MX2000 Pro

LED Display Controller

User Manual

Change History

Document Version	Release Date	Description
V1.4.2	2025-06-04	Updated the accessory information
V1.4.1	2024-08-13	Updated the video source specifications for DP 1.4
V1.4.0	2024-04-26	Added MX_1×ST 2110 (25G), MX_2×ST 2110 (25G), MX_1×DP 1.4 + 1×HDMI 2.1 input cards, and MX_1×40G_Fiber output card
V1.1.0	2023-09-28	Added MX_2xHDMI 2.1 and MX_4x12G-SDI input cards
V1.0.0	2023-09-08	First release

Contents

1 Introduction

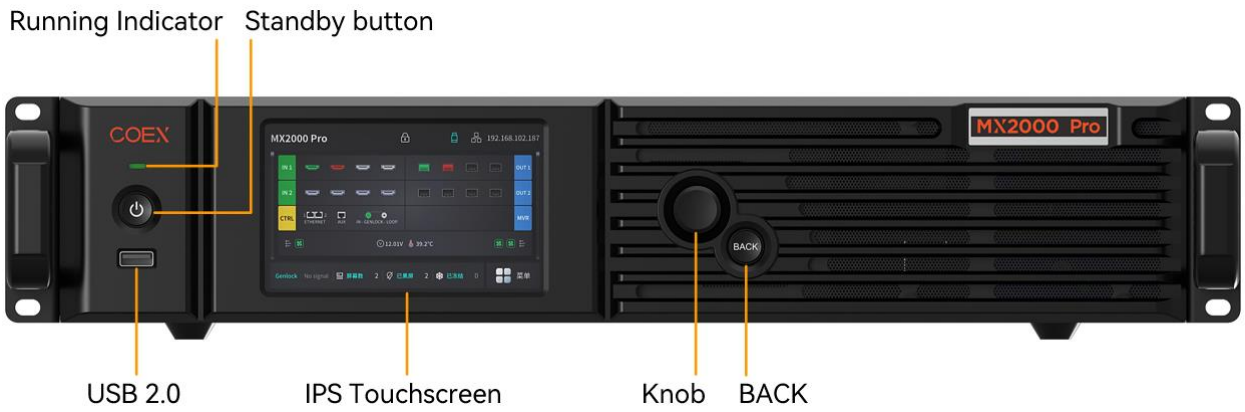
The MX2000 Pro is a large professional 8K LED display controller from Xi'an NovaStar Tech Co., Ltd. (hereinafter referred to as NovaStar), designed as part of the COEX control system series. Its remarkable features include 12-bit color depth, 480 Hz capability, real-time multi-screen scaling, 0-frame latency, and HDR supportability, providing precise brightness control, true-to-life color fidelity, and an excellent image quality. Its card-based modular design is specifically tailored for future LED displays, allowing for flexible input and output card configurations that are stable and easy to maintain. With a compact 2U size, it supports up to 8x 4K@60Hz or 4x 8K@30Hz video inputs, with a maximum load capacity of 35.38 million pixels, making it ideal for large-screen configurations.

The MX2000 Pro supports up to 8 types of 8K/4K/VoIP input cards. Additionally, it supports seamless backup and automatic switching between devices, cards, and Ethernet ports. In case of any malfunction, it promptly switches over while issuing automatic alerts, ensuring stable output on-site. It can also work with the brand-new software VMP (Vision Management Platform) to provide a better operation and control experience.

The MX2000 Pro offers many advantages such as highly integrated design, premium image quality, powerful performance, tremendous load capacity, and easy control. It is widely used in rental services for large events, xR/VP studios, large fixed installation applications, TV production, e-sports events, exhibition halls, and other application scenarios.

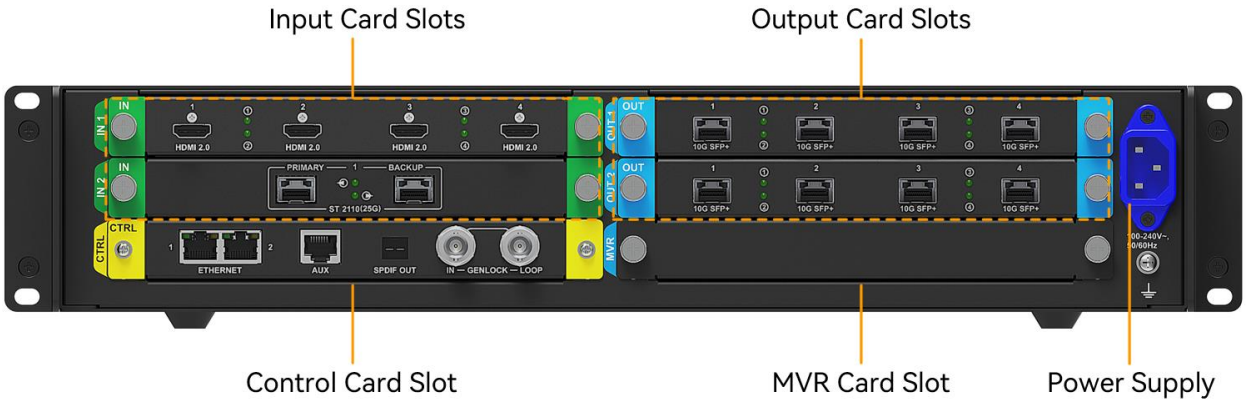
2 Appearance

2.1 Front Panel



Description	Function
Running indicator	• Solid red: The device is in standby mode. • Solid blue: The device is being powered on. • Solid green: The device is running normally. • Flashing red: The device is running abnormally.
Standby button	• Press the button to power on or power off the device. • Hold down the button for 5s to 10s to restart the device.
USB 2.0	• For exporting the device diagnostic result to a USB drive only. • Only the NTFS and FAT32 file systems are supported. Others are not supported.
IPS Touchscreen	A 5-inch screen that is for displaying the device status, configuring settings, and sending commands.
Knob	• On the home screen, press the knob to enter the main menu screen. • On the main menu screen, rotate the knob to select a menu item or adjust the parameter value. Press the knob to confirm the operation. • Hold down the knob and **BACK** button simultaneously for 5s or longer to lock or unlock the buttons and screen.
BACK	Go back to the previous menu or cancel the current operation.

2.2 Rear Panel



All product pictures shown in this document are for illustration purpose only. Actual product may vary.

Note

Markings on the rear panel card slot:

- The card slot marked with "IN x" only supports the installation of input cards, where x is the slot number. For example, IN 1 indicates the first input card slot.
- The card slot marked with "OUT x" only supports the installation of output cards, where x is the slot number. For example, OUT 2 indicates the second output card slot.
- The card slot marked with "MVR" only supports the installation of MVR output card. (Reserved)
- The card slot marked with "CTRL" only supports the installation of control cards.

Input Card			
MX_4×HDMI 2.0 input card			
			
Type	Qty	Description	
HDMI 2.0	4	Resolution	Max resolution: 4096×2160@60Hz or 8192×1080@60Hz (Forced) Min resolution: 800×600@60Hz
		Max width/height (Forced)	Max width: 8192 pixels (8192×1080@60Hz) Max height: 8192 pixels (1080×8192@60Hz)

		Frame rates	23.98 / 24 / 25 / 29.97 / 30 / 47.95 / 48 / 50 / 59.94 / 60 / 71.93 / 72 / 75 / 100 / 119.88 / 120 / 143.86 / 144 / 240 Hz
		HDR	Support HDR10 and comply with the SMPTE ST 2084 and SMPTE ST 2086 standards. Support HLG.
		EDID management	Support standard resolutions, up to 3840×2160@60Hz. Support custom input resolutions.
		HDCP	HDCP 2.3 compliant, backwards compatible with HDCP 2.2/HDCP 1.4/HDCP 1.3.
		Interlaced signal inputs	Not supported.
		Cables	Recommend using the UGREEN HDMI 2.1 cable. Cables up to 5 meters are supported.

MX_2×HDMI 2.1 input card

Type	Qty	Description	
HDMI 2.1	2	Resolution	Max resolution: 8192×4320@30Hz (Forced) Min resolution: 800×600@60Hz
		Max width/height (Forced)	Max width: 8192 pixels (8192×4320@30Hz) Max height: 8192 pixels (4320×8192@30Hz)
		Frame rates	23.98 / 24 / 25 / 29.97 / 30 / 47.95 / 48 / 50 / 59.94 / 60 / 71.93 / 72 / 75 / 100 / 119.88 / 120 / 143.86 / 144 / 240 Hz
		HDR	Support HDR10 and comply with the SMPTE ST 2084 and SMPTE ST 2086 standards. Support HLG.
		EDID management	Support standard resolutions, up to 3840×2160@60Hz. Support custom input resolutions.

		HDCP	HDCP 2.3 compliant, backwards compatible with HDCP 2.2/HDCP 1.4/HDCP 1.3.
		Interlaced signal inputs	Not supported.
		Cables	Recommend using the UGREEN HDMI 2.1 cable. Cables up to 5 meters are supported.
MX_4xDP 1.2 input card			
			
Type	Qty	Description	
DP 1.2	4	Resolution	Max resolution: 4096×2160@60Hz or 8192×1080@60Hz (Forced) Min resolution: 800×600@60Hz
		Max width/height (Forced)	Max width: 8192 pixels (8192×1080@60Hz) Max height: 8192 pixels (1080×8192@60Hz)
		Frame rate	23.98 / 24 / 25 / 29.97 / 30 / 47.95 / 48 / 50 / 59.94 / 60 / 71.93 / 72 / 75 / 100 / 119.88 / 120 / 143.86 / 144 / 240 Hz
		HDR	HDR video is accepted with manual HDR configuration in VMP.
		EDID management	Support standard resolutions, up to 3840×2160@60Hz. Support custom input resolutions.
		HDCP	Support HDCP 2.3, backwards compatible with HDCP2.2/ HDCP 1.4/ HDCP 1.3.
		Interlaced signal inputs	Not supported.
		Cables	Recommend using the UGREEN DP 1.4 cable. Cables up to 5 meters are supported.
MX_2×DP 1.4 input card			

Type	Qty	Description	
DP 1.4	2	Resolution	Max resolution: 7680×4320@30Hz (Forced) Min resolution: 800×600@60Hz
		Max width/height (Forced)	Max width: 8192 pixels (8192×4320@25Hz) Max height: 8192 pixels (4320×8192@25Hz)
		Frame rates	23.98 / 24 / 25 / 29.97 / 30 / 47.95 / 48 / 50 / 59.94 / 60 / 71.93 / 72 / 75 / 100 / 119.88 / 120 / 143.86 / 144 / 240 Hz
		HDR	Support HDR10 and comply with the SMPTE ST 2084 and SMPTE ST 2086 standards. Support HLG.
		EDID management	Support standard resolutions, up to 3840×2160@60Hz. Support custom input resolutions.
		HDCP	HDCP 2.3 compliant, backwards compatible with HDCP 2.2/HDCP 1.4/HDCP 1.3.
		Interlaced signal inputs	Not supported.
		Cables	Recommend using the UGREEN DP 1.4 cable. Cables up to 5 meters are supported.

