PIXELHUE

All-New Event Presentation Switching Solutions

Seamless Switchers P20/P10/Q8
Event Management Software PixelFlow
Event Controllers U5/U5 Pro

User Manual

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The latest edition of user manuals can be downloaded from the PIXELHUE website www.pixelhue.com.

Contents

1 General

Overview

- About This Manual
- Version History
- Symbols and Pictures

1.1 About This Manual

This user manual describes how to operate the P20/P10/Q8 seamless switchers and U5/U5 Pro event controllers, as well as how to use the matched all-new event management software PixelFlow. This manual is designed to be a reference for your daily use of our products. It contains a complete description of the hardware and control software.

Note

Always check for the latest version of all documents at www.pixelhue.com.

1.2 Version History

Version	Date	Changes
V1.4.1	2024-07-31	• Added the key customization feature for the U5/U5 Pro. • Added the virtual event controller feature for PixelFlow.
V1.4.0	2024-06-18	• Changed the home screen picture and added descriptions of EDID compatibility with Mac, smart key and instructions to resize and reposition BKG and turn on/off input/output HDCP in the P20/P10 menu operations chapter. • Updated the descriptions of the event management software PixelFlow. • Updated the LCD menu diagrams and rear panel diagram for the Q8. • Updated the gross weight of the Q8 with flight case due to its replacement. • Added the Stream Deck control chapter.
V1.3.1	2024-03-15	Added the Q8_ST2110_4xSFP25G Input Card_I.
V1.3.0	2024-02-02	• Updated the descriptions of P20/P10 front panel buttons, home screen and LCD menu operations. • Added the stream Deck control instruction. • Updated the descriptions of the event management software PixelFlow.
V1.2.0	2024-01-05	• Updated the sections related to P20/P10. • Updated the descriptions of the event management software PixelFlow. • Updated the Q8 physical specifications. • Updated the U5/U5 Pro physical specifications.
V1.1.1	2023-11-10	Updated the front panel related content of the Q8.
V1.1.0	2023-09-28	Added Stream Deck as a control option of the P20 and P10.
V1.0.1	2023-08-25	Added Q8 function limitation information

1.3 Symbols and Pictures

Symbol Overview

	Danger	Indicates a hazard with a high level of risk, which if not avoided, will result in death or serious injury.
	Warning	Indicates a hazard with a medium or low level of risk, which if not avoided, could result in minor or moderate injury.
	Caution	Indicates a potentially hazardous situation, which if not avoided, could result in equipment damage, data loss, performance degradation, or unexpected results.
	Note	Provides additional information to emphasize or supplement important points of the main text.

Picture Overview

Images and pictures given in this manual are used for illustration purposes only. The actual product may vary due to product enhancement. The content of the images can be slightly different from reality, such as device types, installed modules, form and position of software windows on the screen.

2 Safety

Overview

- General Considerations
- Device Carrying
- Device Mounting
- Cable Requirements
- Electrical Safety
- Unpacking and Inspection
- Device Labels
- Notes and Cautions

2.1 General Considerations

To ensure that you can use this product correctly and safely, please be sure to observe the following precautions:

- Before performing any operation, make sure that you have read all the operating instructions provided by the device, especially the instructions that may endanger the personal safety and device safety, such as dangers, warnings and cautions, to minimize the probability of accidents.
- All the operations must conform to local safety codes. When the safety and precautionary measures described in this manual conflict with local safety codes, please follow the local codes.
- The personnel responsible for installing and maintaining the device must be professionals who have been trained and have mastered the correct operation methods and all safety precautions. Only trained and qualified personnel can perform device installation and maintenance.
- This device must be used in an environment that meets the design specifications; otherwise, it may cause device failure. The resulting device function abnormalities or component damage, personal safety accidents, property losses and other situations are not included within the scope of the device warranty.

2.1.1 General Safety

- When operating the device, you must strictly abide by the local laws and regulations. The safety precautions described in this manual are only a supplement to the local safety laws and regulations.
- The "Danger", "Warning" and "Caution" items described in this manual are only supplementary instructions for all safety precautions.
- To ensure personal and device safety, please strictly follow all the safety precautions on the device labels and described in this manual when installing the device.

2.1.2 Environmental Requirements

- Ensure adequate air flow in the equipment room.
- Take necessary measures to prevent dust, water and static electricity.
- Avoid long-term direct sunlight.
- Keep the device away from heat and ignition sources.
- Do not place the device in an explosive atmosphere.
- Do not place the device in a corrosive environment.
- Do not place the device in a strong electromagnetic environment.

2.1.3 Device Safety

- Before operating, fix the device on the floor or other stable objects, such as a wall or mounting bracket.
- During transportation and use of the device and its packaging, the device must be fixed stably to avoid falling.

- Do not step on, hit and violently operate the device and its packaging to prevent damage to the device or packaging box.
- Do not block the ventilation openings during operation.
- Tighten the board or card screws with a tool.
- After the installation, remove the empty packing materials from the device area.
- Save the packing box and materials for possible storage and transportation in the future.
- Always wear anti-static wrist bands and insulating gloves when touching the static-sensitive components.
- Avoid dropping any object into the chassis.
- Keep the device away from conductors that are easy to induce lightning to avoid lightning strikes to the device.
- Do not make the circuit faces of the boards or cards contact each other.
- Do not touch the circuit, components, connectors or wiring slots of the boards or cards with bare hands.
- Do not repair the device without authorization. Only trained professionals can maintain the device. You can contact PIXELHUE at any time if needed.
- Always use the spare parts recommended by PIXELHUE.
- Regularly clean the dust on the heat dissipation holes to prevent the dust from blocking the holes and thus affect the heat dissipation of the device.

2.1.4 Personal Safety

- Place the device in a stable location to prevent personal injury caused by falling.
- Avoid bare wires and maintain or replace them in time when they are damaged.
- Do not operate the device and connect cables outdoors under thunderstorms.
- Do not wear watches, rings, or other metal jewelry when installing spare parts or maintaining the device.

2.2 Device Carrying

- Do not relocate a powered device, and do not take any objects that may cause danger to the relocation.
- Always pay attention to the wheels at the bottom of the flight case during transportation to avoid them being jammed by stones or deformed due to external forces.
- Always hold the handles of the flight case firmly when pushing a flight case with wheels. Do not stack other devices on the flight case.
- The relocated device should be repacked in the original factory packaging.
- Do not disassemble the components during the transportation of the flight case.
- When handling or placing the boards or cards, bare board components or modules, always package them individually.

- When carrying the device with your bare hands, always wear protective gloves to avoid injury.
- When carrying the device, handle it gently and always hold the handles of the device or drag the bottom edge of the device. Do not hold the handles of a device component.
- When the device weight exceeds the carrying limit of a single person, carry it with multiple people or use a carrying tool.
- When using a forklift or handcart for transportation, place the device stably to ensure the device will not tip over.

The following table lists the maximum weights that adults can carry at a time specified by some organizations for your reference.

Organization	Weight
CEN (European Committee for Standardization)	25 kg/55.13 lb
ISO (International Organization for Standardization)	25 kg/55.13 lb
NIOSH (National Institute for Occupational Safety and Health)	23 kg/50.72 lb
HSE (Health and Safety Executive)	25 kg/55.13 lb
General Administration of Quality Supervision, Inspection and Quarantine of the People's Republic of China	Male: 15 kg/33.08 lb Female: 10 kg/22.05 lb

2.3 Device Mounting

When the device is installed on a desktop or into a rack, the desktop or rack must bear at least 4 times the device weight.

2.3.1 Mounting on a Desktop

- Ensure the stability and grounding of the desktop or working table.
- Ensure that the device is placed horizontally and do not turn it over or hang it on the wall.
- Do not place other objects on the device.
- Do not put water cups, beverages and other containers with liquid close to or on the device to avoid liquid leakage and thus cause safety hazards.
- If any object or liquid accidentally enters the device, stop using the device and disconnect the power cord and all cables connected to the device immediately, and then contact the after-sales personnel.
- When handling a flight case with wheels, please lock and fix the wheels to prevent the device from sliding.
- When stacking, ensure all the devices are stacked stably to avoid device damage and personal injury caused by falling.

2.3.2 Mounting into a Rack

- The rack must be fixed properly to avoid tilting and falling, and thus cause personal injury and device damage.

- When a device is mounted into a rack, all mounting holes must be fixed with screws.
- Ensure the rack is well ventilated. It is recommended to reserve at least 1U space between the stacking devices, and the heat dissipation vents must not be obstructed and keep at least 10 cm distance from other objects.

2.3.3 Grounding

- Connect the grounding wire first when installing a device, and disconnect the grounding wire at last when removing the device.
- The connecting surface of the grounding wire and the device must have good conductivity. Spray painting is strictly prohibited, and there must be sufficient fastening force between the connecting parts.
- Do not operate the device when the grounding conductor is not installed.
- There must be no joints in the middle of the grounding wire, and it is strictly prohibited to install a switch or fuse on the grounding wire.
- For devices using a three-pin socket, ensure that the ground terminal in the three-pin socket is well grounded.

2.4 Cable Requirements

2.4.1 Power Cords

Warning

Do not install or remove the power cord when the device is powered on. When the power cord core contacts the conductor, an electric arc or spark will be generated which may result in fire or eye injury.

- Protect the power cord properly to prevent it from being punctured to avoid personal injury or fire caused by a short circuit.
- To ensure the safety of the device and personnel, be sure to use the matched power cord.
- User-supplied cables must comply with local cable regulations and device cable requirements.
- Before installing or removing the power cord, turn off the device power first.
- Check the electrical plug regularly and wipe off the dirt or dust accumulated on the plug.
- Before connecting the power cord, read the labels or markings on the power cord to make sure it is a matched one.

The device is intended to operate from an AC power source with a voltage range of AC 100–240V~, 50/60Hz. Various standard plugs are shown in the figure below.

US NEMA5/15	Europe CEE 7	China GB 2099	UK BS 1363
			

E Earth N Neutral L Live

2.4.2 Signal Cables

- Before using a DVI signal cable, check whether the pins on the cable connector are vertical and even. If not, please replace the cable.
- Before connecting the signal cable to the device, check whether there is any object in the device connector. If yes, remove the object first.
- If the signal cable has not been used for a long time, discharge static electricity before using it.
- Under normal working conditions of the device, it is recommended that non-technical professionals do not perform hot-swapping to avoid device damage.

2.4.3 Miscellaneous

- Signal cables must be bound separately from strong current cables or high voltage cables.
- When the temperature is too low, severe shock and vibration may cause brittle cracking of the plastic sheath of the cable. All cables should be laid and installed when the temperature is above zero.
- If the storage temperature of the cable is below zero, the cable must be moved to room temperature and stored for more than 24 hours before laying and installation.
- When carrying cables, especially in a low-temperature environment, always handle the cable with care. Violent handling, such as pushing down the cables directly from a high place, is prohibited.

2.5 Electrical Safety

2.5.1 Battery

- The battery is not intended to be replaced.
- Always follow the relevant instructions to dispose of batteries.
- Disposal of a battery into fire or a hot oven, or mechanically crushing or cutting of a battery can result in an explosion.
- Leaving a battery in an extremely high temperature surrounding environment can result in an explosion or the leakage of flammable liquid or gas.
- A battery subjected to extremely low air pressure may result in an explosion or the leakage of flammable liquid or gas.

2.5.2 Electromagnetic Interference

- Keep the device away from transformers, high-voltage power lines and high-current devices.
- Keep the device away from high-power broadcast transmitters.
- If there is a mobile communication transmitter around the device, its interference degree should meet the requirements of relevant standards. If needed, take necessary measures to prevent interference, such as shielding and isolation.
- When using hand-held wireless communication devices, such as interphones, keep at least 30 cm away from the device.

2.5.3 Anti-Static

- Always wear anti-static wrist bands and insulating gloves when touching the static-sensitive components.
- Always hold the board by the edges to avoid touching the circuits or components, and do not touch the chip with your hands.
- The disassembled board must be packaged with anti-static packaging material before storage or transportation.

2.6 Unpacking and Inspection

2.6.1 Unpacking

- After receiving the device, check whether the packing box is damaged. If there is any damage, do not open the box and contact the carrier in time to confirm the damage to the device and matters related to compensation.
- After unpacking, save the packing box and materials for possible storage and transportation in the future.

2.6.2 Inspection

- When the packing box is in perfect condition, unpack the box. Check the appearance of the device for damage. If there is damage, please contact the salesperson.
- Check the box contents according to the packing list described in the certificate of approval. If any item is missing, please contact the salesperson in time.

2.7 Device Labels

Labels	Description
	Warranty void if removed Do not open the chassis. If this label is damaged, the device will not be covered by the warranty.
	Grounding The two ends of the grounding wire are connected to the

Labels	Description
	device and the grounding point respectively, which means that the device must be grounded through the grounding point to ensure the normal operation of the device and the personal safety of the operators.
	Sensitive electronic device Keep the device away from areas with strong electromagnetic radiation to avoid electromagnetic interference and thus affect the image output quality.
	Device carrying The device needs to be carried by multiple people.
	Removing cards Remove cards before taking out the motherboard.

2.8 Notes and Cautions

2.8.1 Installation Notes

When the product needs to be installed on the rack, 4 screws (M5*12) should be used to fix P20/P10 and 16 screws (M5*12) should be used to fix Q8. The rack for installation shall bear at least four times the total weight of the mounted equipment.

a) Elevated Operating Ambient - If installed in a closed or multi-unit rack assembly, the operating ambient temperature of the rack environment may be greater than room ambient. Therefore, consideration should be given to installing the equipment in an environment compatible with the maximum ambient temperature (Tma) specified by the manufacturer.

b) Reduced Air Flow - Installation of the equipment in a rack should be such that the amount of air flow required for safe operation of the equipment is not compromised.

c) Mechanical Loading - Mounting of the equipment in the rack should be such that a hazardous condition is not achieved due to uneven mechanical loading.

d) Circuit Overloading - Consideration should be given to the connection of the equipment to the supply circuit and the effect that overloading of the circuits might have on overcurrent protection and supply wiring. Appropriate consideration of equipment nameplate ratings should be used when addressing this concern.

e) Reliable Earthing - Reliable earthing of rack-mounted equipment should be maintained. Particular attention should be given to supply connections other than direct connections to the branch circuit (e.g. use of power strips).

2.8.2 FCC Caution

Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

2.8.3 Others

- This is Class A product. In a domestic environment, this product may cause radio interference in which case the user may be required to take adequate measures.
- This product can only be placed horizontally. Do not mount vertically or upside-down.
- Please read the specifications thoroughly and use the product in accordance with the requirements. If you have any questions about the specifications, please contact us immediately. If you use the product improperly, not following the requirements, or for illegal purposes, you shall be solely responsible for any consequences arising therefrom.
- If the product does not have the relevant certifications required by the countries or regions where it is to be sold, please contact PIXELHUE to confirm or address the problem. Otherwise, the customer shall be responsible for the legal risks caused or PIXELHUE has the right to claim compensation.

3 Terms and Definitions

PVW	PVW is an abbreviation for Preview. The PVW area displays the pre-editing content before it is sent to PGM.
PGM	PGM is an abbreviation for Program. The PGM area displays the real-time output image.
Take	Take is an action of sending the PVW content to PGM with a transition effect.
Cut	Cut is an action of sending the PVW content to PGM directly, without any transition effect.
FTB	FTB (Fade to Black) is an action of making the screen fade to black.
T-Bar	T-bar is a lever that manually controls the progress of sending PVW to PGM.
LOGO	LOGO is a special layer with the highest priority and is displayed in front of all other layers. LOGO consumes no processing resources and displays an unscaled image on the screen.
BKG	BKG is an abbreviation for background. BKG is a special layer that has the lowest priority and is displayed beneath all other layers. BKG consumes no processing resources and fills the whole screen.
MVR	MVR is an abbreviation for Multiviewer. An MVR connector is used to connect a confidence monitor for displaying the specific input or output content, such as the presenter's laptop.
AUX	AUX is an abbreviation for auxiliary. An AUX connector is used to output the input source, PVW or PGM, to a specified monitor, such as a teleprompter.
AOI	AOI is an acronym for Area of Interesting. AOI allows users to view a specific output area they are interested in.
Aspect Ratio	Aspect ratio is the ratio of a layer/image width to its height. It is commonly expressed as two numbers separated by a colon, as in 16:9.
Contrast	Contrast defines the difference between the darkest and brightest areas of an image displayed on the screen. The greater this value is, the bigger this difference will be.
Gamma	Gamma defines the degree of distortion of the image color. The greater this value is, the more distorted the color will be.

Hue	Hue defines the gradation or variety of the image color. The greater this value is, the more intense the color will be.
Saturation	Saturation defines the purity or vividness of the image color. The greater this value is, the purer the color will be.
Color Space	Color space is a mathematical model that maps the colors that can be reproduced by a device to a standard color model, usually the RGB model.
Bit Depth	Bit depth refers to the color information stored in an image. The higher the bit depth of an image, the more colors it can store.
Frame Rate	Frame rate (expressed in frames per second, or FPS) is the frequency (rate) at which consecutive images called frames to appear on a display. Frame rate may also be called the frame frequency, and be expressed in hertz.
DSK	DSK (Downstream Keying) is an effect allowing one video signal to be keyed on top of another video signal. The lightest portions of the DSK signal replace the source video leaving the dark areas showing the original video image.
Luma Key	Luma key refers to a process to composite a foreground clip over a background clip based on the luma levels in a video or image. This is most often useful for still images, such as a picture of a logo over a black background.
Chroma Key	Chroma key refers to a process that a specific color is removed from an image, allowing that portion of the image to be replaced. This color can be any solid color, most commonly blue or green.
HDCP	HDCP stands for High-Bandwidth Digital Content Protection, a copy protection scheme to eliminate the possibility of intercepting digital data midstream between the source and the display. HDCP 1.4 is designed for full HD content, while HDCP 2.2 relates to ultra HD 4K media.

4 Overview

About This Chapter

This chapter is designed to introduce you to PIXELHUE event presentation switching solution.

Overview

- Solution Overview
- Control Overview
- Initial Inspection

4.1 Solution Overview

The event presentation switching solutions include two parts basically: seamless switchers and event controllers/PixelFlow (PC). The solutions are specifically designed for easy management of multi-display for small/medium/large-sized events or visual management systems.

P20+U5/U5 Pro+PixelFlow

The P20 can work with the U5 or U5 Pro event controller. The following takes the U5 as an example for illustration.

Figure 4-1 Switcher mode (P20+U5+PixelFlow)

When the output capacity is 4K, two output connectors work as primary and the other six work as backup. When the output capacity is DL, four output connectors work as primary and the other four work as backup.

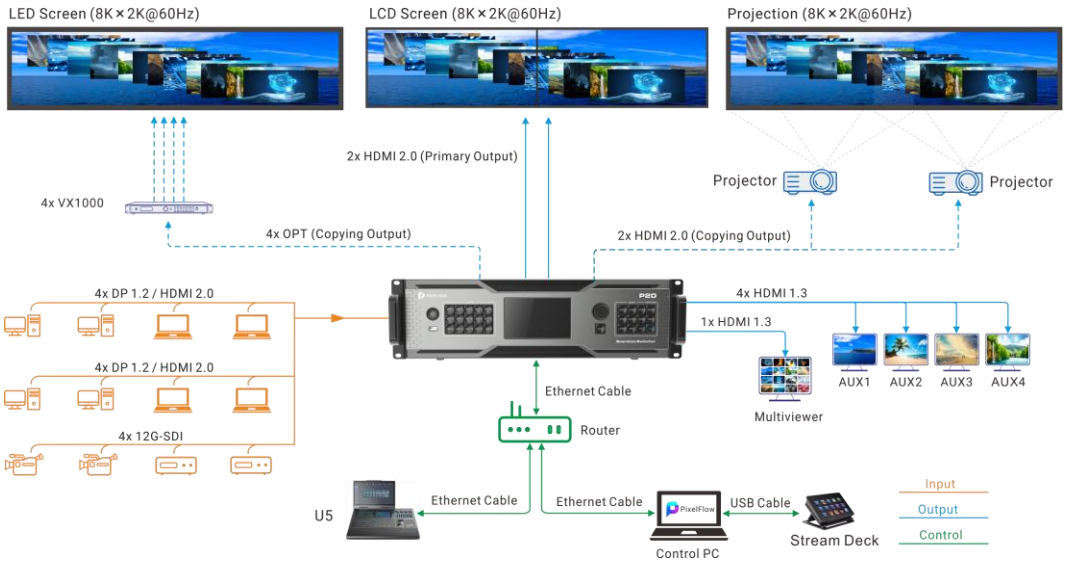
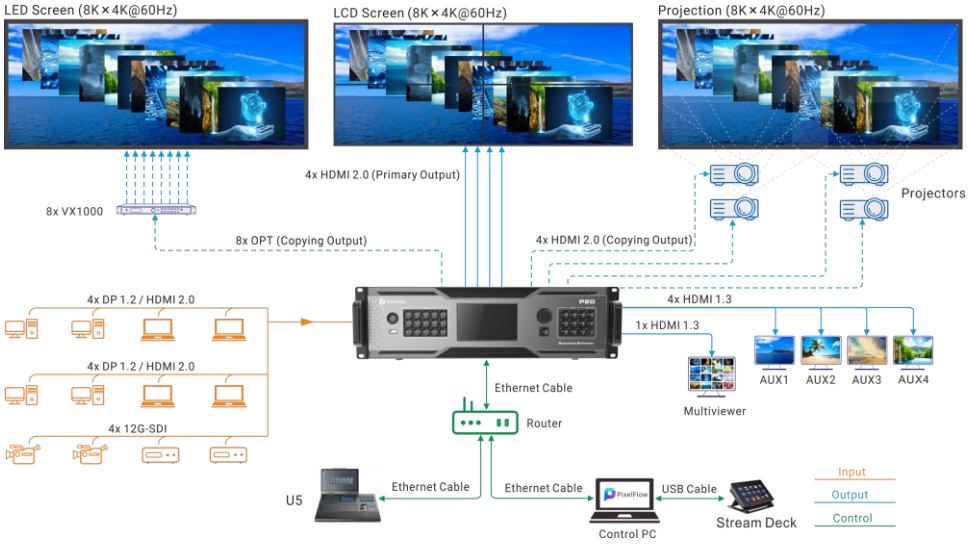


Figure 4-2 PGM only mode (P20+U5+PixelFlow)

When the output capacity is 4K, four output connectors work as primary and the other four work as backup. When the output capacity is DL, four output connectors work as primary and the other four work as backup.

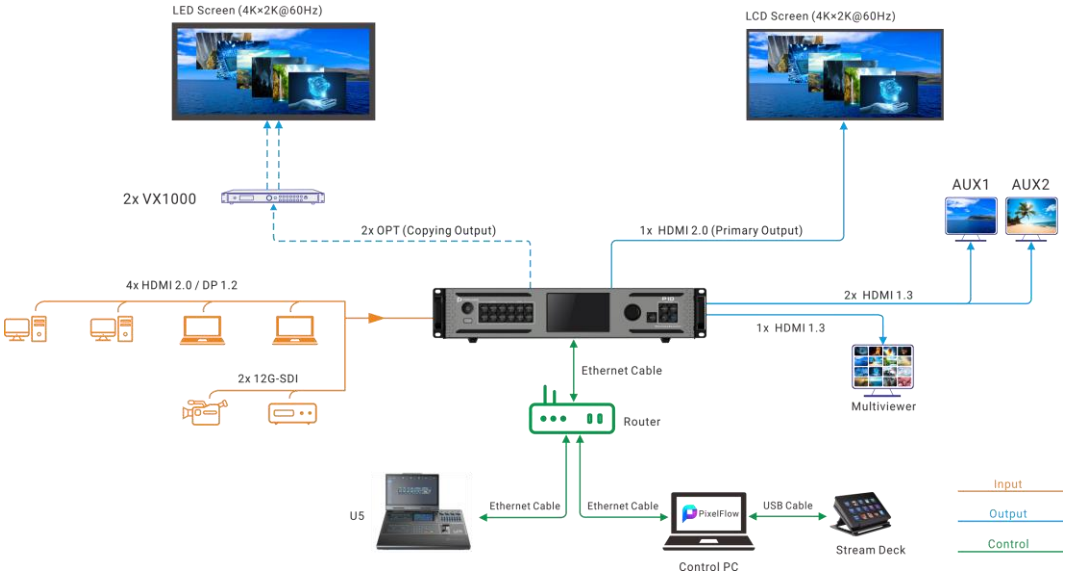


P10+U5/U5 Pro+PixelFlow

The P10 can work with the U5 or U5 Pro event controller. The following takes the U5 as an example for illustration.

Figure 4-3 Switcher mode (P10+U5+PixelFlow)

When the output capacity is 4K, one HDMI 2.0 connector works as primary and the other works as backup. When the output capacity is SL, four output connectors work as primary and the other four work as backup. SL output capacity is used as an example for illustration of projection



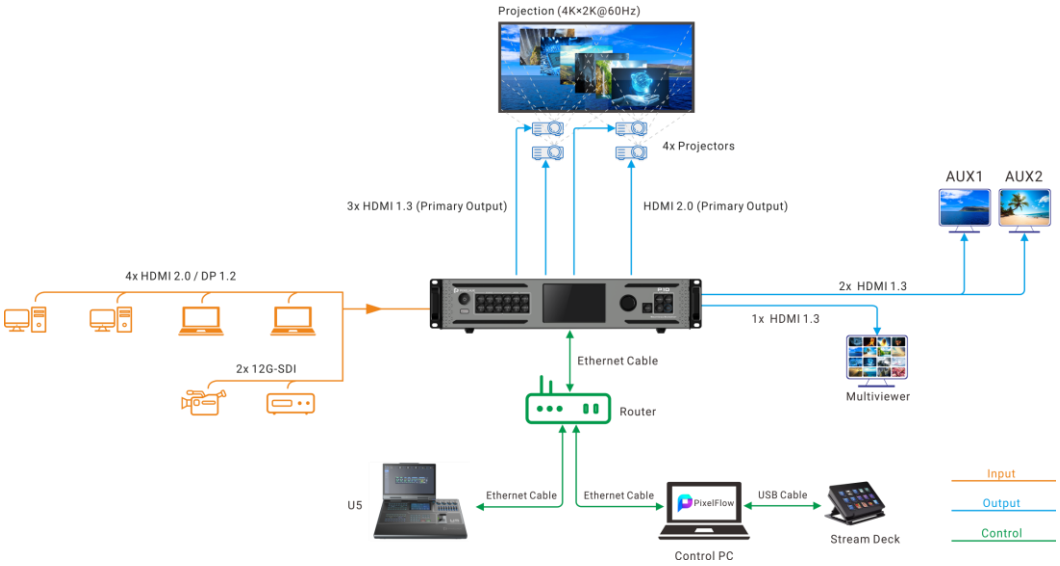
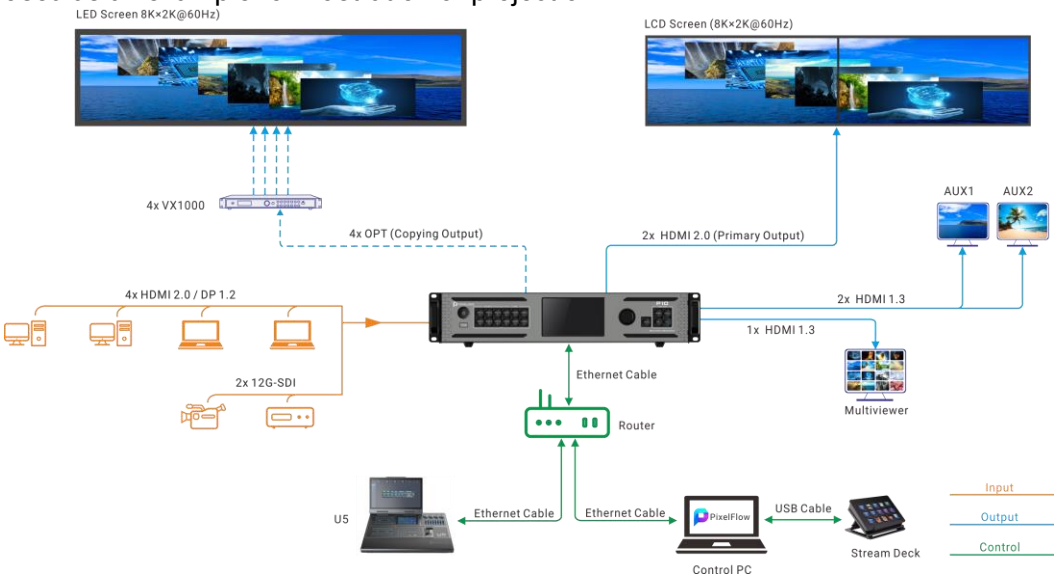
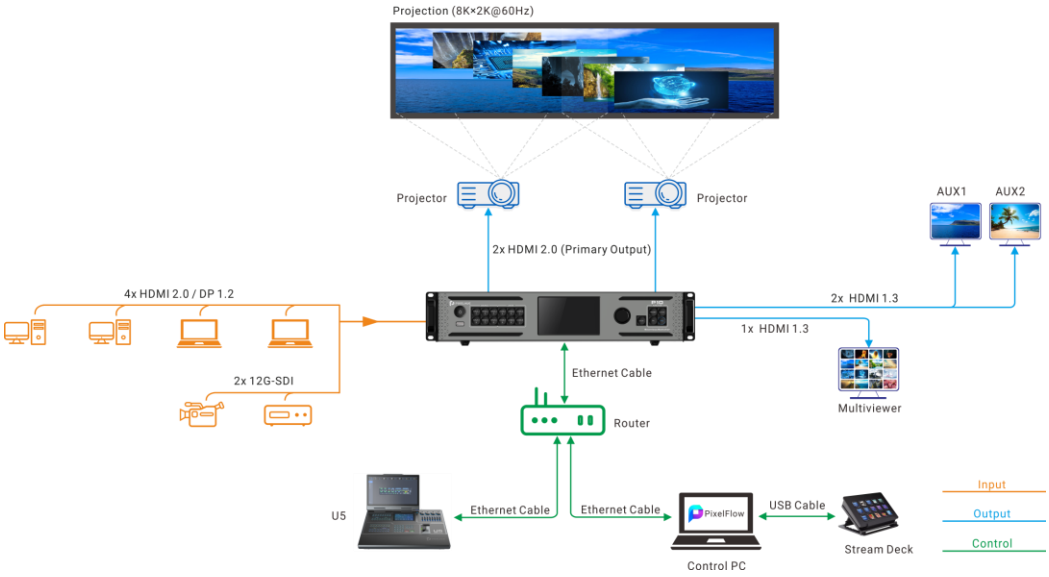


Figure 4-4 PGM only mode (P10+U5+PixelFlow)

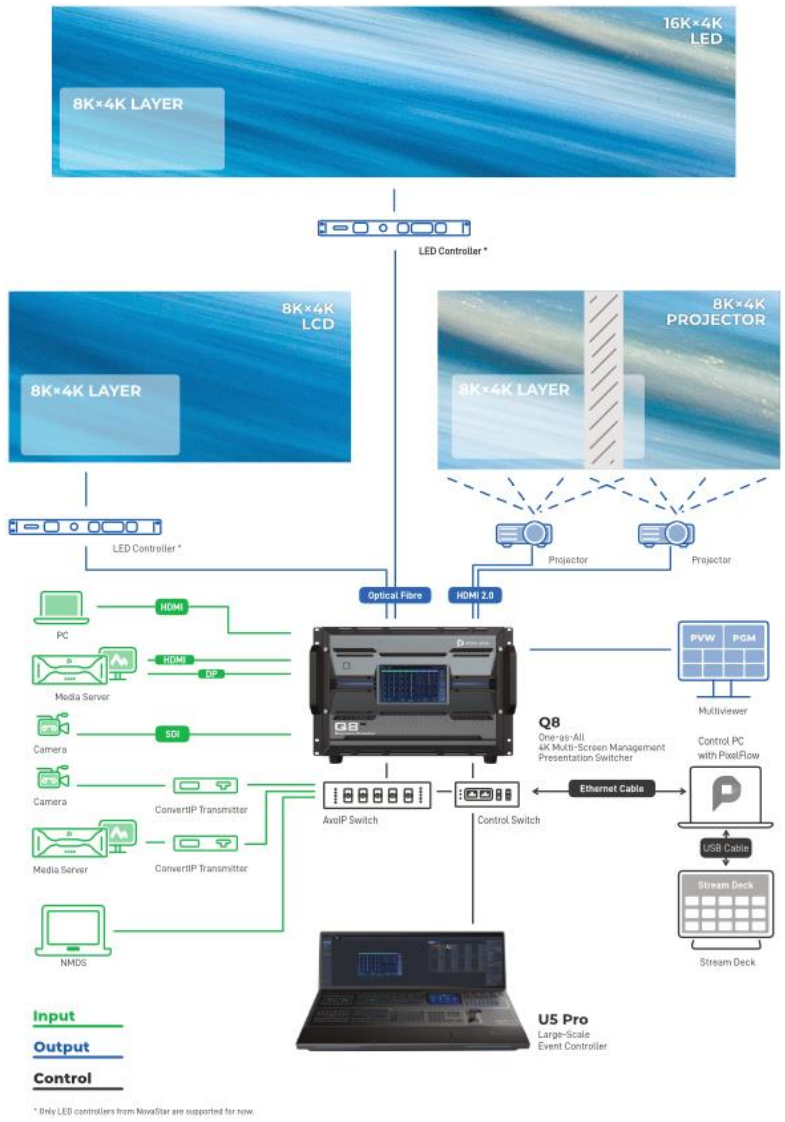
When the output capacity is 4K, two HDMI 2.0 connectors are used for 4K output. When the output capacity is SL, eight connectors are used for 2K output. 4K output is used as an example for illustration of projection





Q8+U5/U5 Pro+PixelFlow

Figure 4-5 Q8+U5/U5 Pro+PixelFlow



P20/P10

The P20 and P10 are PIXELHUE's all-new 4K seamless switchers fully featured in a compact form factor. Featuring high-quality 4K processing, the P series switchers are designed with a wide variety of 4K connectors, including HDMI 2.0, DP 1.2, and 12G-SDI.The P20 and P10 can work in switcher mode or PGM only mode. In switcher mode, a single P20 supports up to two 4K×2K@60Hz outputs and a single P10 supports one 4K×2K@60Hz output. In PGM only mode, the output resolution per P20 is up to 8K×4K@60Hz and P10 is up to 8K×2K@60Hz. Additionally, the P20 and P10 come with dedicated AUX outputs connecting to auxiliary devices such as teleprompters, and a dedicated Multiviewer output is provided for live view of all the inputs and outputs from one display. High-performance image deinterlacing is supported.

Q8

The Q8 seamless switcher offers incredible real-time 4K video processing power. It comes with at most 72x 4K input connectors and 64x 4K output connectors, supporting up to 48x 4K concurrent inputs and 16x 4K concurrent outputs. A maximum of 32x 4K mixing layers (true seamless transitions) in switcher mode are supported.

Moreover, the Q8 provides a variety of exceptional features. Multiple different connectors are designed on one input card or output card, including DP 1.2, HDMI 2.0 and 12G-SDI. The ST2110 input card supports 4x SFP25G ports, which not only offers high bandwidth and bitwidth but also allows flexible transmission of video, audio, and control data over IP networks. Additionally, the Q8 boasts the 8K video processing capability. With these capabilities, the Q8 enables you to design and manage all live events easily and economically. Thanks to the *VPU-based architecture, the number of layers on a single output card can be doubled, eliminating any concerns about running out of layer capacity.

Event Controller U5/U5 Pro

The U5 is a brand new compact-sized event controller and the U5 Pro is a flagship, large-scale event controller developed by PIXELHUE. Compared to their predecessors, they feature more innovative design highlights and more convenient, powerful and friendly operation and control over multiple different devices in the field, which will further facilitate your events today, such as corporate conferences, interactive live events or shows, music tours, immersive art exhibitions, and more.

4.2 Control Overview

The P20, P10 and Q8 are exceptionally easy to operate. Various control options are supported:

- Front panel buttons and graphical LCD (P20/P10/Q8)
- Event management software PixelFlow (P20/P10/Q8)
- Event controller U5/U5 Pro (P20/P10/Q8)
- Third-party control system Stream Deck (P20/P10/Q8)

Front Panel

The front panels of the P20 and P10 come with a 5-inch graphical LCD, a knob and a variety of function buttons that allow for menu operations by pressing buttons. A USB port is provided on the front panel for updating device firmware, import and export files. For more information about the P20 and P10 front panels, please refer to 5 Hardware Introduction.

The front panels of the Q8 come with a 7-inch graphical touchscreen that allows for menu operations. A USB port is provided on the front panel for cascading a second Q8 device. For more information about the Q8 front panels, please refer to 5 Hardware Introduction.

PixelFlow

The event management software PixelFlow allows you to manage and control the seamless switchers uniformly. The software consists of several menus and tabs that allow you to configure the devices, inputs, outputs, screens and layers, as well as manage the presets and Multiviewer.

Event Controller U5/U5 Pro

With the design concept of increasing operational efficiency and satisfying the various changing needs that may arise from event scenarios, the U5/U5 Pro event controllers come with all the crucial functionalities that you may need. Convenient control over multiple seamless switchers and media servers greatly simplifies your on-site deployment and brings more convenience and ease to your events.

Stream Deck

The Q8 and P series (P10 and P20) seamless switchers support control through a third-party device (Stream Deck). Stream Deck control enhances productivity and streamlining of tasks by providing easy access to shortcuts, commands, and actions with just a press of a button. For detailed operations, see 9 Stream Deck Control.

4.3 Initial Inspection

General

Before shipment, the devices were inspected and found to be free of mechanical and electrical defects. As soon as the devices are unpacked, inspect for any damage that may have occurred in transit, and make sure there are no broken parts and the unit is free of dents. Save all packing material until the inspection is completed. If any damage is found, please contact PIXELHUE or your local distributor immediately.

After unpacking, please always place the device on a stable, flat and insulated support for handling or using.

Unpacking

After the unpacking, it is recommended you check carefully to see whether all accessories are included according to the provided packing list.

5 Hardware Introduction

About This Chapter

This chapter is designed to introduce you to the hardware configuration of the seamless switchers in detail.

Overview

- P20 Hardware Introduction
  - Front Panel
  - Rear Panel
- P10 Hardware Introduction
  - Front Panel
  - Rear Panel
- Q8 Hardware Introduction
  - Front Panel
  - Rear Panel

Note:

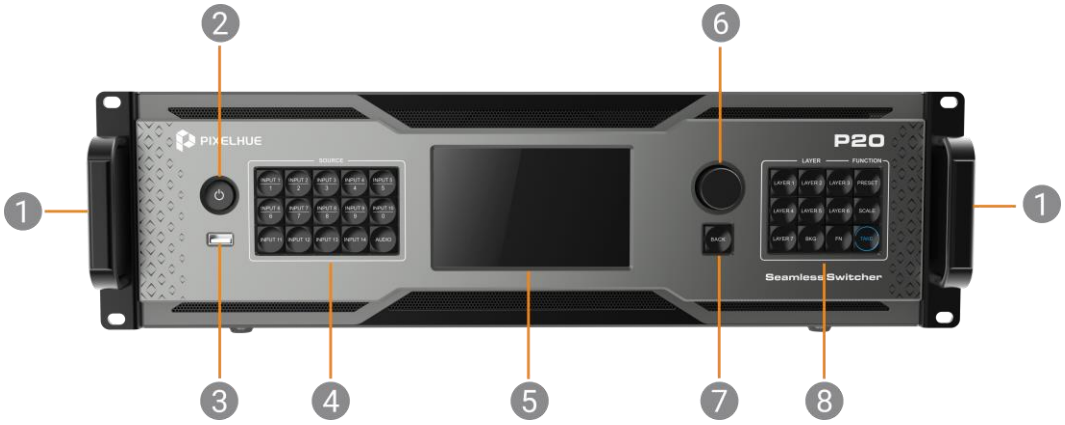
All product pictures shown in this chapter are for illustration purposes only. Actual product may vary.

5.1 P20 Hardware Introduction

5.1.1 Front Panel

The P20 front panel is designed with a 5-inch graphical LCD, a knob and a variety of function buttons that allow for menu operations by button presses. A USB port is provided on the front panel for updating device firmware, import and export files.

Figure 5-1 P20 front panel



1. Chassis handles (L+R)
2. Power button
3. USB port
4. Source buttons
5. LCD screen
6. Knob
7. BACK button
8. Layer and function buttons

Chassis Handles

Two handles are provided for easy installation and transportation.

Power Button

Press the button to turn on/off the device. To turn off the device, press the button and select **OK** from the dialog box displayed on the LCD screen to confirm your operation.

- Breathing dim white: The power supply is connected.
- Bright white: The device is turned on.

USB Port

A Type-A USB 2.0 port is provided for updating device firmware, import and export project files, EDID files, BKG files, LOGO files and logs via USB drive.

Source Buttons

Press a button to access the input settings menu or select the source. These buttons can also be used to enter numbers.

Button LED color and source status (INPUT 1 to 14):

- Dim white: No signal and not in use
- Breathing blue: Signal accessed and not in use
- Blue: Signal accessed and in use

AUDIO: The audio function will be implemented in future updates.

LCD Screen

A 5-inch graphical LCD screen is designed for displaying all the menus, submenus and messages.

After startup, the screen displays the home screen. For detailed information on the home screen, refer to 6.1 P20/P10 Menu Operations.

Knob

Rotate the knob to scroll up or down through the menus.

- Rotate the knob clockwise to scroll down.
- Rotate the knob counter-clockwise to scroll up.

Press the knob to select menu items.

Press and hold the knob and **BACK** button simultaneously for 3s or longer to lock or unlock the front panel buttons.

Back Button

Press the **BACK** button to exit a menu without making changes, to cancel an operation, or to return to the home screen. Each press takes you back up the menu tree one level.

Press and hold the knob and **BACK** button simultaneously for 3s or longer to lock or unlock the front panel buttons.

Layer and function buttons

- LAYER 1 to 7: Press a button to open the layer and access the layer menu. Press and hold the button to close the layer.

  Button LED color and source status:
  - Dim white: The layer is closed.
  - Bright blue: The layer is open.
  - Blinking blue: The layer is in edit mode.
- PRESET: Press the button to access the preset settings menu.
  - Dim white: The preset settings menu is not displayed.
  - Blinking blue: The preset settings menu is displayed.
- SCALE: Press the button to enable the full screen scaling of the layer at the back of the Z-order.
  - Blinking blue: Full screen scaling is enabled successfully.

- BKG: Press the button to turn on BKG (there are pictures in the gallery). Press and hold the button to turn off BKG.

  Button LED color and source status:

  - Dim white: BKG is disabled.
  - Bright blue: BKG layer is enabled.

- FN: This is a custom shortcut button and users can assign a function to the **FN** button.

  When Freeze, FTB (Fade to Black) or Genlock synchronization is assigned, press the button to enable or disable the assigned function.

  Button LED color and source status:

  - Dim white: The function is disabled.
  - Blue: The function is enabled.

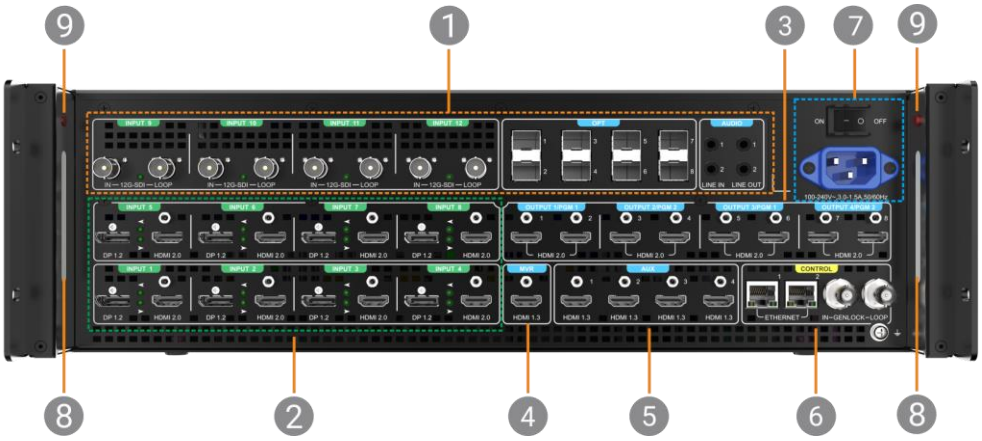
- When **Capture** is assigned, press the button to access the **Capture** menu.
  - Dim white: The **Capture** menu is displayed.
  - Blinking blue: Capturing…

- TAKE: Press the button to switch content from PVW to PGM with a specified transition effect.
  - Dim white: Content is not switched.
  - Blinking blue: Content is being switched.

5.1.2 Rear Panel

The P20 rear panel provides a variety of 4K I/O connectors including 12x 4K inputs (HDMI 2.0, DP1.2, 12G-SDI), 4x HDMI 2.0 outputs, and 8x 10G optical fiber ports.

Figure 5-2 P20 rear panel



1. P_4K_12G SDI Audio-OPT Combo Card
2. Inputs 1 to 8
3. Outputs 1 to 4
4. Multiviewer output
5. AUX outputs
6. Control connectors
7. Power connector and switch
8. LED work lights
9. LED work light switches

P_4K_12G SDI Audio-OPT Combo Card

The P20 is designed with a P_4K_12G SDI Audio-OPT Combo Card which offers the following input and output connectors.

- 4x 12G-SDI IN & LOOP (INPUT 9 to 12)
- 8x optical fiber output ports (OPT)

  4K:

  Switcher mode
  - OPT 1 copies the left half of the output image of HDMI 1.
  - OPT 2 copies the right half of the output image of HDMI 1.
  - OPT 3 copies the left half of the output image of HDMI 1.
  - OPT 4 copies the right half of the output image of HDMI 1.
  - OPT 5 copies the left half of the output image of HDMI 5.
  - OPT 6 copies the right half of the output image of HDMI 5.
  - OPT 7 copies the left half of the output image of HDMI 5.
  - OPT 8 copies the right half of the output image of HDMI 5.

  PGM only mode
  - OPT 1 copies the left half of the output image of HDMI 1.
  - OPT 2 copies the right half of the output image of HDMI 1.
  - OPT 3 copies the left half of the output image of HDMI 3.
  - OPT 4 copies the right half of the output image of HDMI 3.
  - OPT 5 copies the left half of the output image of HDMI 5.
  - OPT 6 copies the right half of the output image of HDMI 5.
  - OPT 7 copies the left half of the output image of HDMI 7.
  - OPT 8 copies the right half of the output image of HDMI 7.

  DL:

  Switcher and PGM only modes
  - OPT 1 copies HDMI 1.
  - OPT 2 copies HDMI 1.
  - OPT 3 copies HDMI 3.
  - OPT 4 copies HDMI 3.
  - OPT 5 copies HDMI 5.
  - OPT 6 copies HDMI 5.
  - OPT 7 copies HDMI 7.
  - OPT 8 copies HDMI 7.
- 4x 3.5 mm audio jacks (AUDIO) including 2x line in & 2x line out (The audio function will be implemented in future updates.)

Inputs 1 to 8

Each includes a DP 1.2/HDMI 2.0. When two connectors have signals, only one can be used as the input source at the same time.

Outputs 1 to 4

Each includes two HDMI 2.0:

- 4K
  - In switcher mode, connectors 1 and 5 work as primary. Connectors 2, 3 and 4 copy connector 1, and connectors 6, 7 and 8 copy connector 5. The resolutions of connectors 1 and 5 can be set independently.
  - In PGM only mode, connectors 1, 3, 5 and 7 work as primary and connectors 2, 4, 6 and 8 copy connectors 1, 3, 5 and 7, respectively. Connector 1 and 3 are in the same group and connectors 5 and 7 are in the same group. Connectors in the same group have the same resolution.
- DL
  - In both switcher and PGM only modes, connectors 1, 3, 5 and 7 work as primary and connectors 2, 4, 6 and 8 copy connectors 1, 3, 5 and 7, respectively. Connector 1 and 3 are in the same group and connectors 5 and 7 are in the same group. Connectors in the same group have the same resolution.

Multiviewer output

The P20 is designed with an HDMI 1.3 for Multiviewer output. A Multiviewer display can be connected, allowing for live monitoring of all the inputs and outputs from one display. The output resolution is fixed at 1920×1080@60Hz.

AUX Outputs

The P20 comes with four HDMI 1.3 for AUX outputs. Auxiliary devices such as teleprompters can be connected. The output resolution defaults to 1920×1080@60Hz.

Ethernet Ports

- Two Ethernet ports are provided for control and live input view.
- One works as primary and the other as backup.
- They have the same function and share the same IP address.

Genlock IN & LOOP

Genlock synchronization signal connectors are provided.

