</li> </ul>
7	DP 1.2	<ul style="list-style-type: none"> <li>1x DP1.2 input.</li> <li>Maximum 4096x2160@60Hz, maximum pixel clock 600MHz.</li> <li>Customized resolution: up to 8192 pixels in width or in height.</li> <li>Support EDID settings.</li> <li>Support audio input.</li> </ul>
8	HDMI 2, HDMI 3	<ul style="list-style-type: none"> <li>2x HDMI1.4 input.</li> <li>Maximum 1920x1200@60Hz, maximum pixel clock 165MHz.</li> <li>Customized resolution: up to 4096 pixels in width or in height.</li> <li>Support EDID settings.</li> <li>Support audio input.</li> </ul>
9	DVI 1, DVI 2	<ul style="list-style-type: none"> <li>2x DVI input.</li> <li>Support 1920x1200@60Hz, maximum pixel clock 165MHz.</li> <li>Customized resolution: up to 4096 pixels in width or in height.</li> <li>Support EDID settings.</li> </ul>
<b>Output</b>		
10	PORT 1-20	<ul style="list-style-type: none"> <li>20x 1G Ethernet output.</li> <li>Load capacity: <ul style="list-style-type: none"> <li>- One network port load capacity is 0.65 million pixels, total load capacity</li> </ul> </li> </ul>

		<p>is 13.00 million pixels.</p> <ul style="list-style-type: none"> <li>- Maximum 16384 pixels in width or 8192 pixels in height.</li> <li>• The recommended maximum cable (Cat 5e) run length is 100 meters.</li> <li>• Support redundant backup.</li> </ul>
11	FIBER 1, FIBER 2	<ul style="list-style-type: none"> <li>• 2x 10G Optical interfaces.</li> <li>- FIBER 1 corresponds to PORT 1-10 Gigabit Ethernet ports output.</li> <li>- FIBER 2 corresponds to PORT 11-20 Gigabit Ethernet ports output.</li> <li>• Equipped with 10G single-mode optical module (purchase separately), the device supports dual LC fiber interface (wavelength 1310nm, transmission distance 2 km).</li> </ul>
<b>Power supply</b>		
12	MAINS INPUT	AC100-240V, 50 / 60Hz, connect to AC power supply, built-in fuse.

## 2 Hardware connection

Before using the equipment, please connect the **input**, **output** and **control** interfaces according to the hardware interface, and finally connect the **power supply**.



## 3 Software operation

Please use the LEDVISION software to configure the screen and set up the device.

- Please make sure the LED screens were set up with correct receiver cards parameters.
- Before setting the parameters, ensure that the hardware is connected correctly, which means the sender and all receiver cards can be detected via software.
- Visit [www.colorlightinside.com](http://www.colorlightinside.com) to download and install the LEDVISION software.

### 3.1 Power on

Press the power switch on the front panel, the device will turn on and enter the self-test status, then all the button lights will light up in sequence until booting successfully. The device will restore to the last saved settings.

### 3.2 Screen Settings

Run LEDVISION software, choose **Control > LED Screen Settings** (enter the authorized password **168** or **777**.)

- On the **Sending Device** tab page, select **Sender > Detect Senders**. On the **Detect Receivers** page, click **All**.
- Enter the **Receiver Mapping (Look From Front)**, add corresponding number and size of receiver cards for each port probed.
- Click a **port index**, and add connectivity relationship of receiver cards, according to its actual panel connections, click **Send** and **Save**.
- Send the connectivity relationship to the screen, and check its display. Save if the display is correct.

\* If the screen doesn't display properly, double check, send and save the connectivity relationship.

### 3.3 Send Device Settings

The setting of sending device includes many aspects: **Video Source Settings, Control Area, Network, 3D, Precise Color Management, Other** and **Detect Receivers**.

#### 3.3.1 Video Source Settings

You can set up multi-window display, window setting, EDID, cropping, picture adjustment, preset and Video Sync.


##### 3.3.1.1 Multi-window display

X20 supports up to 6-window display.