MX_4×12G-SDI input card

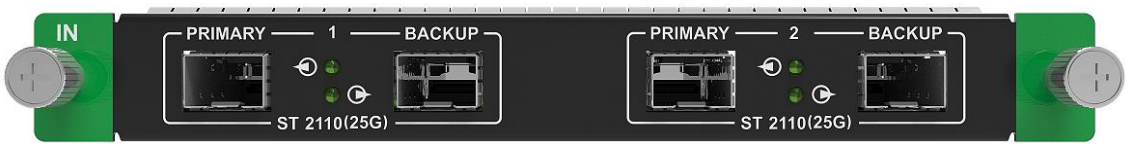
Type	Qty	Description	
12G-SDI	4	Standards	Support ST-2082 (12G), ST-2081 (6G), ST-424 (3G) and ST-292 (HD) standard video inputs. Support 3G-Level A/Level B (DS mode).
		Resolution	Max resolution: 4096×2160@60Hz

			Min resolution: 720x480i@59.94Hz
		Frame rate	23.98/24/25/29.97/30/47.95/48/50/59.94/60 Hz
		HDR	HDR video is accepted with manual HDR configuration in VMP.
		Interlaced signal inputs	Support interlaced signal inputs, including 1080i/576i/480i.
		Cables	Recommend using the CANARE-12G SDI coaxial cable. Cables up to 50 meters are supported.
MX_1xDP 1.4+1xHDMI 2.1 input card			
			
Type	Qty	Description	
DP1.4	1	Resolution	Max resolution: 7680×4320@30Hz (Forced) Min resolution: 800×600@60Hz
		Max width/height (Forced)	Max width: 8192 pixels (8192×4320@25Hz) Max height: 8192 pixels (4320×8192@25Hz)
		Frame rates	23.98 / 24 / 25 / 29.97 / 30 / 47.95 / 48 / 50 / 59.94 / 60 / 71.93 / 72 / 75 / 100 / 119.88 / 120 / 143.86 / 144 / 240 Hz
		HDR	Support HDR10 and comply with the SMPTE ST 2084 and SMPTE ST 2086 standards. Support HLG.
		EDID management	Support standard resolutions, up to 3840×2160@60Hz. Support custom input resolutions.
		HDCP	HDCP 2.3 compliant, backwards compatible with HDCP 2.2/HDCP 1.4/HDCP 1.3.
		Interlaced signal inputs	Not supported.
		Cables	Recommend using the UGREEN DP 1.4 cable. Cables up to 5 meters are supported.

HDMI2.1	1	Resolution	Max resolution: 8192×4320@30Hz (Forced) Min resolution: 800×600@60Hz
		Max width/height (Forced)	Max width: 8192 pixels (8192×4320@30Hz) Max. height: 8192 pixels (4320×8192@30Hz)
		Frame rates	23.98 / 24 / 25 / 29.97 / 30 / 47.95 / 48 / 50 / 59.94 / 60 / 71.93 / 72 / 75 / 100 / 119.88 / 120 / 143.86 / 144 / 240 Hz
		HDR	Support HDR10 and comply with the SMPTE ST 2084 and SMPTE ST 2086 standards. Support HLG.
		EDID management	Support standard resolutions, up to 3840×2160@60Hz. Support custom input resolutions.
		HDCP	HDCP 2.3 compliant, backwards compatible with HDCP 2.2/HDCP 1.4/HDCP 1.3.
		Interlaced signal inputs	Not supported.
		Cables	Recommend using the UGREEN HDMI 2.1 cable. Cables up to 5 meters are supported.

MX_1xST 2110 (25G) input card

Type	Qty	Description	
ST 2110 (25G)	1 primary, 1 backup	Standard	Supports SMPTE ST 2110 (-10, 20) and SMPTE 2059 (-1, -2) standards.
		Backup	Supports SMPTE 2022-7 standard.
		Resolution	Max resolution: 4096×2160@60Hz/8192×1080@60Hz Min resolution: 800×600@60Hz
		Max height & width	Max width: 8192 (8192×1080@60Hz) Max height: 8192 (1080×8192@60Hz)

		Frame rate	23.98 / 24 / 25 / 29.97 / 30 / 47.95 / 48 / 50 / 59.94 / 60 / 71.93 / 72 / 75 / 100 / 119.88 / 120 Hz
		VMP control	Support loading video stream configuration by SDP file or directly inputting. Support setting the resolution when managing ST 2110 source in VMP. • Support preset resolutions up to 8192x1080@60Hz. • Allow for custom input resolutions.
		NMOS management	NMOS discovery and control according to standards IS-04 and IS-05.
		Color gamut	Rec.709/DCI-P3/Rec.2020
		IP address	IPv4 DHCP and static IP
		Multicast protocol	IGMPv3, IGMPv2
		Ethernet	• 25 GbE IEEE 802.3cc (25GBASE-LR) • 25 GbE IEEE 802.3by (25GBASE-SR)
		Optical transceiver	The ST 2110 card does not come with an optical transceiver by default. Users need to purchase one separately. • Only supports SFP28 (25GBASE-LR/SR/CR). • It is recommended to purchase the Accelink 25GBASE-LR 10km module.
		Cables	OS1/OS2 optical fiber cables are recommended. • Transmission mode: single-mode duplex • Diameter: 9/125μm • Interface type: LC • Insertion loss: ≤0.3 dB • Return loss: ≥45 dB
MX_2xST 2110 (25G) input card			
			
Type	Qty	Description	
		Standard	Support SMPTE ST 2110 (-10, -20) and SMPTE 2059 (-1, -2) standards.

ST 2110 (25G)	2 primaries, 2 backups	Backup	Support SMPTE 2022-7 standard.
		Resolution	Max resolution: 4096×2160@60Hz/8192×1080@60Hz Min resolution: 800×600@60Hz
		Max height & width	Max width: 8192 (8192×1080@60Hz) Max height: 8192 (1080×8192@60Hz)
		Frame rate	23.98 / 24 / 25 / 29.97 / 30 / 47.95 / 48 / 50 / 59.94 / 60 / 71.93 / 72 / 75 / 100 / 119.88 / 120 Hz
		VMP control	Support loading video stream configuration by SDP file or directly inputting. Support setting the resolution when managing ST 2110 source in VMP. • Support preset resolutions up to 8192x1080@60Hz. • Allow for custom input resolutions.
		NMOS management	NMOS discovery and control according to standards IS-04 and IS-05.
		Color gamut	Rec.709/DCI-P3/Rec.2020
		IP address	IPv4 DHCP and static IP
		Multicast protocol	IGMPv3, IGMPv2
		Ethernet	• 25 GbE IEEE 802.3cc (25GBASE-LR) • 25 GbE IEEE 802.3by (25GBASE-SR)
		Optical transceiver	The ST 2110 card does not come with an optical transceiver by default. Users need to purchase one separately. • Only supports SFP28 (25GBASE-LR/SR/CR). • It is recommended to purchase the Accelink 25GBASE-LR 10km module.
		Cables	OS1/OS2 optical fiber cables are recommended. • Transmission mode: single-mode duplex • Diameter: 9/125μm • Interface type: LC • Insertion loss: ≤0.3 dB • Return loss: ≥45 dB

<table>
<tr><th colspan="3">Output Card</th></tr>
<tr><td colspan="3">MX_4×10G_Fiber output card</td></tr>
<tr><td colspan="3"> 
</td></tr>
<tr><td>Type</td><td>Qty</td><td>Description</td></tr>
<tr><td>10G SFP+</td><td>4</td><td>10G optical ports
Support single-mode and multi-mode optical fiber modules, with a maximum transmission distance of 10 km.
A single optical port has the same load capacity of 10x 1G Ethernet ports, and a single card supports up to 40x Ethernet port outputs.
The maximum load of a single 1G Ethernet port is as follows, please refer to Ethernet Port Load Capacity for more details:
8bit@60Hz: 659,722 pixels
10bit@60Hz: 494,791 pixels (available only with the A10s Pro receiving card)
12bit@60Hz: 329,861 pixels
Note
When using a 1G Ethernet port to drive the LED screen, it can achieve its maximum load capacity only when the load width is 192 pixels or more. If the load width is less than that, the load capacity will be reduced accordingly, calculated as (192 - load width) × load height.
Maximum load of a single output card: 17,694,720 pixels (8/10/12bit@60Hz).</td></tr>
<tr><td colspan="3">MX_1x40G_Fiber output card</td></tr>
<tr><td colspan="3"> 
</td></tr>
<tr><td>Type</td><td>Qty</td><td>Description</td></tr>
<tr><td>40G QSFP+</td><td>1</td><td>40G optical port
Support single-mode and multi-mode optical fiber modules, with a maximum transmission distance of 10km.
A single optical port has the same load capacity of 8x 5G Ethernet ports.
The maximum load of a single 5G Ethernet port is as follows, please refer to Ethernet Port Load Capacity for more details:
8bit@60Hz: 2,951,200 pixels
10bit@60Hz: 2,213,200 pixels
12bit@60Hz: 1,475,600 pixels</td></tr>
</table>