- GENLOCK IN: Synchronization signal input
- GENLOCK LOOP: Synchronization signal loop output

Power Connector and Switch

- Power connector and rocker switch
- 100-240V~, 3.0-1.5A, 50/60Hz

LED Work Lights and Switches

At some event venues, the lights may be very dim. For users' convenience, the P20 is designed with two LED work lights to provide adequate light for rear panel operations. The LED work lights come with pushbutton switches (red) next to them.

Specifications of input and output video connections

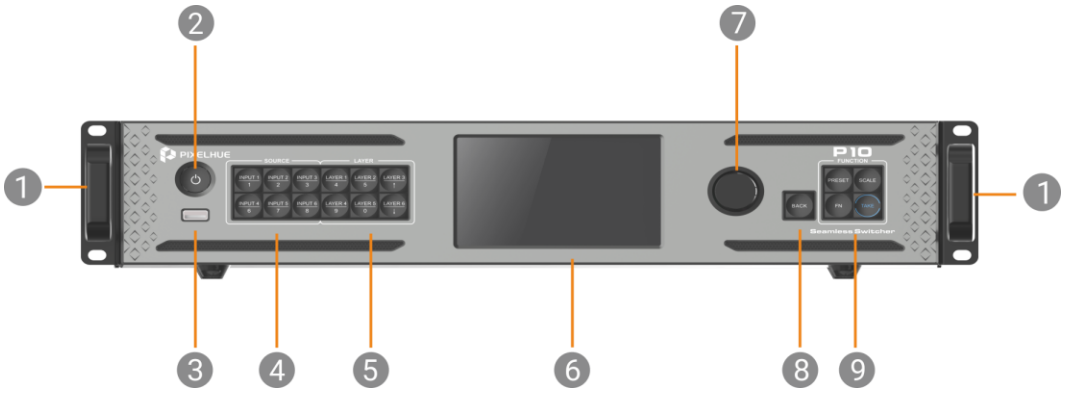
- DP 1.2
  - Maximum resolution: 4096×2160@60Hz/8192×1080@60Hz
  - Minimum resolution: 800×600@60Hz
  - Maximum width: 8192 pixels (8192×1080@60Hz)
  - Maximum height: 8192 pixels (1080×8192@60Hz)
  - Maximum frame rate: 120 Hz
  - EDID management (support for standard resolutions and custom resolutions)
  - HDCP 1.3 compliant
- HDMI 2.0
  - Maximum resolution: 4096×2160@60Hz/8192×1080@60Hz
  - Minimum resolution: 800×600@60Hz
  - Maximum width: 8192 pixels (8192×1080@60Hz)
  - Maximum height: 8192 pixels (1080×8192@60Hz)
  - Maximum frame rate: 120 Hz
  - Support for HDR
  - EDID management (support for standard resolutions and custom resolutions)
  - HDCP 2.2 compliant and downward compatible
- 12G-SDI
  - Support for ST-2082 (12G), ST-2081 (6G), ST-424 (3G), ST-292 (HD)
  - Maximum resolution: 4096×2160@60Hz
  - Maximum frame rate: 60 Hz
  - Support for interlaced input signal

5.2 P10 Hardware Introduction

5.2.1 Front Panel

The P10 front panel is designed with a 5-inch LCD, a knob and a variety of function buttons that allow for menu operations by button presses. A USB port is provided on the front panel for updating device firmware, import and export files.

Figure 5-3 P10 front panel



1. Chassis handles (L+R)
2. Power button
3. USB port
4. Source buttons
5. Layer buttons
6. LCD screen
7. Knob
8. BACK button
9. Function buttons

Chassis Handles

Two handles are provided for easy installation and transportation.

Power Button

Press the button to turn on/off the device. To turn off the device, press the button and select **OK** from the dialog box displayed on the LCD screen to confirm your operation.

- Breathing dim white: The power supply is connected.
- Bright white: The device is turned on.

USB Port

A Type-A USB 2.0 port is provided for updating device firmware, import and export project files, EDID files, BKG files, LOGO files and logs via USB drive.

Source Buttons

Press a button to access the input settings menu or select the source. These buttons can also be used to enter numbers.

Button LED color and source status (INPUT 1 to 6):

- Dim white: No signal and not in use
- Breathing blue: Signal accessed and not in use
- Blue: Signal accessed and in use

Layer Buttons

LAYER 1 to 6: Press a button to open the layer and access the layer menu. Press and hold the button to close the layer.

Button LED color and source status:

- Dim white: The layer is closed.
- Bright blue: The layer is open.
- Blinking blue: the layer is in edit mode.

LCD Screen

A 5-inch LCD screen is designed for displaying all the menus, submenus and messages.

After startup, the screen displays the home screen. For detailed information on the home screen, see 6.1 P20/P10 Menu Operations.

Knob

Rotate the knob to scroll up or down through the menus.

- Rotate the knob clockwise to scroll down.
- Rotate the knob counter-clockwise to scroll up.

Press the knob to select menu items.

Press and hold the knob and **BACK** button simultaneously for 3s or longer to lock or unlock the front panel buttons.

Back Button

Press the **BACK** button to exit a menu without making changes, to cancel an operation, or to return to the home screen. Each press takes you back up the menu tree one level.

Press and hold the knob and **BACK** button simultaneously for 3s or longer to lock or unlock the front panel buttons.

Function buttons

- PRESET: Press the button to access the preset settings menu.
  - Dim white: The preset settings menu is not displayed.
  - Blinking blue: The preset settings menu is displayed.
- SCALE: Press the button to enable the full screen scaling of the layer at the back of the Z-order.
  - Blinking blue: Full screen scaling is enabled successfully.
- FN: This is a custom shortcut button and users can assign a function to the **FN** button.

  When Freeze, FTB (Fade to Black), or Genlock synchronization is assigned, press the button to enable the assigned function.

  Button LED color and source status:

- Dim white: The function is disabled.
- Blue: The function is enabled.

When **Capture** is assigned, press the button to access the **Capture** menu.

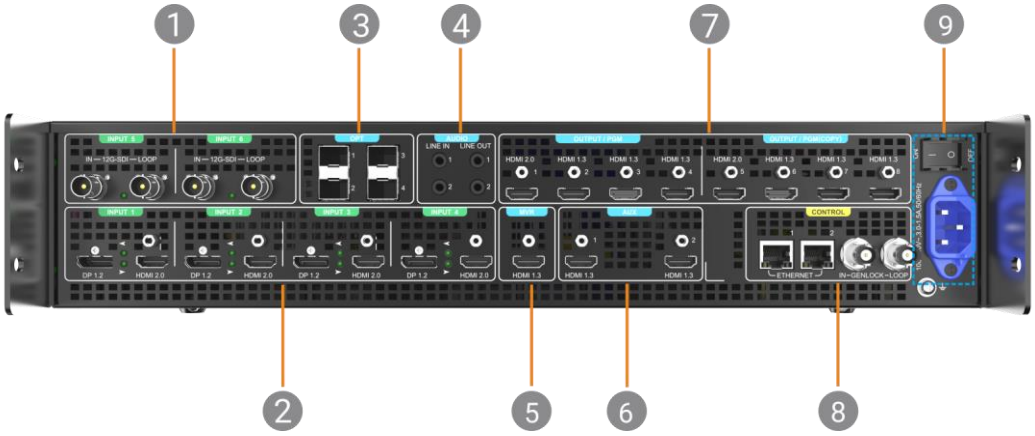
- Dim white: The **Capture** menu is displayed.
- Blinking blue: Capturing…

- TAKE: Press the button to switch content from PVW to PGM with a specified transition effect.
  - Dim white: Content is not switched.
  - Blinking blue: Content is being switched.

5.2.2 Rear Panel

The P10 rear panel provides a variety of I/O connectors including 6x 4K inputs (4x DP1.2/HDMI 2.0 and 2x 12G-SDI), 8x outputs (2x HDMI 2.0 and 6x HDMI 1.3), and 4x 10G optical fiber ports.

Figure 5-4 P10 rear panel



1. Inputs 5 and 6	6. AUX outputs
2. Inputs 1 to 4	7. Outputs 1 to 8
3. OPT outputs 1 to 4	8. Control connectors
4. Audio jacks	9. Power connector and switch
5. Multiviewer output	

Inputs 5 and 6

Two 12G-SDI IN & LOOP connectors are provided.

Inputs 1 to 4

Each includes a DP 1.2 and HDMI 2.0. When both have signals, only one can be used as the input source at the same time.

OPT Outputs 1 to 4

Four optical fiber ports are provided for copying the output of the HDMI connectors.

4K:

- Switcher mode
  - OPT 1 copies the left half of the output image of HDMI 1.
  - OPT 2 copies the right half of the output image of HDMI 1.
  - OPT 3 copies the left half of the output image of HDMI 1.
  - OPT 4 copies the right half of the output image of HDMI 1.
- PGM only mode
  - OPT 1 copies the left half of the output image of HDMI 1.
  - OPT 2 copies the right half of the output image of HDMI 1.
  - OPT 3 copies the left half of the output image of HDMI 5.
  - OPT 4 copies the right half of the output image of HDMI 5.

SL:

- Switcher mode
  - OPT 1 copies HDMI 1 and HDMI 2.
  - OPT 2 copies HDMI 3 and HDMI 4.
  - OPT 3 copies HDMI 1 and HDMI 2.
  - OPT 4 copies HDMI 3 and HDMI 4.
- PGM only mode
  - OPT 1 copies HDMI 1 and HDMI 2.
  - OPT 2 copies HDMI 3 and HDMI 4.
  - OPT 3 copies HDMI 5 and HDMI 6.
  - OPT 4 copies HDMI 7 and HDMI 8.

Audio Jacks (The audio function will be implemented in future updates.)

Four 3.5 mm dual-channel audio jacks are provided, including two line in jacks and two line out jacks.

Multiviewer Output

The P10 is designed with an HDMI 1.3 for Multiviewer output. A Multiviewer display can be connected, allowing for live monitoring of all the inputs and outputs from one display. The output resolution is fixed at 1920×1080@60Hz.

AUX Outputs

The P10 comes with two HDMI 1.3 connectors for AUX outputs. Auxiliary devices such as teleprompters can be connected. The output resolution defaults to 1920×1080@60Hz.

Outputs 1 to 8

The P10 provides eight HDMI output connectors including two HDMI 2.0 and six HDMI 1.3.

4K:

- In switcher mode, connector 1 works as primary connector for 4K output and connector 5 copies connector 1.
- In PGM only mode, connectors 1 and 5 can work as primary connectors and have the same resolution.

SL:

- In switcher mode, connectors 1 to 4 work as primary and connectors 5 to 8 copy connectors 1 to 4, respectively. Connectors 1, 2, 3 and 4 have the same resolution.
- In PGM only mode, eight connectors work as primary. All the connectors have the same resolution.

Control Connectors

The P10 provides two Ethernet ports and a Genlock connector with loop-through.

Ethernet

Two Ethernet ports are used for control and live input view (One works as primary and the other as backup. They share the same IP address.).

Genlock IN & LOOP

Genlock synchronization signal connectors are provided.

- GENLOCK IN: Synchronization signal input
- GENLOCK LOOP: Synchronization signal loop output

Power Connector and Switch

- Power connector: 100-240V~, 3.0-1.5A, 50/60Hz
- Power switch:
  - ON: Power on
  - OFF: Power off

Specifications of input and output video connections

- DP 1.2
  - Maximum resolution: 4096×2160@60Hz/8192×1080@60Hz
  - Minimum resolution: 800×600@60Hz
  - Maximum width: 8192 pixels (8192×1080@60Hz)
  - Maximum height: 8192 pixels (1080×8192@60Hz)
  - Maximum frame rate: 120 Hz
  - EDID management (support for standard resolutions and custom resolutions)
  - HDCP 1.3 compliant
- HDMI 2.0
  - Maximum resolution: 4096×2160@60Hz/8192×1080@60Hz
  - Minimum resolution: 800×600@60Hz
  - Maximum width: 8192 pixels (8192×1080@60Hz)
  - Maximum height: 8192 pixels (1080×8192@60Hz)

- Maximum frame rate: 120 Hz
- EDID management (support for standard resolutions and custom resolutions)
- HDCP 2.2 compliant and downward compatible

- 12G-SDI
  - Support for ST-2082 (12G), ST-2081 (6G), ST-424 (3G), ST-292 (HD)
  - Maximum resolution: 4096×2160@60Hz
  - Maximum frame rate: 60 Hz
  - Support for interlaced input signal
- HDMI 1.3
  - Maximum resolution: 1920×1080@60Hz/2048×1080@60Hz
  - Minimum resolution: 800×600@60Hz
  - Maximum width: 2048 pixels (2048×1080@60Hz)
  - Maximum height: 2048 pixels (1080×2048@60Hz)
  - Maximum frame rate: 120 Hz
  - EDID management (support for standard resolutions up to 2048×1152@60Hz and custom resolutions)
  - HDCP 1.4 compliant and downward compatible

5.3 Q8 Hardware Introduction

5.3.1 Front Panel

The Q8 front panel is designed with a 7-inch touchscreen, a power button, and two LED strips. A LINK port is provided on the front panel to link a second Q8.

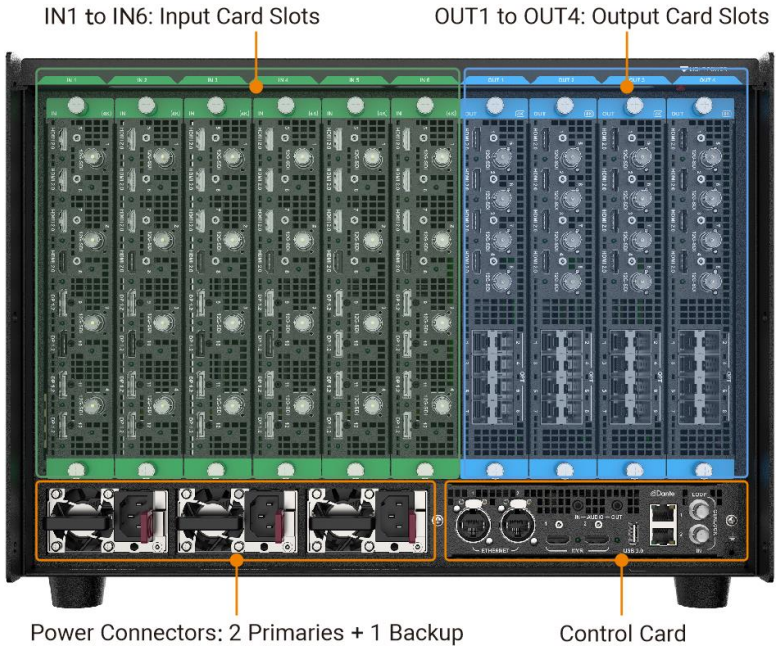
Figure 5-5 Q8 front panel

No.	Type	Description
1	Power button	Power on: Press the button to power on the device. Power off: Press the button, and a shutdown prompt window appears on the LCD screen. Click or tap **Yes** to shut down the device.
2	LED strip	Indicate the device running status.
3	Touchscreen	Display the device status, menus, submenus and messages for parameter settings.
4	USB 3.0	A USB type-A port used to update the device, export device logs, and import and export project files.
5	LINK ports	Reserved ports, used to link two Q8 units for cascading and control. • 3x CXP ports • 1x LINK IN • 1x LINK OUT • 1x OPT
6	LINK port cover	The cover for LINK ports

5.3.2 Rear Panel

The Q8 rear panel provides a variety of I/O connectors including 72x 4K input connectors (HDMI 2.0, DP1.2, 12G-SDI, SFP25G), 48x output connectors (HDMI 2.0, DP1.2, 12G-SDI, 10G OPT).

Figure 5-6 Q8 rear panel



Note

The picture above is the rear panel of the device when it is fully loaded. Users can configure input and output cards as needed.

The input and output cards do not support hot-swapping, and the input and output cards must be installed in ascending order of the card slot numbers.

The input and output cards can be replaced. Refer to the table below for input and output card selection.

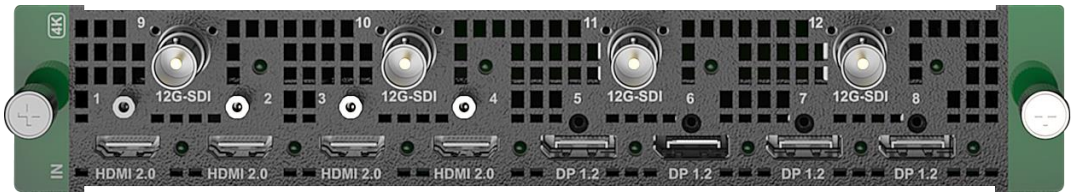
Card Slot Area	Configurable Input and Output Cards
Input card slot	Up to 6 input cards can be installed, which can be selected from the following. • Q8_HDMI2.0+DP1.2+12G-SDI Input Card • Q8_ST2110_4xSFP25G Input Card_I
Output card slot	Up to 4 output cards can be installed. Q8_HDMI2.0+12G-SDI Fiber Output Card
Control card	Control Card
Power connector	Support 2 primary and 1 backup power supplies. Before powering on the device, connect at least two power supplies. Power specifications: 100-240V~, 50/60Hz, 10A-5A

5.3.2.1 Input card

When installing input cards, they must be installed starting from slot 1 and in ascending order. No empty slots can be left between them.

Input cards do not support hot-swappable installation. Before installation, the device must be powered off. Once the installation is completed, the device can be powered on for use.

5.3.2.1.1 Q8_HDMI2.0+DP1.2+12G-SDI Input Card



Connectors

- 4x HDMI 2.0
- 4x DP1.2
- 4x 12G-SDI

Specifications

- 8x 4K×2K@60Hz concurrent inputs per input card

- Each input card supports a maximum of 4-channel deinterlacing processing
- Each input card provides a maximum of 4 sync sources
- HDMI 2.0
  - Up to 4K×2K@60Hz 10bit 4:2:2, or 4K×2K@60Hz 8bit 4:4:4
  - Support for processing of 8-bit, 10-bit and 12-bit inputs
  - Support for 4:2:0, 4:2:2 and 4:4:4 inputs
  - Support for processing of Full and Limited range videos
  - Support for HDR video inputs
  - HDCP 1.4 and HDCP 2.2 compliant
  - Support for deinterlacing processing
  - Custom resolutions

    Maximum width: 8192 pixels; maximum height: 8192 pixels
- DP 1.2
  - Up to 4K×2K@60Hz 10bit 4:4:4, or 4K×2K@60Hz 8bit 4:4:4
  - Support for processing of 8-bit, 10-bit and 12-bit inputs
  - Support for 4:2:2 and 4:4:4 inputs
  - Support for processing of Full and Limited range videos
  - Support for HDR video inputs
  - HDCP 1.3 and HDCP 2.2 compliant
  - Custom resolutions

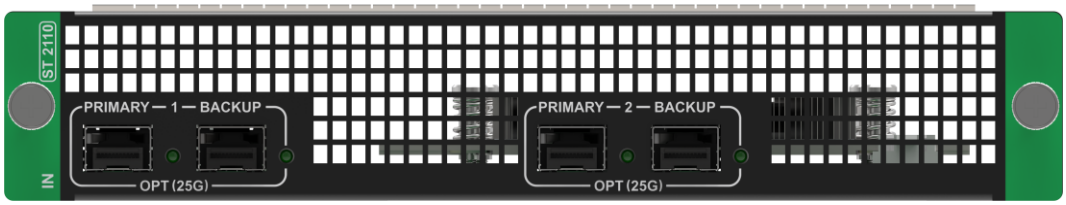
    Maximum width: 8192 pixels; maximum height: 8192 pixels
- 12G-SDI
  - Support for ST-2082 (12G), ST-2081 (6G), ST-424 (3G), ST-292 (HD) and ST-259 (SD) standard video inputs
  - Compatible with SD-SDI, HD-SDI, 3G-SDI and 6G-SDI
  - Support for interlaced signal inputs
  - No support for EDID management or bit depth settings

Status LEDs

Each input connector has a status LED which indicates source access status.

- On: The source is accessed.
- Off: The source is not accessed or it is abnormal.

5.3.2.1.2 Q8_ST2110_4xSFP25G Input Card_I



Connectors

4x SFP25G

Features

- 25G SFP28 interface: For video source transmission, control, and synchronous clock input.
- Supports SMPTE 2110-10 and 2110-20, and backup supports the ST2022-7 standard.
- Hardware-based precision time protocol (PTP) guarantees the nanosecond-level synchronization accuracy requirements of ST2059-1 and ST2059-2.
- The video interface and control interface are combined into one, supporting standard NMOS discovery and registration devices (IS-04), management and control devices (IS-05).
- Simultaneous input of primary and backup video sources, enabling seamless transition when necessary.

Connector Specifications

- 2 primary and 2 backup inputs per input card
- Standard: Supports SMPTE ST 2110 (-10, -20) and SMPTE 2059 (-1, -2) standards.
- Backup: Supports SMPTE 2022-7 standard.
- Resolutions:
  - Max resolution: 4096×2160@60Hz
  - Min resolution: 800×600@60Hz
- SDP management: Supports VESA standard input resolution.
- NMOS management: NMOS discovery and control according to standards IS-04 and IS-05
- Color gamut: BT.601/BT.709/BT.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)

Port Configuration

You can configure the port information through the following three methods:

- Connect to the NMOS management software for visualized configuration.
- Import the SDP file for offline configuration.
- Through the event management software PixelFlow
  - Video stream destination IP: port (primary/backup)
  - Video source IP (primary/backup)

- Port local IP (primary/backup)

Video Source Specifications

Input	Bit Depth	Sampling Format	Max Input Resolution
SFP25G	8bit\10bit	RGB 4:4:4	4096×2160@60Hz
		YCbCr 4:4:4	
		YCbCr 4:2:2	

5.3.2.2 Output Card

When installing output cards, they must be installed starting from slot 1 and in ascending order. No empty slots can be left between them.

Output cards do not support hot-swappable installation. Before installation, the device must be powered off. Once the installation is completed, the device can be powered on for use.

5.3.2.2.1 Q8_HDMI2.0+12G-SDI Fiber Output Card

Connectors

- 4x HDMI 2.0
- 4x 12G-SDI
- 8x 10G OPT

Specifications

- The 4x HDMI 2.0 and 4x 12G-SDI connectors are divided into 4 groups. Each group includes 1x HDMI 2.0 and 1x 12G-SDI connectors, and one connector copies the output of the other. The 12G-SDI connector supports only standard resolutions under the protocol. When the HDMI 2.0 connector is set to a custom resolution, the 12G-SDI connector does not output.
  - Connector 1 (HDMI 2.0) and connector 5 (12G-SDI) are in a group.
  - Connector 2 (HDMI 2.0) and connector 6 (12G-SDI) are in a group.
  - Connector 3 (HDMI 2.0) and connector 7 (12G-SDI) are in a group.
  - Connector 4 (HDMI 2.0) and connector 8 (12G-SDI) are in a group.
- 4x HDMI 2.0
  - Up to 4K×2K@60Hz 8bit 4:4:4 output
  - Support for 8-bit and10-bit output settings
  - Support for 4:2:2 and 4:4:4 output settings
  - Support for YCbCr and RGB color space settings
  - Support for output of HDR videos

- Support for color gamut adjustment
- No support for interlaced signal outputs
- Custom resolutions

  Maximum width: 8192 pixels; maximum height: 8192 pixels

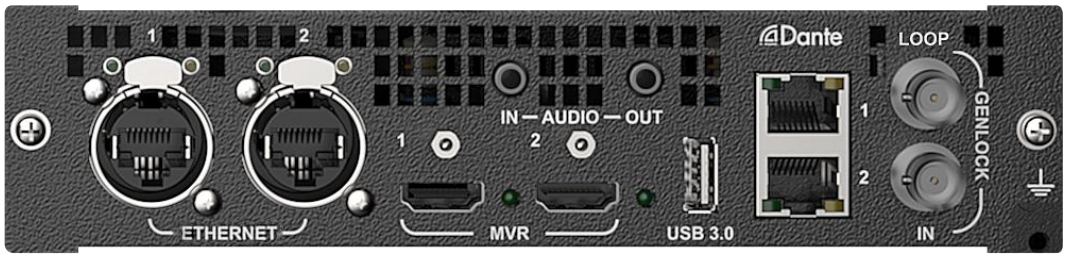
- 4x 12G-SDI
  - Compatible with SD-SDI, HD-SDI, 3G-SDI and 6G-SDI
  - No support for interlaced signal outputs
- 8x 10G OPT
  - Support for single-mode and multi-mode optical outputs, transmission distance up to 10km in single mode
  - OPT ports copy outputs on video connectors
  - OPT 1 and OPT 2 copy the output on connector 1 or 5.
  - OPT 3 and OPT 4 copy the output on connector 2 or 6.
  - OPT 5 and OPT 6 copy the output on connector 3 or 7.
  - OPT 7 and OPT 8 copy the output on connector 4 or 8.

Status LEDs

Each HDMI output connect has a status LED which indicates the connection status of backend device. The 12G-SDI and optical port do not have status LEDs.

- On: The output connection is normal.
- Off: The output connection is abnormal.

5.3.2.3 Control Card



ETHERNET

2x Neutrik Gigabit Ethernet ports

- The two Ethernet ports work as a copy channel for each other
- Connect to the U5, U5 Pro or control computer
- Transmit the input view information to the control computer or U5/U5 Pro event controller
- Support control by central control command

Multiviewer (MVR)

2x HDMI 2.0

Connect to the monitor to display the Multiviewer image in copy or independent mode

- In independent mode, the two Multiviewer connectors are used to display two different MVR images
- In copy mode, HDMI 2 copies the output on HDMI 1

USB 3.0

1x USB 3.0

- Export device logs
- Update the device and fix system bugs

AUDIO

1x 3.5mm audio input, 1x 3.5mm audio output

- IN for external audio input connection
- OUT for audio output

Dante

2x RJ45 digital network audio ports for audio input and output

- Support network audio input and output
- Support 64x64 audio swapping

GENLOCK

1x GENLOCK IN, 1x GENLOCK LOOP

- Support Bi-Level and Tri-Level
- GENLOCK IN: Accept the external sync signal
- GENLOCK LOOP: Loop the sync signal

6 Menu Operations

About This Chapter

This chapter introduces you to the system menus of the P20/P10 and Q8, including how the menus are accessed and the available functions and parameters. The menu pictures are presented throughout the chapter.

Overview

- P20/P10 Menu Operations
  - Startup and Shutdown
  - Home Screen
  - Input
  - Output
  - Screen
  - Layer
  - Preset
  - Multiviewer (MVR)
  - Network
  - Advanced
  - Mode
  - About Us
  - Language
- Q8 Menu Operations
  - Startup and Shutdown
  - Home Screen

Note:

All menu pictures shown in this chapter are for illustration purposes only. Actual product may vary.

6.1 P20/P10 Menu Operations

The 5-inch LCD and a variety of buttons on the front panel of the P20/P10 allow for pretty darn simple operations. The following sections will introduce the operations in detail.

6.1.1 Startup and Shutdown

Connect all the necessary cables and power cords properly, locate and turn on the rocker switch on the rear panel. The startup screen appears, as shown in Figure 6-1. The P20/P10 front panel provides a 5-inch LCD screen allowing for more intuitive operations.

Figure 6-1 Startup screen

To turn off the P20/P10, press the power button on the front panel and select **OK** from the dialog box displayed on the LCD screen.

6.1.2 Home Screen

After the startup, the home screen is displayed. The following descriptions use the P20 home screen as an example, as show in Figure 6-2 and Table 6-1.

Figure 6-2 Home screen (P20)

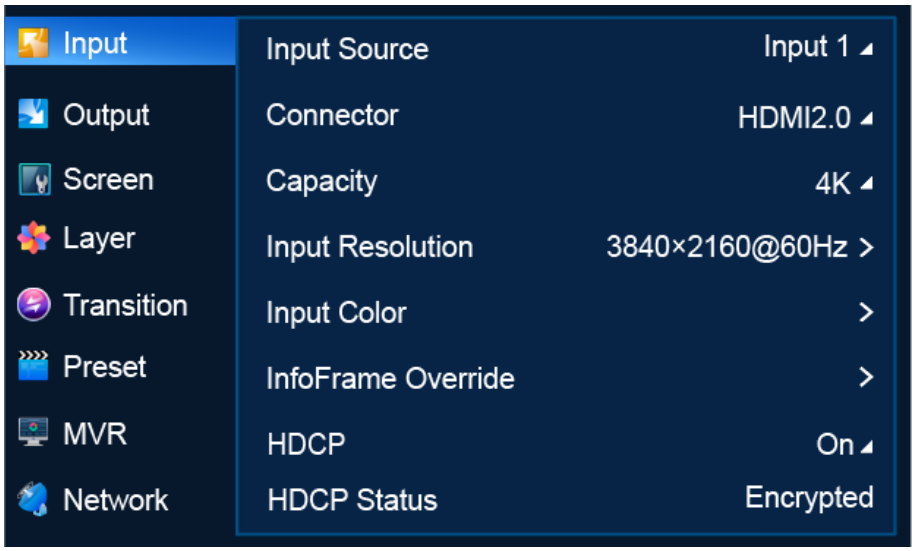
Table 6-1 Home screen description

No.	Description	
1	Displays the device information.	
		Logo of PIXELHUE
	P20	Device model
	SYSTEM	Device name
		Front panel lock • When this icon is displayed, the front panel buttons are locked. • When this icon is not displayed, the front panel buttons are unlocked. Press and hold the knob and **BACK** button simultaneously for 3s or longer to lock or unlock the front panel buttons.
	192.168.100.100	Device IP address For details, see 6.1.10 Network.
		Connection status of the Ethernet port on the rear panel •  : An Ethernet cable is connected. •  : No Ethernet cable is connected.
		Connection status of the USB drive on the front panel •  : A USB drive is inserted. •  : No USB drive is inserted.
2	SCREEN 1	Displays the information of common and AUX screens. When there are multiple screens, you can rotate the knob to

No.	Description	
		switch between the screens. • When Test Pattern, FTB or Freeze is turned on, **Test Pattern FTB** or **FRZ** is displayed at the top of this section. • The screen resolution is displayed on the right of this section. • The layer resource usage is displayed at the bottom of this section. Layer source status: • When an input source name is displayed, it indicates that the source is selected. When the source name is in green, the source is normal. When the source name is in gray, it indicates no signal. **M** denotes that it is a MAIN layer. • When **N/A** is displayed, no input source is selected and the layer is blank.
3	GENLOCK	Signal synchronization status For details, see 6.1.11.1 Set Synchronization Signal Source.
	BACKUP	Device backup on/off
	MODE	Working mode of the device • Switcher • PGM Only For details, see 6.1.12 Mode.
	EFFECTS	Transition effect • Cut • Fade For details, see 6.1.7 Transition.
4	OUTPUT	Displays the output connector statuses. • When an output connector icon is in green, an output device is connected. • When an output connector icon is in blue, no output device is connected. • When the border of an output connector icon is in orange, the connector is used for copying output.

On the home screen, press the knob to access the main menu screen and complete relevant settings. The following sections will describe menu operations in detail.

Figure 6-3 Main menu (P20)



6.1.3 Input

The **Input** menu allows you to do the following:

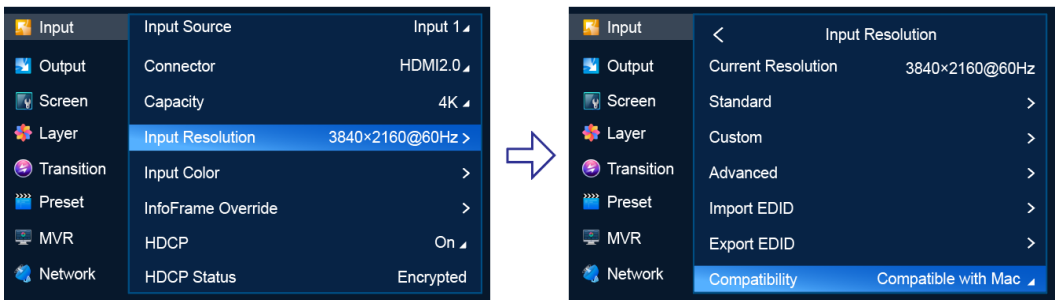
- Select Connector Type
- Select Connector Capacity
- Set EDID
- Import and Export EDID
- Set EDID Compatibility with Mac
- Set EDID Compatibility with Mac

Turn on **Compatible with Mac** when the P20/P10 is not compatible with the EDID on Mac.

Menu Orientation

On the main menu screen, scroll to and select **Input** > **Input Resolution**.

Figure 6-4 EDID compatibility with Mac (P20)



Description

Menu Item	Description
Compatibility	Set EDID compatibility with Mac • Compatible with Mac • Off

- Set Input Color
- Set InfoFrame Override
- Set HDCP
- View HDCP Status

6.1.3.1 Select Connector Type

Select the desired input connector to use it as the input source.

Prerequisites

- For a DP 1.2/HDMI 2.0 input, only one connector can be selected as the input source at the same time.
- Connector type selection is not available for the 12G-SDI connectors.

Notes:

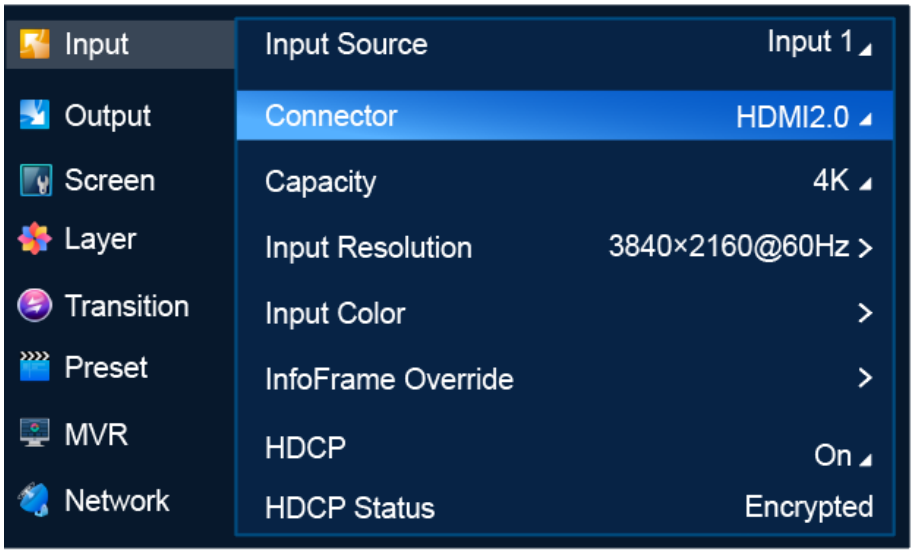
After the input connector is changed:

- The layers on the common screen and AUX screen become blank.
- The connector properties such as the resolution and color settings are reset to the defaults.

Menu Orientation

On the main menu screen, scroll to and select **Input** > **Connector**.

Figure 6-5 Input connector selection (P20)



Description

Menu Item	Description
Input Source	Select an input source. • P20 Includes 12x input sources. Inputs 1 to 8 contain 8x DP 1.2/HDMI 2.0 and Inputs 9 to 12 contain 4x 12G-SDI. • P10 Includes 6x input sources. Inputs 1 to 4 contain 4x DP 1.2/HDMI 2.0 and Inputs 5 to 6 contain 2x 12G-SDI.
Connector	Select the type of the input connector. Either DP 1.2 or HDMI 2.0 can be selected.

6.1.3.2 Select Connector Capacity

Select a connector capacity so that the device can calculate the number of layers that can be added on the common screen according to the selected connector capacity.

Prerequisites

An input source and connector type are selected. Connector type selection is not available for 12G-SDI.

Notes

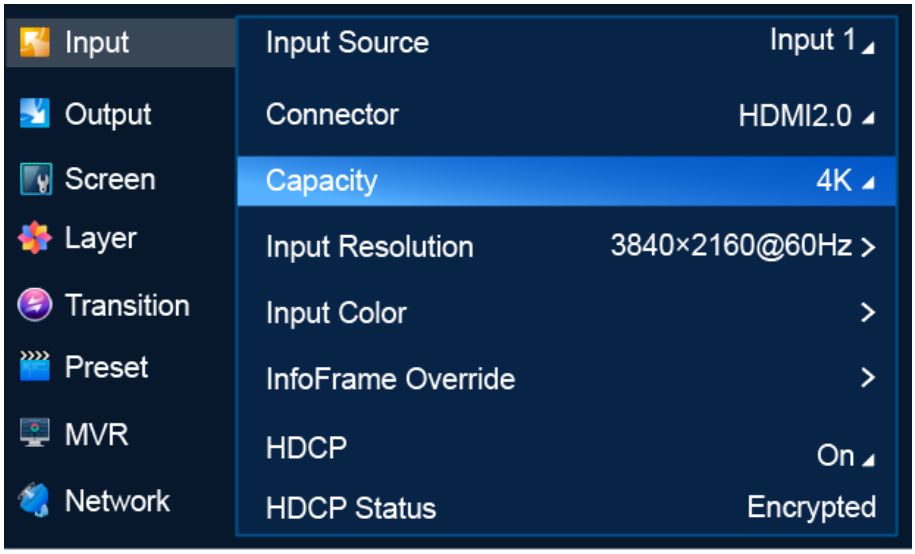
After the connector capacity is changed:

- The layers on the common screen become blank and the DSK function is turned off.
- The connector properties such as the resolution and color settings are reset to the defaults.

Menu Orientation

On the main menu screen, scroll to and select **Input** > **Capacity**.

Figure 6-6 Connector capacity selection (P20)



Description

Menu Item	Description
Capacity	Resource usage of the input connector • DL: 4K×1K • 4K: 4K×2K

6.1.3.3 Set EDID

Set input resolution and frame rate. You can either choose a standard resolution provided by the system or customize a resolution, and set advanced parameters.

Prerequisites

- The video source is output by graphics card.
- An input source and connector type (DP 1.2/HDMI 2.0) are selected. EDID settings are not available for the 12G-SDI connectors.

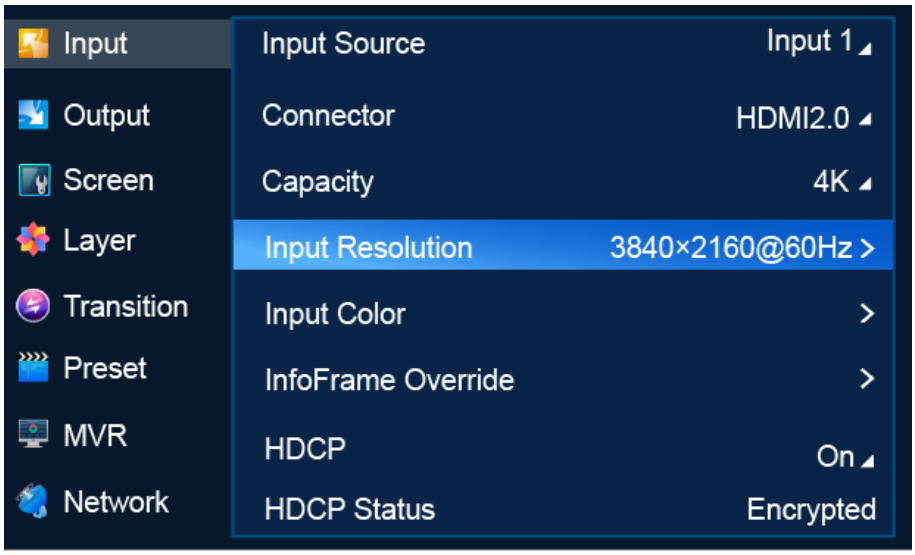
Notes

Advanced settings must be done by trained professionals.

Menu Orientation

On the main menu screen, scroll to and select **Input** > **Input Resolution**.

Figure 6-7 Input resolution settings (P20)



Description

Menu Item	Submenu Item	Description
Current Resolution	-	Current input resolution: Pixel width and height of the input source
Standard	Resolution	Commonly used resolution
	Frame Rate	Commonly used frame rate Frames per second (Hz)
Custom	Width	Pixel width of the input source
	Height	Pixel height of the input source
	Frame Rate	Frames per second (Hz)
Advanced	Frame Rate	Frames per second (Hz)
	H Total	The total number of pixels per line
	Width	Pixel width of the active area
	H Front Porch	The offset between the end of the active area and the beginning of H sync
	H Sync	H sync width in pixels
	H Polarity	Polarity (active high or low) of the horizontal sync pulse
	V Total	The total number of pixels per frame
	Height	Pixel height of the active area
	V Front Porch	The offset in lines between the end of the output active area and the beginning of V sync
	V Sync	V sync width in lines

Menu Item	Submenu Item	Description
	V Polarity	Polarity (active high or low) of the vertical sync pulse

After the settings are completed, select **Apply** for the settings to take effect.

6.1.3.4 Import and Export EDID

When there is something wrong with the input connector compatibility, import EDID files without compatibility problems into the device. Or export EDID files from the device and provide the files for other devices or input connectors to solve compatibility problems.

Prerequisites

- Before importing an EDID file, copy the file (.bin and .dat) to the root directory of a USB drive and insert the USB drive into the USB port on the front panel of the P20/P10.
- Before exporting an EDID file, insert a USB drive into the front panel of the P20/P10.
- An input source and connector type are selected. EDID import and export are not available for 12G-SDI.

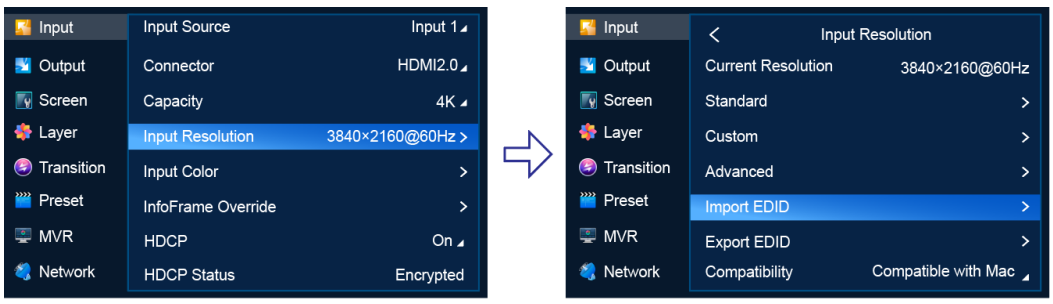
Notes

- The USB port on the P20/P10 front panel does not support USB HUB.
- Only one EDID file can be imported for an input connector and the file must be less than 1 MB.

Menu Orientation

On the main menu screen, scroll to and select **Input** > **Input Resolution** > **Import EDID**/**Export EDID**.

Figure 6-8 EDID import/export (P20)



Description

- Import EDID
  a. Scroll to and select **Import EDID** to access the EDID file screen.
  b. Select the file to be imported.

c. In the dialog box that appears, select **OK**.

- Export EDID
  a. Scroll to and select **Export EDID** to access the submenu.
  b. From the drop-down options, select a file format (.bin or .dat).
  c. Select **Apply**.

Note:

If you want to modify the content of an imported EDID file, modify the file, import it again and overwrite the original one.

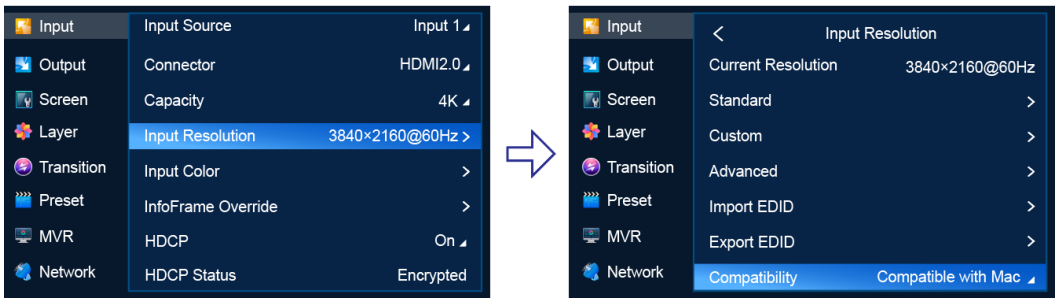
6.1.3.5 Set EDID Compatibility with Mac

Turn on **Compatible with Mac** when the P20/P10 is not compatible with the EDID on Mac.

Menu Orientation

On the main menu screen, scroll to and select **Input** > **Input Resolution**.

Figure 6-9 EDID compatibility with Mac (P20)



Description

Menu Item	Description
Compatibility	Set EDID compatibility with Mac • Compatible with Mac • Off

6.1.3.6 Set Input Color

Set the color parameters of an input connector so that the color effect can be applied to all the video sources accessed from this connector.

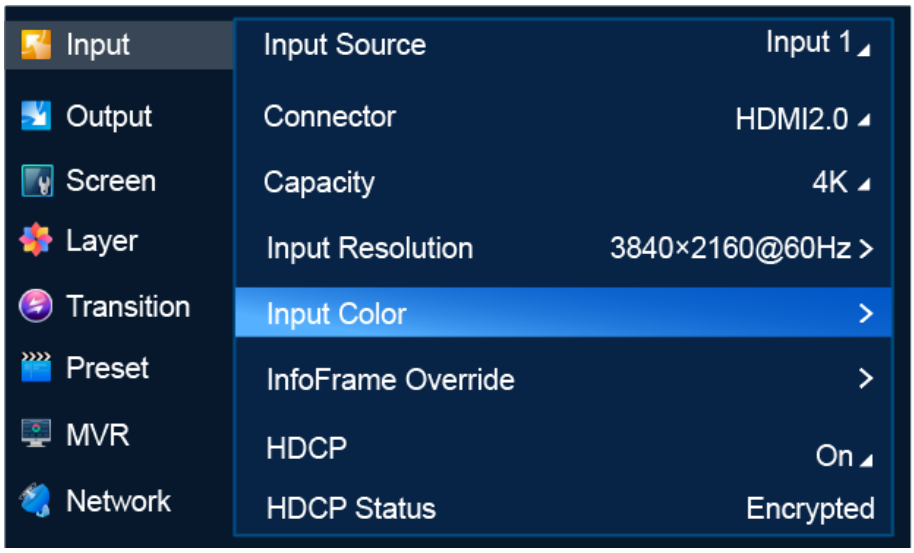
Prerequisites

An input source and connector type are selected. Input color settings are not available for the 12G-SDI connectors.

Menu Orientation

On the main menu screen, scroll to and select **Input** > **Input Color**.

Figure 6-10 Input color settings (P20)



Description

Menu Item	Description
Brightness	Brightness is the shading of lights in the image. When the brightness increases, viewers will be dazzled. When the brightness decreases, the image becomes dark.
Contrast	Contrast is the ratio of the luminance of the brightest color to that of the darkest color. Generally, the higher the contrast, the clearer and more colorful the image. On the contrary, the entire image becomes gloomy. Contrast affects the exposure level of the entire image. It makes the bright part brighter and the dark part darker.
Saturation	Saturation is the colorfulness of the image. The higher the contrast, the more vivid the image.
Hue	Hue is the relative degree of how bright or dark the image is.

If you want to reset the parameters to their default values, select **Apply**.

6.1.3.7 Set InfoFrame Override

Set the override parameters of the input source. The parameters can be used by the device for calculation. This operation does not change the original parameter values of the input source.

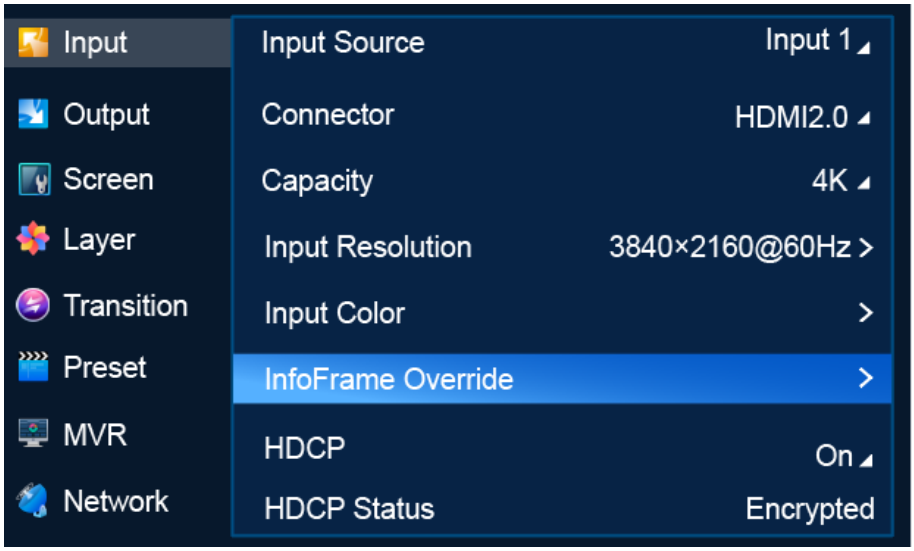
Prerequisites

- An input source and connector type (DP 1.2/HDMI 2.0) are selected. InfoFrame override settings are not available for the 12G-SDI connectors.
- To set dynamic range conversion, make sure the device is P20, the connector is HDMI 2.0, and dynamic range conversion is turned on in **Advanced**. For details, see 6.1.11.3 Turn on/off Dynamic Range Conversion.