- To add a window, click **+**. Select the window, then switch its signal in Signal Selection area.
- To delete the selected window, click **✖**.




### 3.3.1.2 Window Settings

You can set the position, width and height, scaling ratio of signal source window.

- To set the scaling ratio, select the signal source window, click  will pop up **Set Window Size** interface.
  - ✧ **1:1**: Pixel to pixel output.
  - ✧ **Keep Aspect Ratio**: Keep output aspect ratio to the input signal.
- To scale the window by dragging and dropping the handle of the window.

### 3.3.1.3 EDID (Resolution)

To set the EDID (Resolution) of the signal.

- Select the input signal source, click , and enter the **Resolution (EDID) Setting** interface. To select regular resolution or customize it, click **Resolution** .
- In the **Resolution (EDID) Setting** interface, when the drop-down list  is closed, the current transmitter resolution will display by default.
- To customize the setting of the resolution **width, height, frame rate, color depth** and **standard**, select Custom Resolution.

### 3.3.1.4 Cropping

To crop the input signal, select the signal source and click .

- Check **Enable** and set the row start (X), column start (Y), width(W) and height(H) of the cropped screen in the crop information, and click **Save**.



### 3.3.1.5 Picture Adjustment

To optimize the display, click **Picture Adjustment** to adjust the **hue, saturation, brightness compensation** and **contrast** of the picture.

- Click  to enter **Picture Adjustment** interface, then check **Enable** and click **Save**.
- To restore default parameter, click **Reset All**.

### 3.3.1.6 Preset

X20 saves up to 16 sets of preset parameters, and you can save and recall the preset parameters to display the picture.

- Preset mode contains parameters such as scaling, cropping, multi-window display, picture adjustment, color space, brightness, color temperature, etc.
- **Save As Preset**: To save preset parameters, after setting the video source parameters, click  and **Save As Preset**, select the **Blank** item and **rename** it, click **OK**.
- **Load Preset**: To display the screen according to the preset parameters, click , select **Load** and the corresponding preset parameters.

### 3.3.1.7 Video Sync

Video source sync supports **Lock to Free Run, any input signal** or **Internal Vsync**.



- When no specified source sync or the specified sync source is no signal, using the main screen as the sync reference source.

### 3.3.2 Control Area

On the **Control Area**, you can manually adjust the control area of Ethernet ports.

- To save the parameters to the corresponding sender card, click **Import**, select the parameter file, and click **Save**.
- Manually adjust the control area of Ethernet (column start, row start, column length, row height).

### 3.3.3 Network

**Network** page can **Obtain An IP Address Automatically** or manually.

- Select **Obtain An IP Address Automatically**, the sender will obtain the assigned IP address automatically.
- Select **Use The Following IP Address** to manually set the **IP Address**, **Subnet Mask** and **Default Gateway** of the sender.

### 3.3.4 3D (Optional)

3D function needs to be used with **3D emitter** (optional) and **3D glasses** (optional). For the best 3D effect, you can set the signal according to the video signal and window opening, and then adjust the signal delay parameters.

### 3.3.5 Precise Color Management

To set **LED Color and Brightness (After Calibration)** and **Output Color Space**.

- Check **Enable Precise Color Management**.
  - ✧ To quickly set the color space and brightness, click **LED Color and Brightness (After Calibration) > Quick Choose**.
  - ✧ To import or export the measurement values, click **LED Color and Brightness (After Calibration) > Measurements**, you can fill in the measurement value manually, or import or export the values.
  - ✧ To maintain the current color space output standard, click **Output Color Space > Original**.
  - ✧ To quickly select the output standard for the color space, click **Output Color Space > Choose Standard**, select standard from its drop-down box.
  - ✧ To customize output color space coordinates, click **Output Color Space > Customize**, or you can also import or export the measurement values, click **Save**.

### 3.3.6 Other

To set **Advanced Parameters**, **Audio Selection**, **Test Mode**, **Factory Restore** and **Import parameters from File** or **Export Parameters to File**.