		Note When using a 5G Ethernet port to drive the LED screen, it can achieve its maximum load capacity only when the load width is 192 pixels or more. If the load width is less than that, the load capacity will be reduced accordingly, calculated as (192 - load width) × load height. • Maximum load of a single output card: 17,694,720 pixels (8/10/12bit@60Hz).
Control Card		
		
Type	Qty	Description
ETHERNET	2	Gigabit Ethernet control ports. Support TCP/IP and star connection. They have the same functions without priority and order, and can be connected to VMP software. No switch or router is needed to deploy multiple devices on the same LAN via device cascading as the network switching function is already built in. Up to 20 units of MX2000 Pro can be cascaded.
GENLOCK	1	A pair of Genlock signal connectors. Support Bi-Level, Tri-Level, and Blackburst. • IN: Accept the sync signal. • LOOP: Loop the sync signal. The Genlock input signal supports a frame rate range from 23.98 Hz to 60 Hz. For standard Genlock signal generators, up to 20 units of MX2000 Pro can be cascaded.
AUX	1	An auxiliary connector that connects to the central control device (RS232) (Reserved)
SPDIF	1	A digital audio output (Reserved)
Power		
Connector	Qty	Description
100-240V~, 50/60Hz	1	AC power input connector

3 Applications

3.1 Solution Build

Based on the installed output cards (4x10G fiber output card/1x40G fiber output card), users can build 1G/5G solutions with different models of fiber converters and receiving cards. 1G/5G refers to the output bandwidth of a single Ethernet port. For more detailed information, please refer to 8 Ethernet Port Load Capacity.

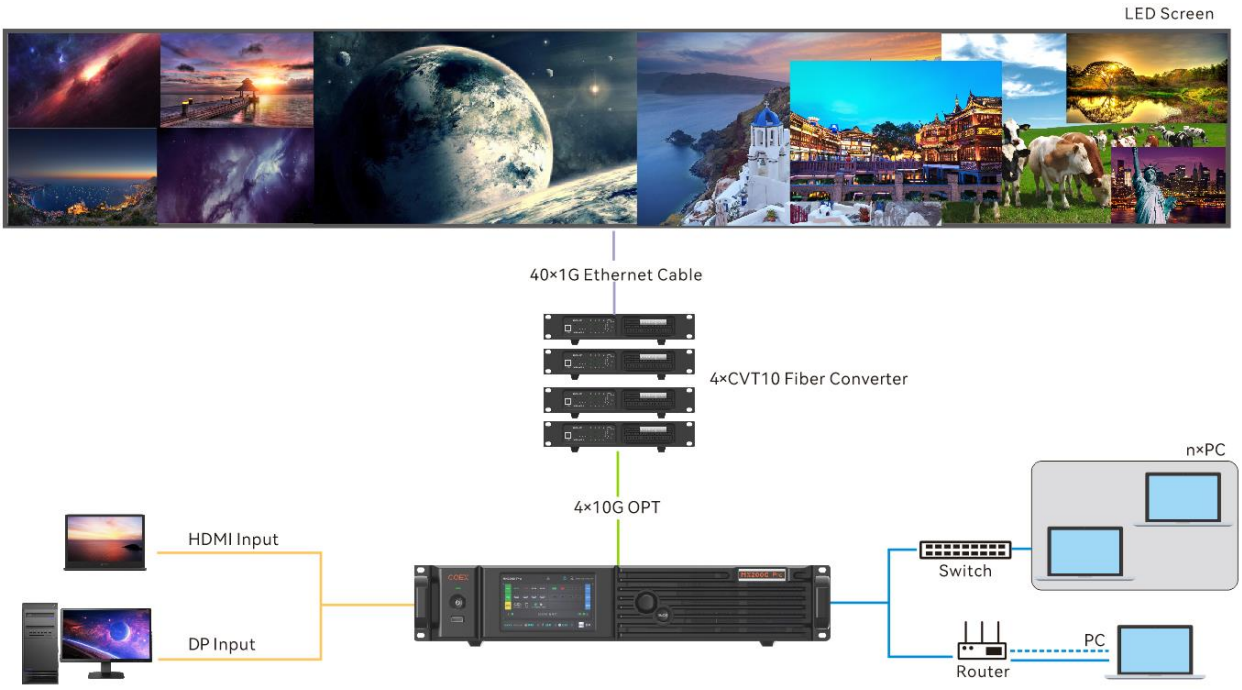
Table 3-1 COEX system build

Solution	Output Card	Fiber Converter	Receiving Card
1G Solution	4x10G fiber output card	CVT10, CVT10 Pro	1G receiving cards such as A10s Pro
5G Solution	1x40G fiber output card	CVT8-5G	5G receiving cards such as CA50E

Note

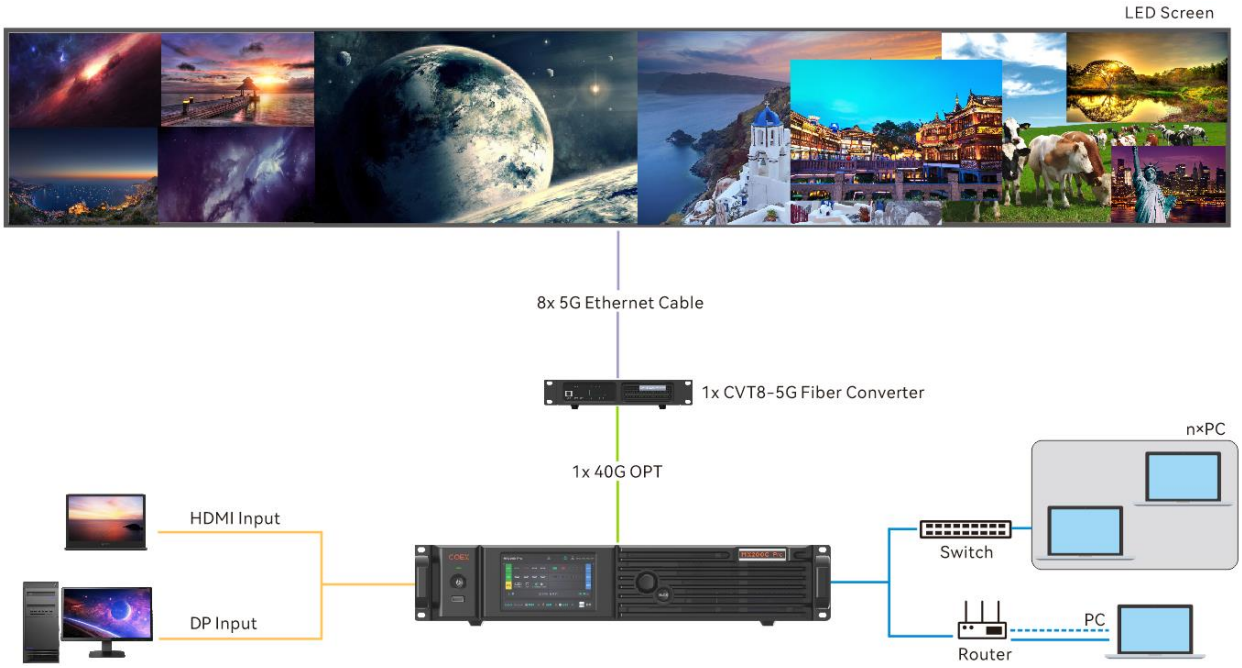
You can install different output cards on the same controller, but output cards with different models cannot be used to load the same screen.

3.2 1G Solution (4x10G Fiber Output Card)



This diagram is an example of two input cards and one 4x10G fiber output card installed on a MX2000 Pro. The actual application may vary.

3.3 5G Solution (1x40G Fiber Output Card)



This diagram is an example of two input cards and one 1x40G fiber output card installed on a MX2000 Pro. The actual application may vary.

4 Front Screen Panel

4.1 UI Introduction

4.1.1 Home Screen

After the device is powered on, the home screen showing device related information is displayed as Figure 4-1 . Rotate the knob to select an input or output card to view its details, as shown in Figure 4-2 .

Figure 4-1 Home screen

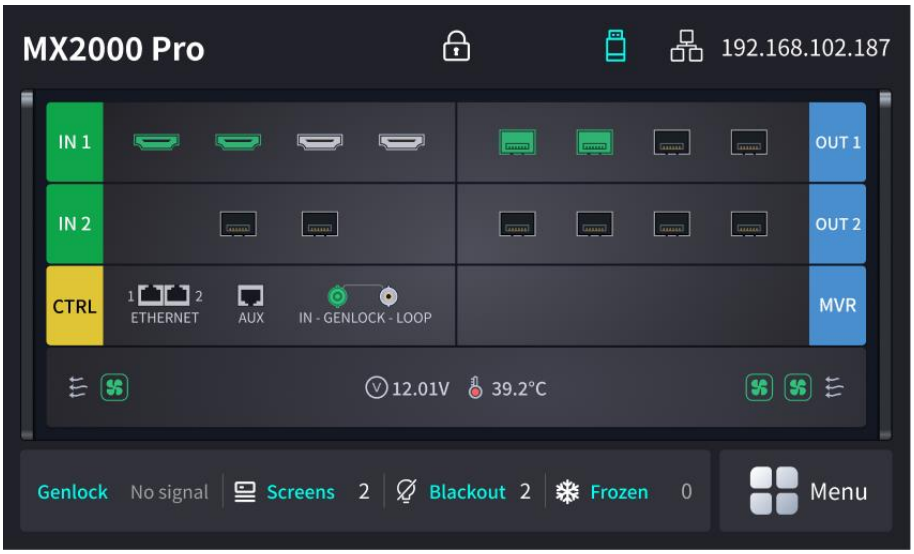
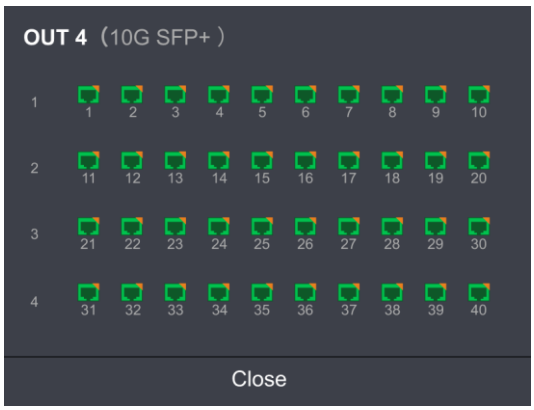


Figure 4-2 Input and output card details



The home screen is shown in Figure 4-1 and the home screen descriptions are shown in Table 4-1.