Menu Orientation

On the main menu screen, scroll to and select **Input** > **InfoFrame Override**.

Figure 6-11 InfoFrame override (P20)



Description

Menu Item	Description
Color/Sample	Set the input color space and sampling rate
Bit Depth	Set the input bit depth Bit depth refers to the color information stored in an image. The higher the bit depth of an image, the more colors it can store.
Quantization Range	Set the input quantization range
Dynamic Range	Convert the dynamic range. Free conversion between SDR, HDR10 and HLG is supported. This menu item is displayed only when **Dynamic Range Conversion** is turned on ().
Color Gamut	Set the input color gamut standard This menu item is displayed only when **Dynamic Range Conversion** is turned on ().
Tone Mapping	Set mapping mode. This menu item is displayed when **Dynamic Range** is **HDR10**. • : On. **Luminance** overrides **Peak Screen Brightness**. • : Off. **Luminance** overrides **Max CLL**.
Luminance	Peak luminance. This menu item is displayed when **Dynamic Range** is **HDR10** or **HLG**.
Ambient Brightness	Ambient brightness. This menu item is displayed when **Dynamic Range** is **HDR10** or **HLG**.

When you set a parameter value to **AUTO**, the device will get the actual value from the properties of the input source automatically.

6.1.3.8 Set HDCP

HDCP (High-Bandwidth Digital Content Protection) is a coding scheme used to protect audio and video signals traveling through DVI, HDMI, and DP from being copied and illegally intercepted during a streaming session. Users can turn on/off HDCP for input connectors. HDCP is turned on by default.

Prerequisites

An input source and connector type are selected.

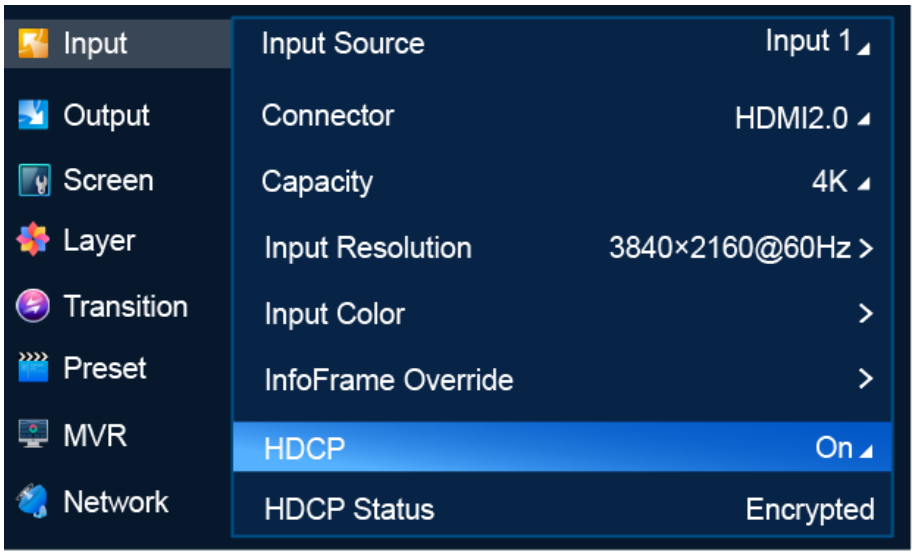
Note

SDI does not support HDCP. If 12G-SDI is select as the input source, the HDCP function will be unavailable.

Menu Orientation

On the main menu screen, scroll to and select **Input** > **HDCP**.

Figure 6-12 HDCP (P20)



Description

Select **On** or **Off** to turn on or off HDCP function for the input source.

6.1.3.9 View HDCP Status

View the HDCP status of the selected video source.

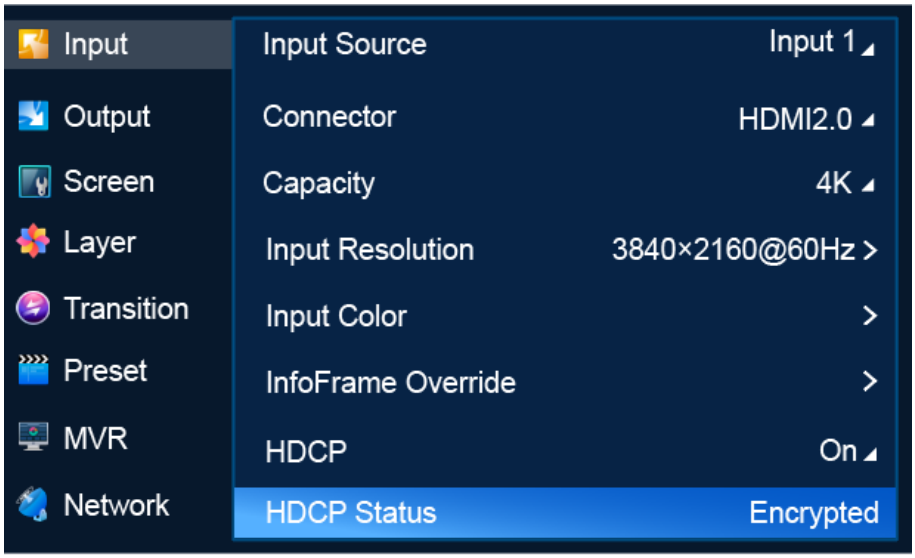
Prerequisites

An input source and connector type are selected. This is not available for 12G-SDI.

Menu Orientation

On the main menu screen, scroll to and select **Input** > **HDCP Status**.

Figure 6-13 HDCP status (P20)



Description

Menu Item	Description
HDCP Status	HDCP status of the selected video source • Encrypted: The video source is encrypted by HDCP. • Not Encrypted: The video source is not encrypted by HDCP. • Unknown: The HDCP encryption status is not obtained.

6.1.4 Output

The **Output** menu allows you to do the following:

- Select Output Capacity
- Set Output Resolution
- Export EDID
- Set Output Color
- Set Output Information
- Set HDCP

6.1.4.1 Select Output Capacity

Set the output capacity of the common screen.

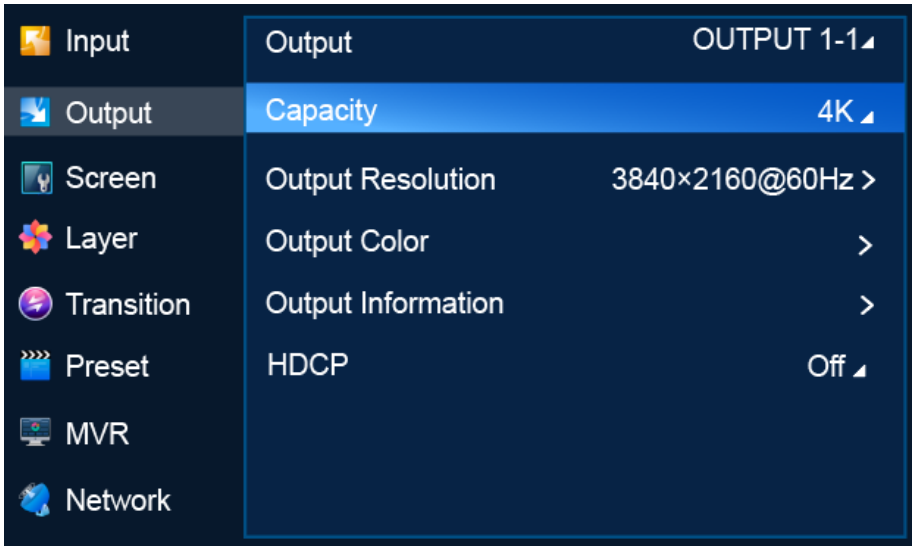
Prerequisites

An output is selected. Output capacity selection is not available for AUX outputs.

Menu Orientation

On the main menu screen, scroll to and select **Output** > **Output Capacity**.

Figure 6-14 Output capacity (P20)



Description

Menu Item	Description
Output	Select an output for settings. • OUTPUT: Primary output • AUX: AUX output
Output Capacity	Select the output capacity of the common screen. • P20 – DL: 4K×1K – 4K: 4K×2K • P10 – SL: 2K×1K – 4K: 4K×2K

6.1.4.2 Set Output Resolution

Set the resolution and frame rate of the common screen. You can select a standard resolution provided by the system or customize a resolution, and complete advanced settings.

Prerequisites

- The EDID information of the connected device is obtained.
- An output connector is selected.

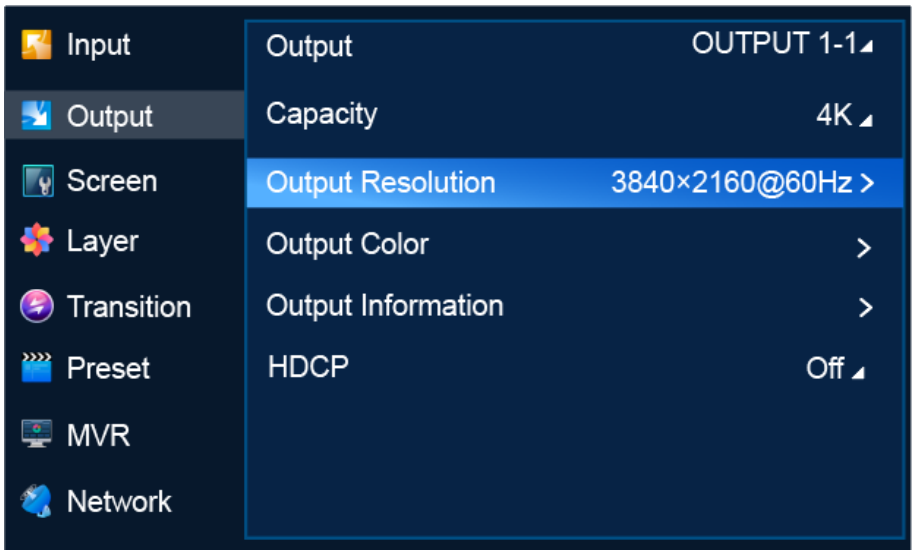
Note

- Advanced settings must be done by trained professionals.
- After the output resolution is changed, the AOI parameters related to the connector are reset to defaults.

Menu Orientation

On the main menu screen, scroll to and select **Output** > **Output Resolution**.

Figure 6-15 Output resolution settings (P20)



Description

Menu Item	Submenu Item	Description
Current Resolution	-	Current resolution: Pixel width and height of the output image
Standard	Resolution	Commonly used resolution
	Frame Rate	Commonly used frame rate, Frames per second (Hz)
Custom	Width	Pixel width of the output image
	Height	Pixel height of the output image
	Frame Rate	Frames per second (Hz)
Advanced	Frame Rate	Frames per second (Hz)
	H Total	The total number of pixels per line
	Width	Pixel width of the active area
	H Front Porch	The offset between the end of the active area and the beginning of H sync
	H Sync	H sync width in pixels

Menu Item	Submenu Item	Description
	H Polarity	Polarity (active high or low) of the horizontal sync pulse
	V Total	The total number of pixels per frame
	Height	Pixel height of the active area
	V Front Porch	The offset in lines between the end of the output active area and the beginning of V sync
	V Sync	V sync width in lines
	V Polarity	Polarity (active high or low) of the vertical sync pulse

After the settings are completed, select **Apply** for the settings to take effect.

6.1.4.3 Export EDID

When the input connectors of the connected device has good EDID compatibility, the P20/P10 can learn the EDID of the connected device via the output connectors and the EDID information can be exported to a USB drive so that other input connectors of the connected device can use the EDID information.

Prerequisites

- A USB drive is inserted into the USB port on the front panel of the P20/P10.
- The input connectors and the connected device are connected correctly.
- An output is selected.

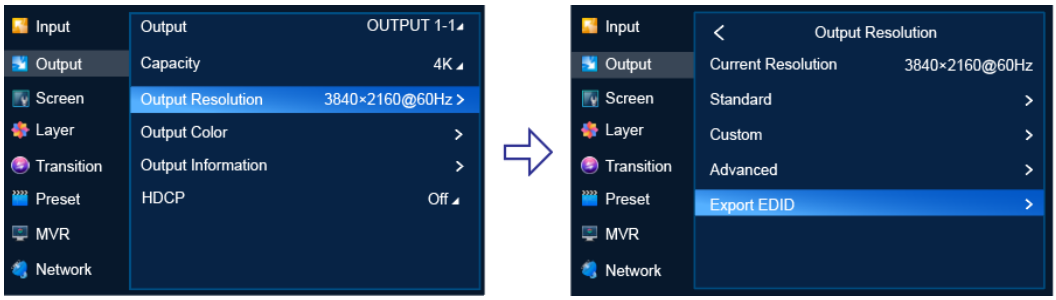
Note

The USB port on the front panel of the device does not support USB HUB.

Menu Orientation

On the main menu screen, scroll to and select **Output** > **Output Resolution** > **Export EDID**.

Figure 6-16 Exporting EDID (P20)



Description

Select **Export EDID** to access the submenu, then select a file format (.bin or .dat) and output connector, and select **Apply** to export the EDID information to the root directory of the USB drive.

6.1.4.4 Set Output Color

Set output color parameters. The final output color is the combination of layer color, input color and output color.

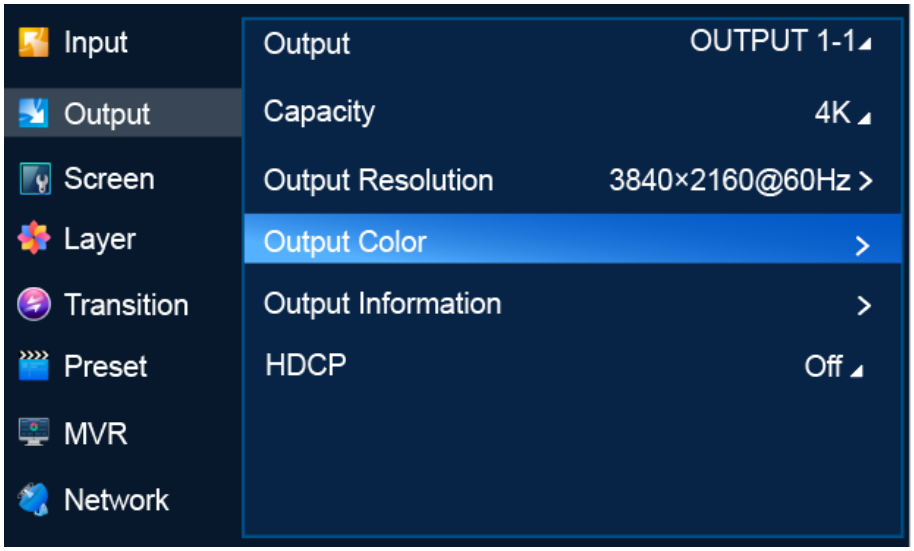
Prerequisites

An output is selected.

Menu Orientation

On the main menu screen, scroll to and select **Output** > **Output Color**.

Figure 6-17 Output color settings (P20)



Description

Menu Item	Description
Brightness	Brightness is the shading of lights in the image. When the brightness increases, viewers will be dazzled. When the brightness decreases, the image becomes dark.
Contrast	Contrast is the ratio of the luminance of the brightest color to that of the darkest color. Generally, the higher the contrast, the clearer and more colorful the image. On the contrary, the entire image becomes gloomy. Contrast affects the exposure level of the entire image. It makes the bright part brighter and the dark part darker.
Saturation	Saturation is the colorfulness of the image. The higher the contrast, the more vivid the image.

Menu Item	Description
Hue	Hue is the relative degree of how bright or dark the image is.

6.1.4.5 Set Output Information

Set the parameters relating to the output signal.

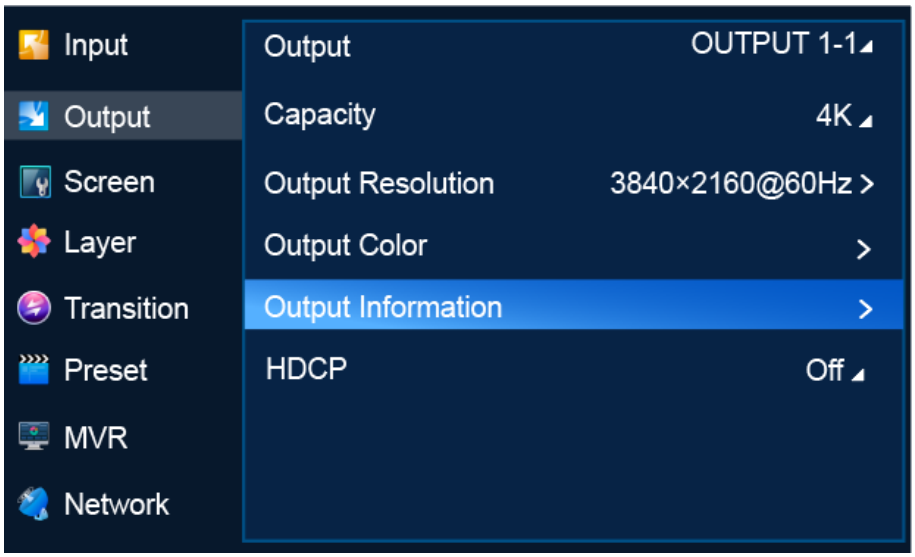
Prerequisites

- An output is selected.
- To set dynamic range conversion, make sure the device is P20 and a primary output is selected.

Menu Orientation

On the main menu screen, scroll to and select **Output** > **Output Information**.

Figure 6-18 Output information (P20)



Description

Menu Item	Description
Color/Sample	Set output color space and sampling rate.
Bit Depth	Set output bit depth. Bit depth refers to the color information stored in an image. The higher the bit depth of an image, the more colors it can store.
Dynamic Range	Convert the dynamic range. Free conversion between SDR, HDR10 and HLG is supported. This menu item is displayed only when Dynamic Range Conversion is turned on ().
Gamma	Set gamma value. This menu item is displayed only when **Dynamic Range Conversion** is

Menu Item	Description
	turned on ( ).
Color Gamut	Set output color gamut standard. This menu item is displayed only when **Dynamic Range Conversion** is turned on ( ).
Tone Mapping	Mapping mode. This menu item is displayed when **Dynamic Range** is **HDR10**. • : On. **Luminance** overrides **Peak Screen Brightness**. • : Off. **Luminance** overrides **Max CLL**.
Luminance	Peak luminance. This menu item is displayed when **Dynamic Range** is **HDR10** or **HLG**.

6.1.4.6 Set HDCP

HDCP (High-Bandwidth Digital Content Protection) is a coding scheme used to protect audio and video signals traveling through DVI, HDMI, and DP from being copied and illegally intercepted during a streaming session. Users can select an HDCP version for the output connector or turn off the HDCP function. HDCP is turned on by default.

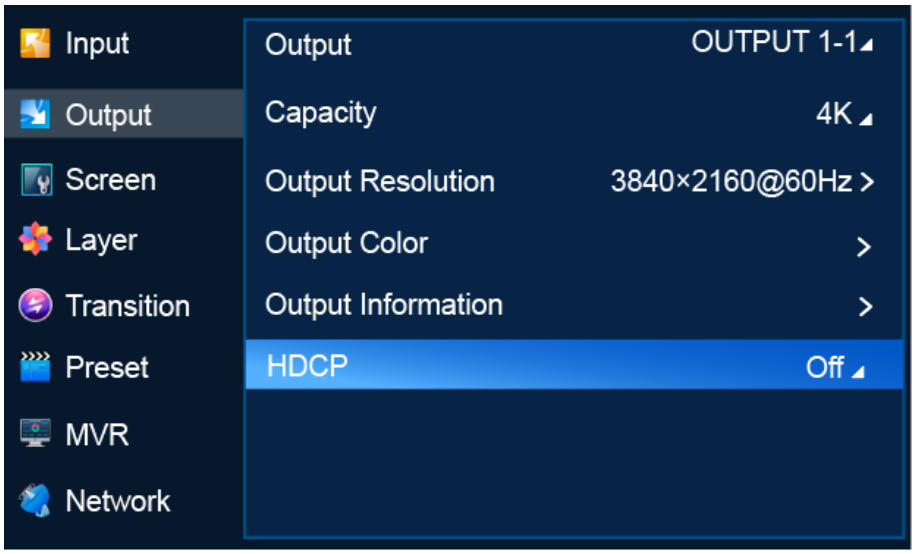
Prerequisites

An output is selected.

Menu Orientation

On the main menu screen, scroll to and select **Output** > **HDCP**.

Figure 6-19 HDCP (P20)



Description

Select an HDCP version, or select **Off** to turn off HDCP.

6.1.5 Screen

The **Screen** menu allows you to do the following:

- Set Screen Status
- Set Connector Resolution
- Set Mosaic
- Set Edge Blending
- Set Screen Color
- Set Output Information
- Set PGM Edit
- Set Display Status

6.1.5.1 Set Screen Status

Enable or disable the screen.

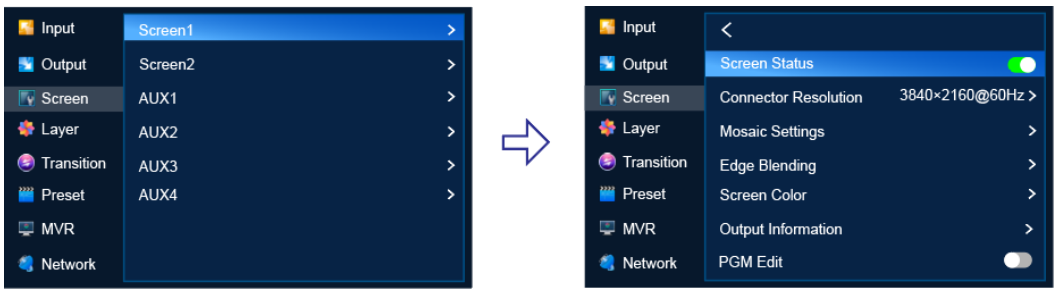
Prerequisites

The screen is a common screen or AUX screen.

Menu Orientation

On the main menu screen, scroll to and select **Screen** > **Screen1/AUX1** > **Screen Status**.

Figure 6-20 Screen status (P20)



Description

Set **Screen Status** to (on) or (off).

6.1.5.2 Set Connector Resolution

Set the connector resolution and frame rate. Users can select a standard resolution or customize a resolution and set advanced parameters.

Prerequisites

- The EDID of the connected display device is obtained.
- The screen is a common screen or AUX screen and **Screen Status** is set to .

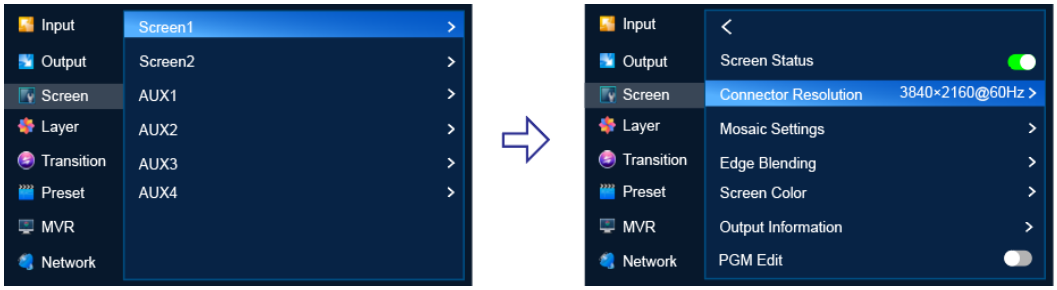
Notes

- The advanced parameters must be set by the trained personnel.
- After the output resolution is changed, the AOI parameters of the connector is reset automatically.

Menu Orientation

On the main menu screen, scroll to and select **Screen** > **Screen1/AUX1** > **Connector Resolution**.

Figure 6-21 Connector resolution (P20)



Description

Menu Item	Submenu Item	Description
Current Resolution	-	Current resolution: Pixel width and height of the output image
Standard	Resolution	Commonly used resolution
	Frame Rate	Commonly used frame rate, Frames per second (Hz)
Custom	Width	Pixel width of the output image
	Height	Pixel height of the output image
	Frame Rate	Frames per second (Hz)
Advanced	Frame Rate	Frames per second (Hz)
	H Total	The total number of pixels per line
	Width	Pixel width of the active area
	H Front Porch	The offset between the end of the active area and the beginning of H sync
	H Sync	H sync width in pixels
	H Polarity	Polarity (active high or low) of the horizontal sync pulse
	V Total	The total number of pixels per frame
	Height	Pixel height of the active area
	V Front Porch	The offset in lines between the end of the

Menu Item	Submenu Item	Description
		output active area and the beginning of V sync
	V Sync	V sync width in lines
	V Polarity	Polarity (active high or low) of the vertical sync pulse

After the settings are completed, select **Apply** for the settings to take effect.

6.1.5.3 Set Mosaic

Set screen mosaic by using easy mode or advanced mode.

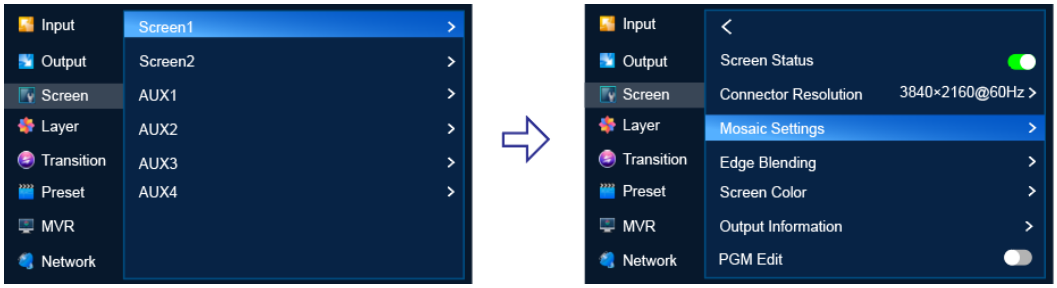
Prerequisites

The screen is a common screen and **Screen Status** is set to .

Menu Orientation

On the main menu screen, scroll to and select **Screen** > **Screen1** > **Mosaic Settings**.

Figure 6-22 Mosaic settings (P20)



Description

Menu Item	Description
Mode	Select a mode for mosaic settings • Easy: Set the total screen width and height. The P20/P10 will generate a mosaic solution automatically. • Advanced: Select a mosaic layout template (the number of rows and columns of the output connectors).
Total Width	Pixel width of the screen This parameter is displayed when the **Easy** mode is selected. After you select **Apply**, this parameter value keeps the same as the value in the mosaic plan.
Total Height	Pixel height of the screen This parameter is displayed when the **Easy** mode is selected. After you select Apply, this parameter value keeps the same as the value in the mosaic plan.
Connector	Horizontal and vertical start positions of the connector

Menu Item	Description
Layout	After the settings are completed, select **Apply** for the settings to take effect.
Mosaic Layout	Rows and columns of output connectors on the screen This menu item is displayed only when **Advanced** is selected as the mosaic mode. Number of output connectors that can be used for mosaic: • P20 – In PGM only mode, four output connectors can be used for mosaic. – In switcher mode, two output connectors can be used for mosaic. • P10 – 4K: In PGM only mode, two connectors can be used for mosaic. In switcher mode, one connector can be used. – SL: In PGM only mode, eight connectors can be used for mosaic. In switcher mode, four connectors can be used.
Replace Connector	If an output connector used on the mosaic layout fails, you can replace the connector with another normal connector via menu operations. Procedure: Select **Replace Connector**, select the connector to be replaced on the right, scroll to and select another normal connector. If the selected normal connector is in use, the normal connector and the failed connector will be swapped.
AOI Settings	Set the pixel width and height and start position of the output connector on the mosaic screen. This menu item is displayed only when **Advanced** is selected as the mosaic mode. When the resolution of the output connector is higher than the actual screen resolution, AOI settings allow the output connector to meet the mosaic requirements without changing the original resolution of the connector. Submenu description: • Connector: Select the connector for AOI settings. • Width: Set the pixel width. • Height: Set the pixel height • H Position: Set the horizontal start position. • V Position: Set the vertical start position.
LCD Bezel Compensation	Set the parameters related to LCD bezel compensation. • Status: Turn on () or off () LCD bezel compensation. • H Spacing: Total width of bezels • V Spacing: Total height of bezels

After the settings are completed, select **Apply** for the settings to take effect.

6.1.5.4 Set Edge Blending

Edge blending is a technique used when using multiple projectors to display different regions of a single image. To display a single seamless image, adjacent projectors need to overlap edges slightly and compensate for the double brightness created in different regions.

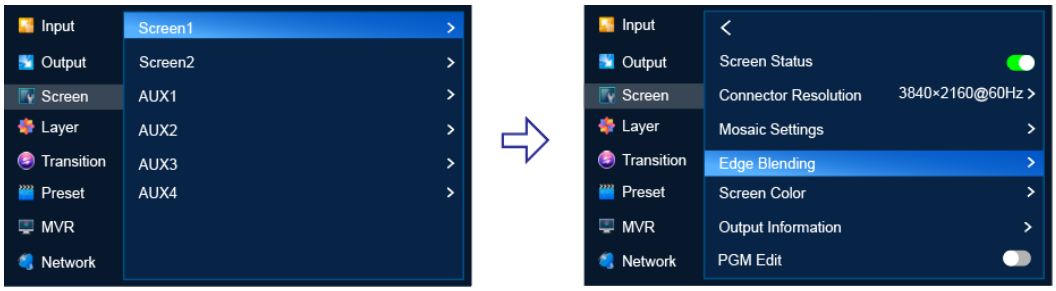
Prerequisites

- The screen is a common screen and **Screen Status** is set to .
- The offset angles of the projectors have been adjusted.

Menu Orientation

On the main menu screen, scroll to and select **Screen** > **Screen1** > **Edge Blending**.

Figure 6-23 Edge blending (P20)



Description

Menu Item	Description
Connector	Select a connector for edge blending settings.
Edge	Select an edge for blending.
Feathering	Turn on or off **Feathering**. • : On • : Off
Gamma	The feathering gamma for the blending area
Width	The feathering width for the blending area The blending area is inside the projector image and facing inward.

6.1.5.5 Set Screen Color

Set the color parameters of the screen.

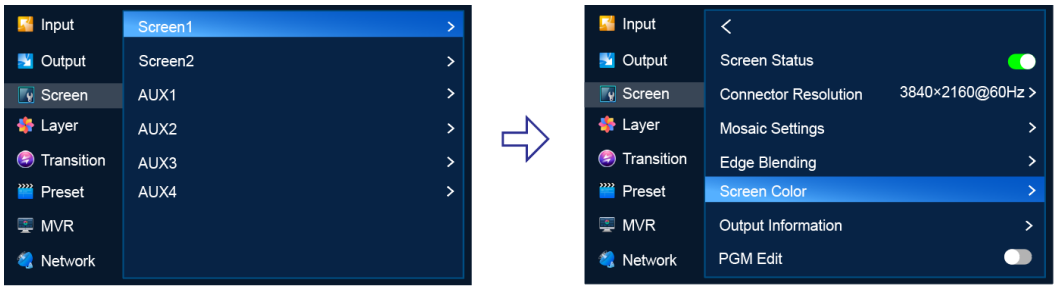
Prerequisites

The screen is a common screen and **Screen Status** is set to .

Menu Orientation

On the main menu screen, scroll to and select **Screen** > **Screen1** > **Screen Color**.

Figure 6-24 Screen color (P20)



Description

Menu Item	Description
Brightness	Brightness is the shading of lights in the image. When the brightness increases, viewers will be dazzled. When the brightness decreases, the image becomes dark.
Contrast	Contrast is the ratio of the luminance of the brightest color to that of the darkest color. Generally, the higher the contrast, the clearer and more colorful the image. On the contrary, the entire image becomes gloomy. Contrast affects the exposure level of the entire image. It makes the bright part brighter and the dark part darker.
Saturation	Saturation is the colorfulness of the image. The higher the contrast, the more vivid the image.
Hue	Hue is the relative degree of how bright or dark the image is.
Brightness	Brightness is the shading of lights in the image. When the brightness increases, viewers will be dazzled. When the brightness decreases, the image becomes dark.

6.1.5.6 Set Output Information

Set the parameters of the output signal.

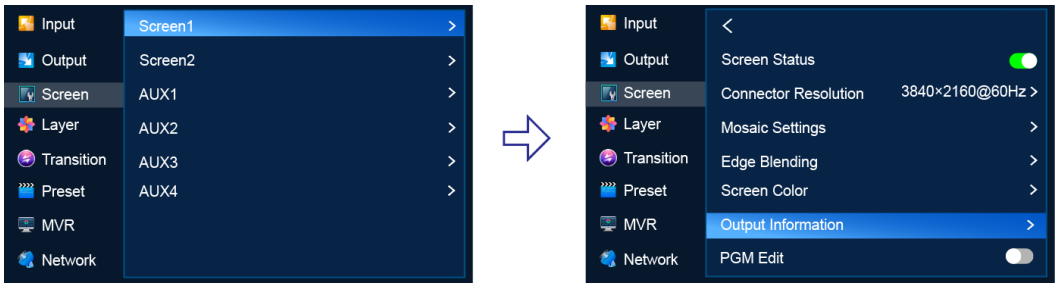
Prerequisites

- The screen is a common screen and **Screen Status** is set to .
- HDR range conversion is available for P20 only.

Menu Orientation

On the main menu screen, scroll to and select **Screen** > **Screen1** > **Output Information**.

Figure 6-25 Output information (P20)



Description

Menu Item	Description
Color/Sample	Set output color space and sampling rate.
Bit Depth	Set output bit depth. Bit depth refers to the color information stored in an image. The higher the bit depth of an image, the more colors it can store.
Dynamic Range	Convert the dynamic range. Free conversion between SDR, HDR10 and HLG is supported. This menu item is displayed only when Dynamic Range Conversion is turned on ().
Gamma	Gamma value This menu item is displayed only when **Dynamic Range Conversion** is turned on ().
Color Gamut	Set output color gamut standard. This menu item is displayed only when **Dynamic Range Conversion** is turned on ().
Tone Mapping	Mapping mode. This menu item is displayed when **Dynamic Range** is **HDR10**. • : On. **Luminance** overrides **Peak Screen Brightness**. • : Off. **Luminance** overrides **Max CLL**.
Luminance	Peak luminance. This menu item is displayed when **Dynamic Range** is **HDR10** or **HLG**.

6.1.5.7 Set PGM Edit

Turn on or off PGM edit.

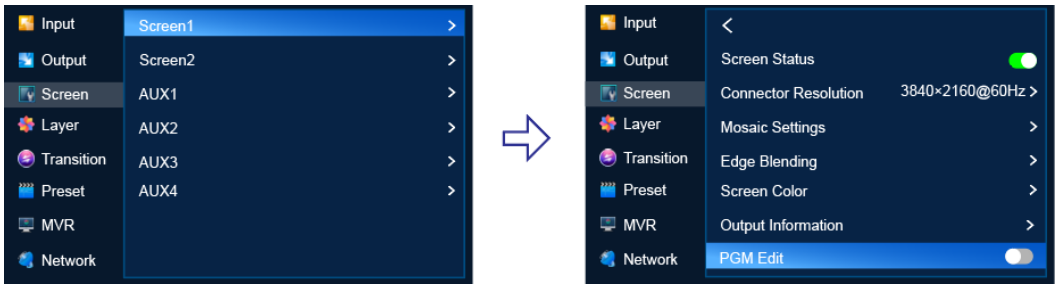
Prerequisites

- The device is in switcher mode. In PGM only mode, **PGM Edit** cannot be set and turned on by default.
- The screen is a common screen or AUX screen and **Screen Status** is set to .

Menu Orientation

On the main menu screen, scroll to and select **Screen** > **Screen1** > **PGM Edit**.

Figure 6-26 PGM edit (P20)



Description

Menu Item	Description
PGM Edit	Turn on or off PGM edit. • : On The edits you make on the LCD menu modify the layers on PGM and the edit process is displayed on the screen in real time. • : Off The edits you make on the LCD menu modify the layers on PVW.

6.1.5.8 Set Display Status

Make the screen display content normally, fade to black, freeze the current frame of the input source, or display test patterns.

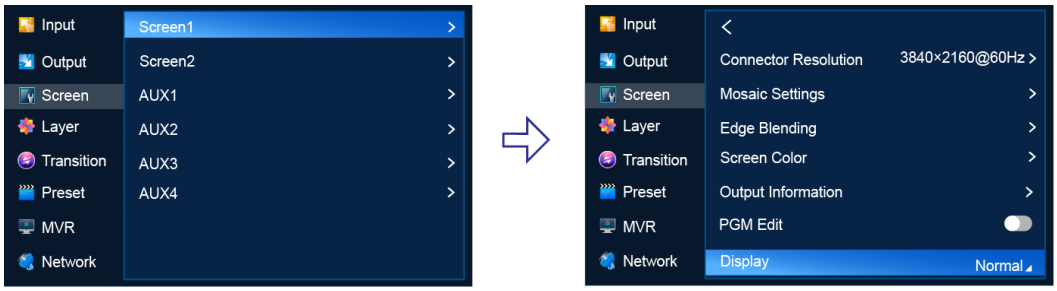
Prerequisites

The screen is a common screen or AUX screen and **Screen Status** is set to .

Menu Orientation

On the main menu screen, scroll to and select **Screen** > **Screen1** > **Display**.

Figure 6-27 Display status (P20)



Description

- Common Screen

  Set Display to Normal, FTB, Freeze or Test Pattern.

- AUX Screen

  Set Display to Normal, FTB, or Freeze.

After **Test Pattern** is selected for a common screen, users can set the following parameters in the sub-menu.

Menu Item	Description
Pure Color	Test pattern color
Gradient	Gradient style of the test pattern
Grid	Grid style of the test pattern
Brightness	Test pattern brightness
Spacing Level	Spacing between different colors This option is displayed only when the test pattern contains multiple colors.
Spacing (px)	Spacing between grid lines This option is displayed only when the grid style is specified.
Line Width	Width of grid lines This option is displayed only when the grid style is specified.
Speed	Moving speed of grid lines This option is displayed only when the grid style is specified.

6.1.6 Layer

The **Layer** menu allows you to do the following:

- Set Regular Layers
- Set Basic Information
- Manage LOGO
- Set AUX Layers

6.1.6.1 Set Regular Layers

6.1.6.1.1 Create and Delete Layers

Create, delete and clear regular layers. The LCD menus of P20 are used as examples in this section for illustration.

Menu Orientation

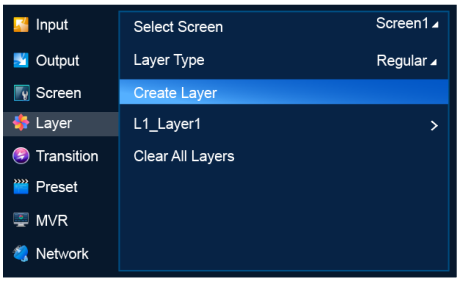
On the main menu screen, scroll to and select **Layer**.

Description

Select a common screen, set **Layer Type** to **Regular**, and then do the following as required.

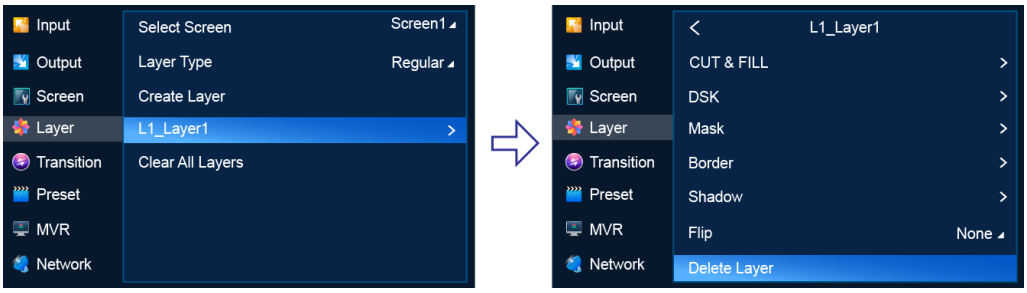
- Create a regular layer

  Select Create Layer.



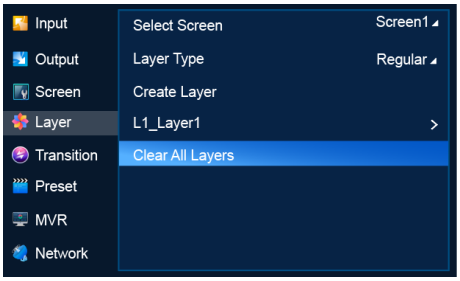
- Delete a regular layer

  Select the layer to be deleted to access the sub-menu and then select **Delete Layer**.



- Clear regular layers

  Select Clear All Layers.



  Note: If **PGM** is displayed next to **Select Screen**, it denotes that PGM Edit is turned on. If not, PGM Edit is turned off.

6.1.6.1.2 Set Basic Information

Set the basic information of regular layers.

Prerequisites

A common screen and regular layer are selected.

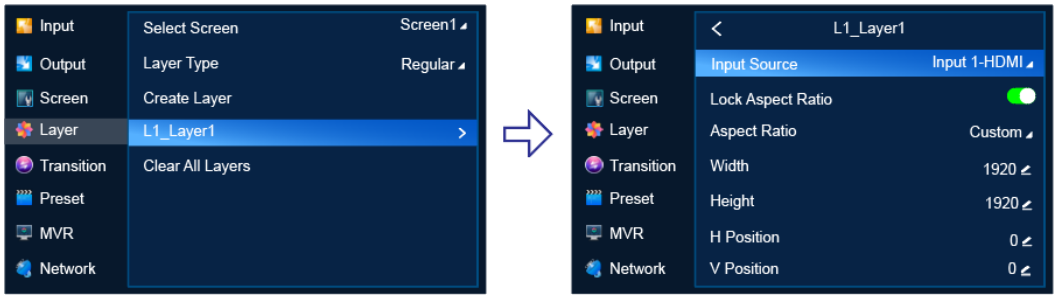
Note

If the layer source bandwidth is exceeded, the layer displays a black screen.

Menu Orientation

On the main menu screen, scroll to and select **Layer** > ***Layer Name***.

Figure 6-28 Basic layer information (P20)



Description

Menu Item	Description
Input Source	Select an input source for the layer
Lock Aspect Ratio	Lock or unlock the aspect ratio of the layer resolution. • : Locked • : Unlocked
Aspect Ratio	Set the ratio of the layer width to the layer height. After the aspect ratio is changed, the layer height keeps unchanged and the layer width is calculated automatically.
Width	Specify the layer width.
Height	Specify the layer height.
H Position	Specify the horizontal start position of the layer on the common screen. The coordinates of the pixel at the top left of the main screen is (0, 0).
V Position	Specify the vertical start position of the layer on the common screen. The coordinates of the pixel at the top left of the main screen is (0, 0).
Scaling Mode	Set the scaling mode of the layer. • Custom: The layer is scaled according to your settings. • Pixel to Pixel: The layer resolution is the same as the input resolution. If the input source is cropped, the layer resolution is the same as the resolution after cropping. • Full Screen: The layer fills the entire screen.
Z-Order	Set the priority order of the layer. • Bring Forward • Send Backward • Bring to Front • Send to Back

When there are black borders or unnecessary information on the input source, input crop allows you to crop the input source and display the desired area.

6.1.6.1.3 Set Input Crop

When there are black borders or unnecessary information on the input source, input crop allows you to crop the input source and display the desired area.

Prerequisites

- A common screen and regular layer are selected.
- The layer source is accessed.

Note

The input source status and capacity after cropping is the same as the original.

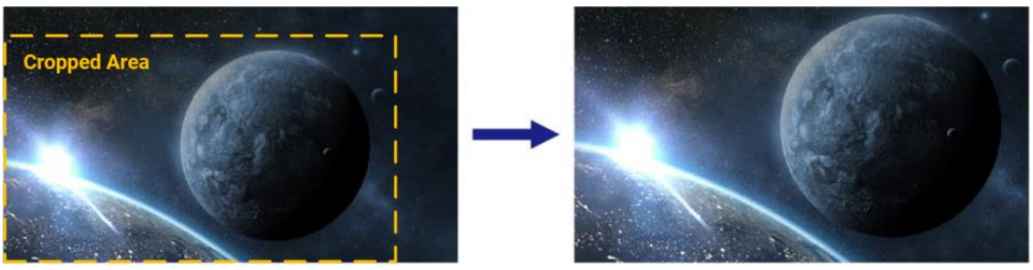
Menu Orientation

On the main menu screen, scroll to and select **Layer** > ***Layer Name*** > **Input Crop**.

Description

Menu Item	Description
Status	Turn on/off input crop. • : On • : Off
H Position	Set the horizontal start position of the cropped area.
V Position	Set the vertical start position of the cropped area.
Width	Set the pixel width of the cropped area.
Height	Set the pixel height of the cropped area.

Crop Effect Example



6.1.6.1.4 Set Layer Color

Set layer color parameters.

Prerequisites

A common screen and regular layer are selected.

Menu Orientation

On the main menu screen, scroll to and select **Layer** > ***Layer Name*** > **Layer Color**.

Description

Menu Item	Description
Brightness	Brightness is the shading of lights in the image. When the brightness increases, viewers will be dazzled. When the brightness decreases, the image becomes dark.
Contrast	Contrast is the ratio of the luminance of the brightest color to that of the darkest color. Generally, the higher the contrast, the clearer and more colorful the image. On the contrary, the entire image becomes gloomy. Contrast affects the exposure level of the entire image. It makes the bright part brighter and the dark part darker.
Saturation	Saturation is the colorfulness of the image. The higher the contrast, the more vivid the image.
Hue	Hue is the relative degree of how bright or dark the image is.
Monochrome	Turn on/off monochrome. • : On. The layer image is in black and white. • : Off
Invert Colors	Turn on/off color inversion. • : On. The colors of the layer image is inverted. • : Off
Opacity	Set color opacity.

6.1.6.1.5 Set Cut & Fill

Set the parameters related to Cut & Fill. The original layer serves as the Fill layer, and the output will display the Cut layer that overlaps with the Fill layer, allowing users to define the output shape and effect more flexibly.

Prerequisites

A common screen and regular layer are selected.

Notes

- When the Cut & Fill function is enabled, the DSK function is disabled.
- The total resources for the Cut layer are 2x DL (1x 4K), and the Cut layer capacity must be less than or equal to that of the Fill layer.

Menu Orientation

On the main menu screen, scroll to and select **Layer** > ***Layer Name*** > **CUT & FILL**.

Description

Menu Item	Description
Status	Turn on or turn off the function. • : On • : Off

Menu Item	Description
CUT Source Type	The input source type of the Cut layer
CUT Source	The input source of the Cut layer
Negative	Turn on or turn off the invert colors function. • : On, allowing black areas to be transparent and white areas to be cut • : Off, allowing white areas to be transparent and black areas to be cut
X	The horizontal initial position of the Cut layer relative to the Fill layer
Y	The vertical initial position of the Cut layer relative to the Fill layer
Width	The horizontal pixels of the Cut layer
Height	The vertical pixels of the Cut layer

6.1.6.1.6 Set DSK

Use luma key, chroma key or smart key for input sources.

Prerequisites

- A common screen and regular layer are selected.
- The layer source is accessed.

Notes

After DSK is turned on, the layer capacity changes to 4K automatically.

Menu Orientation

On the main menu screen, scroll to and select **Layer** > ***Layer Name*** > **DSK**.

Description

Menu Item	Description
Status	Turn on/off DSK. • : On • : Off
Mode	DSK mode • Luma key: Suitable for keying scenarios where the brightness of the background is significantly smaller than that of the foreground. The result of luma key is that the background becomes transparent and the foreground is keyed out. • Chroma key: Suitable for keying scenarios with a single background color, such as blue/green screen matting. • Smart key: Suitable for common keying

Menu Item		Description
		scenarios, which reduces parameter adjustments and allows the keying requirements of users to be satisfied in an easier way.
Luma	Clip	Distinguish between the foreground and background.
	Smooth	Set the smoothness of the transition area between foreground and background. The greater the value, the smoother the transition.
	Foreground Color	Turn on or turn off foreground color adjustment. • : On. The **RGB** of the related parameter can be set to adjust the keying effect. • : Off
	RGB	Specify the RGB values of the foreground color.
Chroma	Pick Hue	Set the RGB values of the pick point • Method 1: Specify the coordinates of the pick point on the input source, and the RGB values of the point will be displayed. • Method 2: Specify the RGB values. After the settings, select **Apply**. You can also adjust the following parameters to optimize the keying effect.
	Hue Ramp	Distinguish between the foreground and background.
	Hue Clip	Hue range The greater the value, the larger the removal area. The maximum value is the current value of **Hue Ramp**.
	Saturation Clip	Distinguish between the foreground and background.
	Saturation Gain	Adjust overall image brightness.
	Spill	Remove the overflow from the foreground image edges and semi-transparent areas.
	Shadow	Remove the shadow areas.
	Highlight	Remove the highlight areas.
Smart	Pick Hue	Set the RGB values of the pick point • Method 1: Specify the coordinates of the pick point on the input source, and the RGB values of the point will be displayed. • Method 2: Specify the RGB values. After the settings, select **Apply**. You can also adjust the following parameters to optimize the keying effect.