### 3.3.6.1 Advanced Parameters

In the **Advanced Parameter** setting area, you can set **Better Graylevel at Low Brightness**, **Mapping from Sender**, **Output Way**, **VSync Multi-frequency / Delay** and **Device Name** editing.

- **Better Graylevel at Low Brightness**: Improving the display effect at low brightness.
- **Mapping from Sender**: Adopting the mapping saved in the sender.
- **Low Latency**: Effectively solve the screen desynchronization caused by system latency.
- **Device Name**: Entering the name of the sender.

### 3.3.6.2 Audio Selection

You can select any input signal as the input audio and adjust its volume.

### 3.3.6.3 Test Mode

To test screen display, select the built-in test screen of the sender.

### 3.3.6.4 Import or Export Parameters

You can **import** or **export** sender parameters.

- Click **Export parameters to File** to save the current configuration of the processor as parameter files.
- Click **Import parameters from File** to directly load the parameter files as the current parameters of the sender.

### 3.3.6.5 Factory Restore

To reset the sender, click **Restore Factory**.

### 3.3.7 Detect Receivers

To detect the receiving card with each network port of the processor and obtain the relevant information of the receiving card (Port, Index, Version, Run time, Support Chips), click **Detect All Receivers**.

## 3.4 Screen Parameters Setting

Observe your display and take a cabinet as unit, if all cabinets can display the picture normally (discontinuous screen between cabinets is normal), then you can directly ignore the following steps.

- Click **Load**, then select the parameter file for this display.
- Click **Send**, send this parameter to the receiving card, at this time, each cabinet display should be normal. Then to save the parameter to the receiving card, click **Save**.

\* If each cabinet can not be displayed normally, you can make basic settings (module information, cabinet settings, performance settings) or intelligent settings for the display, or contact with the technicians of the display manufacturer.

### 3.4.1 Display Connection Setting

You do not need to set the control area of each network port of the sender card separately, but only need to set the connection relationship for the receiving card carried by the network port of each sender card, and the software will automatically calculate the control area of that network port and set it according to the connection relationship.

#### 3.4.1.1 Receiving Cards Number Setting

According to the actual display load capacity, you can set the number of receiving cards. At this point, the software interface will display the simulated cabinet area, representing you can see each cabinet from the front.

#### 3.4.1.2 Set up the quantity of Receiving Parameters

To set the load capacity of receiving card, in the **Sender serial number area**, select the processor and **network port**, choose the actual cabinet controlled by the network port. Then in the **simulation display cabinet area**, set the corresponding alignment.

- In the simulation display area, select the cabinet corresponding to the first receiving card (Look from Front), set its load capacity width and height, and click each receiving card controlled by the sending network port.
- For standard connection line, select preset alignment in the software. First set the actual loading width and height, then select the actual network cable type of the receiving card, and in the simulation area, select the corresponding cabinet load capacity area.

#### 3.4.1.3 Send and Save to Receiving Card

To send the parameters to receiving card, after setting up the processor's parameters and connection lines, click **Send**, then the display will be normal. To save the parameters to corresponding receiving card, click **Save to Receiver**.

## 4 Troubleshooting

Phenomenon	Potential Cause	Method
LCD screen does not light up, no response.	Poor power input contact.	Check the power connector and make sure it's making good contact.
	Device is powered off.	Make sure the POWER button is on.
Poor image display such as ghosting.	Cable quality is not up to standard.	Replace with good quality cable.
	Cable is too long.	Reduce signal resolution or shorten input cable length.
No image output after switching signal.	Target input source is not connected.	Make sure the signal source is connected properly.
	Poor cable contacts.	Check input and output cables and ensure good contact.
Unable to use this device.	Internal damage to the host.	Contact our support team.

## Statement

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Service Phone

**4008 770 775**

**Colorlight Cloud Tech Ltd.**

Official Website: [www.colorlightinside.com](http://www.colorlightinside.com)

Head Office Address: Room 37F-39F, Building 8, Zone A,  
Shenzhen International Innovation Valley, Vanke Cloud City, Dashi Yilu,  
Nanshan District, Shenzhen, China