Table 4-1 Home screen descriptions

Area	Content	Description
Top line	MX2000 Pro	The device name. The name can be changed in VMP software.
		The device button and touchscreen lock status. • When the icon is displayed: The buttons are locked. • When the icon is not displayed: The buttons are unlocked Hold down the knob and **BACK** button simultaneously for 5s or longer to lock or unlock the buttons and screen.
		The connection status of the USB drive • Green: Connected • When the icon is not displayed: Disconnected
	192168102187	The device IP address
Input / Output	IN 1 to 2	The device input source type and status. • Green: The input source is connected. • Red: The input source is being used for the screen but not connected. • Gray: The input source is not connected.
	OUT 1 to 2	The status of the output Ethernet ports. • Green: The Ethernet port is connected and working normally. • Red: The Ethernet port is connected but working abnormally. • Gray: Disconnected When the Ethernet port, associated card, or associated device is used as a backup, you will see an orange triangular icon displayed in the top-right corner.
	MVR (Reserved)	The status of the MVR card ports.
Control	CTRL	The status of the control Ethernet port, AUX port, and GENLOCK port. • Green: Connected • Gray: Disconnected
Monitoring		The chassis fan speed

Area	Content	Description
		• Green: The fan speed is normal. • Yellow: Fan speed alarm. The speed exceeded the threshold range. • Yellow: Fan speed alarm. The speed exceeded the threshold range significantly.
		The supply voltage of the mainboard. Meaning of numerical colors: • Green: The voltage is normal. • Yellow: Voltage alarm. The voltage has exceeded the threshold range. • Red: Voltage alarm. The voltage exceeded the threshold range significantly.
		The temperature inside the chassis Meaning of numerical colors: • Green: The temperature is normal. • Yellow: Temperature alarm. The temperature exceeded the threshold range. • Red: Temperature alarm. The temperature exceeded the threshold range significantly.
Bottom line	Genlock	The sync signal currently used.
	Screens	The number of screens with load.
	Blackout	The number of screens that are blacked out.
	Frozen	The number of screens that are frozen.
	Menu	The device main menu.

4.1.2 Main Menu

On the home screen, touch the icon at the bottom right or press the knob to enter the main menu page.

Figure 4-3 Main menu

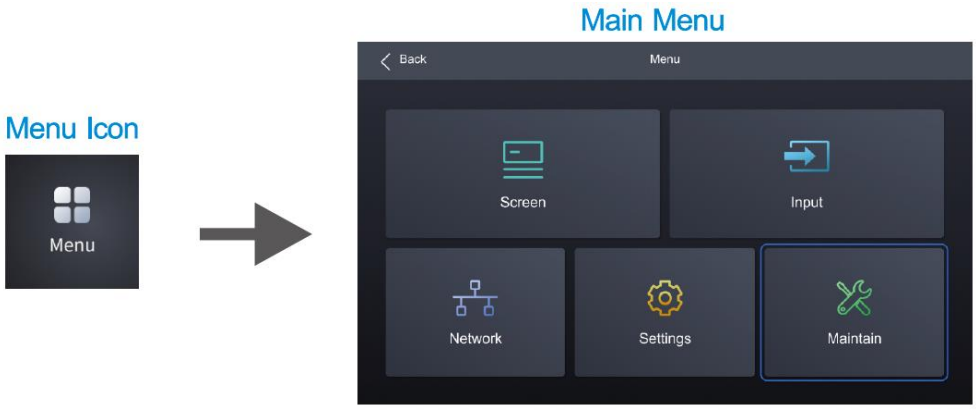


Table 4-2 Main menu description

Module	Description
	Show screen name, sync signal source, and brightness; Set brightness, color temperature, gamma; Enable/Disable black screen or freeze screen.
	Set internal source, check external input source information, and configure EDID and HDR parameters for external input sources.
	Configure network settings and third party protocol.
	Set LCD screen timeout and brightness; Set system language and temperature scale; Check firmware information, and restore factory settings.
	Perform device diagnostics, view and export logs, and check device status.

4.2 Screen

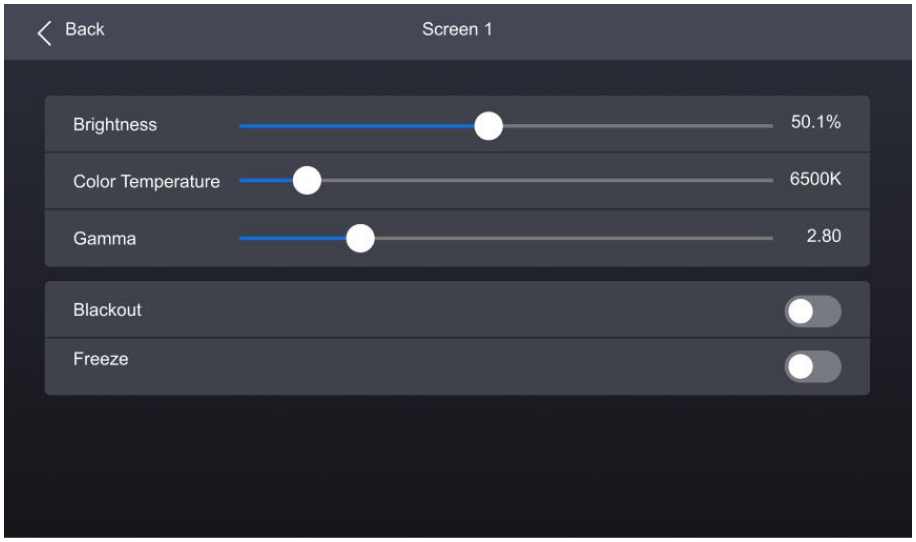
4.2.1 Set Brightness, color temperature and gamma

Step 1 Select **Screen** from the main menu to access the screen list.

The list displays screen names, sync signal sources, and brightness.

Step 2 Select a screen to open the parameter settings.

Figure 4-4 Set Brightness, color temperature and gamma



Step 3 Adjust the values for brightness, color temperature and gamma.

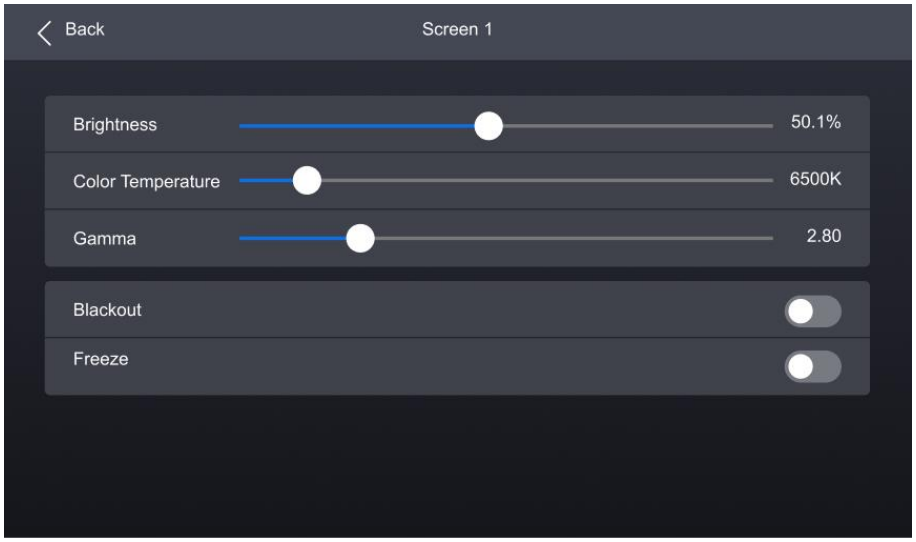
4.2.2 Set screen status

Step 1 Select **Screen** from the main menu to access the screen list.

The list displays screen names, sync signal sources, and brightness.

Step 2 Select a screen to open the parameter settings.

Figure 4-5 Set screen status



Step 3 Select **Blackout** or **Freeze** and then press the knob to toggle on or off the switch.

- : Enabled. The screen display will turn black or freeze, but the playback will not be interrupted.
- : Disabled.

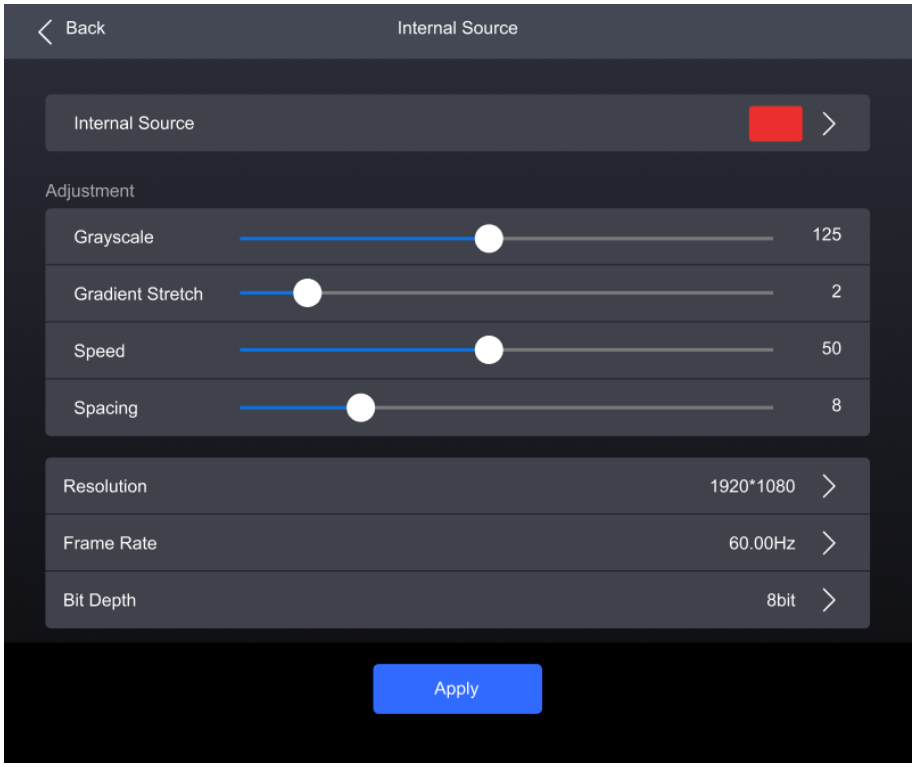
4.3 Input

4.3.1 Set Internal Source

Step 1 Select **Input** from the main menu to access the input source list.