Menu Item		Description
	Matting Strength	Adjust the intensity of background processing.
	Gain Adjust	Adjust the shadow/noise areas present in the foreground.

If you want to reset the parameters to their default values, select **Reset**.

6.1.6.1.7 Set Layer Mask

Set parameters related to layer mask. The masked area will be transparent and invisible. The layer resolution keeps unchanged.

Prerequisites

A common screen and regular layer are selected.

Note

Enabling layer mask will disable the layer border.

Menu Orientation

On the main menu screen, scroll to and select **Layer** > ***Layer Name*** > **Mask**.

Description

Menu Item	Description
Status	Turn on/off layer mask. • : On • : Off
Mask Top	Set the area to be masked on the top of the layer.
Mask Bottom	Set the area to be masked on the bottom of the layer.
Mask Left	Set the area to be masked on the left of the layer.
Mask Right	Set the area to be masked on the right of the layer.

Mask Effect Example

6.1.6.1.8 Set Layer Borders

Set the border of a layer.

Prerequisites

A common screen and regular layer are selected.

Note

Enabling layer mask will disable the layer border.

Menu Orientation

On the main menu screen, scroll to and select **Layer** > ***Layer Name*** > **Border**.

Description

Menu Item	Description
Status	Turn on/off layer border. • : On • : Off
Border	Set the layer border type.
Width	Set the width of the left and right borders.
Height	Set the height of the top and bottom borders.
Color	Set the RGB of the border color.

Border Effect Example

6.1.6.1.9 Set Border Shadow

Set the layer shadow position, size, opacity, edge blur and color.

Prerequisites

A common screen and regular layer are selected.

Menu Orientation

On the main menu screen, scroll to and select **Layer** > ***Layer Name*** > **Shadow**.

Description

Menu Item	Description
Status	Turn on/off layer shadow. •  : On •  : Off
X	The horizontal initial position of shadow on the common screen. The coordinates of the pixel at the top left of the common screen is (0, 0).
Y	The vertical initial position of shadow on the common screen. The coordinates of the pixel at the top left of the common screen is (0, 0).
Width	Set the shadow width.
Height	Set the shadow height.
Opacity	Set the shadow opacity.
Edge Blue	Set the shadow edge blur.
Color	Set the shadow color.

6.1.6.1.10 Set Layer Flipping

Flip layers horizontally, vertically, or horizontally and vertically.

Prerequisites

A common screen and regular layer are selected.

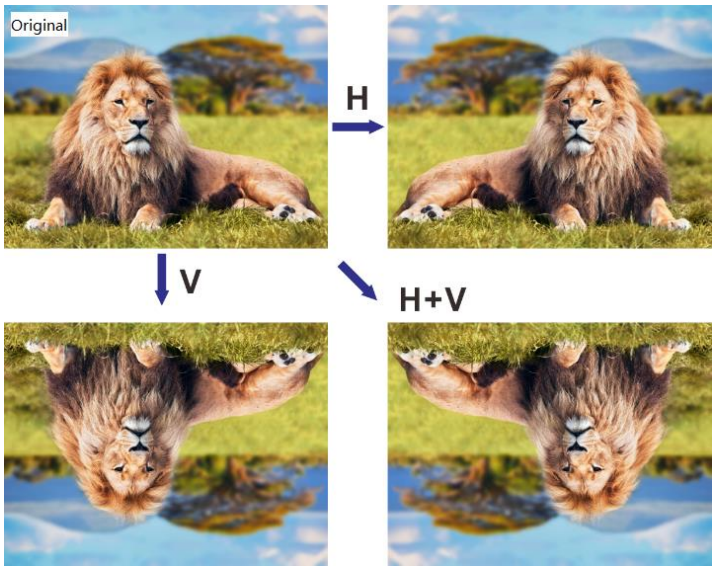
Menu Orientation

On the main menu screen, scroll to and select **Layer** > ***Layer Name*** > **Flip**.

Description

Menu Item	Description
Flip	• None: Don't flip the layer. • Flip Horizontally: Flip the layer horizontally. • Flip Vertically: Flip the layer vertically. • Flip Horizontally and Vertically: Flip the layer horizontally and vertically

Flipping Effect Example



6.1.6.2 Manage BKG

Apply, export, delete, resize, reposition and import BKG files, and save captured images as BKG files.

Prerequisites

- Before importing a BKG file, copy the file (.png, .bmp, .jpg, .jpeg) to the root directory of a USB drive and insert the USB drive into the USB port on the front panel of the P20/P10.
- Before exporting a BKG file, insert a USB drive into the USB port on the front panel of the P20/P10.

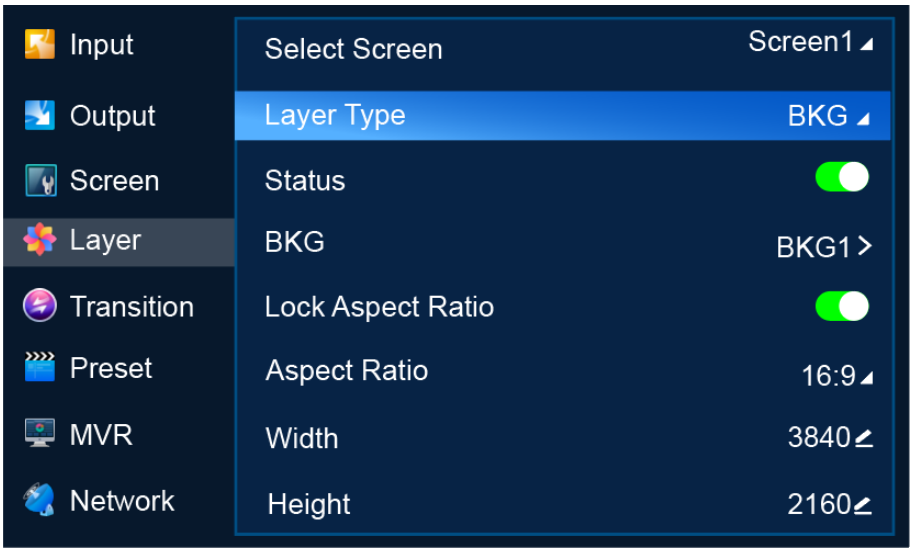
Notes

- The USB port on the front panel of the P20/P10 does not support USB HUB.
- The BKG does not use the layer resources.
- The BKG image automatically fits to the screen and is always at the back of the layer order.
- When you are importing a BKG file using the event controller or PixelFlow, you are not able to import BKG images using the P20/P10.
- The total number of BKG and LOGO files cannot exceed 255 and the total storage space for BKG and LOGO files is up to 512 MB.
- The maximum resolution of a single BKG file is 65536×65536 pixels.

Menu Orientation

On the main menu screen, scroll to and select **Layer**.

Figure 6-29 BKG (P20)



Description

Select a common screen, set the layer type to BKG, and then do the following as required.

- Apply BKG
  a. Turn on BKG. ()
  b. Select **BKG** to open the BKG file screen.
  c. Select a BKG file. In the dialog box that appears, select **Apply** to use the BKG file as the background image of the common screen.
- Export BKG
  a. Turn on BKG. ()
  b. Select **BKG** to open the BKG file screen.
  c. Select a BKG file. In the dialog box that appears, select **Export**.
  d. In the dialog box that appears, select **OK** to export the BKG file to the root directory of the USB drive.
- Delete BKG
  a. Turn on BKG. ()
  b. Select **BKG** to open the BKG file screen.
  c. Select a BKG file. In the dialog box that appears, select **Delete**.
  d. In the dialog box that appears, select **OK** to delete the BKG file.
- Set BKG size

  Turn on/off **Lock Aspect Ratio**, specify **Aspect Ratio**, **Width** and **Height** to resize BKG.
- Set BKG position

  Specify **H Position** and **V Position** to reposition BKG.
- Import BKG
  a. Select **BKG Import** to open the BKG file list screen.

b. Select a BKG file. In the dialog box that appears, select **OK** to import the BKG file.

- Capture
  a. Select **Capture** to access the submenu.
  b. From the drop-down options, select PGM or an input source for capture.
  c. Select **Capture**.
  d. After an image is captured successfully, select **Save** to save the captured image as a BKG file.

6.1.6.3 Manage LOGO

Apply, export, delete and import LOGO files.

Prerequisites

- Before importing a LOGO image, copy the LOGO file (.png, .bmp, .jpg, .jpeg) to the root directory of a USB drive and insert the USB drive into the USB port on the front panel of the P20/P10.
- Before exporting a LOGO image, insert a USB drive into the USB port on the front panel of the P20/P10.

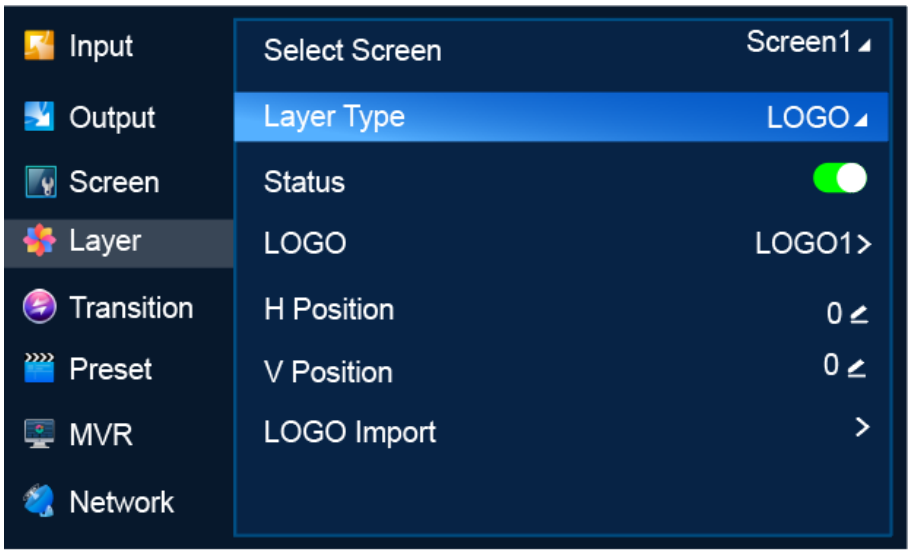
Notes

- The USB port on the front panel of the P20/P10 does not support USB HUB.
- LOGO does not use the layer resources.
- The LOGO image is always at the front of the layer order and cannot be resized. You can change the position of the BKG image.
- When you are importing a LOGO file using the event controller or PixelFlow, you are not able to import LOGO files using the P20/P10.
- The total number of BKGs and LOGOs cannot exceed 255 and the total storage space for BKG and LOGO files is up to 512 MB.
- The maximum resolution of a single LOGO file is 512×512 pixels.

Menu Orientation

On the main menu screen, scroll to and select **Layer**.

Figure 6-30 LOGO (P20)



Description

Select a common screen, set **Layer Type** to **LOGO**, and then do the following as required.

- Apply LOGO
  a. Turn on LOGO. ( )
  b. Select **LOGO** to open the LOGO file screen.
  c. Select a LOGO file. In the dialog box that appears, select **Apply** to use the LOGO file as the LOGO of the common screen.
  d. Go back to the previous menu.
  e. Specify **H Position** and **V Position** to set the position of the LOGO on the screen, that is the horizontal and vertical start position relative to the top left (0,0) of the screen.
- Export LOGO
  a. Turn on LOGO. ( )
  b. Select **LOGO** to open the LOGO file screen.
  c. Select a LOGO file. In the dialog box that appears, select **Export**.
  d. In the dialog box that appears, select **OK** to export the LOGO file to the root directory of the USB drive.
- Delete LOGO
  a. Turn on LOGO. ( )
  b. Select **LOGO** to open the LOGO file screen.
  c. Select a LOGO file. In the dialog box that appears, select **Delete**.
  d. In the dialog box that appears, select **OK** to delete the LOGO file.
- Import LOGO
  a. Select **LOGO Import** to open the LOGO file screen.
  b. Select a LOGO file. In the dialog box that appears, select **OK** to import the LOGO file.

6.1.6.4 Set AUX Layers

6.1.6.4.1 Create and Delete Layers

Create, delete and clear AUX layers. The LCD menus of P20 are used as examples in this section for illustration.

Menu Orientation

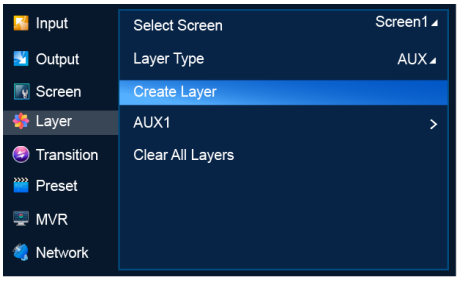
On the main menu screen, scroll to and select **Layer**.

Description

Select an AUX screen, set **Layer Type** to **AUX**, and then do the following as required.

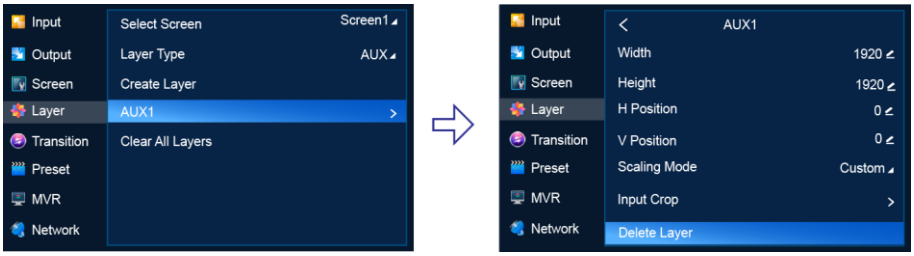
- Create an AUX layer

  Select Create Layer.



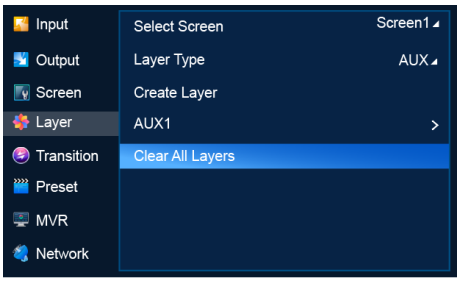
- Delete an AUX layer

  Select the layer to be deleted to access the sub-menu and then select **Delete Layer**.



- Clear AUX layers

  Select Clear All Layers.



6.1.6.4.2 Set Basic Information

Set the basic information of AUX layers.

Prerequisites

A common screen and AUX layer are selected.

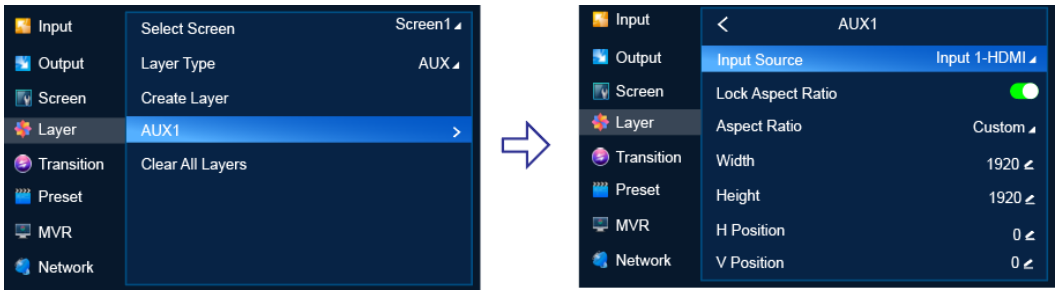
Note

If the layer source bandwidth is exceeded, the layer displays a black screen.

Menu Orientation

On the main menu screen, scroll to and select **Layer** > ***Layer Name***.

Figure 6-31 Basic layer information (P20)



Description

Menu Item	Description
Input Source	Select an input source for the layer.
Lock Aspect Ratio	Lock or unlock the aspect ratio of the layer resolution. • : Locked • : Unlocked
Aspect Ratio	Set the ratio of the layer width to the layer height. After the aspect ratio is changed, the layer height keeps unchanged and the layer width is calculated automatically.
Width	Specify the layer width.
Height	Specify the layer height.
H Position	Specify the horizontal start position of the layer on the common screen. The coordinates of the pixel at the top left of the main screen is (0, 0).
V Position	Specify the vertical start position of the layer on the common screen. The coordinates of the pixel at the top left of the main screen is (0, 0).
Scaling Mode	Set the scaling mode of the layer. • Custom: The layer is scaled according to your settings. • Pixel to Pixel: The layer resolution is the same as the input resolution. If the input source is cropped, the layer resolution is the same as the resolution after cropping. • Full Screen: The layer fills the entire screen.

6.1.6.4.3 Set Input Crop

When there are black borders or unnecessary information on the input source, input crop allows you to crop the input source and display the desired area.

Prerequisites

- A common screen and AUX layer are selected.
- The layer source is accessed.

Note

The input source status and capacity after cropping is the same as the original.

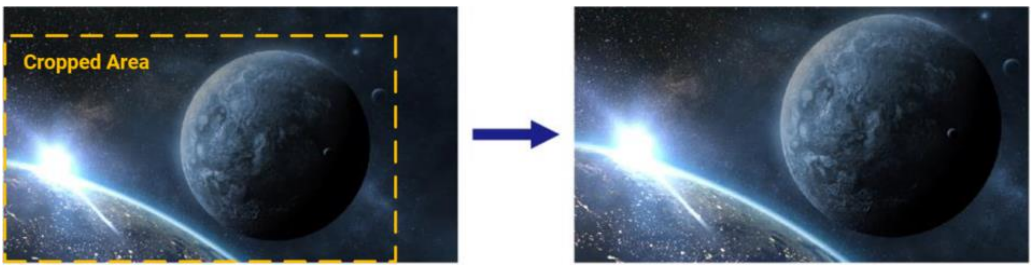
Menu Orientation

On the main menu screen, scroll to and select **Layer** > ***Layer Name*** > **Input Crop**.

Description

Menu Item	Description
Status	Turn on/off input crop. • : On • : Off
H Position	Set the horizontal start position of the cropped area.
V Position	Set the vertical start position of the cropped area.
Width	Set the pixel width of the cropped area.
Height	Set the pixel height of the cropped area.

Crop Effect Example



6.1.7 Transition

Select a mode to switch content from PVW to the PGM.

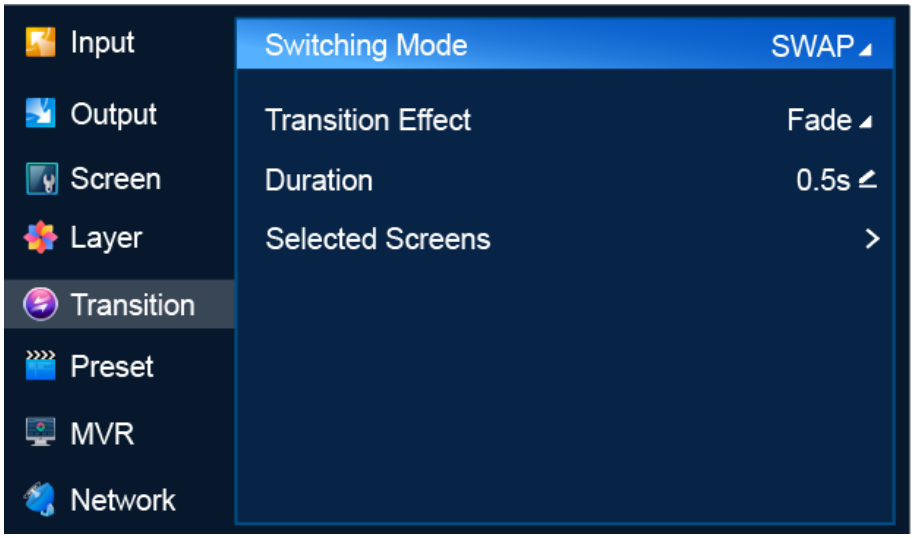
Prerequisites

The device is in switcher mode. This menu is not available in PGM only mode.

Menu Orientation

On the main menu screen, scroll to and select **Transition**.

Figure 6-32 Switching (P20)



Description

Menu Item	Description
Switching Mode	Select a mode to switch content from PVW to PGM. • SWAP: Swap the contents on the PVW screen and PGM screen. • COPY: Copy the content on the PVW screen to the PGM screen.
Transition Effect	Select a transition effect. • Cut: Switch content from PVW to PGM with no transition effect. • Fade: Switch content from PVW to PGM with a fade effect.
Duration	Duration of the transition effect.
Selected Screens	Screens selected for switching, including common screens and AUX screens. Multiple screens can be selected.

6.1.8 Preset

Save the content on PVW or PGM as a preset, load and delete presets.

Note

A maximum of 128 presets can be saved.

Menu Orientation

On the main menu screen, scroll to and select **Preset**.

Figure 6-33 Preset (P20)

Description

- Save a preset
  - In switcher mode, select a blank preset and then select **Save from PVW** or **Save from PGM** from the window that appears.
  - In PGM only mode, select a blank preset and then select **Save Preset** from the window that appears.

  After the preset is saved successfully, the status of the preset changes to **Saved**.
- Load a preset

  Select a saved preset and select **Load** from the dialog box that appears to use the preset on the screen.
- Delete a preset

  Select a saved preset and select **Delete** from the dialog box that appears to clear the content in the preset.

6.1.9 Multiviewer (MVR)

Set the layout on the Multiviewer screen.

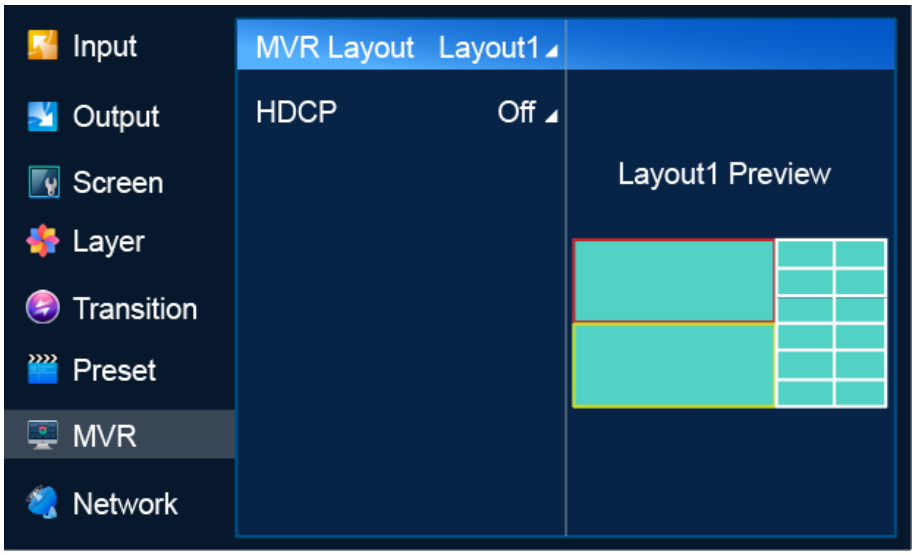
Note

- The resolution of the Multiviewer screen is fixed at 1920×1080@60Hz.
- If the input source exceeds the bandwidth limits, the Multiviewer monitor will display a black screen.

Menu Orientation

On the main menu screen, scroll to and select **MVR**.

Figure 6-34 Multiviewer (P20)



Description

Menu Item	Description
MVR Layout	Select a layout for the Multiviewer screen. After a Multiviewer layout is selected, all the accessed input sources are displayed on the Multiviewer windows automatically.
HDCP	Select an HDCP version or turn off HDCP.

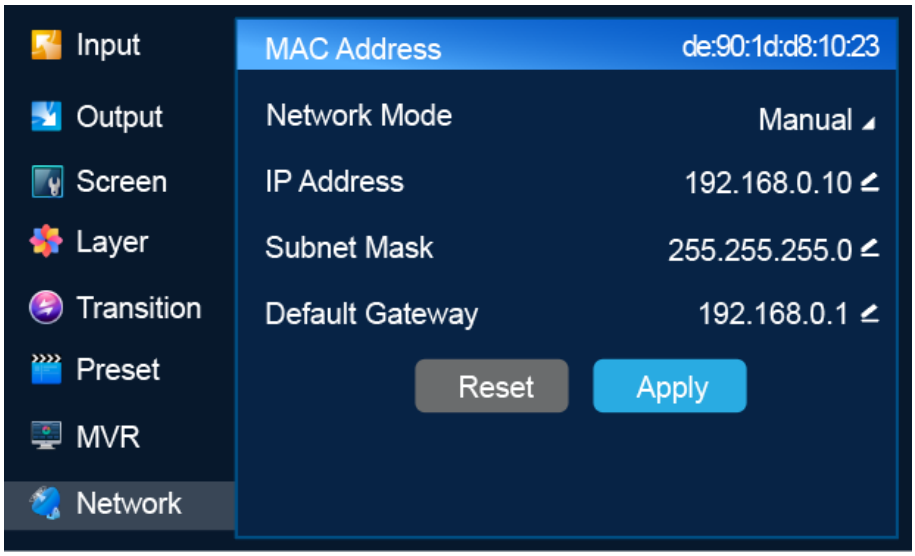
6.1.10 Network

Manually specify a static IP address for the device or set the device to obtain an IP address automatically.

Menu Orientation

On the main menu screen, scroll to and select **Network**.

Figure 6-35 Network settings (P20)



Description

Menu Item	Description
MAC Address	Display the physical address of the device.
Network Mode	Select an IP address configuration method. • Manual: Specify a static IP address for the device manually. • Auto: The device obtains an IP address automatically.
IP Address	IP address of the device
Subnet Mask	Subnet mask of the device
Default Gateway	Default gateway address of the current device

If you want to reset the parameters to their default values, select **Reset**.

6.1.11 Advanced

The **Advanced** menu allows you to do the following:

- Set Synchronization Signal Source
- Set Input Backup
- Turn on/off Dynamic Range Conversion
- Return to Home
- Set Fn Button
- Set HDCP
- Set HDCP
- HDCP (High-Bandwidth Digital Content Protection) is a coding scheme used to protect audio and video signals traveling through DVI, HDMI, and DP from being copied and illegally intercepted during a streaming session. Users can turn on/off HDCP for all inputs (including HDMI and DP) or outputs (including output

connectors, MVR connector and AUX connectors) with one switch. Input and output HDCP are turned off by default.

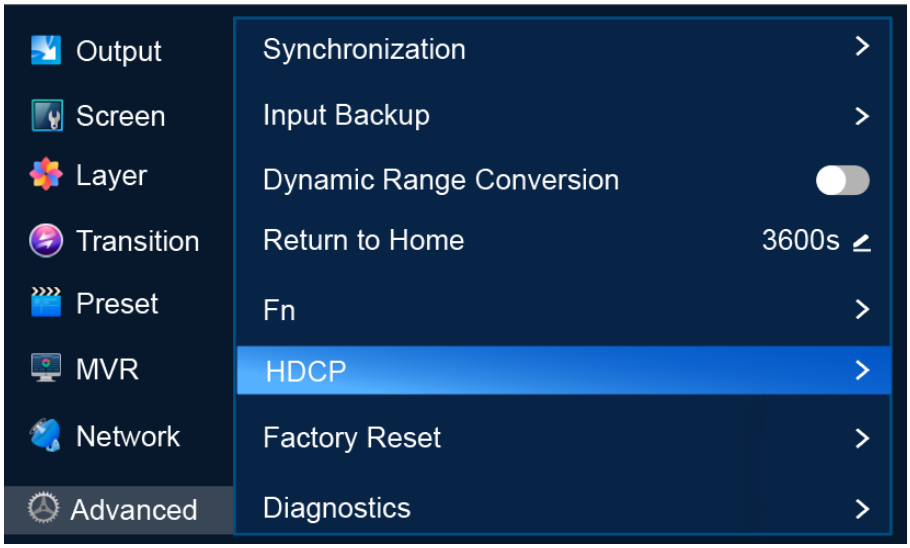
Note

SDI does not support HDCP. Output HDCP includes the HDCP for all output connectors, MVR connector and AUX connectors.

Menu Orientation

On the main menu screen, scroll to and select **Advanced** > **HDCP**.

Figure 6-36 HDCP (P20)



Description

Input HDCP	Turn on/off HDCP for all inputs including HDMI and DP. • Off (Input HDCP is turned off by default.) • On **Partially On** is displayed when HDCP is turned on for some inputs.
Output HDCP	Turn on/off HDCP for all outputs including output connectors, MVR connector and AUX connectors. • Off (Output HDCP is turned off by default.) • On **Partially On** is displayed when HDCP is turned on for some outputs.

- Reset to Factory Settings
- Run Diagnostics
- Import and Export Project Files
- Update Firmware
- Export Logs

6.1.11.1 Set Synchronization Signal Source

Select a synchronization signal source for the output signal.

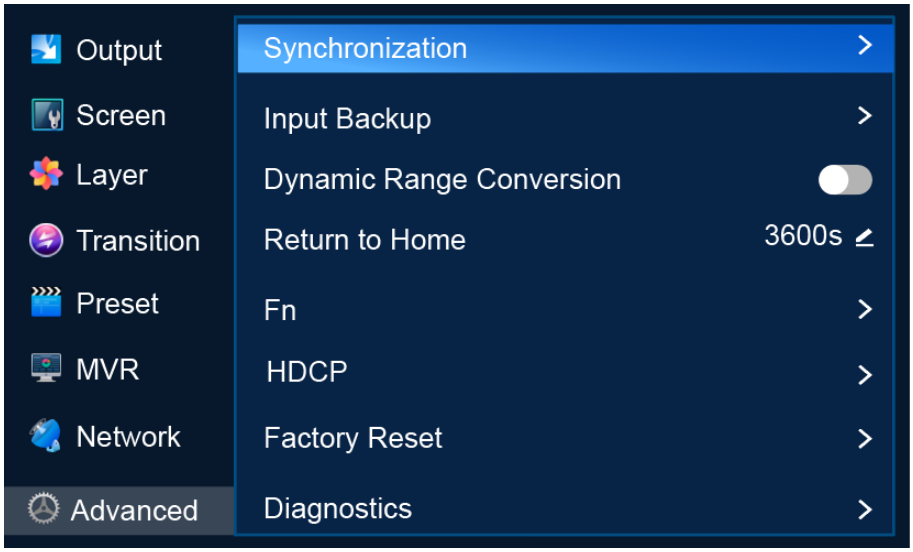
Prerequisites

Before Genlock settings, the synchronization signal source is connected to the Genlock connector on the rear panel of the P20/P10.

Menu Orientation

On the main menu screen, scroll to and select **Advanced** > **Synchronization**.

Figure 6-37 Synchronization signal source (P20)



Description

Menu Item	Description
Status	Turn on/off synchronization. • : On • : Off
Source	Select a synchronization source. • Genlock: Sync to the frame frequency of the Genlock input signal. • Input *X*: Sync to the frame frequency of the selected input source. *X* stands for the input source number.

6.1.11.2 Set Input Backup

Set input source backup relationships. When the primary source fails, the backup source takes over automatically without downtime.

Note

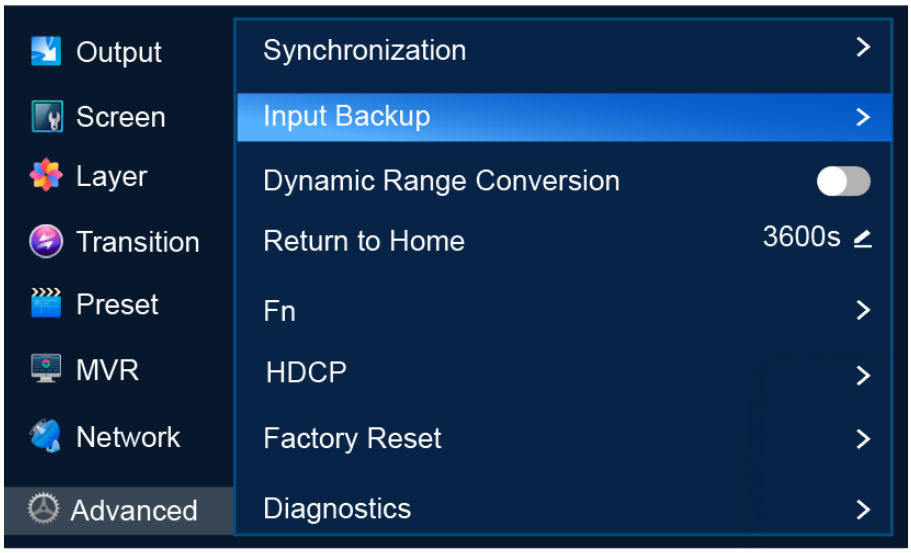
- The capacity of the primary and backup input connectors must be the same.

- After input backup settings, the capacity and type of the related connectors cannot be changed.

Menu Orientation

On the main menu screen, scroll to and select **Advanced** > **Input Backup**.

Figure 6-38 Input backup (P20)



Description

Menu Item	Description
Status	Turn on/off input source backup. • : On. When the current source has no signal, the backup source takes over automatically. • : Off
Primary Preferred	Turn on/off primary source preferred. • : On. The primary source is preferred. • : Off

From the drop-down options on the left and right, select primary and backup sources to establish input backup relationships.

If you want to reset **Primary Preferred** status and all backup relationships to the defaults, select **Reset**.

6.1.11.3 Turn on/off Dynamic Range Conversion

Turn on or off the dynamic range conversion feature.

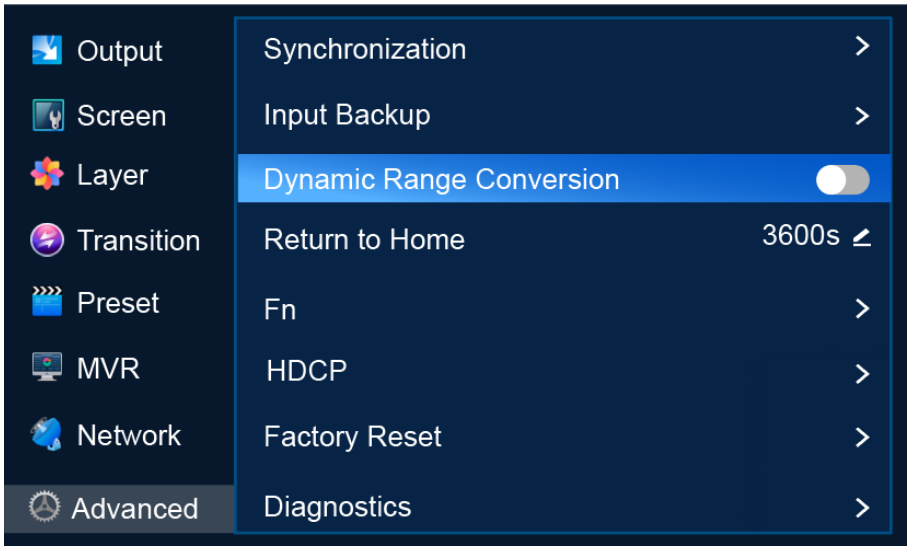
Prerequisites

The device is P20.

Menu Orientation

On the main menu screen, scroll to and select **Advanced** > **Dynamic Range Conversion**.

Figure 6-39 Dynamic range conversion (P20)



Description

Dynamic Range Conversion	Turn on/off dynamic range conversion. This function enables free conversion between SDR, HDR10 and HLG. • : On • : Off

6.1.11.4 Return to Home

Set the period during which the system stays at the current screen before returning to the home screen automatically when no operation is performed.

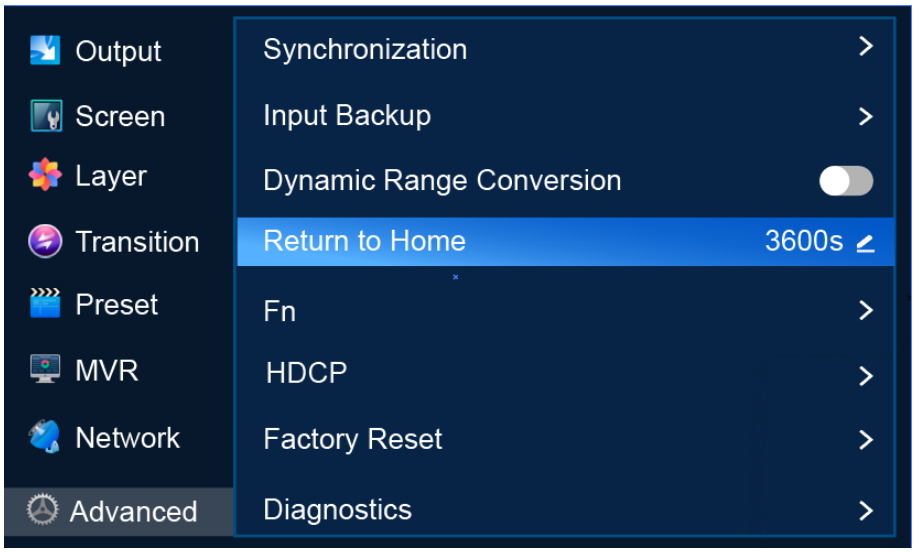
Note

If a dialog box is displayed, the system will not return to the home screen automatically after the specified period of time.

Menu Orientation

On the main menu screen, scroll to and select **Advanced** > **Return to Home**.

Figure 6-40 Return to Home (P20)



Description

Scroll to **Return to Home** and press the knob to make the parameter value editable. Rotate the knob to adjust the parameter to the desired value and press the knob to apply the parameter.

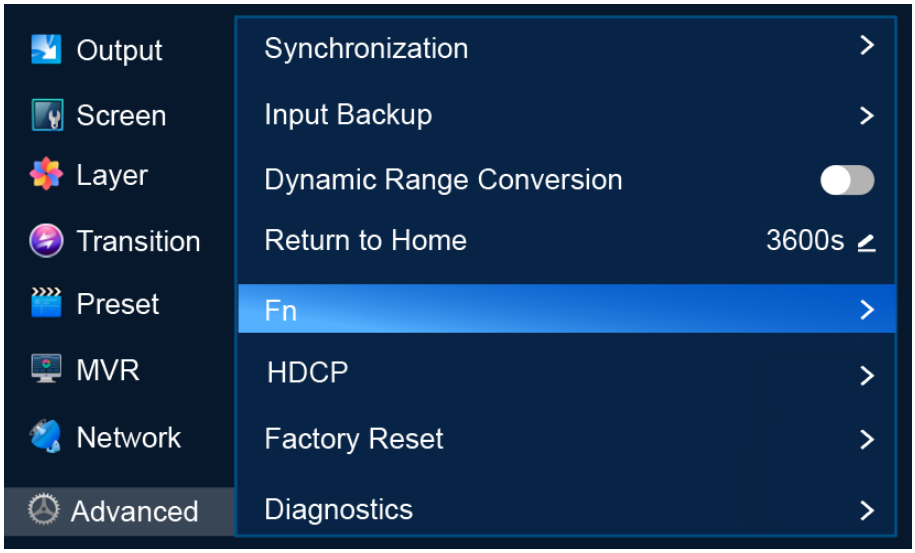
6.1.11.5 Set Fn Button

Assign a function to the **FN** shortcut button on the front panel of the P20/P10 so that users can quickly access the assigned function. Functions that can be assigned to the **FN** button include turning on/off Genlock synchronization, freeze and FTB.

Menu Orientation

On the main menu screen, scroll to and select **Advanced** > **Fn**.

Figure 6-41 FN button settings (P20)



Description

Select **Fn** to access the submenu. Select **Synchronization**, **Freeze** or **FTB** to assign the selected function to the FN button.

6.1.11.6 Set HDCP

HDCP (High-Bandwidth Digital Content Protection) is a coding scheme used to protect audio and video signals traveling through DVI, HDMI, and DP from being copied and illegally intercepted during a streaming session. Users can turn on/off HDCP for all inputs (including HDMI and DP) or outputs (including output connectors, MVR connector and AUX connectors) with one switch. Input and output HDCP are turned off by default.

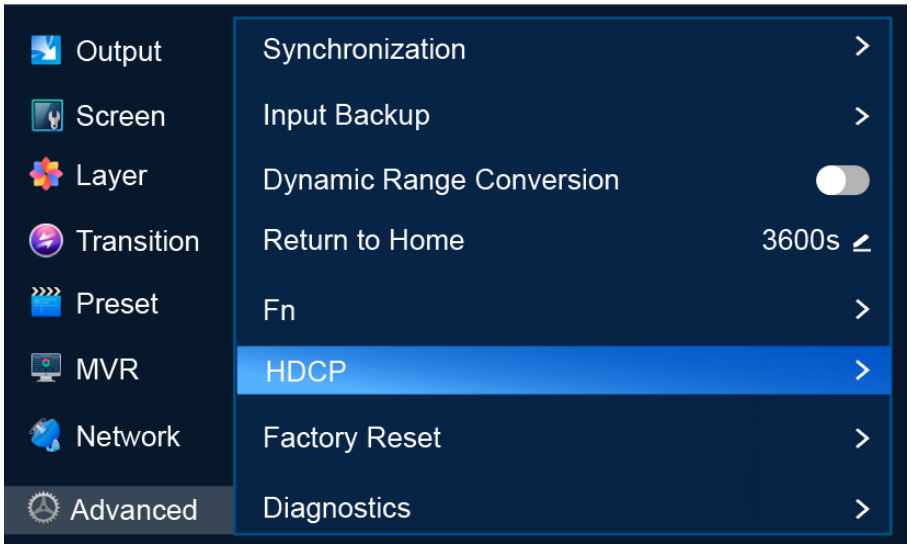
Note

SDI does not support HDCP. Output HDCP includes the HDCP for all output connectors, MVR connector and AUX connectors.

Menu Orientation

On the main menu screen, scroll to and select **Advanced** > **HDCP**.

Figure 6-42 HDCP (P20)



Description

Input HDCP	Turn on/off HDCP for all inputs including HDMI and DP. • Off (Input HDCP is turned off by default.) • On **Partially On** is displayed when HDCP is turned on for some inputs.
Output HDCP	Turn on/off HDCP for all outputs including output connectors, MVR connector and AUX connectors. • Off (Output HDCP is turned off by default.) • On

	Partially On is displayed when HDCP is turned on for some outputs.

6.1.11.7 Reset to Factory Settings

Reset the P20/P10 parameter settings to the factory defaults.

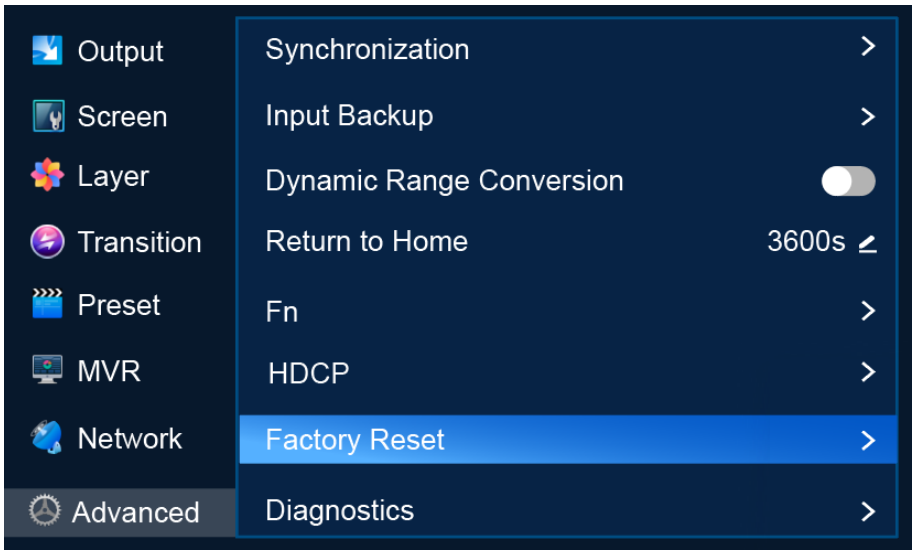
Note

- This action does not change the firmware version of the device.
- Do not disconnect the power supply during the process.
- After factory reset, the device restarts automatically.

Menu Orientation

On the main menu screen, scroll to and select **Advanced** > **Factory Reset**.

Figure 6-43 Factory reset (P20)



Description

- Keep User Data

  Reset all the parameters to their default values except the network parameters, project files, EDID files, gallery files, and display language.

  a. Select **Factory Reset** to access the submenu.
  b. Select **Keep User Data**.
  c. Select **OK** in the dialog box that appears.

- Reset All

  Reset all the parameters to default values, except network parameters and project files.

  a. Select **Factory Reset** to access the submenu.
  b. Select **Reset All**.
  c. Select **OK** in the dialog box that appears.

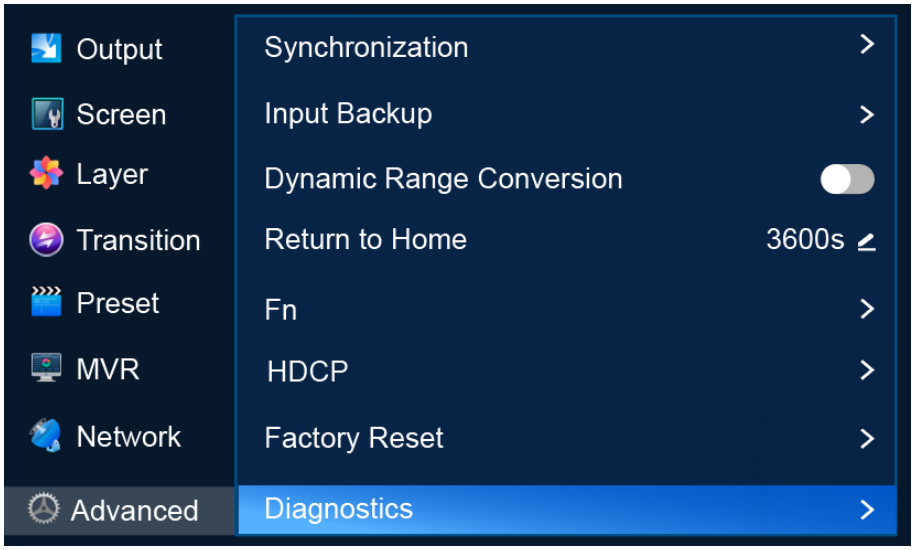
6.1.11.8 Run Diagnostics

Run diagnostics for the P20/P10 to identify and troubleshoot problems.

Menu Orientation

On the main menu screen, scroll to and select **Advanced** > **Diagnostics**.

Figure 6-44 Diagnostics (P20)



Description

Select **Diagnostics** to access the submenu and select **Run**. After the diagnostics, view the result.

6.1.11.9 Import and Export Project Files

Import project files from a USB drive to the P20/P10 and export project files from the P20/P10 to a USB drive. A project file contains configuration files and data.

Prerequisites

- Before importing a project file, copy the file (.uprj) to the root directory of a USB drive and insert the USB drive into the USB port on the front panel of the P20/P10.
- Before exporting a project file, insert a USB drive into the USB port on the front panel of the P20/P10.

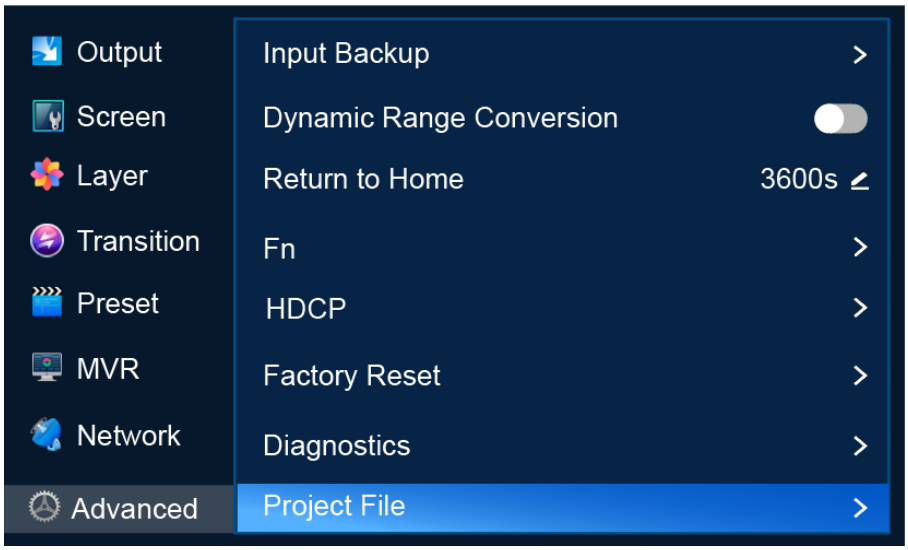
Notes

The USB port on the front panel of the P20/P10 does not support USB HUB.

Menu Orientation

On the main menu screen, scroll to and select **Advanced** > **Project File**.

Figure 6-45 Project file (P20)



Description

- Import a project file
  a. Select **Project File** to access the submenu.
  a. Select **Import Project File** to open the project file screen.
  b. Select a project file.
  c. In the dialog box that appears, select **OK** to import the project file in the root directory of the USB drive.
- Export a project file
  a. Select **Project File** to access the submenu.
  b. Select **Export Project File**.
  c. In the dialog box that appears, select **OK** to export the project file to the root directory of the USB drive.