Step 2 Select **Internal source** to open the parameter settings.

Figure 4-6 Internal source



Step 3 Select **Internal Source**, navigate to the sub-interface, and then select an image.

Step 4 Press **BACK** to return to the parameter settings.

Step 5 Set the **Grayscale**, **Gradient Stretch**, **Speed**, and **Space**. The adjustable parameters for each image may vary based on the interface.

Step 6 Select **Resolution**, **Frame Rate**, and **Bit Depth** in sequence and set a value for each in the pop-up dialog box.

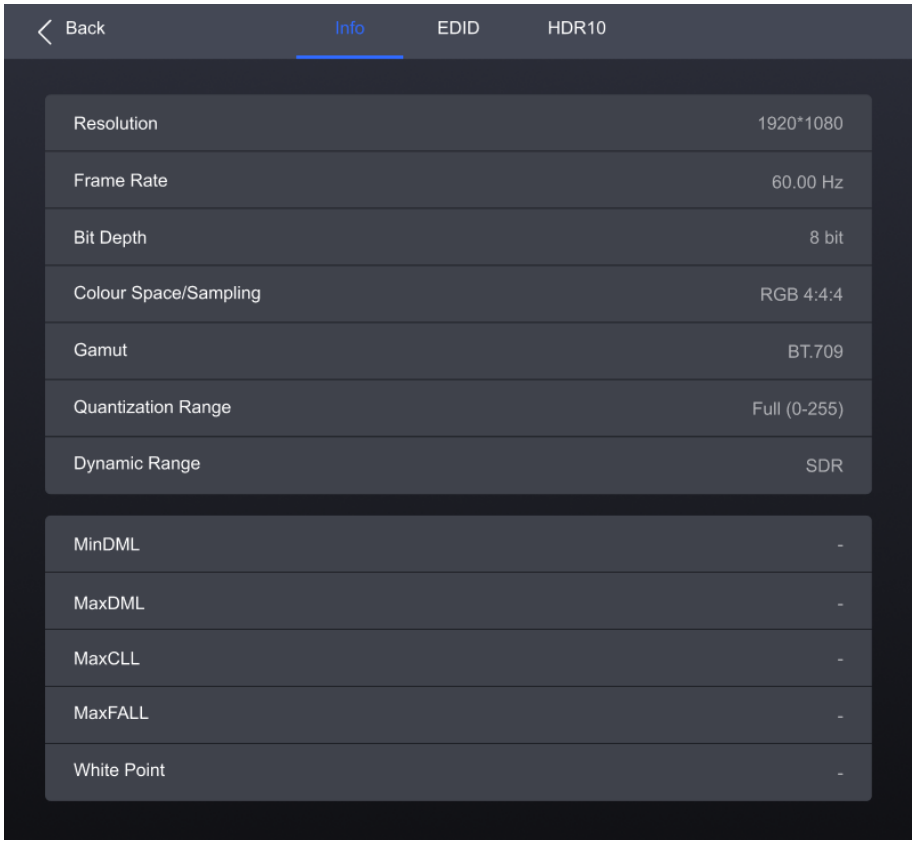
Step 7 After the settings are done, click **Apply**.

4.3.2 Check Input Source Information

Step 1 Select **Input** from the main menu to access the input source list.

Step 2 Select an input source to access the **Information** tab.

Figure 4-7 Input source information



Step 3 Check the input source information.

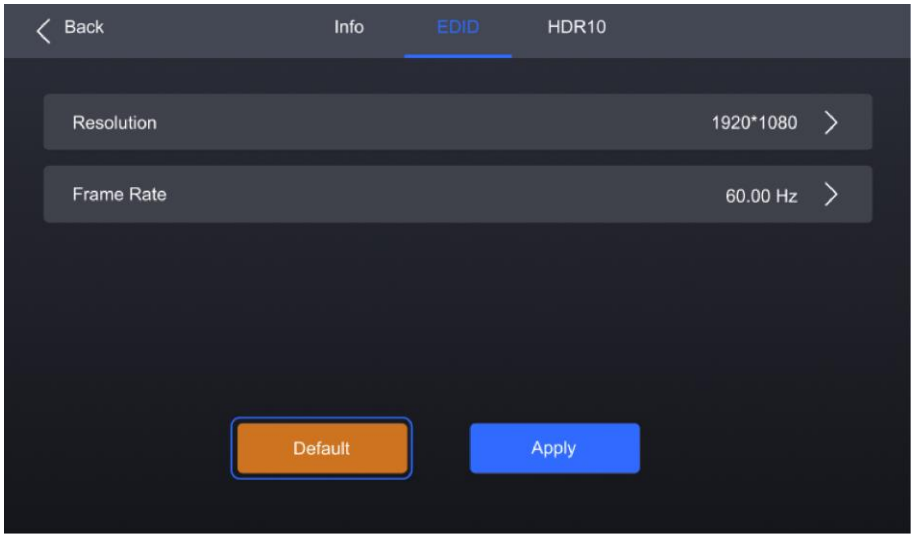
4.3.3 Set EDID

Step 1 Select **Input** from the main menu to access the input source list.

Step 2 Select an input source to open the parameter settings.

Step 3 Navigate to the **EDID** tab.

Figure 4-8 EDID



Step 4 Select **Resolution** and **Frame Rate** in sequence and set a value for each in the pop-up dialog box.

Step 5 After the settings are done, click **Apply**.

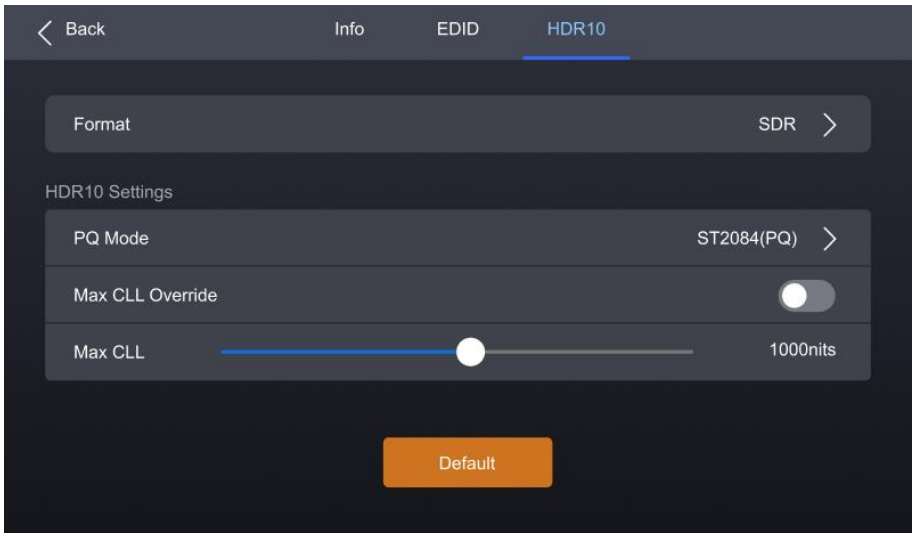
4.3.4 Set HDR

Step 1 Select **Input** from the main menu to access the input source list.

Step 2 Select an input source to open the parameter settings.

Step 3 Navigate to the **HDR10** tab.

Figure 4-9 HDR10



Step 4 Select Format and then select **Auto**, **HDR10**, **HLG**, or **Close** from the pop-up dialog box.

Step 5 For HDR10, please set the relevant parameters.

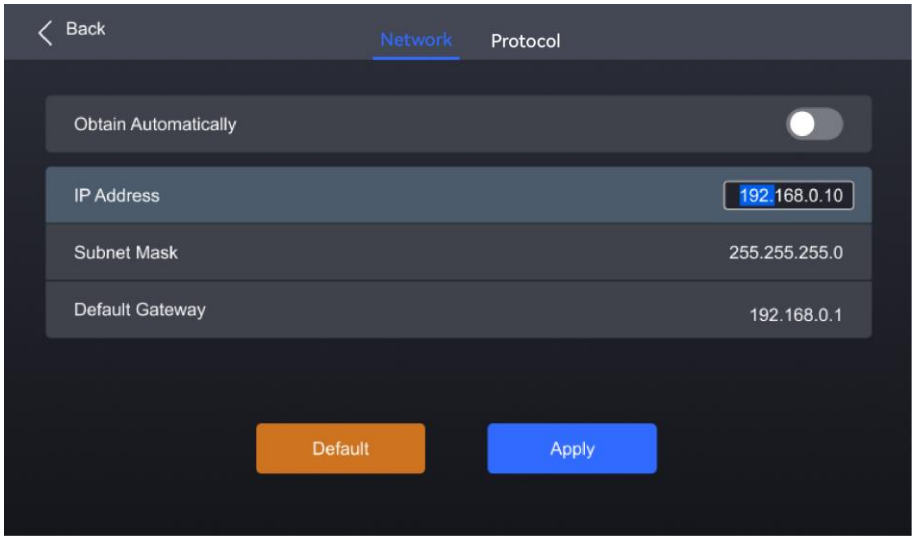
- PQ Mode: The mapping method of video source brightness.
  - ST2084 (PQ): This mode 1:1 maps the brightness of the video source. The part that exceeds the maximum screen brightness will still be displayed as the maximum brightness.
  - ST2086 (Linear mapping): This mode linearly maps the brightness of the video source. It globally adjust the video source brightness according to the maximum screen brightness to ensure that the ratio of the brightness of the entire source content remains unchanged.
- **Max CLL Override**: Enable or disable Max CLL override.
- Max CLL: The max content light level.