6.1.11.10 Update Firmware

Update the firmware of the P20/P10.

Prerequisites

Before firmware update, copy the update file (.img) in the root directory of a USB drive and insert the USB drive into the USB port on the front panel of the P20/P10.

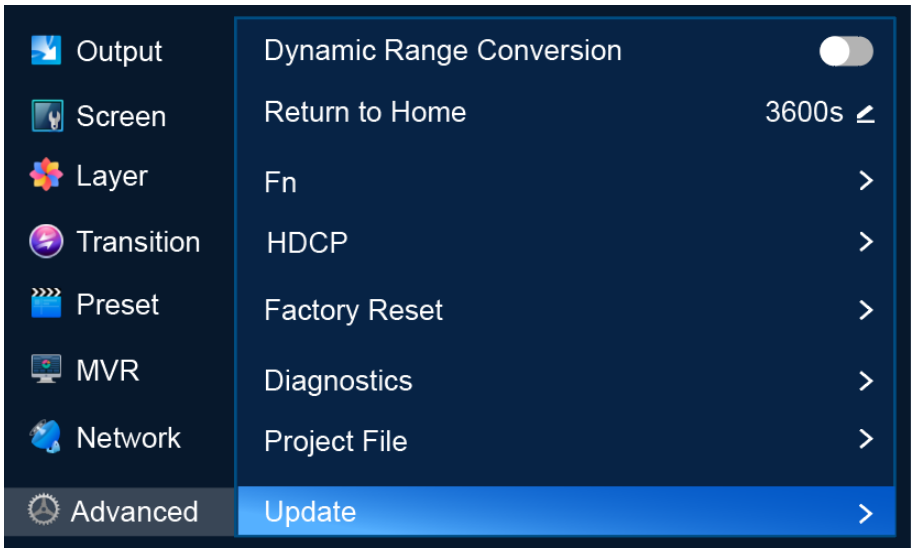
Notes

- The USB port on the front panel of the P20/P10 does not support USB HUB.
- After firmware update, the device restarts automatically.

Menu Orientation

On the main menu screen, scroll to and select **Advanced** > **Update**.

Figure 6-46 Firmware update (P20)



Description

Select **Update** to open the update file screen. Select a file and select **OK** in the dialog box that appears.

6.1.11.11 Export Logs

Export logs from the P20/P10 to a USB drive.

Prerequisites

A USB drive is inserted into the USB port on the front panel of the P20/P10.

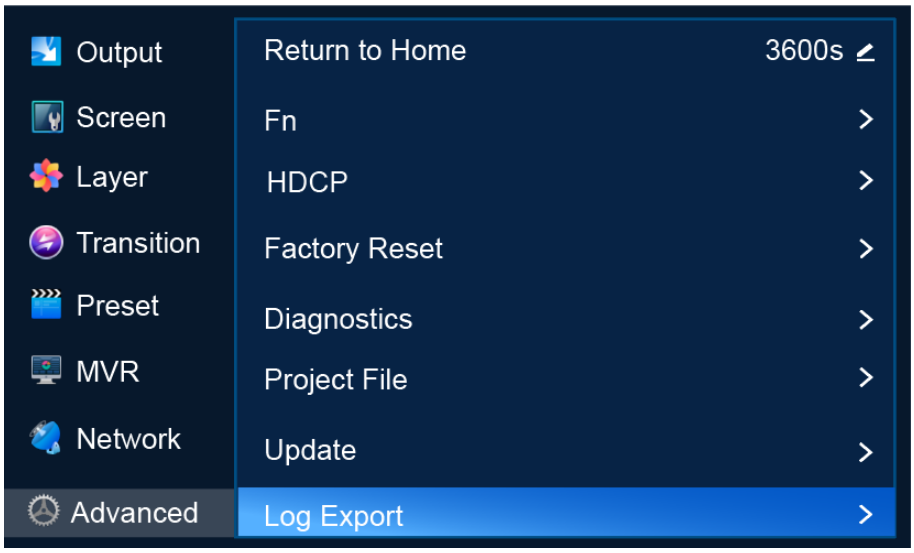
Notes

The USB port on the front panel of the P20/P10 does not support USB HUB.

Menu Orientation

On the main menu screen, scroll to and select **Advanced** > **Log Export**.

Figure 6-47 Exporting logs (P20)



Description

Select **Log Export** to access the submenu. Select **Apply** to export the log files to the root directory of the USB.

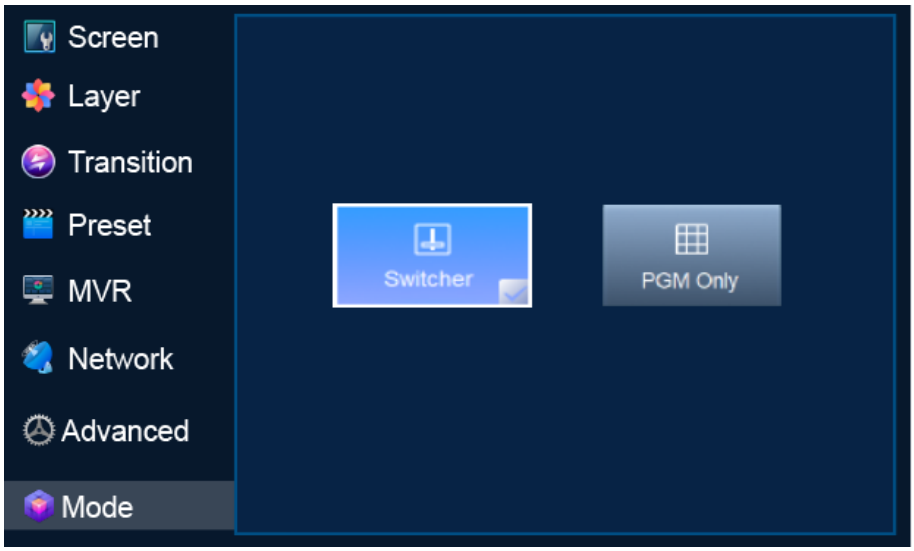
6.1.12 Mode

Set the working mode of the device to switcher or PGM only.

Menu Orientation

On the main menu screen, scroll to and select **Mode**.

Figure 6-48 Working mode (P20)



Description

Select **Switcher** or **PGM Only**. After a working mode is selected, ✓ appears on the bottom right, as shown in Figure 6-48.

6.1.13 About Us

View the P20/P10 firmware version, the email address and official website of PIXELHUE.

Menu Orientation

On the main menu screen, scroll to and select **About Us**.

Figure 6-49 About us (P20)

6.1.14 Language

Set the display language of the menu. English and Simplified Chinese are available.

Menu Orientation

On the main menu screen, scroll to and select **Language**.

Figure 6-50 Language (P20)

Description

Select 简体中文 or **English**. After a language is selected, ✓ appears on the bottom right, as shown in Figure 6-50.

6.2 Q8 Menu Operations

6.2.1 Startup and Shutdown

Connect all the necessary cables and at least two power cords properly, and press the power button on the front panel to power on the Q8.

To turn off the Q8, press the power button on the front panel and select **OK** from the dialog box displayed on the LCD screen.

6.2.2 Home Screen

After the startup, the home screen is displayed.

Figure 6-51 Home screen

Table 6-2 Home screen description

No.	Content	Description
1	Information bar	• : Device manufacturer logo. • **Q8**: Device model. • **SYSTEM**: Device name, which can be modified on the control computer. • **192.168.100.100**: Device IP address, which can be modified on the device LCD or the control computer. : Turn off LCD display.
2	Input card information	Show the input card and its connector status. • Green: The connector is accessed with a source and the source is normal. • White: The connector is not accessed with source. • Gray: The connector is unavailable. • Orange: The connector's accessed source is abnormal.
3	Output card information	Show the output card and its connector status. • Green connector: The connector is connected to the backend device. • White connector: The connector is not connected to the backend device. • Gray connector: The connector is unavailable.
4	Power connector	Show the power supply connection status. • Green: The connector is connected with a power supply and the power is supplied. • White: The connector is not connected with a power supply and the power is not supplied.

No.	Content	Description
5	Control card connector	Show the control card connector status. • Green: The connector is connected and works normally. • White connector: The connector is not connected or works abnormally.
6	Voltage status	Show the device working voltage status. • Normal: The voltage of each module in the device is normal. • Abnormal: The voltage of one or some modules in the device is abnormal, and the device needs troubleshooting.
7	Temperature status	Show the device working temperature status. • Normal: The temperature of each module in the device is normal. • Abnormal: The temperature of one or some modules in the device is too high, and the device needs troubleshooting.
8	Fan status	Indicate whether the fan speed is normal when the device is working. • Normal: The speed of each fan in the device is normal. • Abnormal: The speed of one or some fans in the device is abnormal, and the device needs troubleshooting.
9	Settings	Click to enter the device menu where you can perform the following device operations. • Network settings: Configure the device IP address. • Device information: Check the device's chassis and card version, and fan status. • Advanced settings: Perform factory reset settings, firmware update, project file import and export, log export, and AC back settings for the device. • Language: Set the user interface language. • About us: Check the official website and technical support email address of the device manufacturer.

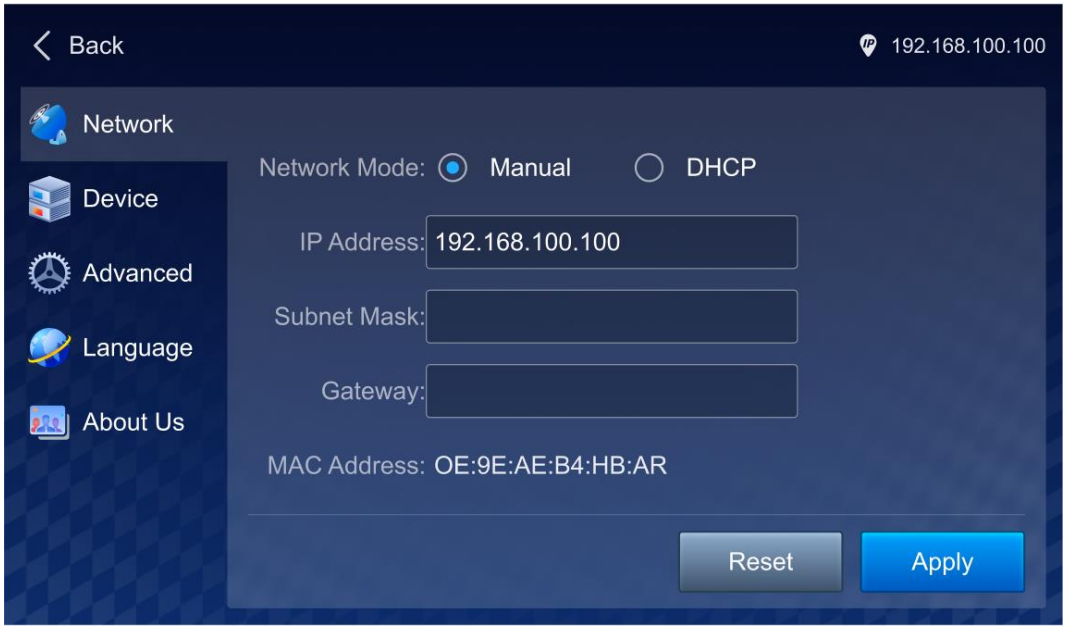
6.2.3 Network Settings

Step 1 On the home screen, tap located at the bottom right corner to enter the settings screen.

Step 2 Select **Network** to enter the network settings screen.

Step 3 Configure the device IP address information.

Figure 6-52 IP address settings



The device supports both automatic (DHCP) and manual IP configuration. When the device is connected via router or switch, DHCP is recommended. The router or switch will automatically assign IP address to the device. When the network mode is set to **Manual**, you need to set **IP Address**, **Subnet Mask** and **Gateway**.

Note

When manually configuring the IP address, the device IP address and the control computer IP address must be on the same network segment.

Step 4 Tap **Apply** to complete the settings.

6.2.4 Device Information

On the **Device** screen, you can check the power voltage status, card temperature, version and serial number (SN), and fan running status of the device.

Figure 6-53 Device information

Two ways to enter the **Device** screen:

- On the home screen, tap located at the bottom right corner to enter the settings screen. Then, tap **Device** on the left.
- On the home screen, tap the icon in the status bar on the right to enter the corresponding screen under **Device**.
  - : Displays the voltage status of the connected power supply. Tap this icon to enter the **Voltage** screen under **Device**, where you can check the connection status of the three power supplies and whether the power connector voltage is normal.
  - : Displays the device card temperature. Tap this icon to enter the **Card** screen under **Device**, where you can check the card temperature, version and SN.
  - : Displays whether the device fans are running normally. Tap this icon to enter the **Fans** screen under **Device**, where you can check the status of all the device fans.

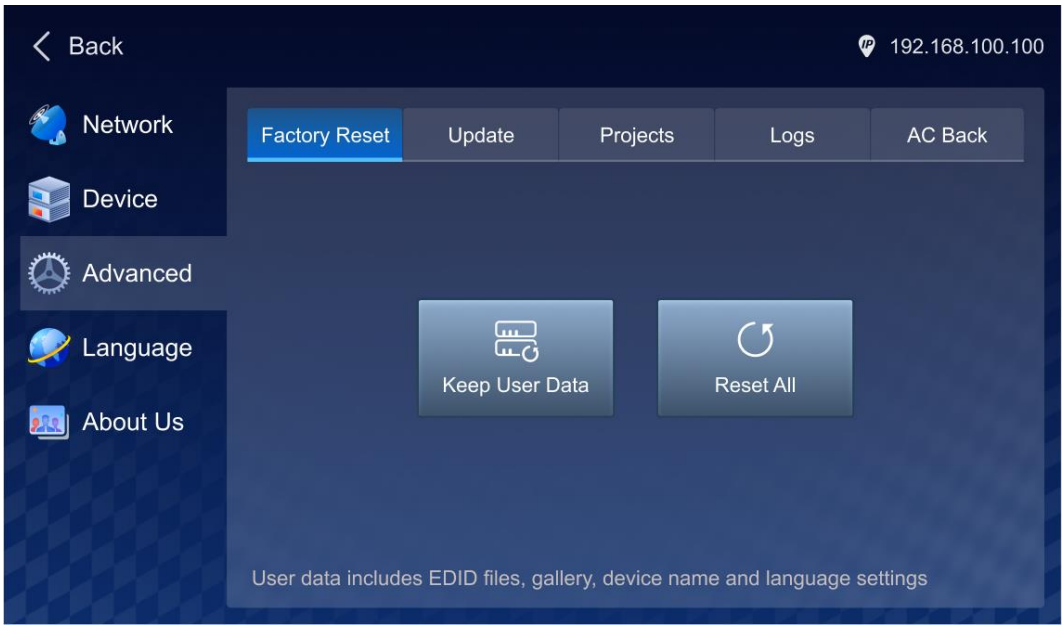
6.2.5 Advanced Settings

In advanced settings, you can do the following operations:

- Factory reset
- Update firmware
- Import and export project files
- Export log files
- Set the device status after AC power back

On the home screen, tap located at the bottom right corner to enter the settings screen. Then, tap **Advanced** to enter the advanced settings screen.

Figure 6-54 Advanced settings



Factory Reset

This function is used to quickly clear the data saved in the device. All parameters will be restored to the default values.

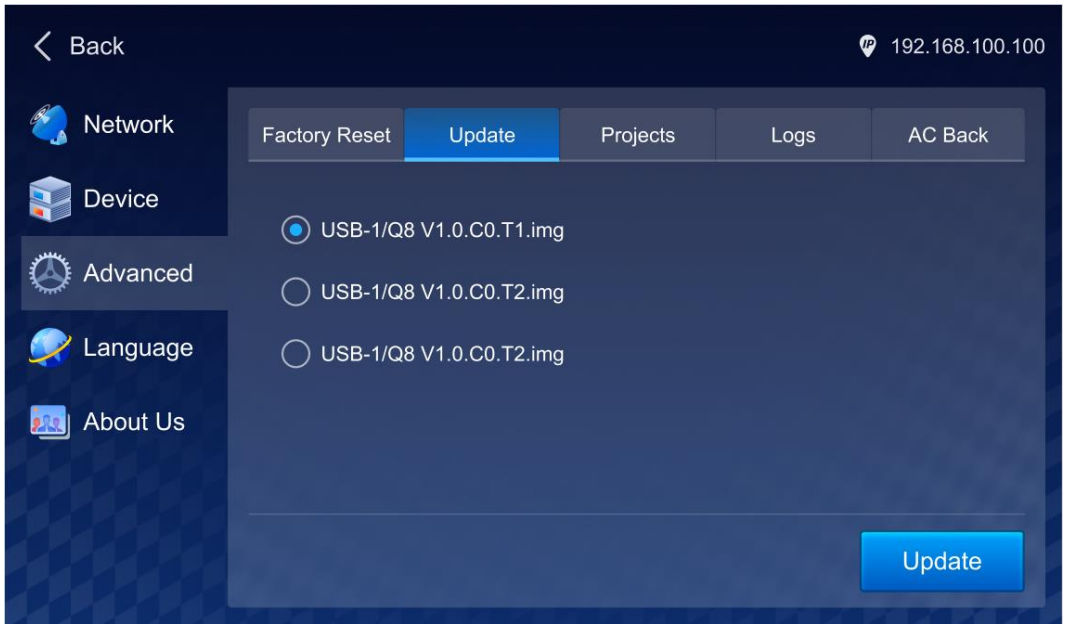
- Keep User Data: During factory reset, the network configuration, EDID files, gallery, device name and language settings will be kept, while other parameters will be restored to the default values.
- Reset All: All device parameters will be restored to the default values.

Update Firmware

The Q8 supports firmware update via USB drive. To do that, save the update file in the root directory of the USB drive and then insert the drive into the USB port on the control card of the Q8.

On the **Advanced** screen, tap **Update** to enter the firmware update screen and the system will automatically detect and read the update file in the USB drive.

Figure 6-55 Firmware update



Select the target update file, tap **Update**, and the system will automatically update the device.

After the update is complete, the device will automatically restart.

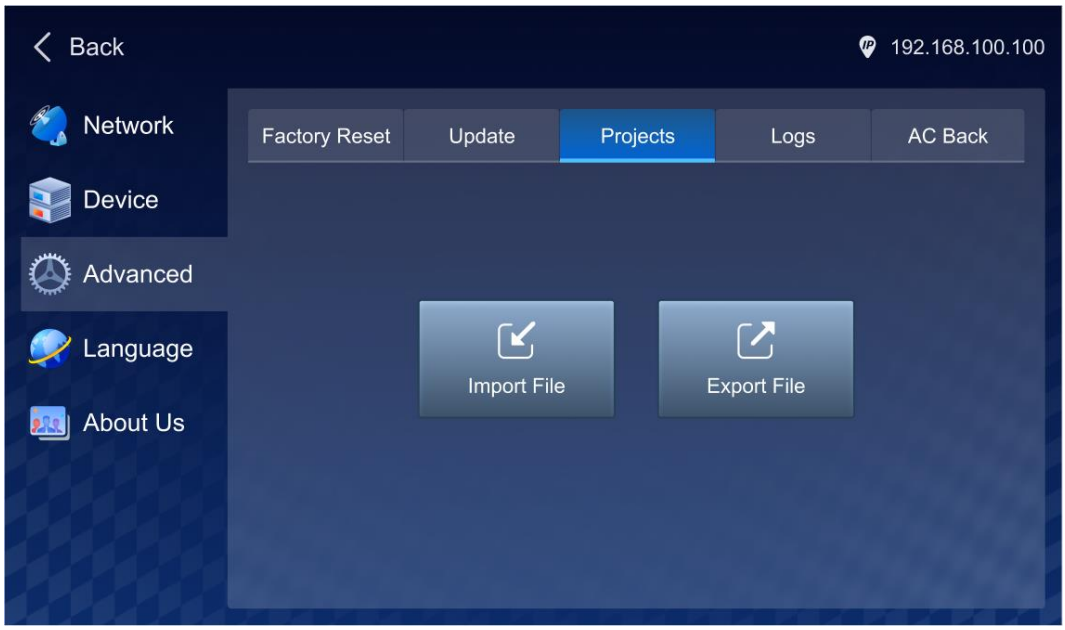
Import and Export Project Files

The Q8 supports import and export of configured project information via USB drive, allowing you to quickly complete device configuration.

- To export project files, insert the USB drive that is used to save the files into the USB port on the control card of the Q8.
- To import project files, save the files in the root directory of the USB drive and then insert the drive into the USB port on the control card of the Q8.

On the **Advanced** screen, tap **Projects** to enter the project file import and export screen.

Figure 6-56 Importing and exporting project file



- Importing project file: Tap **Import File**, and the system will automatically read the project files in the USB drive. After selecting the target file, tap **OK**, and the system will automatically import the file to the device. After the import is complete, the device will automatically restart.
- Exporting project file: Tap **Export File**, and the system will automatically export the current configured project file to the selected USB drive.

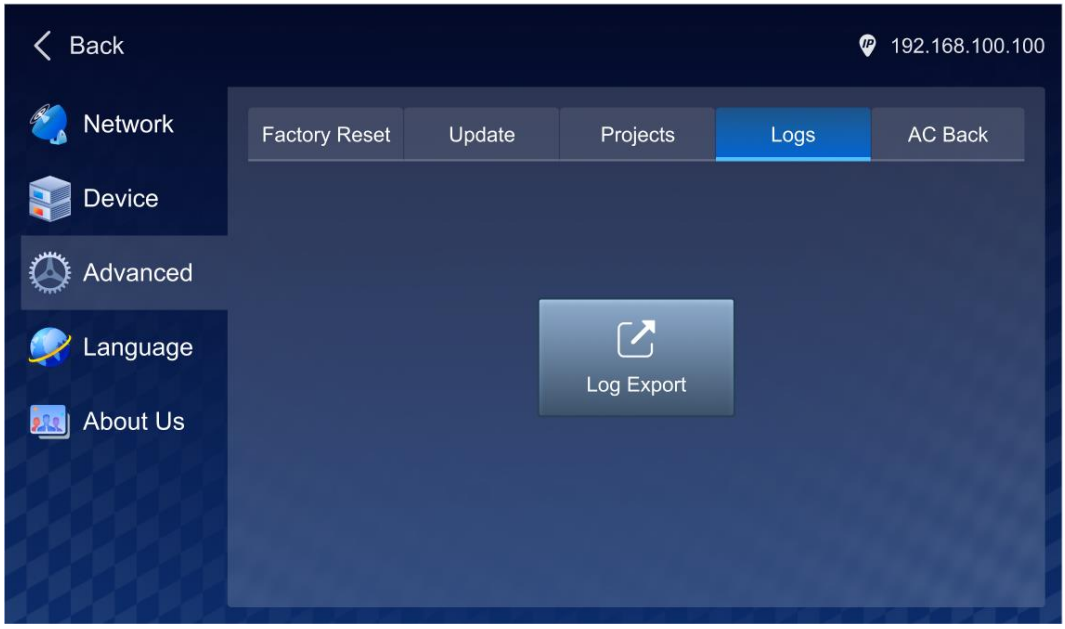
Export Logs

The Q8 supports export of the device running logs via USB drive. When the device has an exception, the logs can help you quickly troubleshoot the problem.

To export logs, insert the USB drive that is used to save the logs into the USB port on the control card of the Q8.

On the **Advanced** screen, tap **Logs** to enter the log export screen.

Figure 6-57 Exporting logs

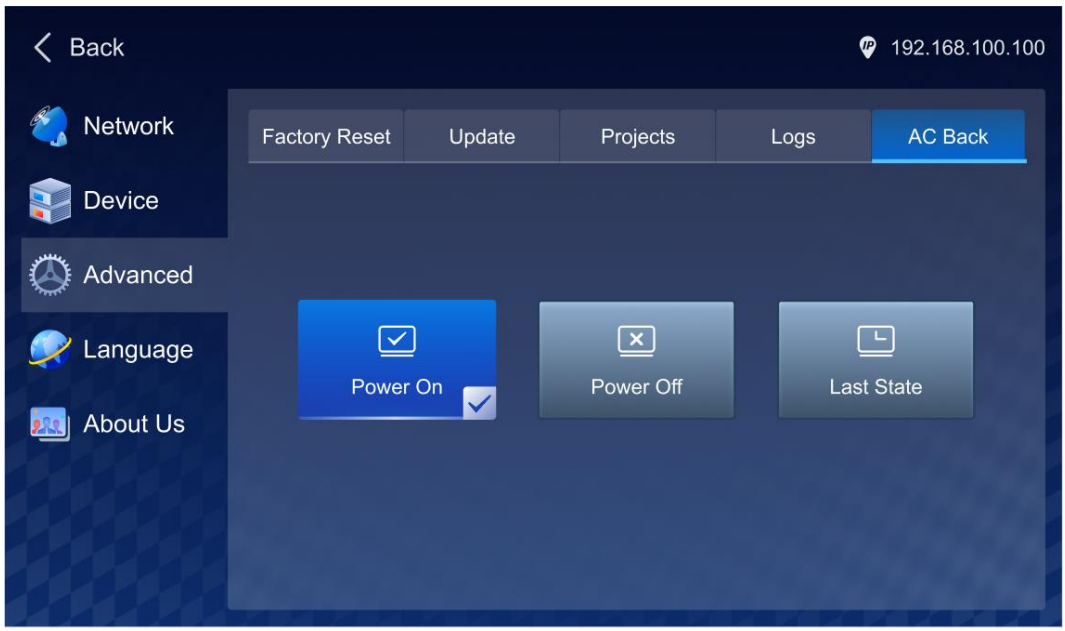


Tap **Log Export** to export the device logs to the selected USB drive.

Set Device Status After AC Back

Set whether the device automatically powers on after the power is supplied.

Figure 6-58 AC back



- Power On: After the power is supplied, the device automatically powers on.
- Power Off: After the power is supplied, the device remains in the power-off state. To power on the device, press the power button on the device front panel.
- Last State: After the power is supplied, the device remains in the last state.

6.2.6 Language

The Q8 supports both Chinese and English UI languages. You can change the language on the **Language** screen.

6.2.7 About Us

On the A**bout Us** screen, you can check the device system version and the device manufacturer related information.

7 Event Management Software PixelFlow

About This Chapter

This chapter provides a detailed description of each section of the event management software PixelFlow, as well as a step-by-step approach to configure the projects, devices, screens, layers, Multiviewer, presets and more.

Overview

- Software Installation and Connection
- Project Management
- Device Management
- Screen Configuration
- Layer Operation
- Multiviewer (MVR)
- Screen Maintenance
- Software Settings

Notes:

- The device in this chapter refers to the P20, P10 or Q8 seamless switcher.
- The software pictures given in this chapter are used for illustration purposes only. The actual user interface may vary slightly due to product enhancement. The content of the pictures can be slightly different from reality, such as the form and position of the software windows, input source images and more.

7.1 Software Installation and Connection

7.1.1 Software Installation

Prerequisites

- The software package is obtained.
- A computer meeting the following requirements is prepared:
  - Operating system: Windows 10 (64-bit) or later
  - CPU: Intel® Core™ i5 or later
  - RAM: 8 GB or greater

Installation Method

Run the .exe file and follow the setup wizard to complete the installation. If a firewall prompt appears, choose to allow the installation.

Installation Result

After a successful installation, the PixelFlow software icon  is displayed on the desktop. Double-click this icon to open the PixelFlow software.

7.1.2 Software Connection

The PixelFlow software is installed on the control computer. The control computer can connect to the device in the following two ways:

- Via Ethernet cable

  Connect the device and the control PC directly via Ethernet cable and set a static IP address for the device to let it and the control PC be on the same network segment.

- Via LAN

  Connect the device and the control PC to the same LAN via a router and set the device to automatically obtain an IP address.

7.2 Project Management

Create, edit and delete projects, and view project details. The project file (.uprj) can be exported by a device, and then imported into other devices of the same model, so as to quickly apply the device parameters and resource files in the project file.

7.2.1 Create New Projects

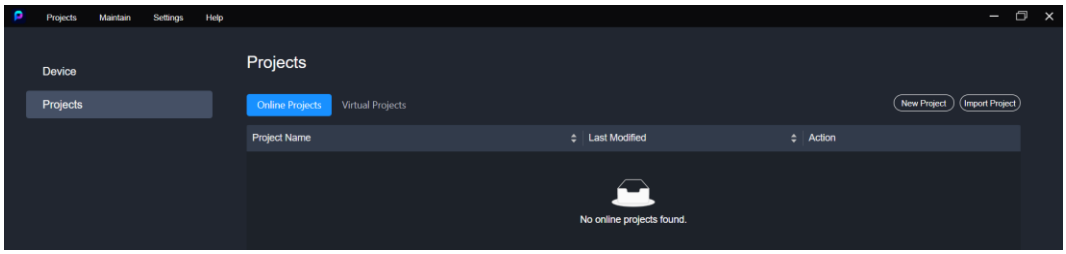
Create a new project and add one or more devices.

- Before creating an online project, there must be online devices available.

- For creating a virtual project, virtual devices are not required initially, but it is possible to create virtual devices during the process of creating a virtual project. Virtual devices do not have any physical connections, but simulate the configuration scenarios of real devices, providing convenience for users to use and understand the software.

Step 1 Select **Projects** on the left side of the interface to show the project list.

Figure 7-1 Project list



Step 2 If creating a project for an online device, click **New Project** on the **Online Projects** tab interface.

If creating a project for a virtual device, select the **Virtual Projects** tab and click the **New Project**.

Figure 7-2 Create new online projects

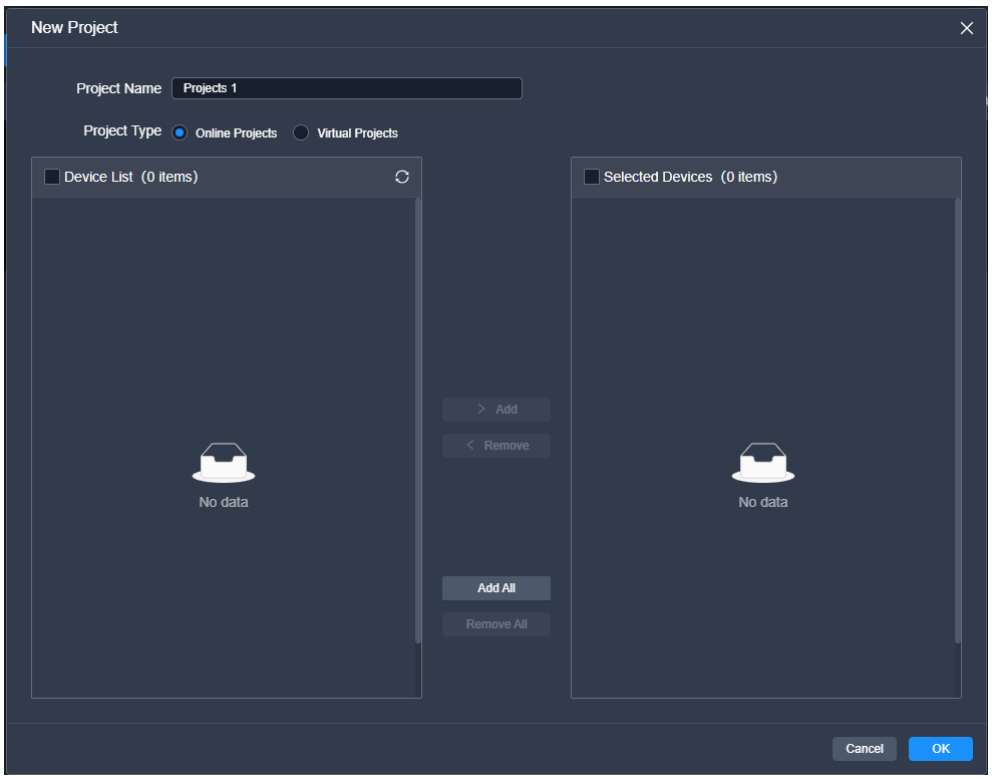
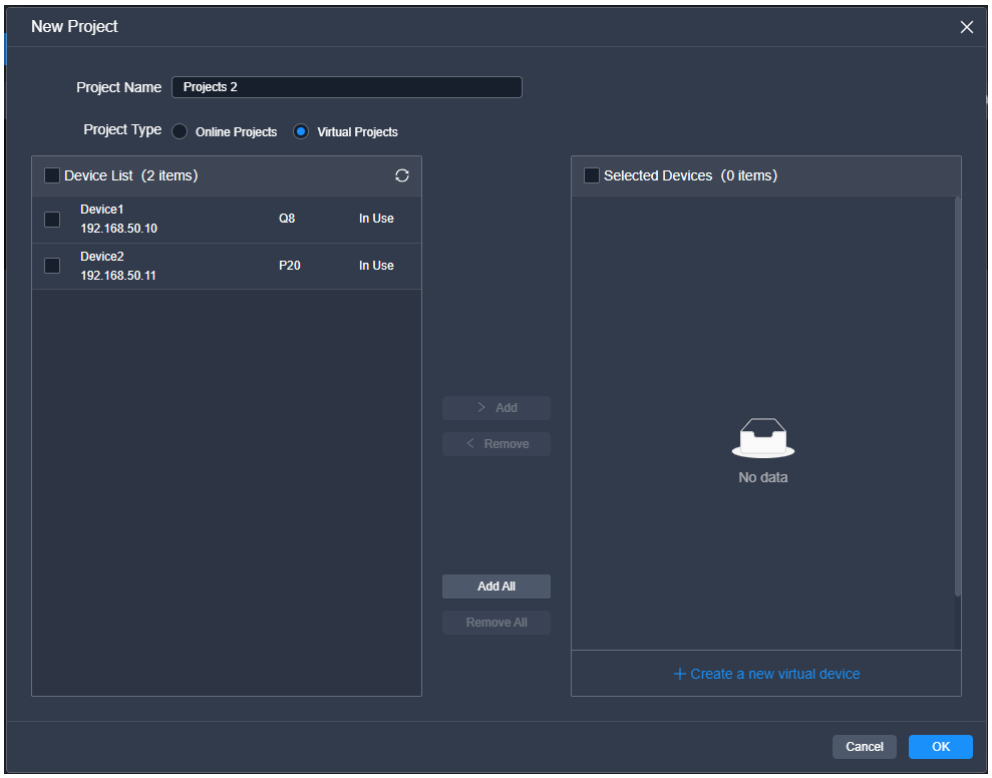


Figure 7-3 Create new virtual projects



Step 3 Name the project.

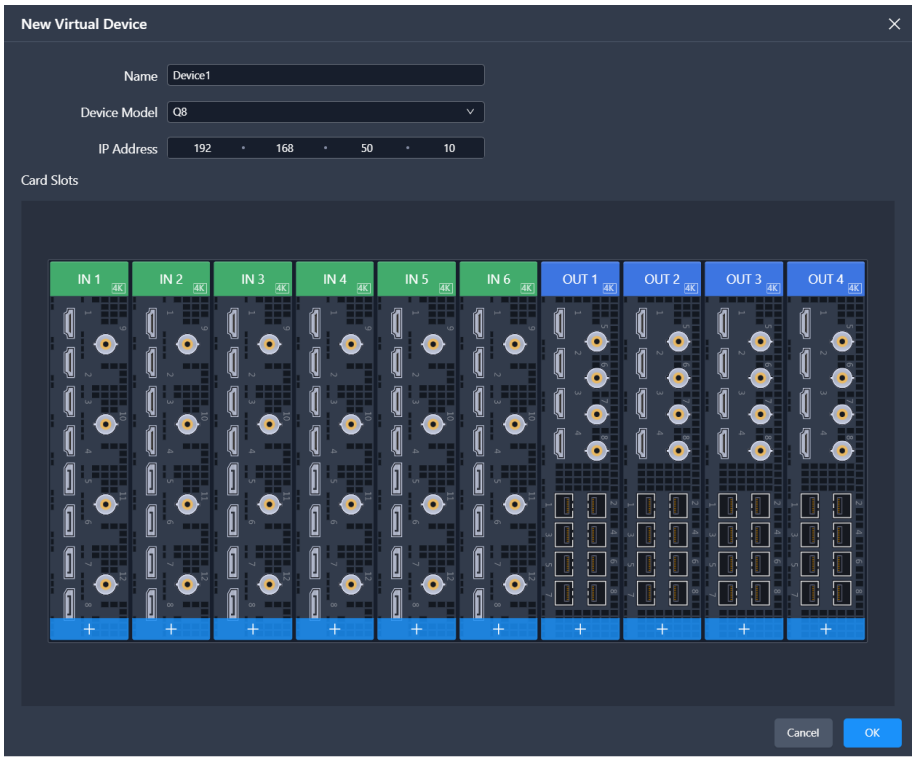
Step 4 Select the devices that you want to include in this project, and click **Add**.

For a virtual project, you can click **Create a new virtual device**. In the dialog box that appears, set the name, model, and IP address for the virtual device, then click **OK** to add it to the selected devices list.

Note

A device can be added to one project only.

Figure 7-4 Add virtual devices



Related operations are as follows:

- Remove: Withdraw the selected devices in **Selected Devices** list to **Device List**.
- Add All: Add all the devices in **Device List** to **Selected Devices** list**.**
- Remove All: Withdraw all the devices in **Selected Devices** list to **Device List**.

Step 5 After the settings, click **OK**.

After a project is successfully created, you will enter the device configuration interface.

Note

In the project list area, you can perform the following project-related operations:

- Rename project: Hover the mouse over the desired project and click that appears on the right side of the project name.
- Enter project: Click **Enter** in the **Action** column.
- Edit project: Click **Edit** in the **Action** column.
- Delete project: Click **Delete** in the **Action** column.
- View project details: Click **Details** in the **Action** column.

7.2.2 Import Projects

Import the local project files to the device. Please note that the device model must match with that in the project file.

Step 1 Select **Projects** on the left side of the interface to show the project list.

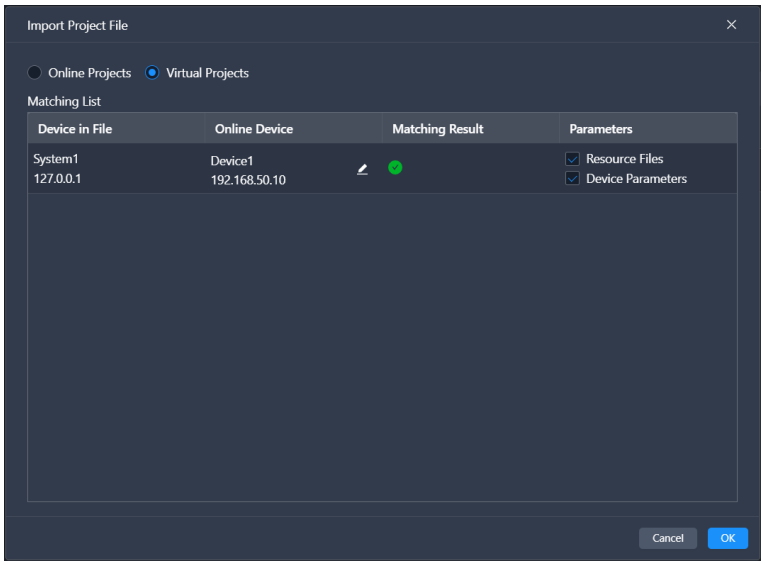
Step 2 Click **Import Project** or go to **Projects** > **Import** from the menu bar.

The **Import Project** button on both the **Online Projects** and **Virtual Projects** tab interfaces serves the same purpose and has the same functionality.

Step 3 In the dialog box that appears, select a project file (.uprj) and click **OK**.

Step 4 In the displayed **Import Project File** window, select **Online Projects** or **Virtual Projects**.

Figure 7-5 Import project files



Step 5 After successful device matching, select the data you want to import and click **OK**.

7.2.3 Export Projects

Export the device project files to your local computer.

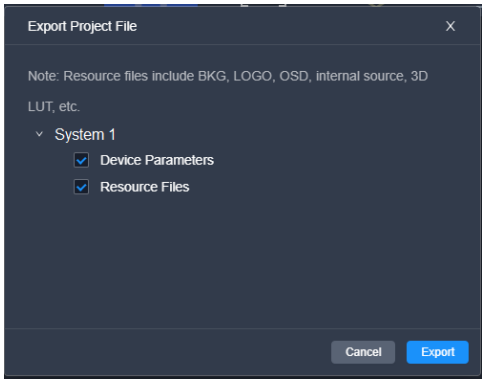
Step 1 Select **Projects** on the left side of the interface to show the project list.

Step 2 Select the **Online Projects** or **Virtual Projects** tab, double-click the project name or click **Enter** in the **Action** column to enter the device configuration interface.

Step 3 In the menu bar, select **Projects** > **Export**.

Step 4 In the displayed dialog box, select the desired data.

Figure 7-6 Export project files



Step 5 Click **Export**.

Step 6 In the displayed dialog box, select a file path and click **Save**.

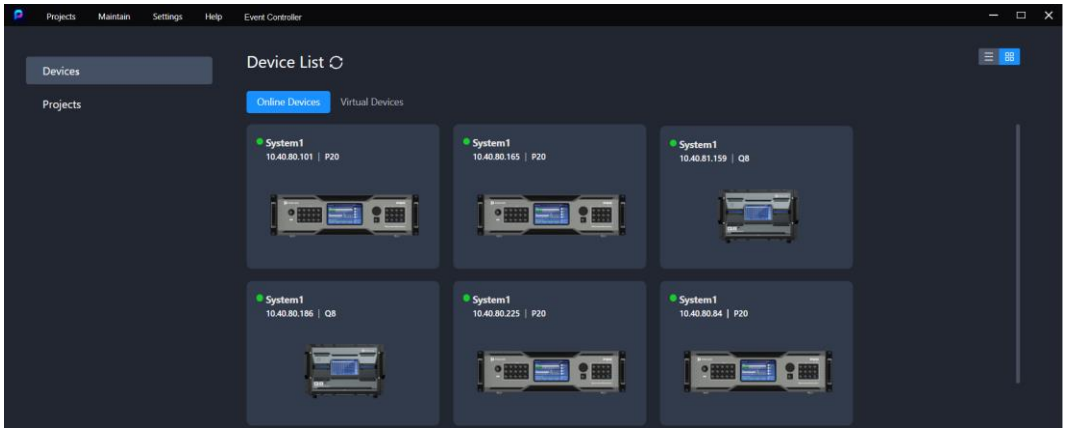
7.3 Device Management

7.3.1 Enter Device Configuration Page

7.3.1.1 Online Devices

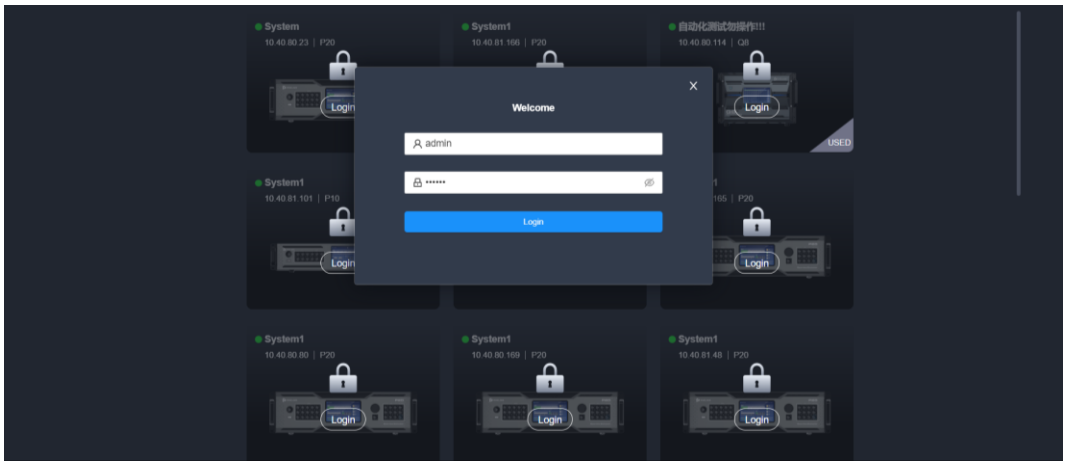
Step 1 Select **Device** on the left side of the interface to show the device list.

Figure 7-7 Online device list



Step 2 On the **Online Devices** tab page, if the device is not logged in, click **Login**. In the dialog box that appears, simply click **Login** (keeping the default values for username and password). If the device is already logged in, skip this step.

Figure 7-8 Device login



Step 3 Click  to refresh the device list.

Step 4 (Optional) Switch the display style of the device list as desired.

-  : Graphical view
  - View the device name, IP address and model.

- Double clicking the device front panel image allows you to access the device configuration interface.

- : List view
  - View the device name, IP address, model, and the project the device belongs to.
  - In the **Action** column, you can access the device configuration interface.
  - Place the mouse over the device information and click that appears on the right side of the device name to change the device name.

Device Name	IP Address	Model	Project	Action
System1	10.40.80.84	P20	--	Enter
System1	10.40.81.52	P10	--	Enter
System1	10.40.81.101	P10	--	Enter

Step 5 Perform either of the following actions to enter the device configuration page.

- In the graphic view mode ( ), double click the image of the device front panel.
- In the list view mode ( ), click **Enter** in the **Action** column.

7.3.1.2 Virtual Devices

Step 1 Select **Device** from the left side of the interface to enter the device list interface.

Step 2 Select the **Virtual Devices** tab.

Figure 7-9 Virtual device list

Step 3 Click .

Step 4 In the pop-up dialog, set the device name, model, and IP address, and click **OK**.

Once created, the device will be displayed in the list and will be in the default started state.

- : The device is started.

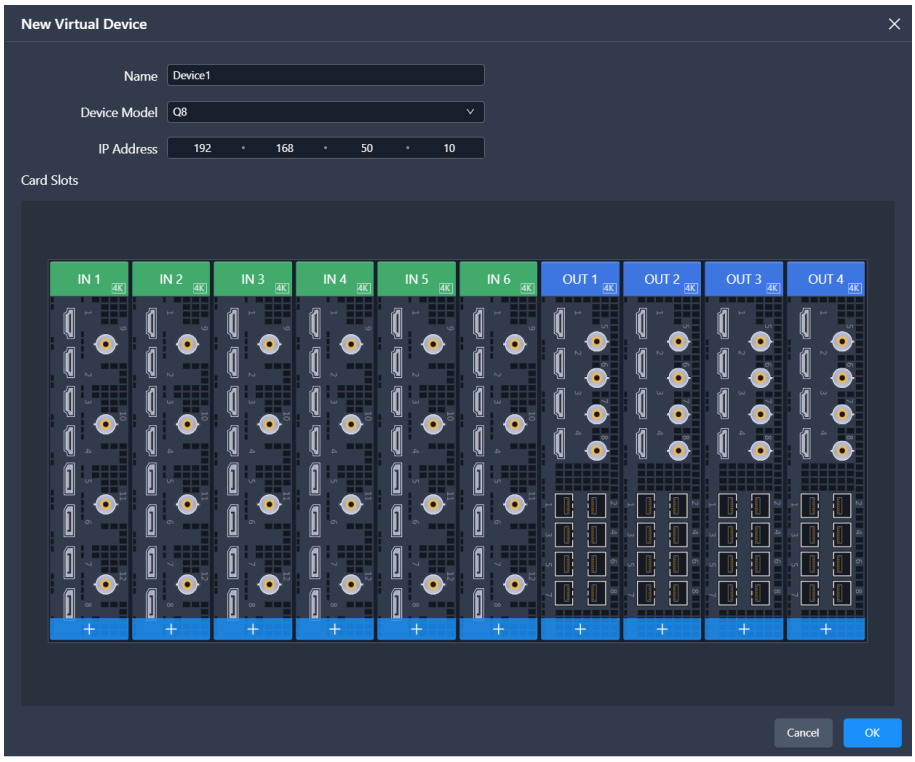
- : The device is off.

Note

For devices in the list, you can perform the following batch operations:

- Start all devices: Click **Start All**.
- Shut down all devices: Click **Shut Down All**.
- Delete specific devices: Click **Edit**, select the devices you want to delete, and click **Delete**.
- Delete all devices: Click **Edit**, select **Select All**, and click **Delete**.

Figure 7-10 Add virtual devices



Step 5 (Optional) Switch the list display style according to your preferences.

- : Graphic style
  - View device status, name, IP address, and model.
  - Double click the device front panel image to access the device configuration interface.
  - Place the mouse over the device to start or shut down, configure (change device name, IP address), or delete the device.

- : List style.
  - View device status, name, IP address, model, and the project to which the device belongs.

- In the **Action** column, you can access, start or shut down, configure (change device name, IP address), and delete the device.
- Place the mouse over the device and click that appears on the right side of the device name to change the device name.