4.4 Communication

4.4.1 Network

Step 1 Select **Communication** > **Network** from the main menu to access the network settings interface.

Figure 4-10 Network



Step 2 Toggle on or off **Obtain Automatically**.

- : The device automatically obtain an IP address.
- : You need to manually set an IP address for the device.

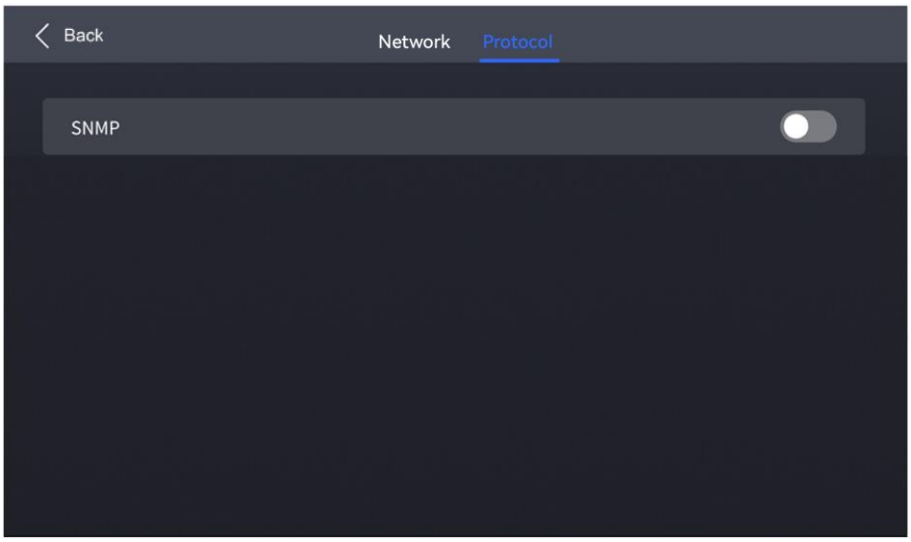
Step 3 If **Obtain Automatically** is disabled, you need to set an **IP Address**, **Subnet Mask** and **Default Gateway** and. If it is enabled, this step is not required.

Step 4 After the settings are done, click **Apply**.

4.4.2 Protocol

Step 1 Select **Communication** > **Protocol** from the main menu to access the SNMP settings interface.

Figure 4-11 Protocol



Step 2 Toggle on or off **SNMP**.

- : Enable SNMP.
- : Disable SNMP.

Note:

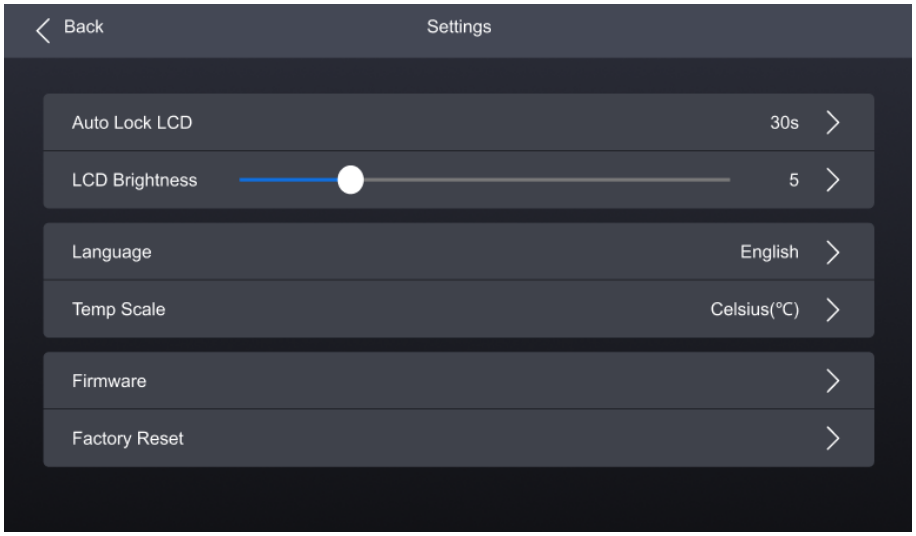
Refer to *SNMP Instructions* for more details.

4.5 Settings

4.5.1 Configure LCD screen

Step 1 Select **Settings** from the main menu to access the system settings interface.

Figure 4-12 Configure LCD screen



Step 2 Select **Auto Lock LCD** and set a value in the pop-up dialog box.

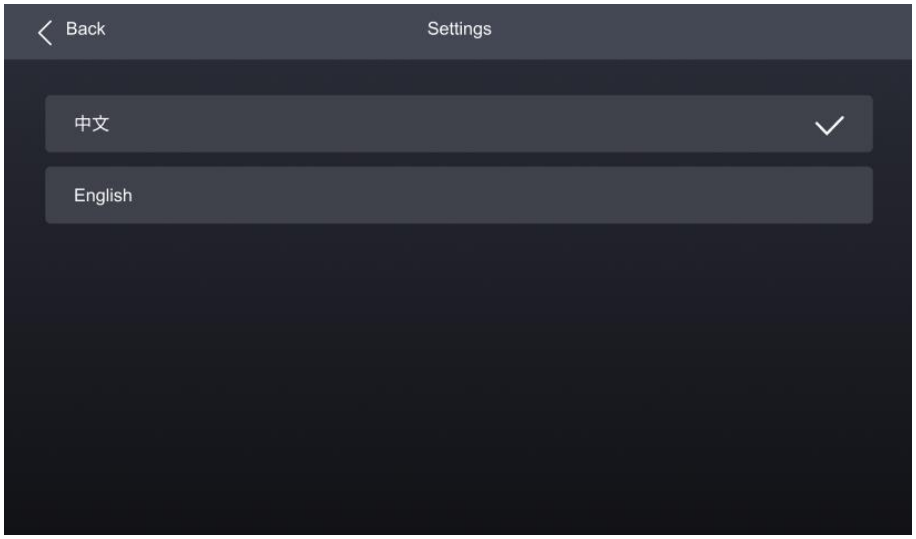
Step 3 Select **LCD Brightness** and adjust the value.

4.5.2 Setting Language

Step 1 Select **Settings** from the main menu to access the system settings interface.

Step 2 Select **语言/Language** to open the sub-interface.

Figure 4-13 Language settings



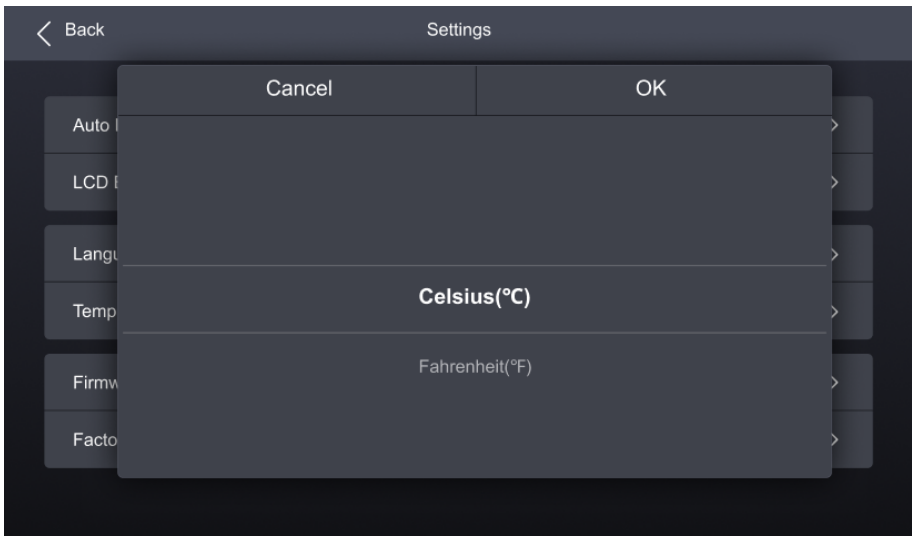
Step 3 Select **中文** or **English**.

4.5.3 Set Temperature Scale

Step 1 Select **Settings** from the main menu to access the system settings interface.

Step 2 Select **Temp Scale** and then select **Celsius(℃)** or **Fahrenheit(℉)** from the pop-up dialog box.

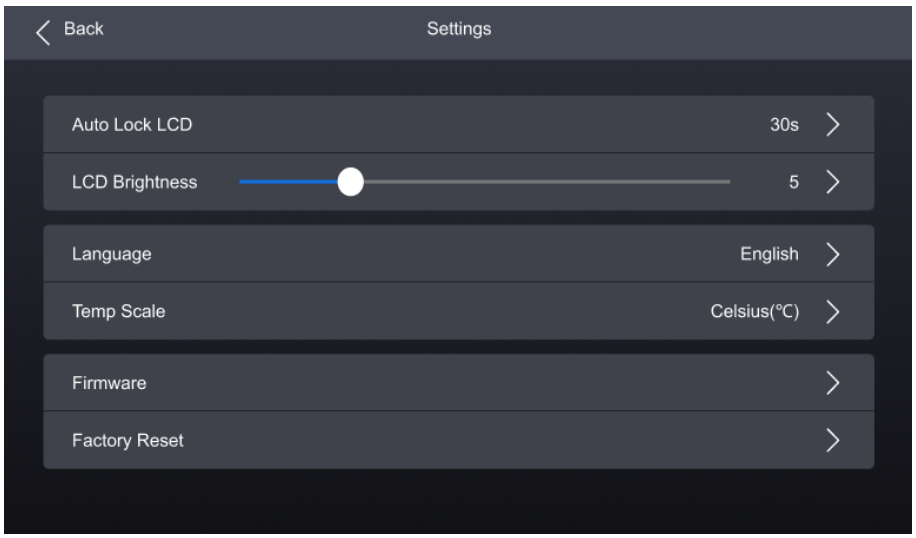
Figure 4-14 Set Temperature Scale



4.5.4 Check Firmware Information

Step 1 Select **Settings** from the main menu to access the system settings interface.

Figure 4-15 Check firmware information



Step 2 Select **Firmware** to open the sub-interface.

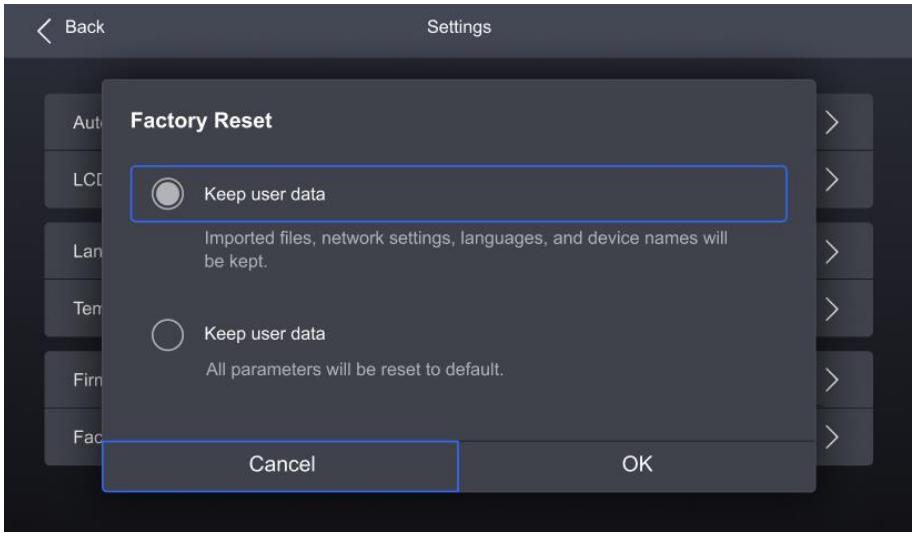
Step 3 Select **Controller**, **Input Card**, and **Output Card** tab to check the related information.

4.5.5 Factory Reset

Step 1 Select **Settings** from the main menu to access the system settings interface.

Step 2 Select **Factory Reset** and then select **Keep user data** or **Reset All** from the pop-up dialog box. Finally, select **OK**.

Figure 4-16 Factory Reset



4.6 Maintenance

4.6.1 Diagnostics

Upon Powering Up

When the device is powered on, it automatically conducts a diagnostic process:

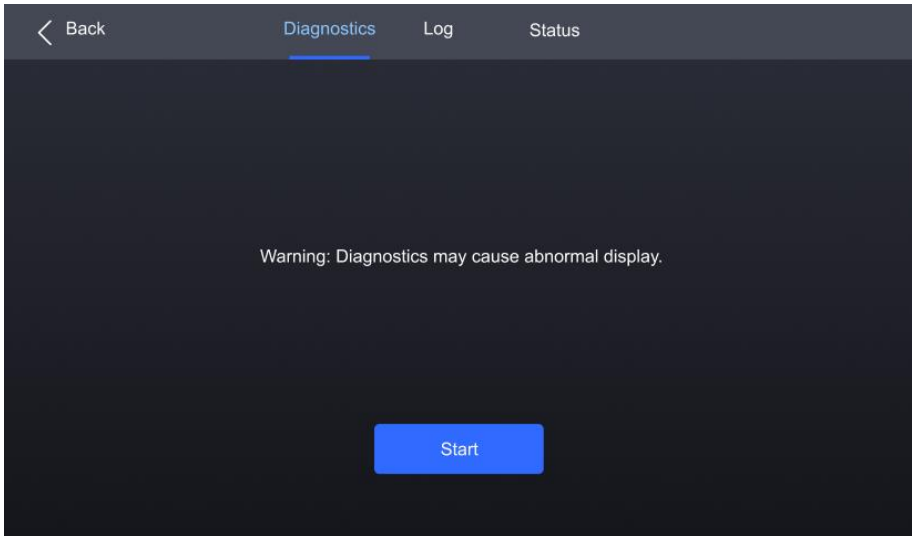
- Normal startup: All functions of the MX6000 Pro are available for use.
- Abnormal startup: Depending on the displayed error message, you can choose to export the diagnostic results or continue to operate in a limited functionality state.

Maintenance

To export the diagnostics log, insert a USB drive to the USB port on the front panel of the device.

Step 1 Select **Maintain** from the main menu to access the settings interface.

Figure 4-17 Diagnostics



Step 2 Navigate to the **Diagnostics** tab and select **Start**.

Step 3 Once the diagnostic process is completed, select **Details** to check the diagnostic result. You can also select **Export** to export the result into a USB drive.

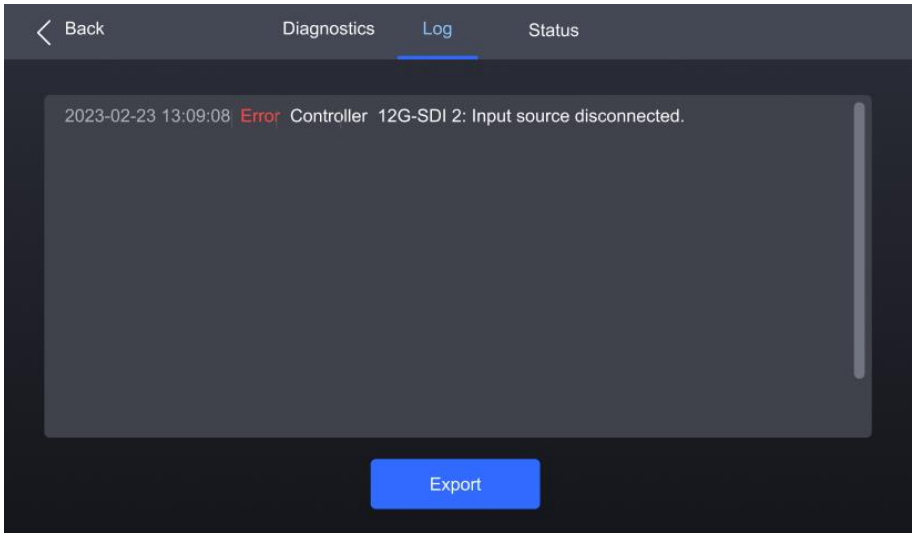
4.6.2 View and Export Logs

To export the logs, insert a USB drive to the USB port on the front panel of the device.

Step 1 Select **Maintain** from the main menu to access the settings interface.

Step 2 Navigate to the **Log** tab to check the device logs.

Figure 4-18 Device log



Step 3 Select **Export** to export the logs into a USB drive.

4.6.3 Check device status

Step 1 Select **Maintain** from the main menu to access the settings interface.

Step 2 Navigate to the **Status** tab to check the device status.

Figure 4-19 Check device status

5 VMP Operations

Users can only perform some basic operations on the MX2000 Pro LCD screen. To perform more operations such as project management, input source configuration, screen configuration, screen calibration, color processing, screen adjustment, screen monitoring, preset management, and screen maintenance, please install Vision Management Platform (VMP) on the control PC and refer to the *Vision Management Platform User Manual*.

6 Specifications

Electrical Specifications	Power supply	100-240V~, 50/60Hz
	Max power consumption	260W
Operating Environment	Temperature	0°C to +45°C
	Humidity	0% RH to 80% RH, non-condensing
Storage Environment	Temperature	-10°C to +60°C
	Humidity	0% RH to 95% RH, non-condensing
Physical Specifications	Dimensions	482.6 mm × 94.6 mm × 529.7 mm (foot pad included)
	Weight	• Standard (1x control card, 1x input card, 1x output card) – Net weight: 12.0kg – Total weight: 12.5 kg • Fully installed (1x control card, 2x input cards, 2x output cards) – Net weight: 13.0kg – Total weight: 13.5kg **Note:** Total weight refers to the weight of the product, accessories, and packing materials.
Packing Information	Packing box	660.0 mm × 570.0 mm × 210.0 mm, kraft paper box
	Accessories	2x Power cord, 1x Ethernet cable, 1x HDMI2.1 cable, 1x DP 1.4 cable 1x Quick Start Guide, 1x Customer Letter, 1x Safety Manual, 1x Certificate of Approval
IP Rating	IP20 (Please prevent the product from water intrusion and do not wet or wash the product).	
Noise Level (typically at 25°C/77°F)	53 dB (A)	

The amount of power consumption may vary depending on various factors such as product settings, usage, and environment.