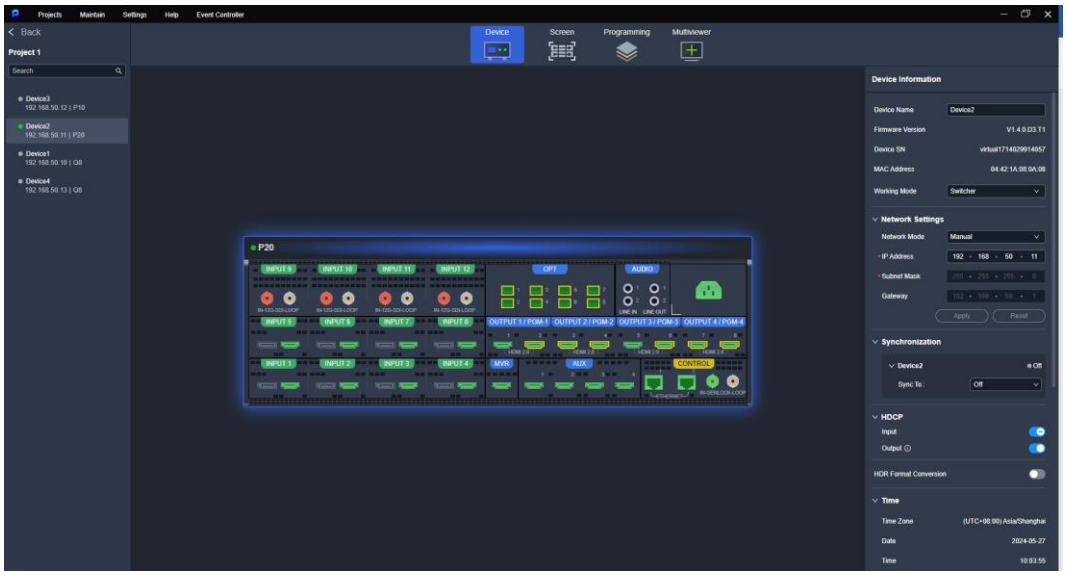
Step 6 Perform either of the following actions to enter the device configuration page.

- In the graphic view mode ( ), double click the image of the device front panel.
- In the list view mode ( ), click **Enter** in the **Action** column.

7.3.2 Configure Device Properties

Select the device on the left side of the device configuration interface, and then configure the device-related properties on the right pane.

Figure 7-11 Device properties (P20)



Note

For the Q8, click **Front Panel** located at the top right of the rear panel to view the status of the OPT ports on the front panel.

7.3.2.1 Rename Device

Change the device name.

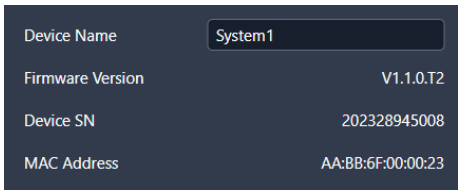
Prerequisites

None

Notes

None

Interface Example (P20)



Description

Enter a name for the device in the text box next to **Device Name**.

Note

In the device list on the left side of the interface, you can also right click the device name and select **Rename** from the context menu to change the device name as well.

7.3.2.2 Switch Working Mode

When the device supports dual working modes (Switcher and PGM Only), you can switch to either mode that satisfies your actual needs.

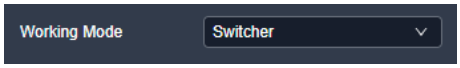
Prerequisites

The device model is the P20 and P10.

Notes

None

Interface Example (P20)



Description

Select **Switcher** or **PGM Only** from the drop-down list.

7.3.2.3 Configure IP Address

Manually set a static IP address for the device or let the device to automatically obtain an IP address.

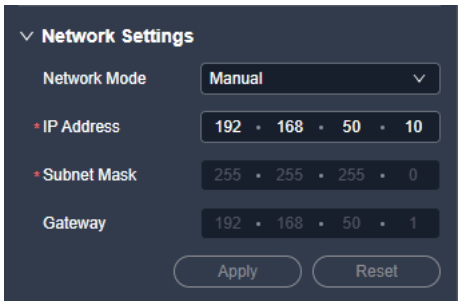
Prerequisites

None

Notes

None

Interface Example (P20)



Description

Configure the following parameters and click **Apply** to make the settings take effect.

Parameter	Description
Network Mode	Select the IP configuration method. • Manual: Manually set a static IP address for the device. • DHCP: The device automatically obtains an IP address.
IP Address	The device IP address
Subnet Mask	The subnet mask of the IP address
Gateway	The default gateway

7.3.2.4 Configure Sync Source

Enable the sync function and configure the sync source for the output.

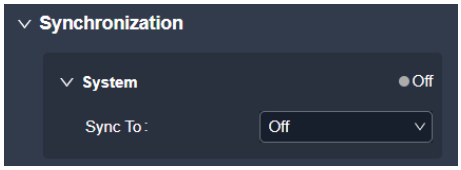
Prerequisites

- Before enabling the Genlock sync function, make sure the sync signal has been connected to the Genlock connector of the device.
- The device model is Q8 and the screen has already been created.

Notes

None

Interface Example (P20)



Description

Parameter	Description
Sync To	Turn off the sync function; or turn on the function and then select the sync source to be used. • Off: Disable the sync function. • Genlock: Sync with the frame rate of the accessed Genlock signal. • Input-*X*: Sync with the frame rate of the selected input source. *X* indicates the serial number of the input source and the actual format shall prevail. When the function is enabled, the frame rate of the sync source will be displayed.

7.3.2.5 Configure Output Mapping

Turn on or turn off the output mapping function. If turned on, each output displays its slot number in the loading area of the screen.

Prerequisites

The device model is Q8.

Notes

None

Interface Example (Q8)

Description

Parameter	Description
Mapping	Turn on or turn off the function. • : On • : Off

Note

In the device list on the left side of the interface, you can also right click the device name and select **Mapping** from the context menu to enable or disable the mapping function as well.

7.3.2.6 Configure HDCP

Configure the global HDCP settings for all connectors of the device.

Prerequisites

None

Notes

None

Interface Example (P20)

Description

For the specific output images after configuring the global, input, output HDCP respectively, please refer to the follow table.

Source	Input HDCP	Output HDCP	Output Image	MVR/AUX HDCP	Output Image
HDCP Source	On	On	Normal, HDCP-encrypted	On	Normal, HDCP-encrypted
	On	On	Normal, HDCP-encrypted	Off	Normal, decrypted
	On	Off	Normal, decrypted	On	Normal, HDCP-encrypted
	On	Off	Normal, decrypted	Off	Normal, decrypted
	Off	On	Black/snow, HDCP-encrypted	On	Black/snow, HDCP-encrypted
	Off	On	Black/snow, HDCP-encrypted	Off	Black/snow, decrypted
	Off	Off	Black/snow, decrypted	On	Black/snow, HDCP-encrypted
	Off	Off	Black/snow, decrypted	Off	Black/snow, decrypted
Non-HDCP Source	On	On	Normal, HDCP-encrypted	On	Normal, HDCP-encrypted
	On	On	Normal, HDCP-encrypted	Off	Normal, decrypted
	On	Off	Normal, decrypted	On	Normal, HDCP-encrypted
	On	Off	Normal, decrypted	Off	Normal, decrypted
	Off	On	Normal, HDCP-encrypted	On	Normal, HDCP-encrypted
	Off	On	Normal, HDCP-encrypted	Off	Normal, decrypted

	Off	Off	Normal, decrypted	On	Normal, HDCP-encrypted
	Off	Off	Normal, decrypted	Off	Normal, decrypted

7.3.2.7 Configure HDR Format Conversion

Turn on or turn off the HDR format conversion function. If turned on, you can set the HDR-related parameters for the input and output.

Prerequisites

The device model is the P20 or Q8.

Notes

None

Interface Example (P20)

Description

Parameter	Description
HDR Format Conversion	Turn on or turn off the function. • : On • : Off

7.3.2.8 Configure Date and Time

Configure the time zone, date and time of the device.

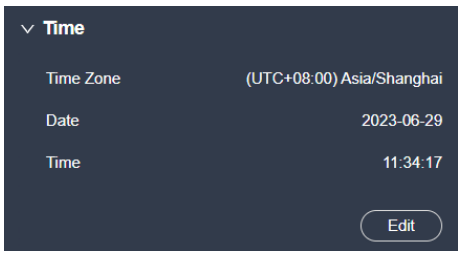
Prerequisites

None

Notes

None

Interface Example (P20)



Description

Click **Edit** and the time parameters become editable. Set the time zone, date and time respectively, and then click **Apply**.

7.3.2.9 Configure Input Source Backup

Establish a backup relation for two input sources.

In the **Manual** mode, use the designated source only regardless of signal availability. In the **Auto** mode, adhere to the following principles when the primary source transitions from no signal to signal presence:

- If **Primary Source Preferred** is selected, automatically switch to the primary source.
- If **Primary Source Preferred** is not selected, continue using the backup source.

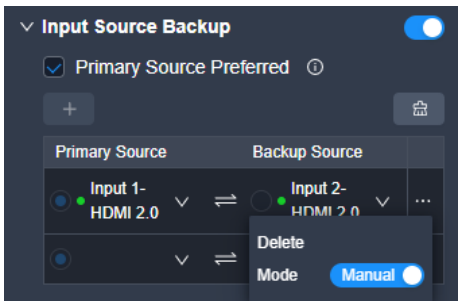
Prerequisites

None

Notes

- The backup relation can only be established if the input connectors have identical capacities.
- Once the function is enabled, the switching of the connector capacity and connector type are not supported.

Interface Example (P20)



Description

Step 1 Set the **Input Source Backup** switch to .

Step 2 Select or deselect **Primary Source Preferred**.

Step 3 Click .

Step 4 Select a primary source and a backup source respectively from two drop-down lists to establish a hot backup pair.

The green dot ● indicates the source is accessed normally and ready for use.

- To delete a hot backup pair, click next to the pair and click **Delete**.
- To delete all hot backup pairs, click .

Step 5 Click ··· on the right and set **Mode** to either **Auto** or **Manual**.

If **Manual** is selected, you will also need to choose the desired source.

7.3.2.10 Configure Device Backup

Enable the device backup function for the screen.

For screens with the device backup function turned on, when a layer's input source has no signal or does not exist, all output connectors of the screen will immediately stop outputting any signal, and switch to the backup link together with the sending cards and receiving cards.

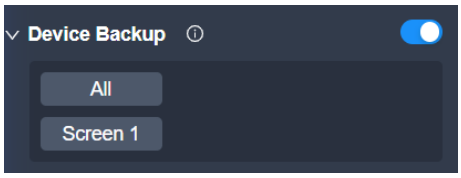
Prerequisites

None

Notes

The Multiviewer signal is not affected by device backup function.

Interface Example (P20)



Description

Parameter	Description
Device Backup	Turn on or turn off the function. • : On – All: Select all screens. – Specific screen name: Select the desired screen. • : Off

7.3.2.11 Reset to Factory Settings

Reset the device data and settings to factory default values.

Prerequisites

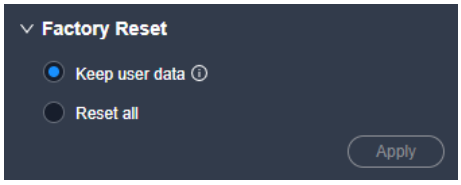
None

Notes

- Please do this with great caution.
- The reset action does not affect the device firmware version.
- Power-off is not allowed during the reset process.

- The device will restart automatically after the reset is completed.

Interface Example (P20)



Description

Select **Keep user data** or **Reset all**, and then click **Apply**.

- Keep user data

  Retain the network parameters, project files, EDID files, gallery files and device language settings.

- Reset all

  Retain the network parameters and project files.

7.3.2.12 Shut Down or Restart Device

Shut down the device, or restart the device.

Prerequisites

None

Notes

None

Interface Example (P20)

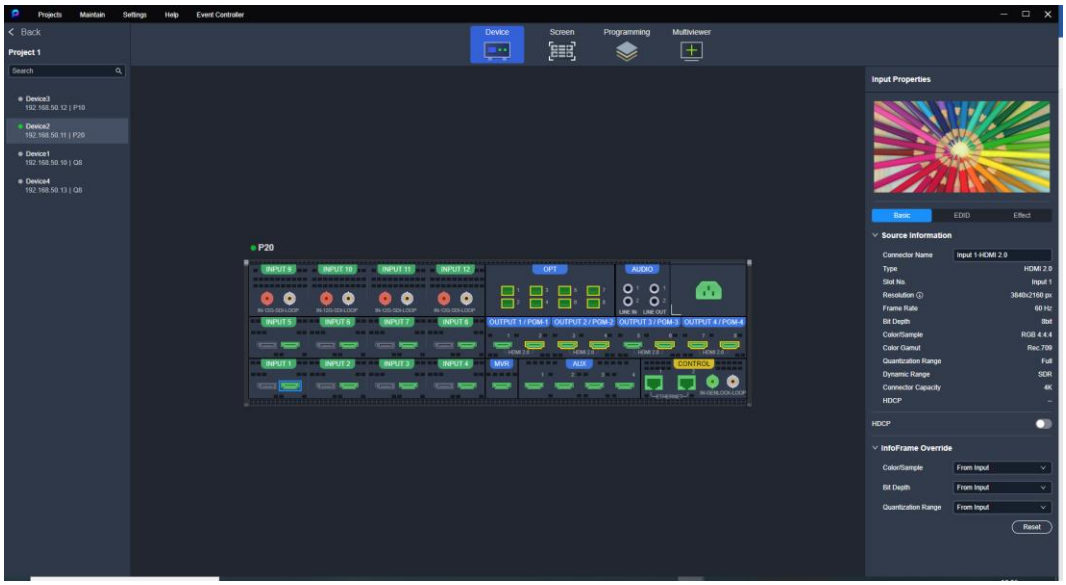
Description

Click **Restart** or **Shut Down**, and then click **Yes** in the displayed dialog box.

7.3.3 Configure Input Properties

Click the target input connector on the graphical device rear panel (if you need to configure the card properties, please click the desired card on the rear panel), and then set the input-related properties in the property area on the right pane.

Figure 7-12 Input properties (P20)



7.3.3.1 View Input Card Info

View the input card related information.

Prerequisites

The device model is Q8.

Notes

None

Interface Example (Q8)

Input Card Properties	
Processing Card SN	0:30976:0
Processing Card Version	1.1.0
Connector Card SN	0:30977:0
Connector Card Version	1.1.0

Description

None

7.3.3.2 Configure Input Card Properties

Set the input connectors to be used, connector capacity (resource usage) and deinterlacing function.

Prerequisites

- The connector capacity is available on the P20 and P10.

- The deinterlacing function is available on the Q8.

Notes

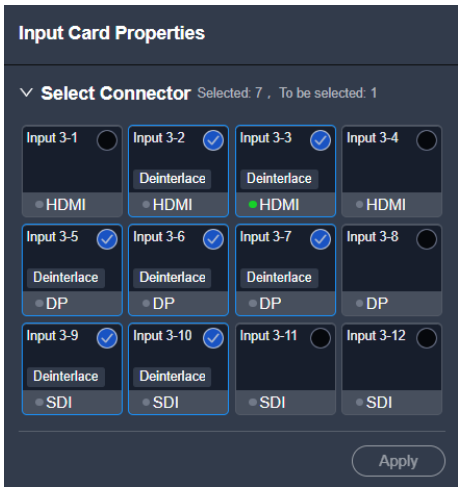
If the connector is set to be NOT used:

- The corresponding layers on the common screens and AUX screens will become empty layers.
- Some connector properties will be restored to defaults, such as resolution and color parameters.

If the connector capacity is switched on the P20 and P10:

- The corresponding layers on the screens will become empty layers, and the DSK function will be turned off.
- Some connector properties will be restored to defaults, such as resolution and color parameters.

Interface Example (Q8)



Description

- Switch the connector capacity.

  Select **SL** or **4K** from the drop-down list.
- Select the connectors to be used.

  The connector status descriptions are as follows:
  - : Selected
  - : Not selected
- Set the deinterlacing function.

  Click the **Deinterlace** icon.
  - Deinterlace: On
  - Deinterlace: Off

After the settings, click **Apply**.

7.3.3.3 View Input Source Info

View the basic properties of the input connector and change the input connector name.

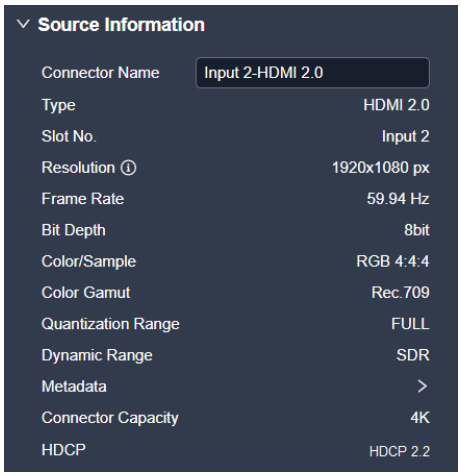
Prerequisites

A fine signal is connected to the input connector.

Notes

None

Interface Example (P20)



Description

On the **Basic** tab interface, change the connector name as required.

7.3.3.4 Configure Input HDCP

Enable or disable the input HDCP encryption.

Prerequisites

None

Notes

None

Interface Example (P20)

Description

For an HDCP source, it can only be properly recognized if the HDCP function on the input end is enabled; if the input HDCP is disabled, the HDCP source will by default display a black screen or snow.

For a non-HDCP source, whether the HDCP function on the input end is enabled or not does not affect the normal transmission of the source image into the device.

Note

- For the specific output images after configuring the global, input, output HDCP respectively, please refer to the table in 7.3.2.6 Configure HDCP.
- The input HDCP is disabled by default.

7.3.3.5 Configure InfoFrame Override Parameters

Configure the InfoFrame override parameters of the input source, so that the device can use it when doing some calculations. This action does not change the parameter values that come with the input source.

Prerequisites

The HDR-related parameter settings are applicable to the HDMI 2.0 connectors on the P20, and make sure you have turned on the HDR format conversion function in the device property configuration page before the settings. For specific operations, please refer to 7.3.2.6 Configure HDCP

Configure the global HDCP settings for all connectors of the device.

Prerequisites

None

Notes

None

Interface Example (P20)

Description

For the specific output images after configuring the global, input, output HDCP respectively, please refer to the follow table.

Source	Input HDCP	Output HDCP	Output Image	MVR/AUX HDCP	Output Image
HDCP	On	On	Normal,	On	Normal,

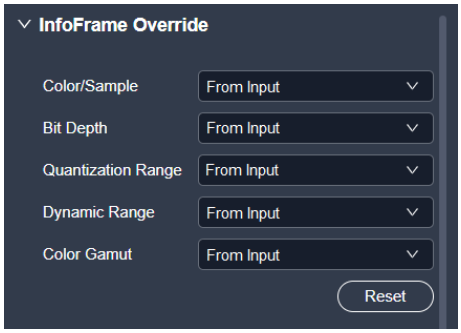
Source			HDCP-encrypted		HDCP-encrypted
	On	On	Normal, HDCP-encrypted	Off	Normal, decrypted
	On	Off	Normal, decrypted	On	Normal, HDCP-encrypted
	On	Off	Normal, decrypted	Off	Normal, decrypted
	Off	On	Black/snow, HDCP-encrypted	On	Black/snow, HDCP-encrypted
	Off	On	Black/snow, HDCP-encrypted	Off	Black/snow, decrypted
	Off	Off	Black/snow, decrypted	On	Black/snow, HDCP-encrypted
	Off	Off	Black/snow, decrypted	Off	Black/snow, decrypted
Non-HDCP Source	On	On	Normal, HDCP-encrypted	On	Normal, HDCP-encrypted
	On	On	Normal, HDCP-encrypted	Off	Normal, decrypted
	On	Off	Normal, decrypted	On	Normal, HDCP-encrypted
	On	Off	Normal, decrypted	Off	Normal, decrypted
	Off	On	Normal, HDCP-encrypted	On	Normal, HDCP-encrypted
	Off	On	Normal, HDCP-encrypted	Off	Normal, decrypted
	Off	Off	Normal, decrypted	On	Normal, HDCP-encrypted
	Off	Off	Normal, decrypted	Off	Normal, decrypted

Configure HDR Format Conversion.

Notes

None

Interface Example (P20)



Description

On the **Basic** tab interface, configure the following parameters.

Type	Parameter	Description
General parameters	Color/Sample	The sampling format of the input
	Bit Depth	The bit depth of the input, i.e., the binary digits to represent a single color
	Quantization Range	The quantization range of the input
HDR parameters	Dynamic Range	The HDR format of the input
	Color Gamut	The color gamut standard of the input
	Tone Mapping	When the **Dynamic Range** parameter is set to HDR10, this parameter is available. • : On. The value of **Peak Brightness** overrides the value of **Peak Brightness** of the screen. • : Off The value of **Peak Brightness** overrides the value of **Max cll**.
	Peak Brightness	When the **Dynamic Range** parameter is set to HDR10 or HLG, this parameter is available.
	Ambient Illuminance	When the **Dynamic Range** is set to HDR10 or HLG, this parameter is available.

Select **From Input** and the device will read the attribute values that come with the input source.

7.3.3.6 Configure EDID

Configure the resolution and frame rate of the input. You can select the standard resolution provided by the device, customize a resolution, or set the advanced parameters.

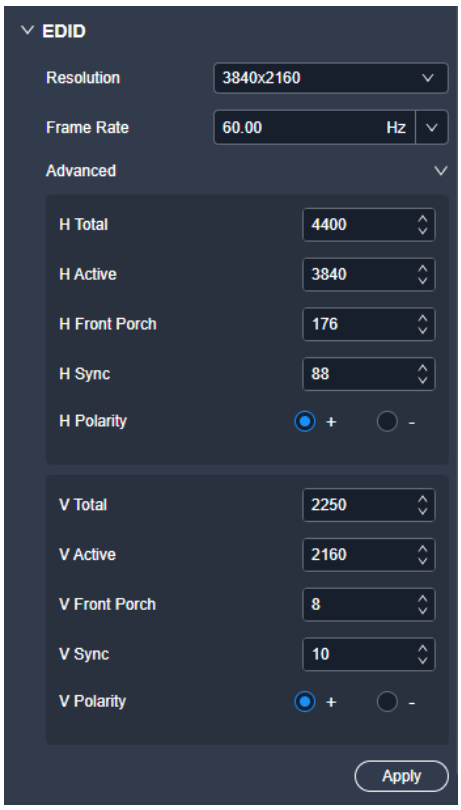
Prerequisites

- The front-end device outputs the video source from the graphics card.
- The input connector must be DP 1.2 or HDMI 2.0. 12G-SDI does not support this function.

Notes

It is recommended the advanced settings be carried out by the trained personnel only.

Interface Example (P20)



Description

On the **EDID** tab interface, configure the following parameters and click **Apply** after the settings.

Parameter	Sub-Parameter	Description
Resolution	-	The number of horizontal pixels and vertical pixels of the image Config method: • Select the desired resolution from the drop-down list. • Select **Custom** from the drop-down list, and then set the width and height values respectively.
Frame Rate	-	The image frames every second (unit: Hz) Config method: Select the preset common frame rates from the drop-down options. The available frame rates may vary according to the chosen resolution.
Advanced	H Total	Total pixel count per line
	H Active	The horizontal size in pixels of the active area
	H Front Porch	The offset between the end of the active area and the beginning of the H sync
	H Sync	The horizontal sync width in pixels (or between

Parameter	Sub-Parameter	Description
		pixels)
	H Polarity	The polarity of the horizontal sync pulse
	V Total	Total pixel count per column
	V Active	The vertical size in pixels of the active area
	V Front Porch	The offset in lines between the end of the active output area and the beginning of V sync
	V Sync	The vertical sync width in rows (or between rows)
	V Polarity	The polarity of the vertical sync pulse

7.3.3.7 Import and Export EDID

When compatibility problem occurs on an input connector, import an intact EDID file into the device; or export an EDID file from a device and provide the EDID file to other devices or input connectors to solve the compatibility issues.

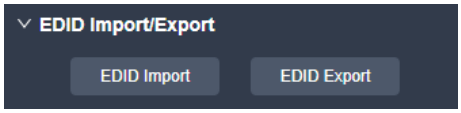
Prerequisites

The input connector must be DP 1.2 or HDMI 2.0. 12G-SDI does not support this function.

Notes

Each input connector supports importing one EDID file only and the EDID file must be less than 1 MB.

Interface Example (P20)



Description

- EDID Import

  On the **EDID** tab interface, click **EDID Import**. In the dialog box that appears, select an EDID file and click **Open**.

- EDID Export

  On the **EDID** tab interface, click **EDID Export**. In the dialog box that appears, select a path and click **Save**.

Note

If you need to modify the content of an imported EDID file, just modify it and then re-import it to overwrite the original one.

7.3.3.8 Configure Compatibility with Mac

When the device is incompatible with the EDID of a Mac system, you may activate this feature to resolve the issue.

Prerequisites

None

Notes

None

Interface Example (P20)

Description

Parameter	Description
Compatibility	Turn on or turn off the function. • : On • : Off

7.3.3.9 Configure OPT Port Stream Parameters

Specify the destination IP, destination port, source IP, and other relevant parameters for stream pulling.

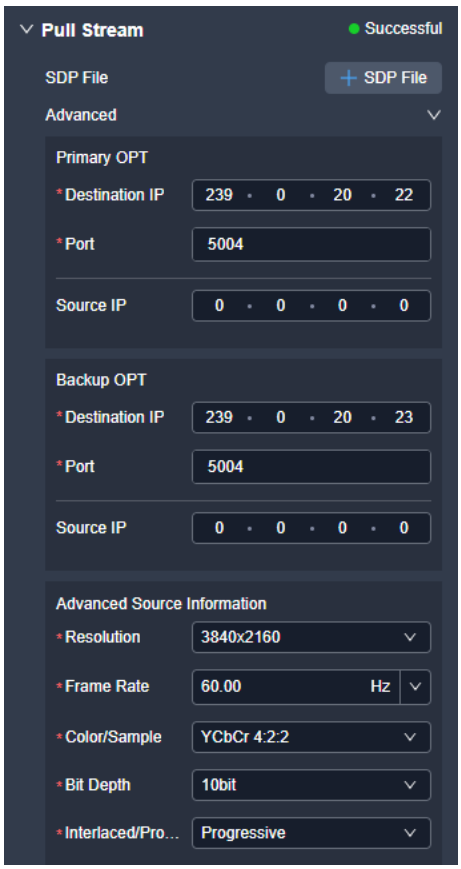
Prerequisites

- The device model is Q8 and the input connector is an OPT port.
- If you need to configure parameters by importing an SDP file, you must prepare the SDP file (.sdp) in advance.

Notes

None

Interface Example (Q8)



Description

On the **Stream** tab interface, configure the following parameters and click **Apply**.

- Configure the parameters by importing an SDP file

  Click **SDP File**, select the SDP file from the window that appears, and click **OK**.

- Manually configure the parameters

  Manually configure the parameters listed in the table below, according to the actual situation.

Type	Parameter	Description
Primary OPT	Destination IP	The destination IP of the video stream for the primary OPT port
	Port	The destination port of the video stream for the primary OPT port
	Source IP	The source IP of the video stream for the primary OPT port
Backup OPT	Destination IP	The destination IP of the video stream for the backup OPT port
	Port	The destination port of the video stream for the backup OPT port
	Source IP	The source IP of the video stream for the

		backup OPT port
Advanced Source Information	Resolution	The resolution of the video stream
	Frame Rate	The frame rate of the video stream
	Color/Sample	The color space and sampling rate of the video stream
	Bit Depth	The bit depth of the video stream
	Interlaced/Progressive	The scanning method of the video stream

7.3.3.10 Configure OPT Port IP Addresses

Configure the network settings for the primary and backup OPT ports.

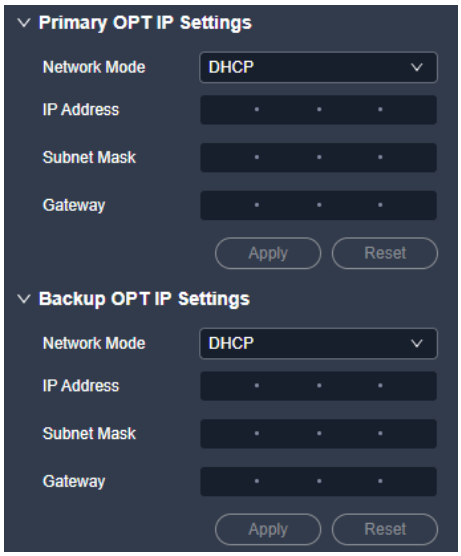
Prerequisites

The device model is Q8 and the input connector is an OPT port.

Notes

None

Interface Example (Q8)



Description

On the **Stream** tab interface, configure the following parameters and click **Apply**.

Parameter	Description
Network Mode	The configuration method for the OPT port • Manual: Manually configure a static IP address for the OPT port. • DHCP: The OPT port obtains the IP address automatically.
IP Address	The IP address of the OPT port

Subnet Mask	The subnet mask of the OPT port
Gateway	The default gateway of the OPT port

7.3.3.11 Configure Input Color

Set the image quality parameters of the input connector, so that all video sources connected to it will have the same image quality.

Prerequisites

None

Notes

None

Interface Example (P20)

Description

On the **Effect** tab interface, configure the following parameters.

Parameter	Description
Contrast	The ratio of the luminance of the brightest color to that of the darkest color Adjust the contrast value either as a whole or individually adjust the RGB components.

Parameter	Description
Brightness	The shading of lights in the image Adjust the brightness value either as a whole or individually adjust the RGB components.
Hue	The relative degree of how bright or dark the input source image is
Saturation	The color purity of the image The higher the value, the more vivid the color.

7.3.3.12 Configure DSK

Achieve the luma, chroma or smart keying effect on the input source.

Prerequisites

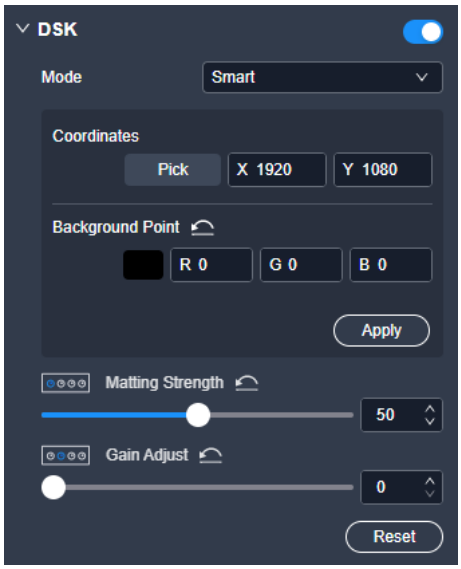
- The device model is Q8.

  If your device is the P10 or P20 and you want to achieve the DSK effect, please refer to 7.3.3.12 Configure DSK to set the related parameters in the layer property area.
- A fine signal is connected to the input connector.

Notes

None

Interface Example (Q8)



Description

On the **DSK** tab interface, configure the following parameters.

Type	Parameter	Description
Function	DSK	Turns on or turn off the function.

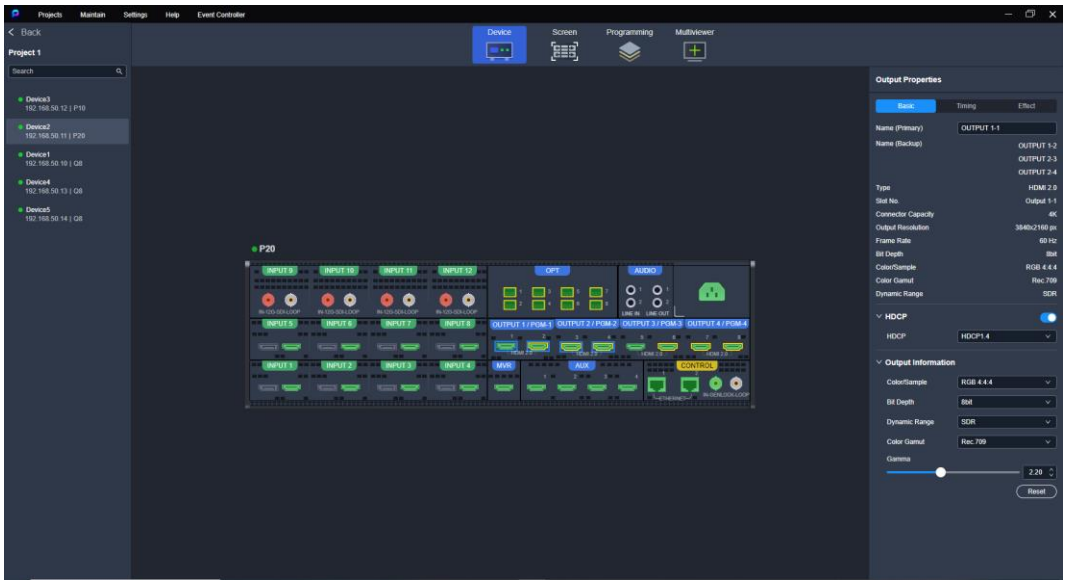
Type	Parameter	Description
switch		• : On • : Off Description: • Smart: Suitable for standard keying scenarios. This feature reduces the need for parameter adjustments, facilitating a more convenient and swift fulfillment of user requirements for image keying. • Luma: Suitable for application scenarios where the brightness of the background is significantly smaller than that of the foreground. The result of luma key is that the background becomes transparent and the foreground is keyed out. • Chroma: Suitable for application scenarios with a single background color, such as blue/green screen matting
Smart key parameters	Pick	The RGB values of the pick point • Config method 1: Click **Pick**, and then click the position to be picked in the input source image. • Config method 2: Set the coordinates of the pick point in the input source image. • Config method 3: Set the RGB values of **Background Point**. After the settings, click **Apply**. You can also adjust the following parameters to optimize the keying effect.
	Matting Strength	To adjust the intensity with which the background is processed
	Gain Adjust	To adjust the shadow/noise areas present in the foreground
Luma key parameters	Clip	To distinguish between the foreground and background
	Saturation Gain	The hue softness of the transition area The larger the value, the softer the transition.
	Foreground Color	Turn on or turn off the function. • : On. After the function is turned on, the associated parameter **Color** can be used to adjust the keying effect. • : Off
	Color	The RGB values of the foreground color
Chroma key parameters	Pick	The RGB values of the pick point • Config method 1: Click **Pick**, and then click the position to be picked in the input source image. • Config method 2: Set the coordinates of the pick point in the input source image. • Config method 3: Set the RGB values of

Type	Parameter	Description
		Background Point. After the settings, click **Apply**. You can also adjust the following parameters to optimize the keying effect.
	Hue Ramp	To distinguish between the foreground and background
	Hue Clip	The hue range The larger the value, the larger the removal area. The maximum value is the current value of **Hue Ramp**.
	Saturation Clip	To distinguish between the foreground and background
	Saturation Gain	The hue softness of the transition area The larger the value, the softer the transition.
	Spill	To remove the overflow from the foreground image edges and semi-transparent areas
	Shadow	To remove the shadow areas
	Highlight	To remove the highlight areas

7.3.4 Configure Output Properties

Click the target output connector on the graphical device rear panel, and then set the output-related properties in the property area on the right pane.

Figure 7-13 Output properties (P20)



7.3.4.1 View Output Card Info

View the output card related information.

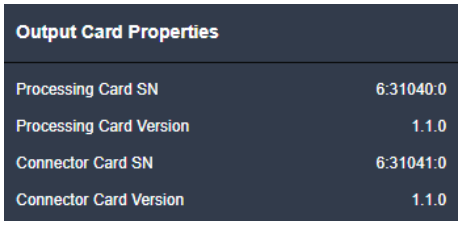
Prerequisites

The device model is Q8.

Notes

None

Interface Example (Q8)



Description

None

7.3.4.2 Configure Output Card Properties

Configure the connector capacity (resource usage), desired output connectors and output connector copying function. The copy connector outputs the same image as the primary output connector outputs.

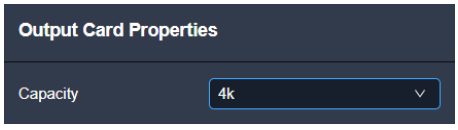
Prerequisites

- The connector capacity configuration is applicable to the P10 and P20.
- The function of output connector copying and the selection of output connectors are applicable to the Q8.

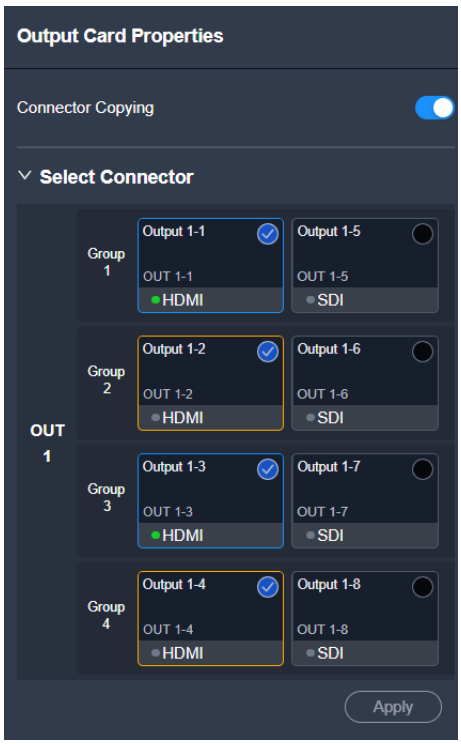
Notes

When the copy connector is already used to load the screen, you cannot enable the connector copying function for the output card where the copy connector is located.

Interface Example (P20)



Interface Example (Q8)



Description

Parameter	Description
Capacity	Set the output connector capacity from the drop-down list.
Connector Copying	The function switch • : On • : Off The default copy relations between connectors are as follows: • HDMI: Connectors 1 and 3 are primary connectors. Connector 2 copies the output on connector 1, while connector 4 copies the output on connector 3. • SDI: Connectors 5 and 7 are primary connectors. Connector 6 copies the output on connector 5, while connector 8 copies the output on connector 7.
Select Connector	Select the desired output connectors. • : Selected • : Not selected When the connector copying function is disabled, select the required output connectors and click **Apply**.

7.3.4.3 View Output Info

View the basic output properties, and change the output connector name.

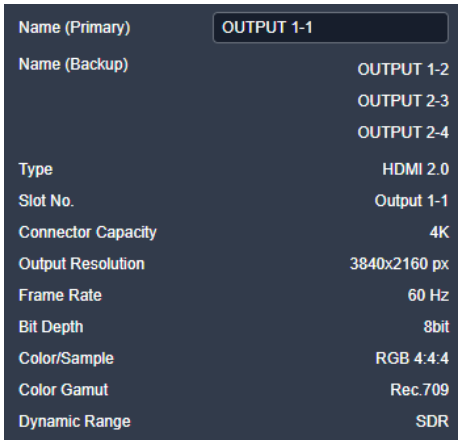
Prerequisites

None

Notes

None

Interface Example (P20)



Description

On the **Basic** tab interface, enter a new connector name, and then click elsewhere in the interface to complete the connector name change.

7.3.4.4 Configure Output HDCP

Enable or disable the output HDCP encryption.

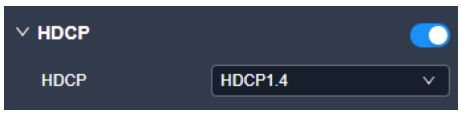
Prerequisites

None

Notes

None

Interface Example (P20)



Description

For the main output connectors, AUX and MVR connectors, whether the HDCP function is enabled or not only affects whether the image content is encrypted or not during output, but does not affect the image content itself. That is, when HDCP is enabled, the output is encrypted; when HDCP is disabled, the output is decrypted.

Note

- For the specific output images after configuring the global, input, output HDCP respectively, please refer to the table in 7.3.2.6 Configure HDCP.
- The output HDCP is disabled by default. Once enabled, the default HDCP version is set to the lowest.

7.3.4.5 Configure Output Info

Configure the output-related parameters.

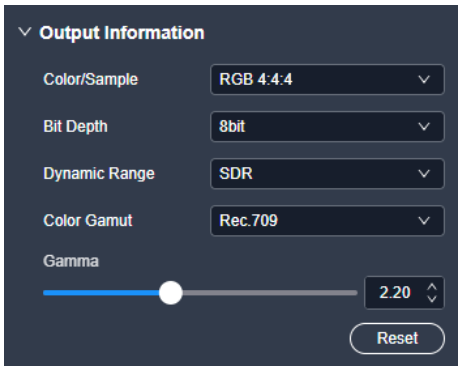
Prerequisites

The configuration of the HDR format conversion parameters is applicable to P20 and Q8.

Notes

None

Interface Example (P20)



Description

On the **Basic** tab interface, configure the following parameters.

Type	Parameter	Description
General parameters	Color/Sample	The sampling format of the output
	Bit Depth	The bit depth of the output, i.e., the binary digits to represent a single color
HDR format conversion parameters	Dynamic Range	The dynamic range
	Color Gamut	The color gamut standard
	Gamma	The gamma value
	Tone Mapping	The tone mapping function switch When **Dynamic Range** is HDR10, this parameter is available. • : On

Type	Parameter	Description
		• : Off
	Peak Brightness	The peak brightness When **Dynamic Range** is HDR10 or HLG, this parameter is available.

7.3.4.6 Configure Output Timing

Configure the resolution and frame rate of the output. You can select the standard resolution provided by the device, customize a resolution, or set the advanced parameters.

Prerequisites

The back-end device EDID is obtained.

Notes

It is recommended the advanced settings be carried out by the trained personnel only.

Interface Example (P20)

Description

On the **Timing** tab interface, configure the following parameters and click **Apply** after the settings.

Parameter	Sub-Parameter	Description

Resolution	-	The number of horizontal pixels and vertical pixels of the image Config method: • Select the desired resolution from the drop-down list. • Select **Custom** from the drop-down list, and then set the width and height values respectively.
Frame Rate	-	The image frames every second (unit: Hz) Config method: Select the preset common frame rates from the drop-down options. The available frame rates may vary according to the chosen resolution.
Advanced	H Total	Total pixel count per line
	H Active	The horizontal size in pixels of the active area
	H Front Porch	The offset between the end of the active area and the beginning of the H sync
	H Sync	The horizontal sync width in pixels (or between pixels)
	H Polarity	The polarity of the horizontal sync pulse
	V Total	Total pixel count per column
	V Active	The vertical size in pixels of the active area
	V Front Porch	The offset in lines between the end of the active output area and the beginning of V sync
	V Sync	The vertical sync width in rows (or between rows)
	V Polarity	The polarity of the vertical sync pulse

7.3.4.7 Export EDID

When the EDID compatibility of the input connector of the back-end device is good, the device can learn the EDID of the back-end device through the output connector and export the EDID to a local computer for possible future use.

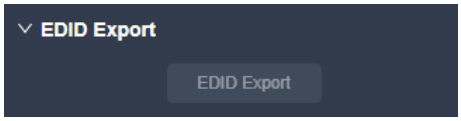
Prerequisites

The output connector is connected to the back-end device normally.

Notes

None

Interface Example (P20)



Description

On the **Timing** tab interface, click **EDID Export**. In the dialog box that appears, select a path and click **Save**.

7.3.4.8 Configure Output Color

Configure the output color parameters. The ultimate output image quality is decided by the layer color, input color and output color settings.

Prerequisites

None

Notes

None

Interface Example (P20)

Description

On the **Effect** tab interface, configure the following parameters.

Parameter	Description
Contrast	The ratio of the luminance of the brightest color to that of the darkest color Adjust the contrast value either as a whole or individually adjust

Parameter	Description
	the RGB components.
Brightness	The shading of lights in the image Adjust the brightness value either as a whole or individually adjust the RGB components.
Hue	The relative degree of how bright or dark the image is
Saturation	The color purity of the image The higher the value, the more vivid the color.

7.3.4.9 Configure Multiviewer

Configure the connector mode and resolution of the Multiviewer connector.

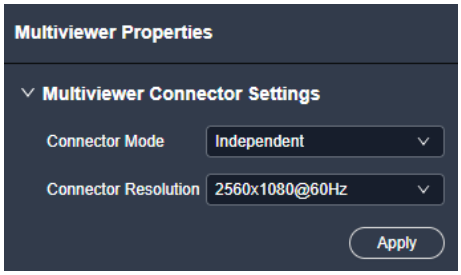
Prerequisites

The device model is the Q8.

Notes

None

Interface Example (Q8)



Description

Configure the following parameters and click **Apply**.

Parameter	Description
Connector Mode	Configure the working mode of the Multiviewer connector. • Independent: Two Multiviewer connectors output their own monitoring images. • Copy: HDMI 2 copies the monitoring data on HDMI 1. When the output resolution is 4K×2K@60Hz, only copy mode is supported.
Connector Resolution	Select the desired connector resolution.

7.4 Screen Configuration

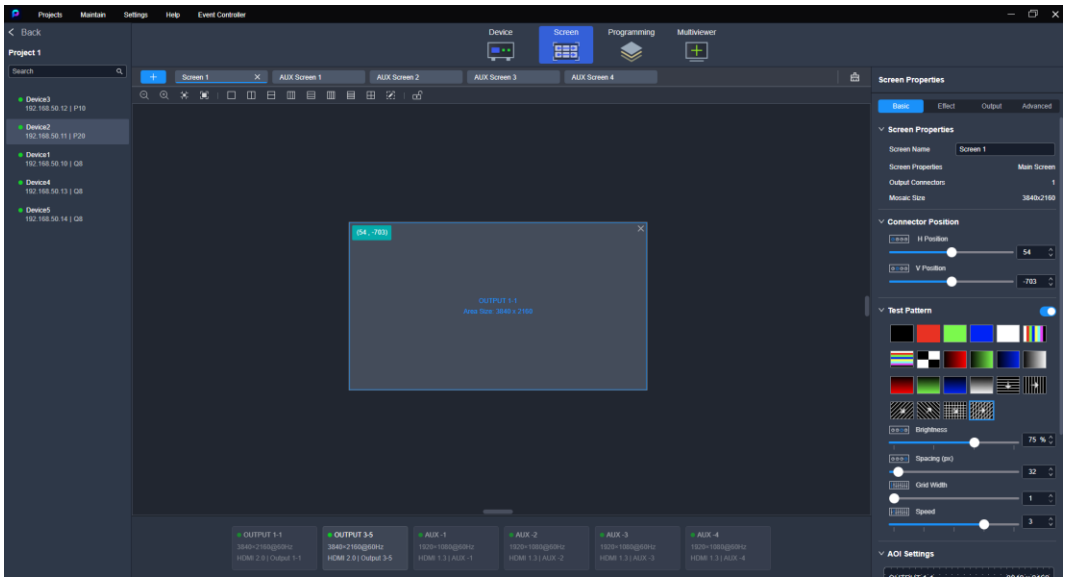
7.4.1 Configure Screens

Configure the layout of a common (not AUX) screen, as well as add and replace the output connectors. The connectors of the same type and output resolution can be configured for the same mosaic screen.

Step 1 Enter the device configuration page as described in 7.3.1 Enter Device Configuration Page.

Step 2 Select the target device on the left, and then select **Screen** at the top of the page.

Figure 7-14 Screen configuration (P20)



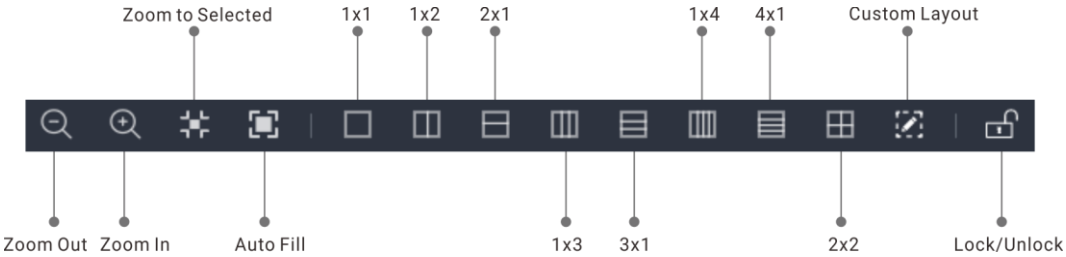
Step 3 Click  to add a new screen.

- To delete a single screen, place the mouse on the screen name and click  .
- To delete all screens, click  .

Step 4 Click the screen name to select a screen.

Step 5 Click the layout style icon in the toolbar above the editing area, or click  to customize the layout by setting the number of rows and columns.

Figure 7-15 Toolbar (P20)



Step 6 Drag the output connector to the desired screen to complete the screen configuration.

To change an output, simply drag another output connector to the screen.

7.4.2 Configure Screen Properties

Click the desired screen, and then set the screen-related properties in the property area on the right pane.

7.4.2.1 Rename Screens

Change the screen name.

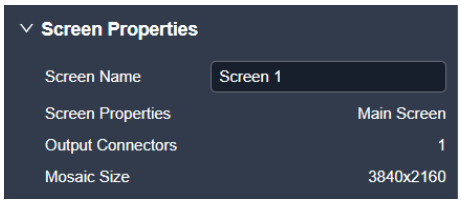
Prerequisites

None

Notes

None

Interface Example (P20)



Description

On the **Basic** tab interface, enter a new screen name, and then click elsewhere in the interface to complete the screen name change.

7.4.2.2 Configure Connector Position

Configure the start position of the output connector.

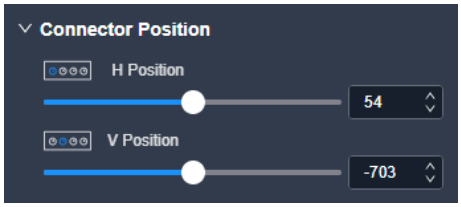
Prerequisites

The screen is a common screen.

Notes

None

Interface Example (P20)



Description

On the **Basic** tab interface, configure the following parameters.

Parameter	Description
H Position	The horizontal start position of the output connector
V Position	The vertical start position of the output connector

7.4.2.3 Configure Test Patterns

Test patterns are used to check the connection relation between the output connectors and the screen, and check whether the screen display is good.

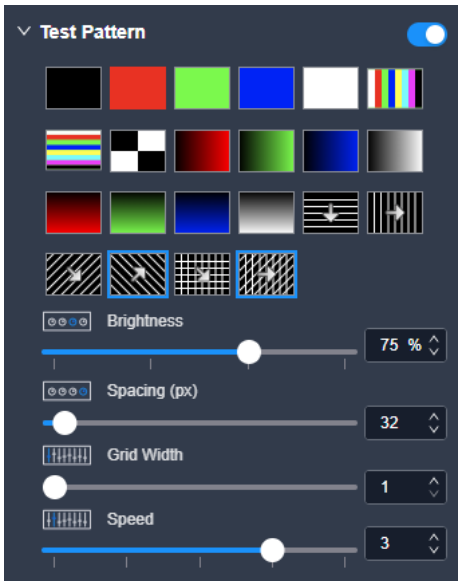
Prerequisites

The screen is a common screen.

Notes

None

Interface Example (P20)



Description

On the **Basic** tab interface, configure the following parameters.

Parameter	Description
Test Pattern	Turn on or turn off the function. • : On • : Off After the function is enabled, select the desired test pattern.

Parameter	Description
Brightness	Set the brightness of the test pattern.
Spacing Level	Set the spacing between different color areas. If a multi-color test pattern is selected, this parameter is available.
Spacing (px)	Set the spacing between the lines. If a grid test pattern is selected, this parameter is available.
Grid Width	Set the width of the grid lines.
Speed	Set the moving speed of the lines.

7.4.2.4 Configure AOI

When the output connector resolution is greater than the actual screen resolution, you can configure an unequal mosaic rather than changing the resolution of the output connector.

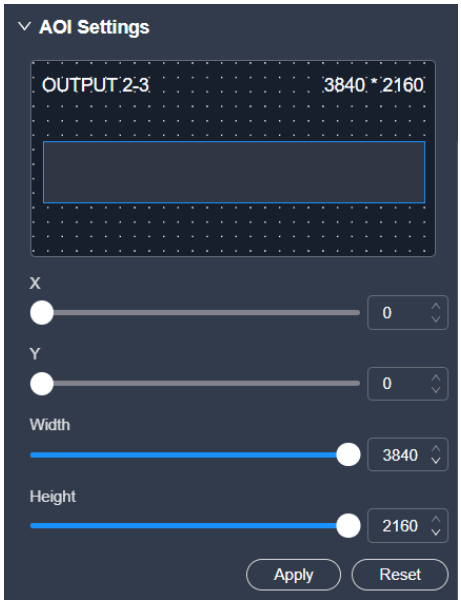
Prerequisites

The screen is a common (not AUX) screen.

Notes

None

Interface Example (P20)



Description

Select the output connector on the canvas, and then configure the following parameters on the **Basic** tab interface. After the settings, click **Apply**.

Parameter	Description
X	The horizontal offset relative to the starting position of the original connector
Y	The vertical offset relative to the starting position of the original connector
Width	The horizontal pixels
Height	The vertical pixels

7.4.2.5 Configure Screen Color

Configure the screen color parameters.

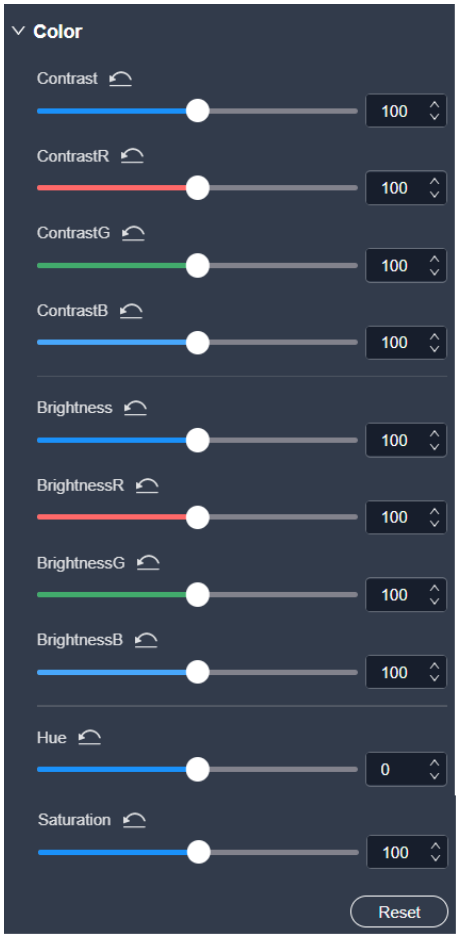
Prerequisites

None

Notes

None

Interface Example (P20)



Description

On the **Effect** tab interface, configure the following parameters.

Parameter	Description
Contrast	The ratio of the luminance of the brightest color to that of the darkest color Adjust the contrast value either as a whole or individually adjust the RGB components.
Brightness	The shading of lights in the image Adjust the brightness value either as a whole or individually adjust the RGB components.
Hue	The relative degree of how bright or dark the image is
Saturation	The color purity of the image The higher the value, the more vivid the color.

7.4.2.6 Configure Timing

Configure the resolution and frame rate of the output. You can select the standard resolution provided by the device, customize a resolution, or set the advanced parameters.

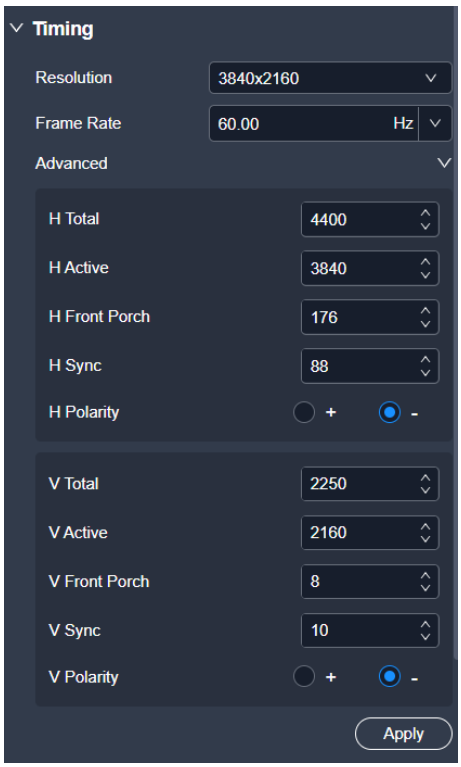
Prerequisites

The EDID of the back-end device is obtained.

Notes

- It is recommended the advanced settings be carried out by the trained personnel only.
- Once the output resolution is changed, the AOI parameters associated with the connector will be automatically reset.

Interface Example (P20)



Description

On the **Output** tab interface, configure the following parameters and click **Apply**.

Parameter	Sub-Parameter	Description
Resolution	-	The number of horizontal pixels and vertical pixels of the image Config method: • Select the desired resolution from the drop-down list. • Select **Custom** from the drop-down list, and then set the width and height values respectively.
Frame Rate	-	The image frames every second (unit: Hz) Config method: Select the preset common frame rates from the drop-down options. The available frame rates may vary according to the chosen resolution.
Advanced	H Total	Total pixel count per line
	H Active	The horizontal size in pixels of the active area
	H Front Porch	The offset between the end of the active area and the beginning of the H sync
	H Sync	The horizontal sync width in pixels (or between pixels)
	H Polarity	The polarity of the horizontal sync pulse

	V Total	Total pixel count per column
	V Active	The vertical size in pixels of the active area
	V Front Porch	The offset in lines between the end of the active output area and the beginning of V sync
	V Sync	The vertical sync width in rows (or between rows)
	V Polarity	The polarity of the vertical sync pulse

7.4.2.7 Configure Output Parameters

Configure the output-related parameters.

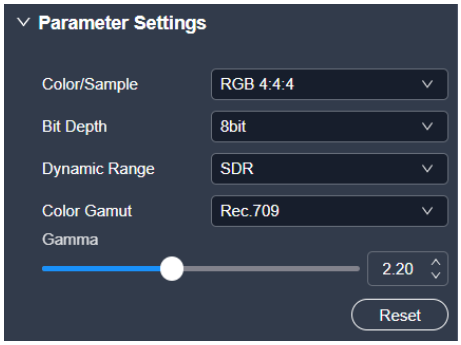
Prerequisites

Before setting the HDR format conversion related parameters here, make sure your device is the P20 or Q8 and the screen is a common (not AUX) screen.

Notes

None

Interface Example (P20)



Description

On the **Output** tab interface, configure the following parameters.

Type	Parameter	Description
General parameters	Color/Sample	The sampling format of the output
	Bit Depth	The bit depth of the output, i.e., the binary digits to represent a single color
HDR format conversion parameters	Dynamic Range	The dynamic range format of the output
	Color Gamut	The color gamut standard of the output
	Gamma	The Gamma value
	Tone Mapping	The tone mapping function switch When **Dynamic Range** is HDR10, this parameter is available.

Type	Parameter	Description
		• : On • : Off
	Peak Brightness	The peak brightness When **Dynamic Range** is HDR10 or HLG, this parameter is available.

7.4.2.8 Configure Screen HDCP

Configure the HDCP settings for all connectors of the screen.

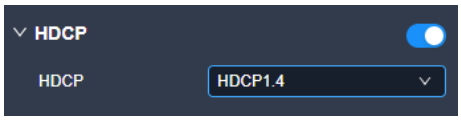
Prerequisites

The function is applicable to the LCD screens only.

Notes

None

Interface Example (P20)



Description

Enable or disable the HDCP encryption function for all connectors of the device that loads the LCD screen.

Note

- For the specific output images after configuring the global, input, output HDCP respectively, please refer to the table in 7.3.2.6 Configure HDCP.
- The screen HDCP is disabled by default. Once enabled, the default HDCP version is set to the lowest.

7.4.2.9 Configure Edge Blending

Edge blending is a technique used when using multiple projectors to display different regions of a single image. To display a single seamless image, adjacent projectors need to overlap edges slightly and compensate for the double brightness created in different regions.

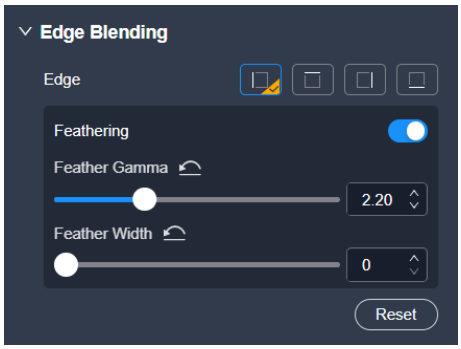
Prerequisites

- The screen is a common screen.
- The offset angles of the projectors have been adjusted.

Notes

None

Interface Example (P20)



Description

On the **Advanced** tab interface, configure the following parameters.

Parameter	Description
Edge	Select the edge for blending.
Feathering	Turn on or turn off the function. • : On • : Off
Feather Gamma	The feathering gamma for the blending area
Feather Width	The feathering width for the blending area The blending area is inside the projector image and facing inward.

7.4.2.10 Configure LCD Bezel Compensation

Configure the edge compensation parameters for LCD splicing screens to make the image visually integrated.

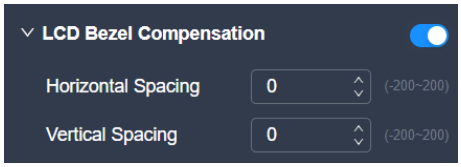
Prerequisites

The screen is a common (not AUX) screen.

Notes

None

Interface Example (P20)



Description

On the **Advanced** tab interface, configure the following parameters.

Parameter	Description
LCD Bezel Compensation	Turn on or turn off the function. • : On • : Off
Horizontal Spacing	The total width of the borders at the horizontal joints of the screens
Vertical Spacing	The total width of the borders at the vertical joints of the screens

7.4.2.11 Configure Connector Rotation

Rotate the currently-selected output connector clockwise from the center point. Only the connector rotates, not the image, making it suitable for vertical playback or creative mosaic application scenarios.

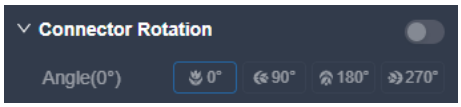
Prerequisites

The device model is Q8.

Notes

Once the connector rotation is enabled, the virtual pixel function will be reset, and there will be an additional one-frame delay from input to output.

Interface Example (P20)



Description

On the **Advanced** tab interface, configure the following parameters.

Parameter	Description
Connector Rotation	Turn on or turn off the function. • : On • : Off
Angle (0°)	Rotate the output connector clockwise from the central point.

7.4.2.12 Configure Virtual Pixels

With the help of the virtual pixel function, the complicated calculations during the screen configuration process will not be troublesome.

Prerequisites

The screen is a common screen.

Notes

The virtual pixels have no effect on the actual output content.

Interface Example (P20)

Description

On the **Advanced** tab interface, configure the following parameters and click **Apply**.

Parameter	Description
Virtual Pixels	Turn on or turn off the function. • : On • : Off
Width (Actual Size)	The width of the actual screen
Height (Actual Size)	The height of the actual screen

7.5 Layer Operation

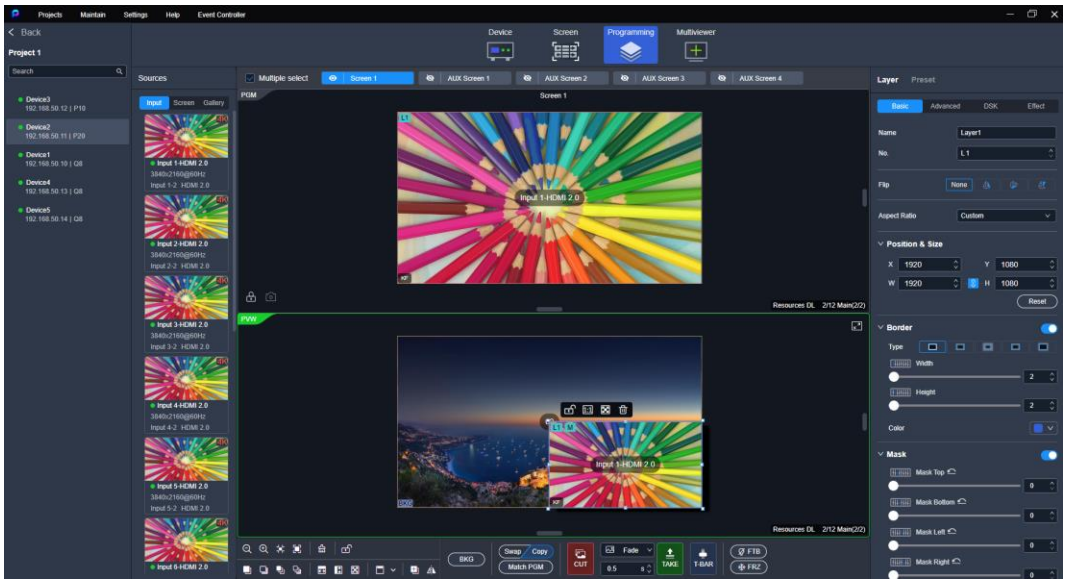
7.5.1 Add Layers

Add the layers to the screen. Multiple layers can be added to a common screen, but only one layer can be added to an AUX screen.

Step 1 Enter the device configuration page as described in 7.3.1 Enter Device Configuration Page.

Step 2 Select the target device on the left, and then select **Programming** at the top of the page.

Figure 7-16 Programming (P20)



Step 3 Click a screen name to select the screen, or click **Multiple select** to select multiple screens.

Step 4 Add the layers to the screens.

- Common screen: Drag an input source to the screen.

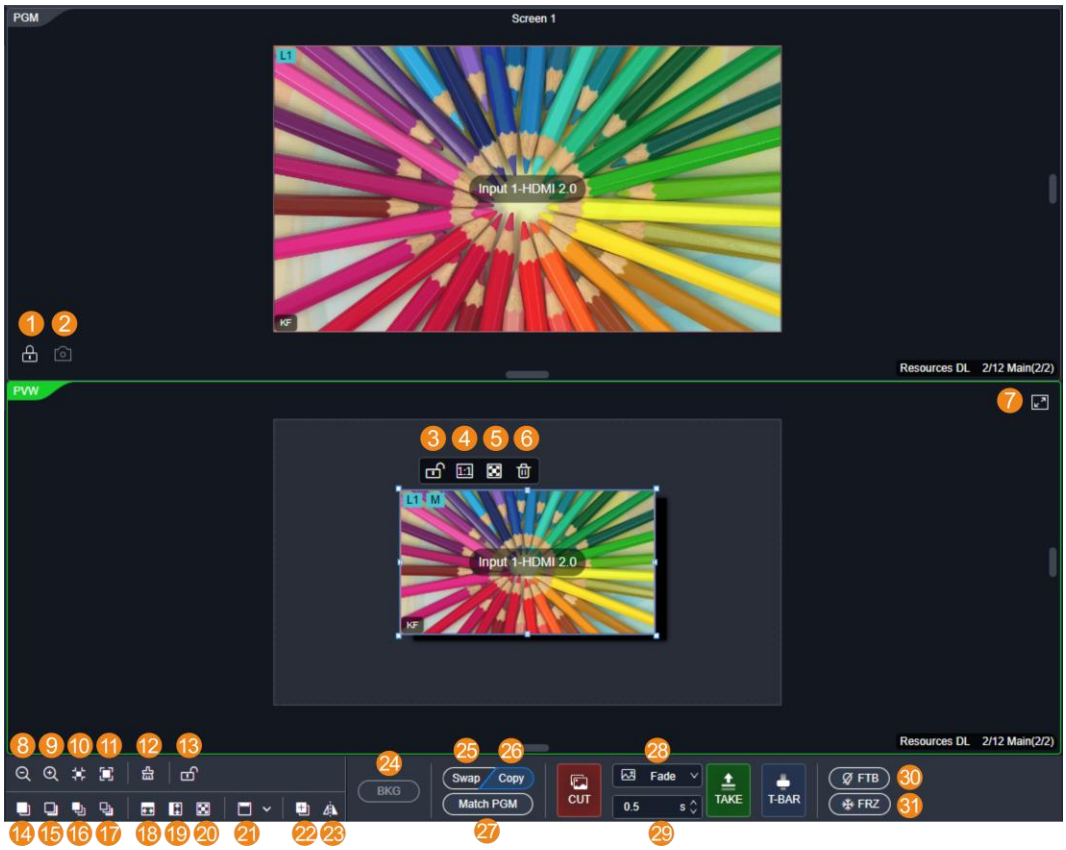
  If the device model is Q8, you can also drag the PGM from other screens to the current screen.

  The layer resource usage is displayed in the bottom right of the programming area.

- AUX screen: Drag an input source in the input list or a PGM in the screen list to the AUX screen.

Step 5 Perform the desired layer operations as required.

Figure 7-17 Layer operations



1	Lock/Unlock PGM	17	Send to back
2	Capture PGM	18	Fill horizontally
3	Lock/Unlock layer	19	Fill vertically
4	1:1 display	20	Fill screen
5	Maximize display	21	Align
6	Delete	22	Copy
7	Maximize/Restore	23	Mirror horizontally
8	Zoom out	24	Enable/Disable BKG
9	Zoom in	25	Swap PVW and PGM
10	Zoom to selected	26	Copy PVW to PGM
11	Auto fill	27	Match PVW with PGM
12	Clear	28	Transition effect
13	Lock/Unlock PGM and PVW	29	Transition duration
14	Bring forward	30	FTB
15	Send backward	31	Freeze
16	Bring to front		

Send PVM to PGM via the following three ways:

- CUT: Send PVW to PGM without any transition effect.
- TAKE: Send PVW to PGM with a time-specified transition effect.

- T-BAR: Send PVW to PGM with a transition effect, and the transition duration depends on the time duration you push the T-Bar.

Note

The layer or preset operations are NOT allowed during the transition process.

7.5.2 Manage Gallery

Select the **Gallery** tab in the **Sources** area, and do the following as required.

Import Images (.png/.bmp/.jpg/.jpeg)

Click , select the desired images in the displayed dialog box and then click **Open**.

Export Images

Click **Edit**, select the images you want to export, and click . In the pop-up dialog box, choose a destination path, and click **OK**.

Delete Images

Click **Edit**, select the images to be deleted, and then click . In the pop-up dialog box, click **Yes**.

7.5.3 Configure Layer Properties

Select the desired layer, and then set the layer-related properties in the property area on the right pane.

7.5.3.1 Configure Basic Properties

Configure the layer name, flipping, aspect ratio, as well as position and size.

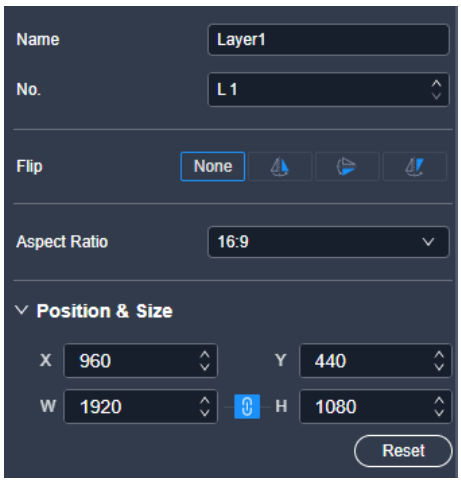
Prerequisites

The flipping function is applicable to the regular layers only.

Notes

The AUX layer fills the AUX screen, with the layer size and position unadjustable.

Interface Example (P20)



Description

On the **Basic** tab interface, configure the following parameters.

Parameter	Description
Name	The layer name
No.	The layer number
Flip	The layer flipping mode The supported options include **None**, **Flip Horizontally**, **Flip Vertically**, **Flip Horizontally and Vertically**.
Aspect Ratio	The ratio of the layer's width to its height After the aspect ratio is changed, the height of the layer remains unchanged, and the device automatically calculates its width.
X	The horizontal starting position of the layer on the screen The coordinates of the first pixel in the upper left corner of the screen are (0,0).
Y	The vertical starting position of the layer on the screen The coordinates of the first pixel in the upper left corner of the screen are (0,0).
W	The horizontal size of the layer The minimum width of a layer can only be scaled down to 1/64 of the layer width.
H	The vertical size of the layer The minimum height of a layer can only be scaled down to 1/64 of the layer height.

7.5.3.2 Configure Layer Borders

Configure the border style of a layer.

Prerequisites

The layer is a regular (not AUX) layer.

Notes

If the layer mask function is turned on, the border function is turned off.

Interface Example (P20)

Description

On the **Basic** tab interface, configure the following parameters.

Parameter	Description
Border	Turn on or turn off the function. • : On • : Off
Type	The layer border type
Width	The width of the layer left and right borders
Height	The height of the top and bottom borders
Color	The layer border color When the border function is set to , this parameter is available.

7.5.3.3 Configure Layer Mask

Configure the mask-related parameters. The masked area becomes transparent and the layer size remains the same.

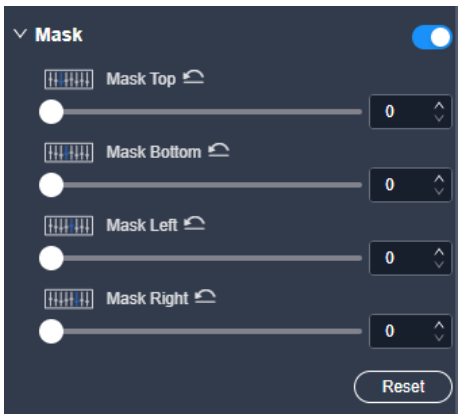
Prerequisites

The layer is a regular (not AUX) layer.

Notes

If the layer mask function is turned on, the border function is turned off.

Interface Example (P20)



Description

On the **Basic** tab interface, configure the following parameters.

Parameter	Description
Mask	Turn on or turn off the function. • : On • : Off
Mask Top	Set the masked area height from the top edge of the layer.
Mask Bottom	Set the masked area height from the bottom edge of the layer.
Mask Left	Set the masked area width from the left edge of the layer.
Mask Right	Set the masked area width from the right edge of the layer.

7.5.3.4 Configure Layer Shadow

Configure the layer shadow parameters, including the shadow position, size, opacity, edge blurring and shadow color.

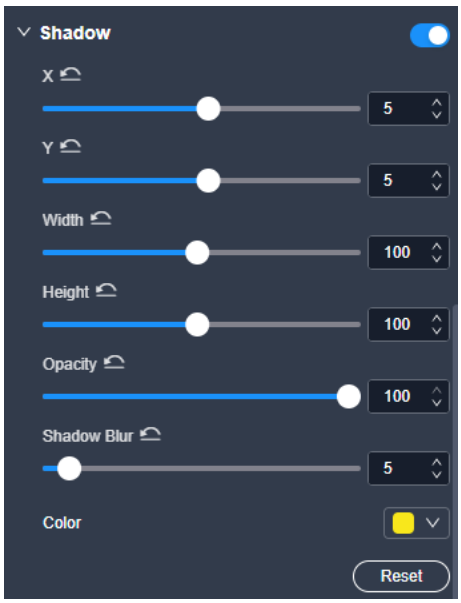
Prerequisites

The layer is a regular (not AUX) layer.

Notes

None

Interface Example (P20)



Description

On the **Basic** tab interface, configure the following parameters.

Parameter	Description
Mask	Turn on or turn off the function. : On : Off
Mask Top	Set the masked area height from the top edge of the layer.
X	The horizontal start position of the shadow on the screen The coordinates of the first pixel in the upper left corner of the screen are (0,0).
Y	The vertical start position of the shadow on the screen The coordinates of the first pixel in the upper left corner of the screen are (0,0).
Width	The width of the shadow
Height	The height of the shadow
Opacity	The opacity of the shadow
Shadow Blur	The blurring degree of the shadow edge The greater the value, the more blurring the shadow edges
Color	The shadow color

7.5.3.5 Configure KeyFrame

Configure the speed, start time and animation duration for KeyFrame (the transition of layer position and size)

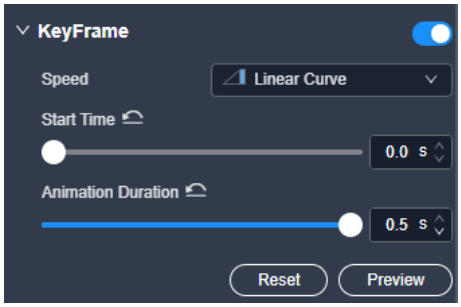
Prerequisites

None

Notes

None

Interface Example (P20)



Description

On the **Basic** tab interface, configure the following parameters.

Parameter	Description
KeyFrame	Turn on or turn off the function. • : On • : Off
Speed	• Linear Curve (default): The speed is constant. • S-Curve: The speed alternates between fast and slow.
Start Time	Time after which the KeyFrame effect commences
Animation Duration	Total time required for the transition effect

Note

After enabling the function, a persistent "KF" marker will display on the layer, serving as a visual cue to users.

7.5.3.6 Crop Layer Sources

When there are black borders or other redundant info in the input source image, the required picture can be retained through the cropping the input source, so as to improve the screen utilization.

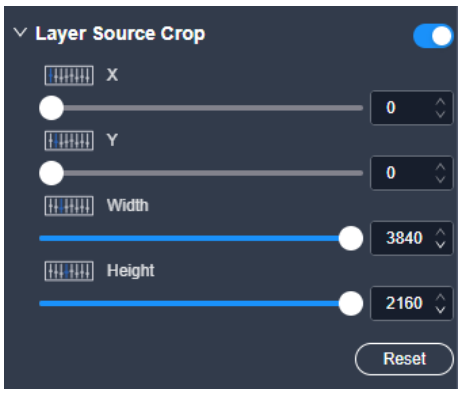
Prerequisites

- The device model is the P20 and P10.
- A fine signal is connected to the input connector.

Notes

The properties and capacity of the cropped source remain consistent with the original one.

Interface Example (P20)



Description

On the **Advanced** tab interface, configure the following parameters.

Parameter	Description
Layer Source Crop	Turn on or turn off the function. • : On • : Off
X	The horizontal start position of the cropped area relative to the original source
Y	The vertical start position of the cropped area relative to the original source
Width	The number of horizontal pixels (width) of the cropped area
Height	The number of vertical pixels (height) of the cropped area

7.5.3.7 Configure Cut & Fill

Configure the relevant parameters for the Cut & Fill function.

The original layer serves as the Fill layer, and the output will display the Cut layer that overlaps with the Fill layer, allowing users to define the output shape and effect more flexibly.

Prerequisites

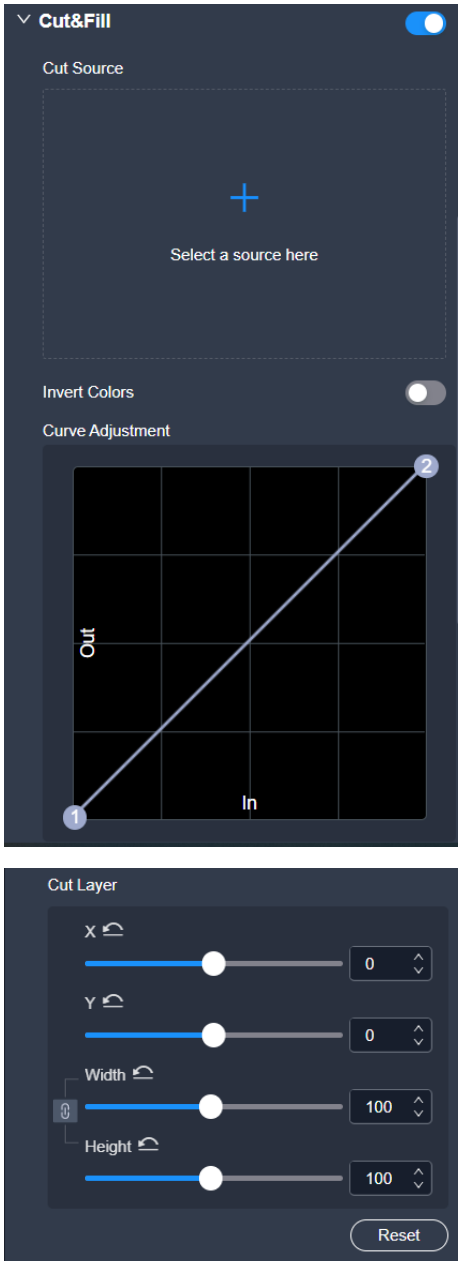
The layer is a regular layer.

Notes

- When the Cut & Fill function is enabled, the DSK function is disabled.
- For the Q8, the Cut & Fill function occupies two layer resources.

- For the P10 and P20, the total resources for the Cut layer are 2x DL (1x 4K), and the Cut layer capacity must be less than or equal to that of the Fill layer.

Interface Example (P20)



Description

On the **Advanced** tab interface, configure the following parameters.

Parameter	Description
Cut & Fill	Turn on or turn off the function. • : On • : Off
Cut Source	The input source of the Cut layer

Parameter	Description
	Config method: Click  to select an input source in the pop-up dialog box, and click **OK**. You can also delete or replace the input source if necessary.
Invert Colors	Turn on or turn off the function. •  : On, allowing black areas to be transparent and white areas to be cut •  : Off, allowing white areas to be transparent and black areas to be cut
Curve Adjustment	The color curve for the Cut layer, which is used to adjust the transition effect of the Cut layer The farther apart the X coordinates of **1** and **2** are, the smoother the transition will be.
X	The horizontal initial position of the Cut layer relative to the Fill layer
Y	The vertical initial position of the Cut layer relative to the Fill layer
Width	The horizontal pixels of the Cut layer
Height	The vertical pixels of the Cut layer

7.5.3.8 Configure DSK

Achieve the luma, chroma and smart keying effect on the input source.

Prerequisites

- The device model is the P10 and P20. If your device is the Q8 and you want to achieve the DSK effect, please refer to 7.3.3.12 Configure DSK to set the related parameters in the input property area.
- The layers is a regular (not AUX) layer, and the layer input source is a good one.

Notes

After the DSK function is enabled, the layer capacity will automatically change to 4K, and the cut & fill function will be disabled.

Interface Example (P20)

Description

On the **DSK** tab interface, configure the following parameters.

Type	Parameter	Description
Function switch	DSK	Turns on or turn off the function. • : On • : Off Description: • Luma: Suitable for application scenarios where the brightness of the background is significantly smaller than that of the foreground. The result of luma key is that the background becomes transparent and the foreground is keyed out. • Chroma: Suitable for application scenarios with a single background color, such as blue/green screen matting • Smart: Suitable for standard keying scenarios. This feature reduces the need for parameter adjustments, facilitating a more convenient and swift fulfillment of user requirements for image keying.
Smart key parameters	Pick	The RGB values of the pick point • Config method 1: Click **Pick**, and then click the position to be picked in the input source

Type	Parameter	Description
		image. • Config method 2: Set the coordinates of the pick point in the input source image. • Config method 3: Set the RGB values of **Background Point**. After the settings, click **Apply**. You can also adjust the following parameters to optimize the keying effect.
	Matting Strength	To adjust the intensity with which the background is processed
	Gain Adjust	To adjust the shadow/noise areas present in the foreground
Luma key parameters	Clip	To distinguish between the foreground and background
	Saturation Gain	The hue softness of the transition area The larger the value, the softer the transition.
	Foreground Color	Turn on or turn off the function. • : On. After the function is turned on, the associated parameter **Color** can be used to adjust the keying effect. • : Off
	Color	The RGB values of the foreground color
Chroma key parameters	Pick	The RGB values of the pick point • Config method 1: Click **Pick**, and then click the position to be picked in the input source image. • Config method 2: Set the coordinates of the pick point in the input source image. • Config method 3: Set the RGB values of **Background Point**. After the settings, click **Apply**. You can also adjust the following parameters to optimize the keying effect.
	Hue Ramp	To distinguish between the foreground and background
	Hue Clip	The hue range The larger the value, the larger the removal area. The maximum value is the current value of **Hue Ramp**.
	Saturation Clip	To distinguish between the foreground and background
	Saturation Gain	The hue softness of the transition area The larger the value, the softer the transition.

Type	Parameter	Description
	Spill	To remove the overflow from the foreground image edges and semi-transparent areas
	Shadow	To remove the shadow areas
	Highlight	To remove the highlight areas

7.5.3.9 Configure Layer Color

Configure the layer color parameters.

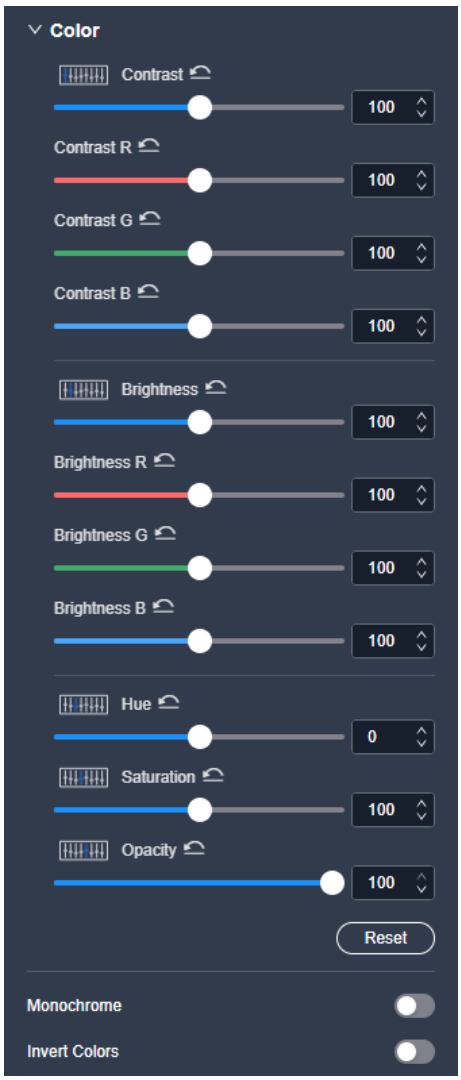
Prerequisites

When configuring the monochrome or color inverting, the layer must be a regular (not AUX) layer.

Notes

None

Interface Example (P20)



Description

On the **Effect** tab interface, configure the following parameters.

Parameter	Description
Contrast	The ratio of the luminance of the brightest color to that of the darkest color Adjust the contrast value either as a whole or individually adjust the RGB components.
Brightness	The shading of lights in the image Adjust the brightness value either as a whole or individually adjust the RGB components.
Hue	The relative degree of how bright or dark the image is
Saturation	The color purity of the image The higher the value, the more vivid the color.
Opacity	The layer opacity

Parameter	Description
Monochrome	Turn on or turn off the function. • : On, and the layer image is show in black and white. • : Off
Invert Colors	Turn on or turn off the function. • : On, and the layer image is show in the complementary color of its original color. • : Off

7.5.3.10 Configure BKG Properties

Configure the aspect ratio, position and size of the BKG layer.

Prerequisites

None

Notes

None

Interface Example (P20)

Description

Select the BKG image and configure the following parameters in the layer property area on the right.

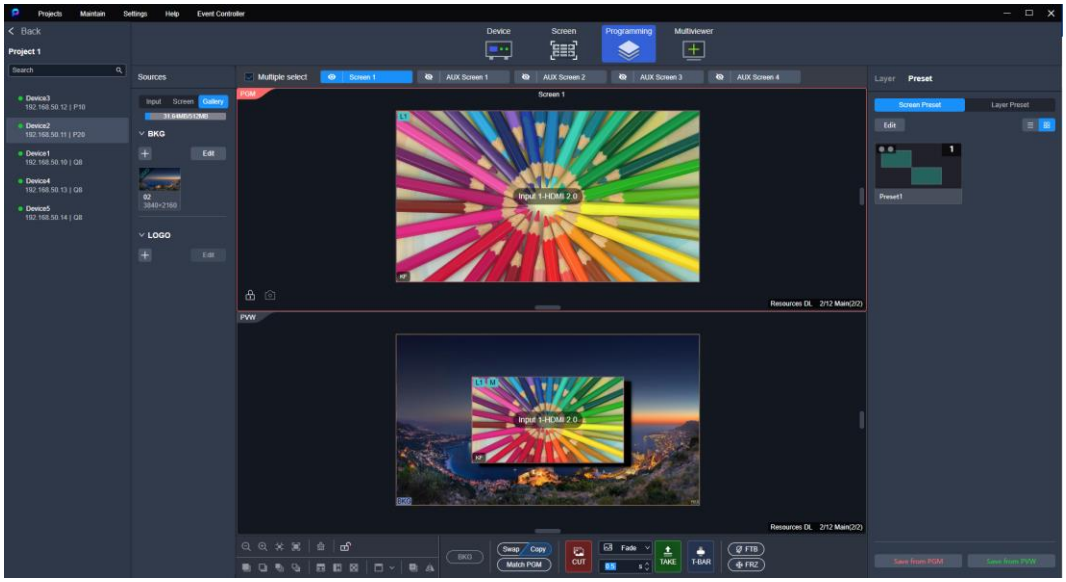
Parameter	Description
Aspect Ratio	The proportional relationship between the horizontal width and the vertical height of the BKG layer Upon changing the aspect ratio, the height of the BKG layer remains unchanged and the system automatically calculates the width.
X	The horizontal starting position of the BKG layer on a screen The coordinates of the first pixel in the upper left corner of the screen are (0,0).
Y	The vertical starting position of the BKG layer on a screen

Parameter	Description
	The coordinates of the first pixel in the upper left corner of the screen are (0,0).
W	The horizontal pixels of the BKG layer
H	The vertical pixels of the BKG layer

7.5.4 Manage Screen Presets

To manage the screen presets, click **Preset** on the right side of the **Programming** interface and perform the corresponding actions as needed.

Figure 7-18 Preset management (P20)



Save Presets

Click a screen name to select an individual screen, or select **Multiple select** and click the desired screens one by one. Then, perform the following actions as required:

- Q8:

  Click **Save from PGM** or **Save from PVW**.

- P20 and P10:

  The actions vary according to different working modes.

  In Switcher mode: Click **Save from PGM** or **Save from PVW**.

  In PGM Only mode: Click **Save Preset**.

Load Presets

In the preset list, select the desired preset to load it.

- Q8:

  The preset is loaded to PVW.

- P20 and P10:

In Switcher mode: The preset is loaded to PVW.

In PGM Only mode: The preset is loaded to PGM.

After the preset is successfully loaded, the corresponding indicator light at the top left of the preview area will light up:

- : The preset is loaded to PVW.
- : The preset is loaded to PGM.

Rename Presets

Place the mouse over the preset and click . Enter a new name and then click elsewhere to make the change take effect.

Delete Single Preset

Place the mouse over the preset and click . In the pop-up dialog box, click **Yes**.

Delete All Presets

Click **Edit**, check **Select All**, and click . In the pop-up dialog box, click **Yes**.

7.5.5 Manage Layer Presets

Users can preserve the layer properties and apply these configurations swiftly to other layers.

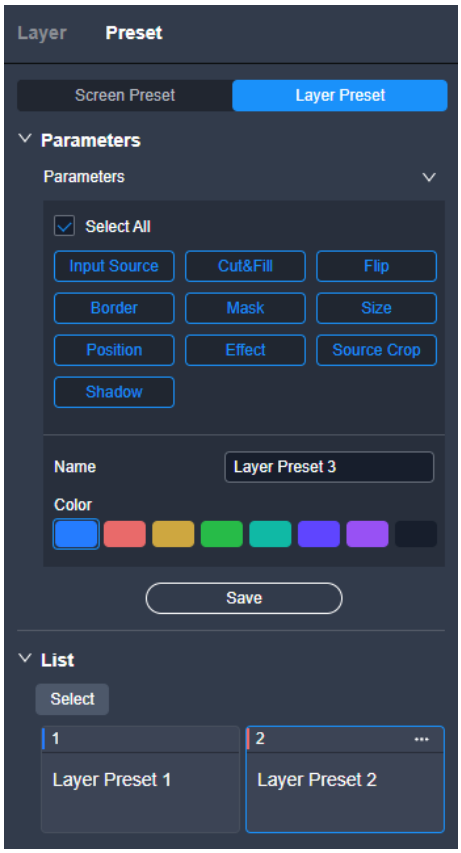
Note

- Up to 1024 layer presets can be saved.
- Layer presets do not differentiate between PGM and PVW.
- Layer presets are solely properties of the device and do not follow the screen.
- The layer preset can be applied to one layer at a time.

Save Layer Presets

Step 1 Click **Preset** on the right side of the **Programming** interface.

Figure 7-19 Layer presets



Step 2 Click to select the data you wish to save, or check **Select All** to include all data.

Step 3 Assign a name to the layer preset.

Step 4 Click to select a color, assigning it to the layer preset.

Step 5 Once the parameters are set, click **Save**.

Upon successful saving, the list area will display a corresponding entry.

Modify Layer Presets

Within the layer preset list, go to ··· > **Edit** to modify relevant information of the layer preset.

If you need to adjust the position of a layer preset in the list, directly drag it to the desired location.

Delete Layer Presets

- To delete a single layer preset: In the layer preset list, click ··· > **Delete**.
- To delete all layer presets: Click **Select**, check **Select All**, then click **Delete**.

Apply Layer Presets

To apply a layer preset, proceed with any of the following actions:

- Select a layer, then double-click the target layer preset in the list area.

- Simply drag the layer preset to the target layer.

7.6 Multiviewer (MVR)

7.6.1 Configure MVR Layout

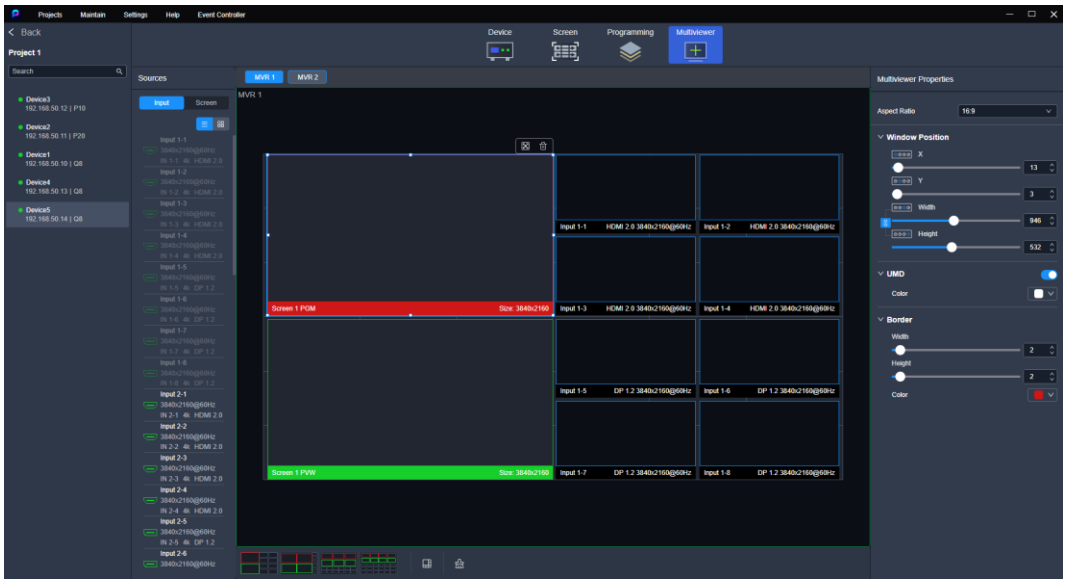
Configure the layout of the MVR windows. When the bandwidth of the input source exceeds the limit, the corresponding MVR image is black.

When the MVR connector of Q8 is in independent mode, an input source or screen cannot be simultaneously previewed by both MVR1 and MVR2.

Step 1 Enter the device configuration page as described in 7.3.1 Enter Device Configuration Page.

Step 2 Select the target device on the left, and then select **Multiviewer** at the top of the page.

Figure 7-20 MVR management (Q8)



Step 3 Select a layout style. When the device model is the Q8, you can also click to customize the number of rows and columns of the windows.

Step 4 If the device model is the Q8, drag an input in the input list or drag PVW and PGM in the screen list to the MVR window.

If the device model is the P20 and P10, please skip this step.

To replace a signal of a specified window, simply drag another signal to the window. If the device model is the Q8, the following operations can be performed:

- Delete signal: Click to delete the signal from the window.
- Maximize signal image: Click to maximize the signal image according to the windows it crosses.
- To delete all signals, click .

7.6.2 Configure MVR Properties

Configure the aspect ratio, position, size, UMD and borders of the MVR window.

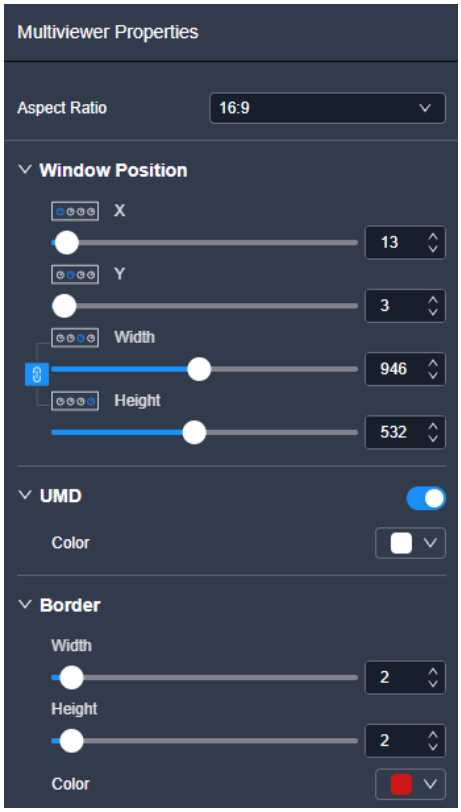
Prerequisites

- The settings of the aspect ratio, position and size are applicable to the Q8, P20 and P10.
- The settings of UMD and borders are applicable to the Q8 only, and the window must be a MVR window for PGM or PVW.

Notes

None

Interface Example (Q8)



Description

Select an MVR window (Q8) or select a PGM or PVW MVR window (P20 or P10), and then set the related properties in the property area on the right pane.