7 Video Source Specifications

Input	Resolution		Color Space	Sampling	Bit Depth	Integer Frame Rate (Hz)
HDMI 2.0	4K	4096×2160 (Forced)	RGB / YCbCr	4:4:4	12bit	24/25/30
					10bit	24/25/30/48/50
					8bit	24/25/30/48/50/60
			YCbCr	4:2:2	8/10/12bit	
		3840×2160	RGB / YCbCr	4:4:4	12bit	24/25/30
					10bit	24/25/30/48/50
					8bit	24/25/30/48/50/60
			YCbCr	4:2:2	8/10/12bit	
	2K1K	2560×1440	RGB / YCbCr	4:4:4	12bit	24/25/30/48/50/60/75
					10bit	24/25/30/48/50/60/75/100
					8bit	24/25/30/48/50/60/75/100/120
			YCbCr	4:2:2	8/10/12bit	
		1920×1080	RGB / YCbCr	4:4:4	12bit	24/25/30/48/50/60/72/75/100/120/144
					10bit	
					8bit	24/25/30/48/50/60/72/75/100/120/144/240 (240 Hz needs to be forced)
			YCbCr	4:2:2	8/10/12bit	
HDMI 2.1	8K	8192×4320 (Forced)	RGB / YCbCr	4:4:4	12bit	24/25
					10bit	24/25/30
					8bit	
			YCbCr	4:2:2	8/10/12bit	
		7680×4320 (Forced)	RGB / YCbCr	4:4:4	12bit	24/25
					10bit	24/25/30

Input	Resolution		Color Space	Sampling	Bit Depth	Integer Frame Rate (Hz)
					8bit	
			YCbCr	4:2:2	8/10/12bit	
	5K	5120×2880 (Forced)	RGB / YCbCr	4:4:4	12bit	24/25/30/48/50/60
					10bit	24/25/30/48/50/60/72/75
					8bit	
			YCbCr	4:2:2	8/10/12bit	
	4K	4096×2160 (Forced)	RGB / YCbCr	4:4:4	12bit	24/25/30/48/50/60/72/75/100
					10bit	24/25/30/48/50/60/72/75/100/120
					8bit	
			YCbCr	4:2:2	8/10/12bit	
		3840×2160	RGB / YCbCr	4:4:4	12bit	24/25/30/48/50/60/72/75/100 (75 Hz and above need to be forced)
					10bit	24/25/30/48/50/60/72/75/100/120 (75 Hz and above need to be forced)
					8bit	
			YCbCr	4:2:2	8/10/12bit	
	2K1K	2560×1440	RGB / YCbCr	4:4:4	12bit	24/25/30/48/50/60/72/75/100/120/144 (144 Hz needs to be forced)
					10bit	24/25/30/48/50/60/72/75/100/120/144/240 (144 Hz and above need to be forced)
					8bit	
			YCbCr	4:2:2	8/10/12bit	
		1920×1080	RGB / YCbCr	4:4:4	12bit	24/25/30/48/50/60/72/75/100/120/144/240 (240 Hz needs to be forced)
					10bit	
					8bit	
			YCbCr	4:2:2	8/10/12bit	
DP 1.2	4K	4096×2160 (Forced)	RGB / YCbCr	4:4:4	12bit	24/25/30/48/50
					10bit	24/25/30/48/50/60
					8bit	24/25/30/48/50/60/75

Input	Resolution		Color Space	Sampling	Bit Depth	Integer Frame Rate (Hz)
			YCbCr	4:2:2	8/10/12bit	
		3840×2160	RGB / YCbCr	4:4:4	12bit	24/25/30/48/50
					10bit	24/25/30/48/50/60
					8bit	24/25/30/48/50/60/75 (75Hz needs to be forced)
			YCbCr	4:2:2	8/10/12bit	
	2K1K	2560×1440	RGB / YCbCr	4:4:4	12bit	24/25/30/48/50/60/75/100
					10bit	24/25/30/48/50/60/75/100/120
					8bit	24/25/30/48/50/60/75/100/120/144 (144 Hz needs to be forced)
			YCbCr	4:2:2	8/10/12bit	
		1920×1080	RGB / YCbCr	4:4:4	12bit	24/25/30/48/50/60/75/100/120/144 (144 Hz needs to be forced)
					10bit	
					8bit	24/25/30/48/50/60/75/100/120/144 /240 (240 Hz needs to be forced)
			YCbCr	4:2:2	8/10/12bit	
DP 1.4	8K	8192×4320 (Forced)	RGB / YCbCr	4:4:4	12bit	Not supported
					10bit	
					8bit	24/25
			YCbCr	4:2:2	8/10/12bit	
		7680×4320 (Forced)	RGB / YCbCr	4:4:4	12bit	Not supported
					10bit	24
					8bit	24/25/30
			YCbCr	4:2:2	8/10/12bit	
	5K	5120×2880 (Forced)	RGB / YCbCr	4:4:4	12bit	24/25/30
					10bit	24/25/30/48/50
					8bit	24/25/30/48/50/60
			YCbCr	4:2:2	8/10/12bit	
	4K	4096×2160		4:4:4	12bit	24/25/30/48/50/60

Input	Resolution		Color Space	Sampling	Bit Depth	Integer Frame Rate (Hz)
		(Forced)	RGB / YCbCr		10bit	24/25/30/48/50/60/75
					8bit	24/25/30/48/50/60/75/100
			YCbCr	4:2:2	8/10/12bit	
		3840×2160	RGB / YCbCr	4:4:4	12bit	24/25/30/48/50/60
					10bit	24/25/30/48/50/60/75 (75Hz needs to be forced)
					8bit	24/25/30/48/50/60/75/100 (75Hz and above need to be forced)
			YCbCr	4:2:2	12bit	
					8/10bit	24/25/30/48/50/60/75/100/120 (75Hz and above need to be forced)
	2K1K	2560×1440	RGB / YCbCr	4:4:4	12bit	24/25/30/48/50/60/75/100/120/144 (144 Hz needs to be forced)
					10bit	
					8bit	24/25/30/48/50/60/75/100/120/144/240 (144Hz and above need to be forced)
			YCbCr	4:2:2	8/10/12bit	
		1920×1080	RGB / YCbCr	4:4:4	12bit	24/25/30/48/50/60/75/100/120/144/240 (240 Hz needs to be forced)
					10bit	
					8bit	
			YCbCr	4:2:2	8/10/12bit	
12G-SDI	4K	4096×2160	YCbCr	4:2:2	10bit	24/25/30/48/50/60
		3840×2160				
	2K1K	2048×1080				
		1920×1080				
ST 2110	4K	4096×2160	RGB / YCbCr	4:4:4	8bit/10bit	24/25/30/48/50/60
			YCbCr	4:2:2		

Input	Resolution		Color Space	Sampling	Bit Depth	Integer Frame Rate (Hz)
		3840×2160	RGB / YCbCr	4:4:4	8bit/10bit	24/25/30/48/50/60
			YCbCr	4:2:2		
	2K1K	2560×1440	RGB / YCbCr	4:4:4	8bit/10bit	24/25/30/48/50/60/75/100/120
			YCbCr	4:2:2		
		1920×1080	RGB / YCbCr	4:4:4	8bit/10bit	24/25/30/48/50/60/75/100/120
			YCbCr	4:2:2		

Note:

The table above only displays a selection of common resolutions and integer frame rates. Decimal frame rates are also supported, allowing for automatic frame rate adaptation from the highest frame rate of each resolution down to 23.98/29.97/47.95/59.94/71.93/119.88/143.86 Hz.

8 Ethernet Port Load Capacity

8.1 1G Solution (4x10G Fiber Output Card)

When Working with A10s Pro Receiving Card

When working with the A10s Pro receiving card, the formula of calculating the load capacity per Ethernet port and the detailed parameters are as follows:

- 8bit: Load capacity × 24 × Frame rate < 1000 × 1000 × 1000 × 0.95
- 10bit: Load capacity × 32 × Frame rate < 1000 × 1000 × 1000 × 0.95
- 12bit: Load capacity × 48 × Frame rate < 1000 × 1000 × 1000 × 0.95

Max Load Capacity per Ethernet Port (Pixels)			
Frame Rate / Bit Depth	8bit	10bit	12bit
24 Hz	1,649,306	1,236,979	824,653
25 Hz	1,583,333	1,187,500	791,667
30 Hz	1,319,444	989,583	659,722
50 Hz	791,667	593,750	395,833
60 Hz	659,722	494,792	329,861
120 Hz	329,861	247,396	164,931
144 Hz	274,884	206,163	137,442
240 Hz	164,931	123,698	82,465
300 Hz	131,944	95,958	65,972
360 Hz	109,954	82,465	54,977
480 Hz	82,465	61,849	41,232

When Working with Other Armor Series Receiving Cards

The formula of calculating the load capacity per Ethernet port and the detailed parameters are as follows.

- 8bit: Load capacity × 24 × Frame rate < 1000 × 1000 × 1000 × 0.95
- 10bit: Load capacity × 48 × Frame rate < 1000 × 1000 × 1000 × 0.95
- 12bit: Load capacity × 48 × Frame rate < 1000 × 1000 × 1000 × 0.95

Max Load Capacity per Ethernet Port (Pixels)			
Frame Rate / Bit Depth	8bit	10bit	12bit
24 Hz	1,649,306	824,653	824,653
25 Hz	1,583,333	791,667	791,667
30 Hz	1,319,444	659,722	659,722
50 Hz	791,667	395,833	395,833
60 Hz	659,722	329,861	329,861
120 Hz	329,861	164,931	164,931
144 Hz	274,884	137,442	137,442
240Hz	164,931	82,465	82,465
300 Hz	131,944	65,972	65,972
360 Hz	109,954	54,977	54,977
480 Hz	82,465	41,232	41,232

Note

When using a 1G Ethernet port to drive the LED screen, it can achieve its maximum load capacity only when the load width is 192 pixels or more. If the load width is less than that, the load capacity will be reduced accordingly, calculated as (192 - load width) × load height.

8.2 5G Solution (1x40G Fiber Output Card)

When working with the CA50E and XA50 Pro receiving cards, the formula of calculating the load capacity per Ethernet port and the detailed parameters are as follows:

- 8bit: Load capacity × 24 × Frame rate < 5G × 0.85
- 10bit: Load capacity × 32 × Frame rate < 5G × 0.85
- 12bit: Load capacity × 36 × Frame rate < 5G × 0.85

Max Load Capacity per Ethernet Port (Pixels)			
Frame Rate / Bit Depth	8bit	10bit	12bit
24 Hz	7,378,000	5,533,000	3,689,000
25 Hz	7,082,800	5,311,680	3,541,440
30 Hz	5,902,400	4,426,400	2,951,200
50 Hz	3,541,440	2,655,840	1,770,720
60 Hz	2,951,200	2,213,200	1,475,600
120 Hz	1,475,600	1,106,600	737,800
144 Hz	1,229,600	918,478	612,374
240 Hz	737,800	553,300	368,900
300 Hz	590,240	442,640	295,120
360 Hz	491,800	368,800	245,900
480 Hz	368,900	276,650	184,450

Note

When using a 5G Ethernet port to drive the LED screen, it can achieve its maximum load capacity only when the load width is 192 pixels or more. If the load width is less than that, the load capacity will be reduced accordingly, calculated as (192 - load width) × load height.

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