Type	Parameter	Description
-	Aspect Ratio	The aspect ratio of the MVW window
Window position	X	The X coordinate of the window on the MVR screen
	Y	The Y coordinate of the window on the MVR

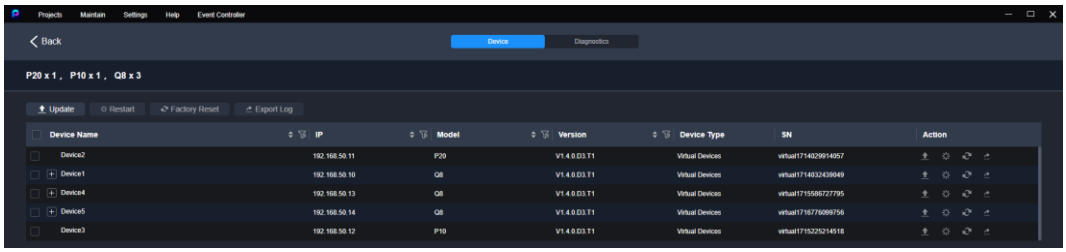
Type	Parameter	Description
		screen
	Width	The horizontal pixels of the window
	Height	The vertical pixels of the window
UMD	UMD	Turn on or turn off the function. • : On • : Off
	Color	The color of the UMD text
Border	Width	The width of the layer left or right border
	Height	The height of the top or bottom border
	Color	The window border color

7.7 Screen Maintenance

7.7.1 Device Maintenance

In the menu bar, select **Maintain**. Select the **Device** tab and the target devices, and then do the following as required.

Figure 7-21 Device maintenance



Update

Note

During the update process, power-off and all operations are NOT allowed.

Step 1 Click **Update**.

Step 2 In the pop-up dialog box, select the update file (.img) and click **OK**.

Step 3 Confirm the devices to be updated, and click the **Update** button.

Step 4 In the pop-up dialog box, click **Yes** and wait until the update completes.

Step 5 After the update completes, click **OK**.

Restart

Click **Restart**. In the displayed dialog box, click **Yes** to restart the device.

Factory Reset

Notes

- Please do this with great caution.
- The reset action does not affect the device firmware version.
- Power-off is NOT allowed during the reset process.
- The device will restart automatically after the reset is completed.

Click **Factory Reset**. In the pop-up dialog box, select **Keep user data** or **Reset all**, and then click **OK**.

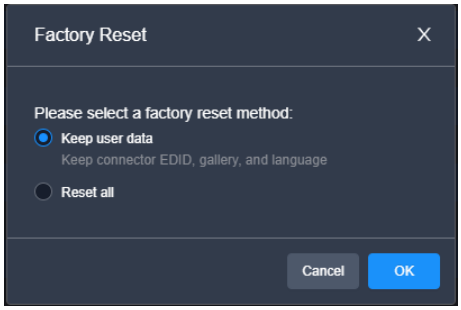
- Keep user data

  Retain the network parameters, project files, EDID files, gallery files and device language settings.

- Reset all

  Retain the network parameters and project files.

Figure 7-22 Factory reset



Export Logs

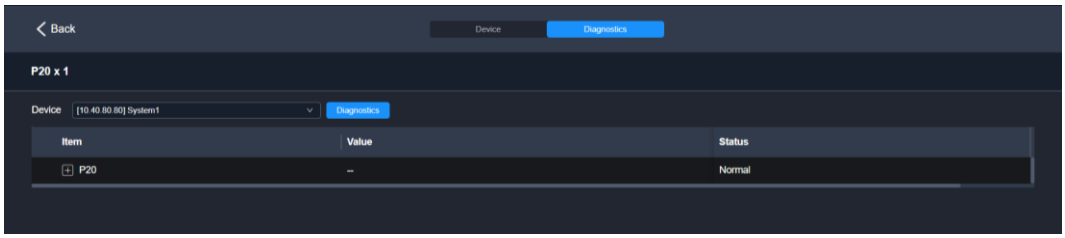
Click **Export Log**. In the dialog box that appears, select a path and click **Save** to save the device logs to local computer.

7.7.2 Device Diagnostics

In the menu bar, select **Maintain**. Select the **Diagnostics** tab, select a device from the drop-down list, and click **Diagnostics**.

After the diagnostics completes, you can view the test result and take necessary measures as required.

Figure 7-23 Device diagnostics



7.8 Software Settings

7.8.1 Switch UI Language

In the menu bar, go to **Settings** > **Language** to switch the UI language.

7.8.2 Configure Input View

In the menu bar, go to **Settings** > **Input View**.

- √: The function is enabled, and the input source will have a live image in the software interface.
- No mark: The function is disabled.

7.8.3 Configure Screen Resources Display

In the menu bar, navigate to **Settings** > **Screen Resources**.

- √: The function is enabled, and the usage of the common screen resources will be displayed in the **Programming** interface.
- No mark: The function is disabled.

7.8.4 Export Log

In the menu bar, go to **Settings** > **Export Log**.

- On a PC, you can export the logs of the PixelFlow software.
- On an event controller, you can export the logs of both the PixelFlow software and event controller.

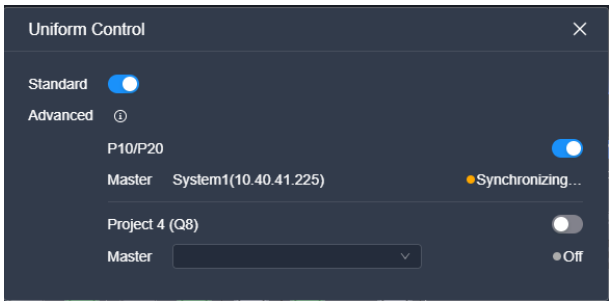
7.8.5 Uniform Control

For devices in the same project, the uniform control function can be activated to facilitate simultaneous operations on multiple seamless switchers.

Step 1 Access the device configuration interface as described in 7.3.1 Enter Device Configuration Page.

Step 2 Navigate to **Settings** > **Uniform Contro**l from the menu bar.

Figure 7-24 Uniform control (Q8)



Step 3 In the window that appears, toggle on **Standard**.

Upon activation, the right side of the menu bar at the top of the event controller will display **Uniform Control: ON**.

Notes

- A single event controller or control PC can simultaneously control multiple seamless switchers.
- All seamless switchers within the same local network and project as the event controller can be controlled simultaneously.
- With advanced control function enabled, if multiple seamless switchers are together used to control a screen and the sync sources of the switchers are consistent, it ensures that the content displayed and switched on the screen remains frame-synchronized.

7.8.6 View Software Info

In the menu bar, go to **Help** > **About Us** to view the software-related info.

7.9 Virtual Event Controller

The virtual event controller offers the same functionalities as the physical event controller's operation panel, enabling you to use the keys and display business statuses in PixelFlow. The features of the virtual event controller include:

- Option to virtualize the U5 or U5 Pro event controller.
- Display of a virtual operation panel in a popup window on a PC
- Device control through the virtual operation panel

Fully customizable keys, identical to those on the physical event controller. For more information, refer to 8.3.17 Key Customization.

8 U5/U5 Pro Event Controllers

About This Chapter

This chapter introduces you to the U5/U5 Pro event controller.

Overview

- Introduction
- Device Operations

8.1 Introduction

The U5 series event controllers are equipped with two touchscreens, a main touchscreen and a smart touchscreen. On the main touchscreen, you can do various intuitive and free configurations for the seamless switchers, such as configurations of layers, layer position, input sources, output resolutions, input keying, layer borders, input crop and presets.

The 8" smart touchscreen displays still images, timecode, switcher and event controller status, and a Multiviewer image (Multiviewer 1, Multiviewer 2, or HDMI 1.3), and can be customized as a virtual MIDI keyboard.

The U5 series event controllers include the following two models:

- U5 event controller
- U5 Pro event controller

8.2 Hardware Introduction

8.2.1 Front Panel

U5 Front Panel

Figure 8-1 U5 front panel

1. Main touchscreen
2. Screen buttons
3. Layer buttons
4. Input buttons
5. Preset buttons
6. Smart touchscreen
7. Function control area
8. Switching control area
9. T-Bar
10. Power button
11. MIDI module area

Note

The U5 LCD screen can be folded and lock at any angle between 45° and 125°.

U5 Pro Front Panel

Figure 8-2 U5 Pro front panel

1. Main touchscreen
2. Device buttons
3. Screen buttons
4. Input buttons
5. Layer buttons
6. Preset buttons
7. Function control area
8. Camera and timecode control area
9. Smart touchscreen
10. Number buttons
11. Switching control area
12. MIDI module area
13. Power button
14. T-Bar
15. Keyboard

16 Drawers

8.2.2 Rear Panel

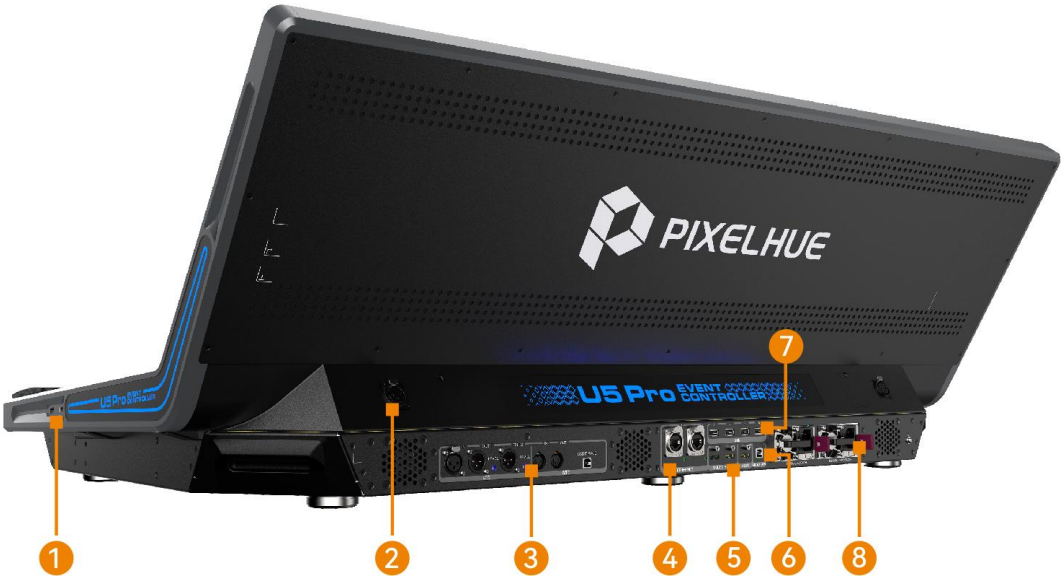
U5 Rear Panel

Figure 8-3 U5 rear panel

1. 2x USB 3.0
2. Timecode module connector (optional module)
3. Gooseneck lamp connector
4. 2x ETHERNET ports
5. 2x HDMI 2.0+1x HDMI 1.3 connectors
6. 4x USB 2.0 ports
7. USB (type-B)
8. 1x Power module

U5 Pro Rear Panel

Figure 8-4 U5 Pro Rear Panel



1. 2x USB 3.0
2. Gooseneck lamp connector
3. Timecode module connector
4. 2x ETHERNET ports
5. 2x HDMI 2.0+1x HDMI 1.3 connectors
6. USB (type-B)
7. 4x USB 2.0 ports
8. 2x Power modules

Connector Description

No.	Area		Connector	Qty	Function
1	USB		USB 3.0	2	2x USB 3.0 on the right side of U5 Connect to the mouse, keyboard, USB drive, etc.
2	Gooseneck lamp connector		-	1 or 2	Connect the gooseneck lamp. The U5 has one gooseneck lamp connector and the U5 Pro has two.
3	Timecode module	LTC	3-pin XLR connector	3	1x LTC IN, 2x LTC OUT • Connect to the external LTC-format timecode input device. • LTC timecode output
		MTC	5-pin XLR connector	3	1x MTC IN, 1x MTC OUT, 1x USB (type-B) • MTC IN: Connect to the external MTC-format timecode input device. • MTC OUT: MTC timecode output • USB DEVICE: Support input and output of MTC timecodes from USB MIDI device
4	ETHERNET		Neutrik Ethernet ports	2	2x Neutrik Gigabit Ethernet ports • Connect to the Ethernet control port of the backend control device. • Support mutual backup mode. The two Ethernet ports use the same IP address. • Support independent mode. The two Ethernet ports use two IP addresses. • Support transmission of the input view information.
5	MULTIVIEWER		HDMI 2.0	2	• Generally connect to the MVR connector of the seamless switcher to view the output

				monitoring. • Up to 4K×2K@60Hz
	HDMI	HDMI 1.3	1	• Generally connect to the output connector of the media server to display its user interface. • Up to 2K×1K@60Hz
6	USB	USB 2.0	4	Connect to the mouse, keyboard, USB drive, etc.
7	MIDI / KVM	USB (type-B)	1	• KVM: Connect to a PC or media server via USB cable for KVM control. • MIDI: Connect to the MIDI control device for MIDI command output. • KVM and MIDI can be turned on at the same time.
8	Power module -	-	1 or 2	• Power connector specifications: 100-240V~, 6A, 50/60Hz • The U5 has one power module. • The U5 Pro has two power modules, one primary and one backup.

8.3 Device Operations

8.3.1 Basic Operations

- Press: Press the button and release it within 3 seconds.
- Hold down: Press and hold the button for 3 seconds or longer.
- Click/Tap: Click or tap the menu once on the screen.
- Double click/tap: Click or tap the same area twice quickly.
- Combination of buttons: Hold down  or  to activate combination function and then press another function button to trigger the corresponding function.
- Pinch in or stretch out: Place two fingers on the touchscreen and pinch in or stretch out. This operation is only to zoom in or out pictures on the smart touchscreen.

8.3.2 Startup and Shutdown

Prerequisites

A power supply is connected and the power is supplied normally.

Startup

Press the button in the upper right corner of the panel, and the system will automatically start up. After startup, the main touchscreen displays the home screen.

Shutdown

Power off the event controller through the following methods:

- Press the button in the upper right corner of the panel, select **OK** in the pop-up dialog box on the main touchscreen, and the system will shut down.
- During the startup process, hold down the button to force shutdown.
- On the main touchscreen, choose **Settings** > **Event Controller** at the top and select the **Other** tab on the displayed page. In the Event Controller Power area, click **Shut Down**, and the device will automatically shut down.

Restart Event Controller

On the main touchscreen, choose **Settings** > **Event Controller** at the top and select the **Other** tab on the displayed page. In the **Event Controller Power** area, click **Restart**, and the device will automatically restart.

Note

During startup or shutdown, the PIXELHUE logo is displayed on the home screen.

8.3.3 Main Touchscreen

The U5 has a 21.5” multi-touch main touchscreen with a resolution of 1920×1080.

The U5 Pro has a 43.8” multi-touch main touchscreen with a resolution of 1920×1080.

On the main touchscreen, the built-in software user interface is displayed for you to do a lot of operations, such as adding devices, configuring screens, configuring inputs and outputs, configuring gallery, adding and deleting layers, configuring presets, configuring Multiviewer, importing and exporting project files, configuring the smart touchscreen, configuring the event controller skin, language and light, and much more.

The main touchscreen supports the click, double-click, tap and double tap operations via the connected mouse or your finger.

8.3.4 Device Buttons

The U5 does not support switching between connected devices through buttons, while the U5 Pro supports switching between up to 16 connected seamless switchers through buttons. However, the buttons do not page-turning.

When only one device is connected to the U5 Pro, the buttons in its device area will be automatically used as screen buttons.

Figure 8-5 Device buttons

Operations and status description of the 16 Device buttons:

- The LCD button displays the device name. Pressing the button switches to the device corresponding to the button name for you to control that device.
- White: A device is bound to this button but not selected.
- Green: A device is bound to this button and is being operated.
- Yellow: A device is bound to this button, but the device is offline.
- Blank button: No device is bound to this button.

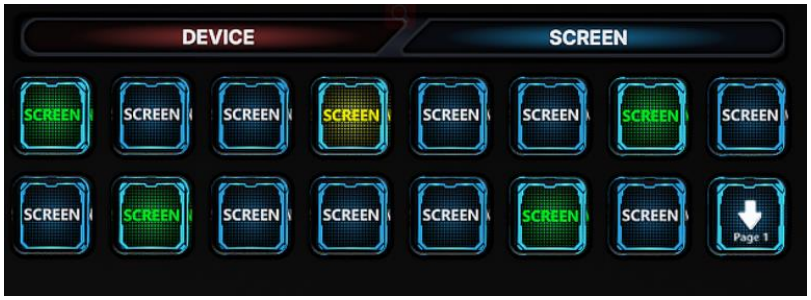
8.3.5 Screen Buttons

Pressing a screen button selects the corresponding screen, and the PVW page of that screen will be displayed on the main touchscreen.

The screen name displayed in the screen button can be modified through the screen editing page.

The screen quantity and screen name depend on the selected device connected to the event controller.

Figure 8-6 Screen buttons



Screen Button Status

The screen buttons have the following statuses:

- Green: Screens are added to this button and being operated.
- Yellow: Screens are added to this button but not selected.
- Blank: No screens are added to this button.

Screen Button Operations

- Press the screen button (yellow) bound with screens to select this screen. After the screen is selected, the screen button turns green, and the corresponding screen in the main touchscreen enters the PVW activated status.
- Press different screen buttons consecutively to select multiple screens.
- Holding down the selected screen cancels screen selection. The button will turn yellow, and the screen corresponding to the button will become unselected in the main touchscreen.
- Pressing the button with no screens bound (blank button) quickly creates a screen. For that created screen, the system uses an unused and top-ranked output connector to add a screen. If there is no unused output connector, an empty screen will be created.

Screen Page Up/Down

If there are too many screens, they will be displayed on different screen pages on the screen buttons. The first page is displayed by default and the page jumping operation is performed in the following method.

- Page Down: Press  to jump to the next page. For example, when the page button displays **Page 1** currently, press  to jump to the screens displayed in **Page 2**.
- Page Up: Button combination should be used.
  - U5: Press  while holding down the control button  in the control area to jump to the previous page. For example, when the page button displays **Page 2** currently, use the combination of  and  buttons to jump to the screens displayed in **Page 1**.
  - U5: Press  while holding down the control button  in the control area to jump to the previous page. For example, when the page button displays **Page 2** currently, use the combination of  and  buttons to jump to the screens displayed in **Page 1**.

8.3.6 Input Source Buttons

Press an input source button to select an input source for the layer.

When a layer is selected, press an input source button to switch the layer input source.

The U5 Pro has 30 input buttons and 2 page turning buttons.

The U5 has 15 screen buttons and 1 page turning button. To jump to the previous page, use the combination of  and  buttons.

Figure 8-7 Input source buttons

The input source page turning button supports cyclic page turning.

All the input sources are bound to the input buttons by default. When the input source changes, the button name will be automatically updated.

The status of input source buttons are described as follows:

- Green: The input source is being used by the selected layer.
- Yellow: The input source corresponding to the button has signal but it is not used by the layer.
- Red: The input source corresponding to the button has signal but it is used by the layer.
- Orange: The input source corresponding to the button exceeds the connector's load capacity.
- White: The input source corresponding to the button has no signal.
- Blank button: The button does not have corresponding input source.

8.3.7 Layer Buttons

Pressing a layer button selects the corresponding layer and the PVW page of the screen corresponding to that layer will be displayed on the main touchscreen with that layer in the selected status.

The layer name displayed in the layer button can be modified on the layer editing page.

- The U5 Pro has 34 layer buttons and 2 page turning buttons.
- The U5 has 15 layer buttons and 1 page turning button. To jump to the previous page, use the combination of and buttons.

Figure 8-8 Layer buttons

Layer Button Status

- Green: The layer is selected.
- Yellow: The layer is added but not selected.
- Blank button: The button does not have corresponding layer.

Layer Button Operations

- Pressing the layer button (yellow) bound with layer selects this layer. After the layer is selected, the layer button turns green. On the main touchscreen, the PVW area of the screen where the layer belongs to enters the activated status and the corresponding layer is selected.
- Pressing the button with no layers bound (blank button) quickly creates a layer. The system uses an unused and top-ranked source with signal as the source for that created layer.

  The default source used by the system is the one connected to the input connector that has the smallest number on the input card with the smallest number as well.

8.3.8 Preset Buttons

Pressing the preset button loads a saved preset to the screen PVW area.

The preset name displayed in the preset button can be modified on the preset list page.

- The U5 Pro has 34 preset buttons and 2 page turning buttons.
- The U5 has 15 preset buttons and 1 page turning button. To jump to the previous page, use the combination of  and  buttons.

Figure 8-9 Preset buttons

Preset Button Status

- Green: The preset has been loaded to the screen PVW.
- Yellow: The preset is saved but not loaded.
- Red: The preset has been loaded to the screen PGM.

- Blue: This button is bound with the program of the media server. Pressing this button switches the program of the media server.
- Purple: This button is bound with a preset and the program of the media server. Press this button to switch the program of the media server and switch the preset of the seamless switcher.
- Blank button: The button does not have corresponding preset or program.

8.3.9 Function Control Area

Figure 8-10 Function control area of U5 Pro

- FTB: Make the output image fade to black.
- FRZ: Freeze the current frame of the output image.
- MATCH PGM: Press to synchronize all layer information in PGM to PVW.
- PGM EDIT: Enable or disable the PGM editing function. After it is enabled, the layers in the current screen PGM can be edited.
- / : Control button, which can be used together with another button. Press and hold this key, and then press another function button to realize a specific function. For example, press while holding down on the U5 Pro to jump to the previous page.
- MVR: MVR button for checking the Multiviewer image on the right side of the main touchscreen from the MULTIVIEWER and HDMI IN connectors on the rear panel. If you press it consecutively, the Multiviewer image will be switched with the order of MULTIVIEWER (HDMI 1) > MULTIVIEWER (HDMI 2) > HDMI I
- : MEDIA button. When the HDMI IN connector is connected to the media server, its user interface will be displayed on the main touchscreen. If its user interface is displayed by pressing the MVR button, pressing the MEDIA button enables KVM control.
- : Press to stretch the selected layer to fill the screen area(s) in which the selected layer is located before it is stretched.
- DSK: Press to enter the DSK page for you to do chroma key and luma key operations on the input source.

-  : Press to bring the selected layer to front.
-  : Press to send the selected layer to back.
-  : Press to copy the selected layer.
-  : Press to flip the selected layer
- 

: Hold down to lock the T-Bar. After it is locked and then pushed, the layer will not be switched.
- 

: Hold down to lock the front panel and main touchscreen of the event controller. After locked, they cannot be used.
-  : In the U5 event controller, press this button to turn the page of the two rows of buttons on the left of this button.
- Blank button: Reserved button for custom functions.

8.3.10 Camera and Timecode Control Area

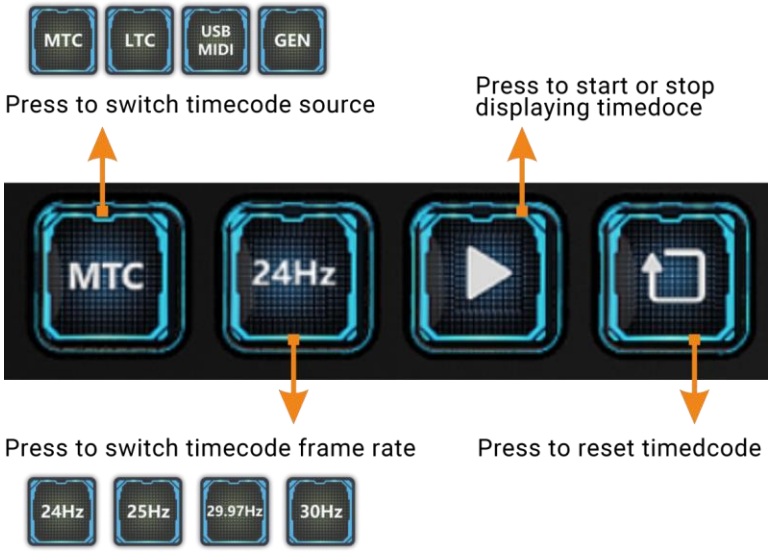
The U5 Pro allows for adjusting the PTZ camera position and the timecode output.

- 

: Save to button. Press to activate the save to function and the button flashes yellow. Then, press a preset button, and the current layer or program will be saved to the selected preset.
- 

: Delete button. Press to activate the delete function and the button flashes yellow. Then, press a preset, layer or screen button, and the selected preset, layer or screen will be deleted.
- 

: Timecode module control buttons



- PTZ camera adjustment buttons:
  -  : Save the PTZ position after adjustment as a pattern for quick PTZ switching in the future. Press the button to activate it and it flashes yellow. Then, press **Pattern 1** or **Pattern 2** to save the PTZ camera positions in the two buttons.
  -  : Adjust the PTZ camera shooting angle up, down, left and right.
  -  : The saved PTZ camera positions. Press these buttons to apply the position to quickly adjust the PTZ camera.

8.3.11 Smart Touchscreen

Figure 8-11 Smart touchscreen home

Import Still Images

Step 1 Save the pictures to be imported into the smart touchscreen to the USB drive.

Step 2 Insert the USB drive to the USB port on the side panel of the event controller.

Step 3 On the main touchscreen, choose **Settings** > **Event Controller**, and select the **Smart Screen** tab to enter the tab page.

Step 4 In the **Still Images** area, click  to add a pictures.

Step 5 Select the inserted USB drive in the pop-up dialog box, select the necessary picture files, and click **Open** to import the selected pictures to the smart touchscreen.

Up to 8 pictures in png, jpeg, jpg, and bmp formats can be imported into the smart touchscreen.

View Images on Smart Touchscreen

On the smart touchscreen, click **Still Images** to enter the subpage.

- Still images are displayed in full screen mode on the smart touchscreen by default.
- Swipe left or right to view the next or previous image. The images will cycle in a continuous loop as long as you keep swapping.
- After you turn on slideshow function, the images will automatically cycle in a continuous loop as long as the slideshow function is turned on.
- Pinch with two fingers to zoom in or out the still images.

View Timecode

On the smart touchscreen, click **Timecodes** and view the timecode information of output.

Figure 8-12 Timecode displayed

There are two ways to configure timecode:

- On the main touchscreen, choose **Settings** > **Event Controller**, select the **Smart Screen** tab to enter the tab page, and configure the timecode display format and display information.
- In the “timecode control area” on the U5 Pro panel, press the corresponding button to change the timecode format, enable or reset timecode.

Check Event Controller Running Status

On the home of smart touchscreen, click **Health** to enter the subpage where you can check the following information:

- CPU, RAM, motherboard, and disk running status
- Power supply and HDMI connector connection status
- Transmission rate of the Ethernet ports

Figure 8-13 Event controller health

View Multiviewer Images

On the home of smart touchscreen, click **Multiviewer** to enter the Multiviewer (MVR) page.

Figure 8-14 Video page

The following requirements must be met to view Multiviewer images.

- The HDMI 2.0 connector in the **MULTIVIEWER** area on the rear panel of the event controller has been connected to the Multiviewer connector of the seamless switcher.
- The Multiviewer configuration is completed on the main touchscreen.
- The software control output connector of the media server has been connected to the HDMI 1.3 connector on the rear panel of the event controller.
- On the event controller area of the front panel, press 

to switch between Multiviewer image and image from the media server. Each time you press it, the image displayed on the smart touchscreen display screen changes from MVR1 to MVR2 and then HDMI 1.3 (control interface of the media server).

8.3.12 Number Buttons

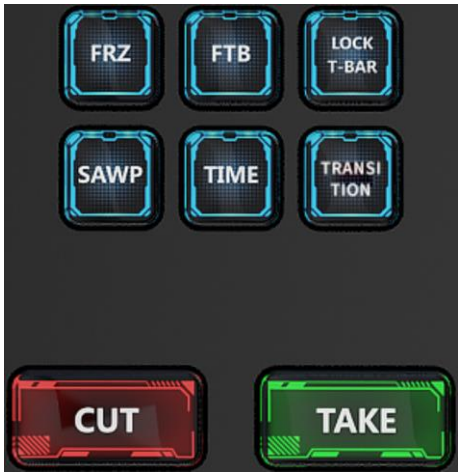
The U5 Pro is equipped with number buttons, which are used to enter numbers when adjusting layer size, position, etc.

Figure 8-15 Number buttons

-  to  : Press to enter the corresponding number.
-  : Press to subtract 1 from the current number for fine adjustment.
-  : Press to add 1 to the current number for fine adjustment.
-  : Press to enter the decimal point.
-  : Press to delete a number or character to the left of the cursor.
-  : Confirm and exit the current input.

8.3.13 Switching and Control Area

Figure 8-16 Switching and control area



- FRZ: Freeze all the images of the selected screen.
- FTB: Make the output images displayed on the selected screens fade to black.
- LOCK T-BAR: Lock the T-Bar. After it is lock, pushing T-Bar does not take effect.
- SWAP: Press the button to enable or disable the SWAP function.

- SWAP enabled: The button is solid green and the switching mode from PVW to PGM is swapping. That is, the PVW and PGM images are swapped during image switching.
- SWAP disabled: The button is off and the switching mode from PVW to PGM is copying. That is, PGM copies the PVW image during image switching.
- TIME: Set the transition effect duration.
- Trans: Set the transition effect during switching.
  Currently only the **Fade** effect is supported.
- CUT: Press to send PVW to PGM directly without transition effect.
- TAKE: Press to send PVW to PGM with a selected transition effect.

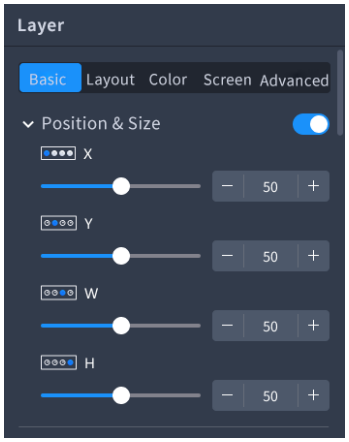
8.3.14 MIDI Module Area

The MIDI module has 4 encoders and 8 faders, which can be used for property adjustment or MIDI keyboard control.

- When used as a property adjustment, they can adjust the layer size, position, image quality, etc.
- To use them used as a MIDI keyboard, connect the USB (MIDI/KVM) connector of the event controller to the controlled device, such as an audio console, a lighting console, etc.

After the property adjustment information is bound to the encoders and faders, the corresponding encoder or fader icons will be displayed on the property adjustment page.

Figure 8-17 Bound to encoders



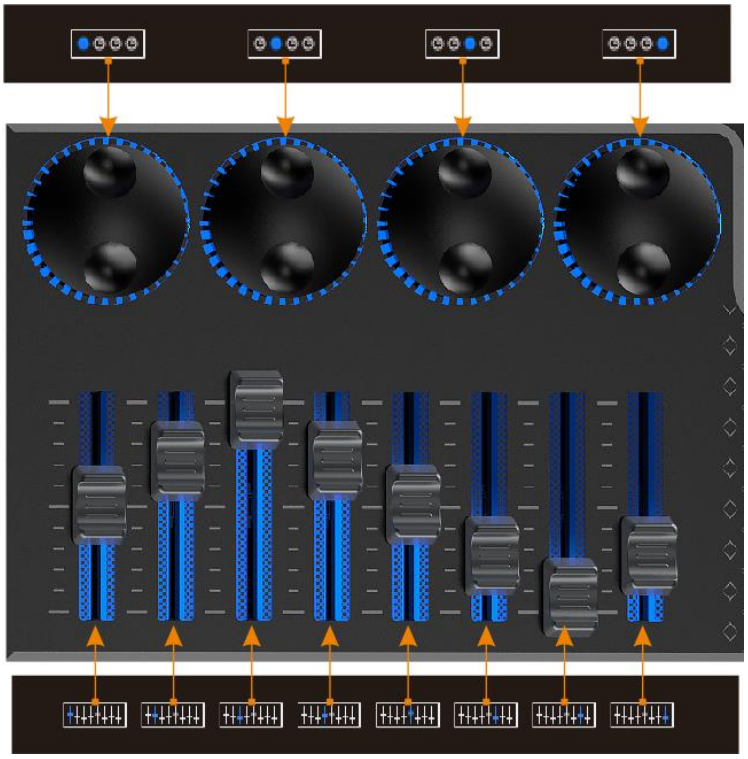
When you enter a property area, the adjustment parameters are automatically bound to the encoders and faders, and the binding relation icons are displayed under the menu in the property area. The corresponding relation between the icons and MIDI buttons is shown in the figure below.

When you rotate an encoder or a fader, the system automatically adjusts the parameters corresponding to the encoder or fader. If a property parameter does not have a corresponding encoder or fader, rotating the encoder or pushing the fader does not take effect.

- Turn the encoder right to increase the corresponding parameter value, and turn the encoder left to decrease the value.

- Push the fader up to increase the corresponding parameter value, and pull the fader up down to decrease the value.

Figure 8-18 Binding relationship between menu adjustment and MIDI buttons



8.3.15 Power Button

- Press the button in the upper right corner of the panel, and the system will automatically start up. After startup, the main touchscreen displays the home screen.
- Power off the event controller through the following methods:
  - Press the button in the upper right corner of the panel, select OK in the pop-up dialog box on the main touchscreen, and the system will shut down.
  - During the startup process, hold down the button to force shutdown.

8.3.16 T-Bar

Pushing the T-Bar up or pulling it down to manually control the switching from PVW to PGM. The LED indicator shows the switching progress.

During the process of pushing or pulling the T-Bar, pressing the buttons on the front panel of the event controller does not take effect.

Figure 8-19 T-Bar area

8.3.17 Key Customization

This feature supports the following functions:

- Supports simulation of all physical keys, encoders, faders and T-bar of the event controller.
- Allows you to customize the business bound to the keys, key function properties, key styles, and MIDI parameters.
- Allows you to save the key customizations as multiple configuration files for easy recall and transfer them across different event controllers.

8.3.17.1 Switcher Layout Configuration

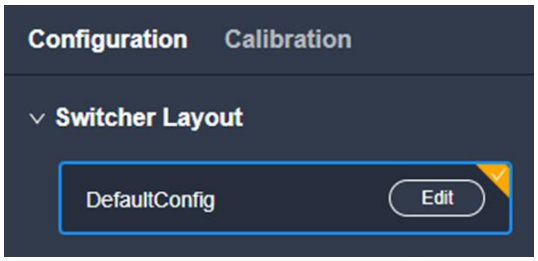
This function allows you to bind devices, screens, inputs, layers and presets to the physical keys in the corresponding key area on the event controller.

Step 1 From the device list on the primary touchscreen, double tap a device to enter its page.

Step 2 From the menu bar on the top, tap **Custom Keys**.

Step 3 In the **Switcher Layout** area, select a configuration file and tap **Edit**.

Figure 8-20 Switcher layout configuration



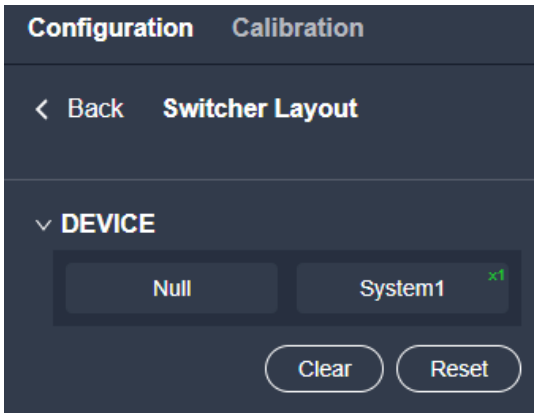
Step 4 From the switcher layout menu bar on the left, select a desired business and bind it to a key (Refer to Figure 8-30 for key area description and Table 8-1 for binding area restrictions.)

Figure 8-21 Binding switcher business to keys

- Tap a desired business and then tap the target key in the corresponding area to complete binding.
- Tap and drag a business to the target key in the corresponding area to complete binding.
- Batch binding: In the **Batch Bind** area in the left menu bar, select the binding type, enter the business start, business end, key start and key interval, and tap **Bind**.

Step 5 (Optional) Reset: From the switcher layout menu bar on the left, tap **Reset** in the corresponding business property area.

Figure 8-22 Reset



Note

- You can only edit and save the default switcher layout configuration file.
- You can bind a business to multiple physical keys.
- You can not clear the binding relationships of the switcher layout configuration.

8.3.17.2 Event Controller Layout Configuration

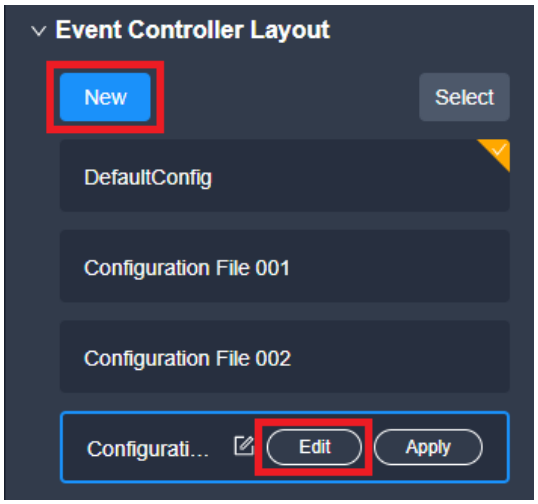
This feature allows you to configure the key properties for areas 1 to 8 (refer to Table 8-2 for key area descriptions) as device, screen, input, layer, preset, or custom settings. You can also bind keys to various events, including system functions, layer editing, timecode editing, PTZ control, input parameter adjustment, output parameter adjustment, screen parameter adjustment, layer parameter adjustment, and PTZ parameter adjustment.

Step 1 From the device list on the primary touchscreen, double tap a device to enter its page.

Step 2 From the menu bar on the top, tap **Custom Keys**.

Step 3 In the **Event Controller Layout** area, tap **New** to enter the layout configuration file editing page (To edit an existing file, tap to select it and then tap **Edit**.)

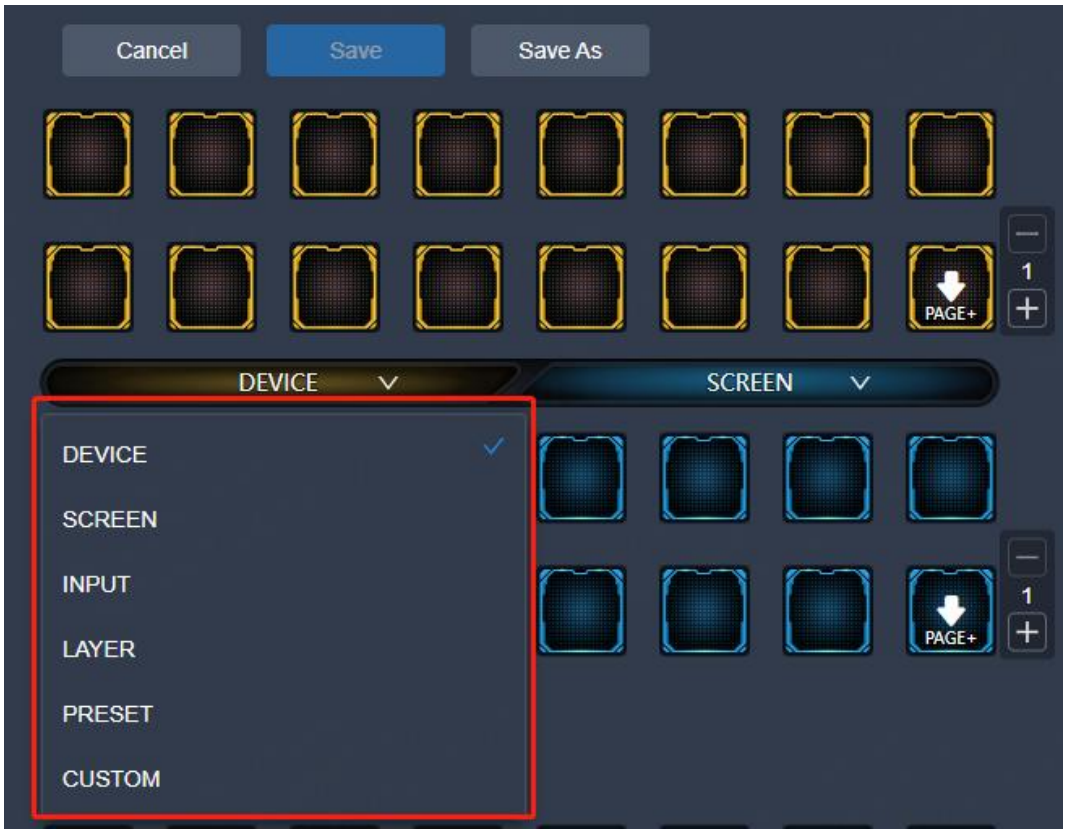
Figure 8-23 New/Edit



Step 4 From the key property drop-down box, select a property to complete key area property customization.

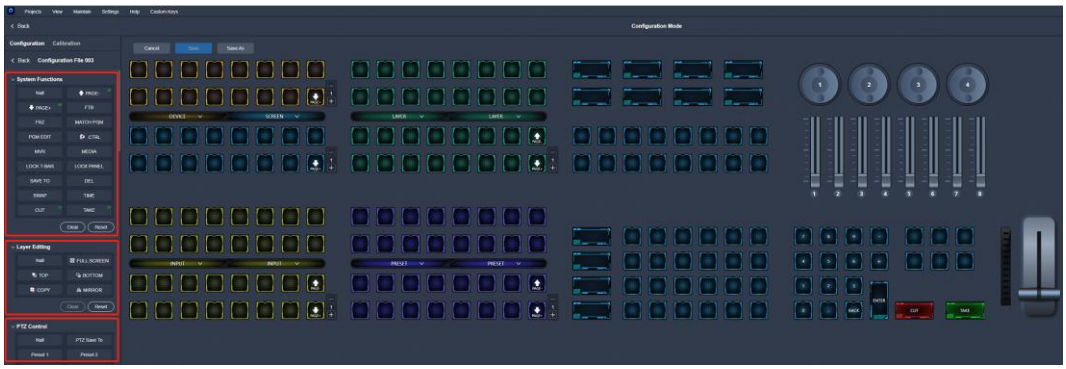
For example, after you set the property of a key area to **SCREEN**, you can bind screens to keys in this key area. After you set the property of a key area to **CUSTOM**, you can bind the system functions, layer editing, timecode editing, and PTZ control events to keys in this key area.

Figure 8-24 Key properties



Step 5 From the left menu bar, select an event and bind it to a key. (Refer to Figure 8-30 for key area description and Table 8-1 for binding area restrictions.)

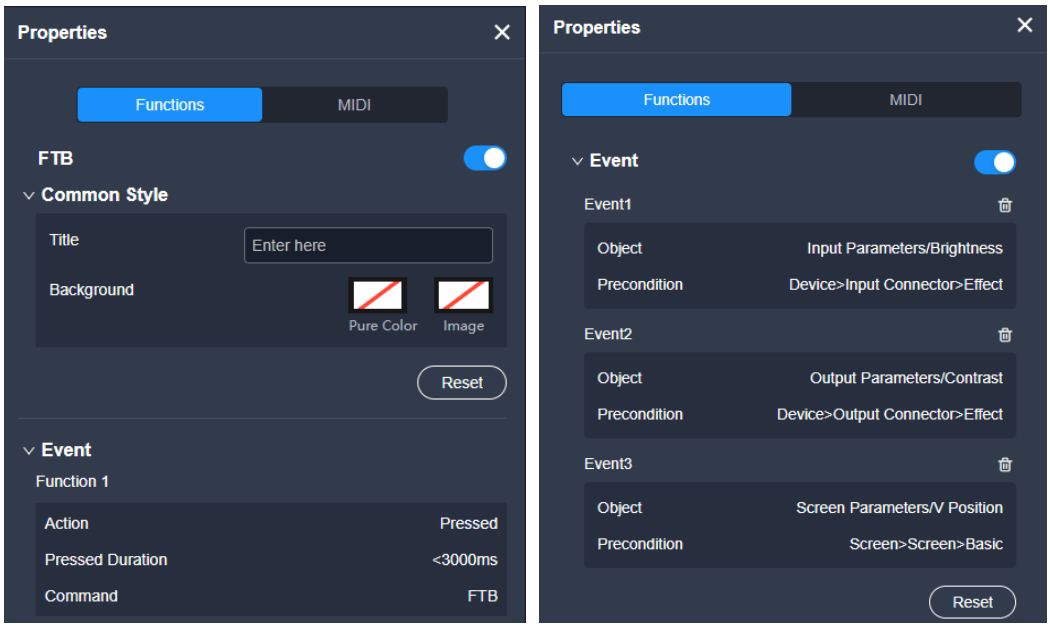
Figure 8-25 Binding events to keys



- Select an event, and tap the target key in the corresponding key area.
- Tap and drag an event to the target key in the corresponding key area.

Step 6 (Optional) Set the key properties. (Refer to Table 8-2 for related restrictions.)

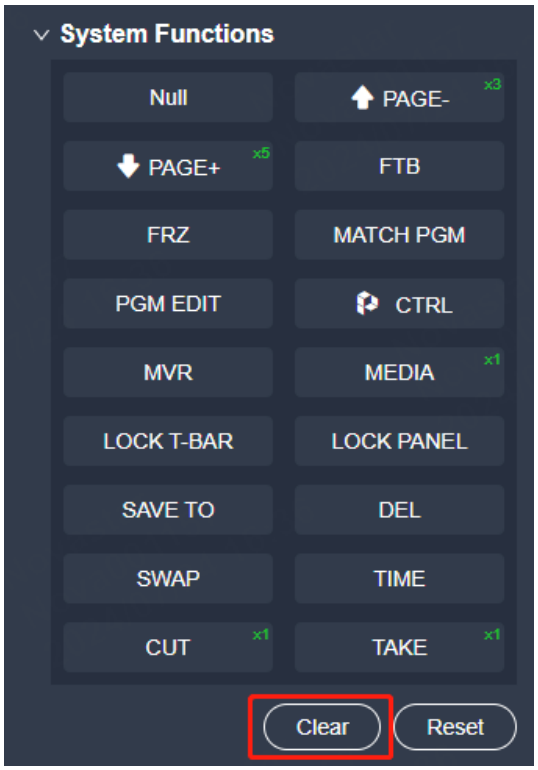
Figure 8-26 Property settings



- Enable/Disable key functions/events: Tap the switch button on the right menu bar.
- Set common style: select a key and set the title and background on the right menu bar.
- Event precondition: Only the events that can be bound to key area 11 have precondition.
- Set MIDI: Select **MIDI** from the right menu bar, enable the event switch, and set the MIDI parameters.

Step 7 (Optional) Clear binding: On the menu bar of event controller configuration, tap **Clear** in a business property area.

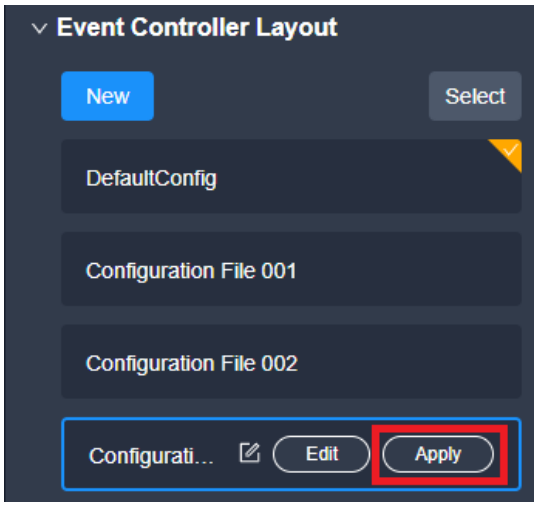
Figure 8-27 Clearing



Step 8 Tap **Save** or **Save As** to save your customization as a configuration file.

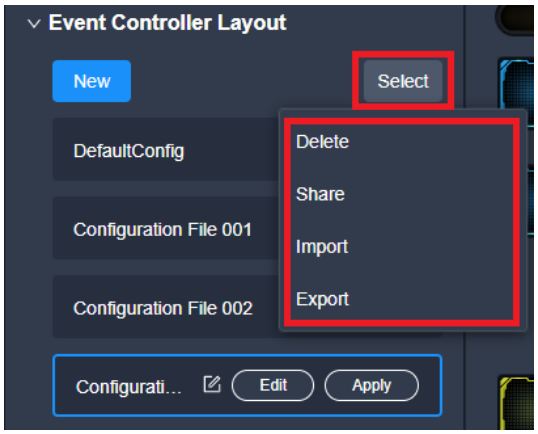
Step 9 Go back to the configuration file list, select a configuration and tap **Apply** to apply it to the event controller.

Figure 8-28 Applying



Step 10 Tap **Select** at the top of the layout configuration file list. A drop-down menu will appear, allowing you to delete, share, import, or export configuration files.

Figure 8-29 Related operations



Note

- You can create up to 128 event controller layout configuration files, including one default configuration.
- The default configuration file can be edited, but cannot be deleted, shared, or exported.
- A single event can be bound to multiple physical keys.
- The event controller supports MIDI key parameter customization and MIDI output switch settings, but these features are not available in the PixelFlow on PC.

Figure 8-30 Key areas of the U5 Pro (the U5 lacks areas 5 to 9)

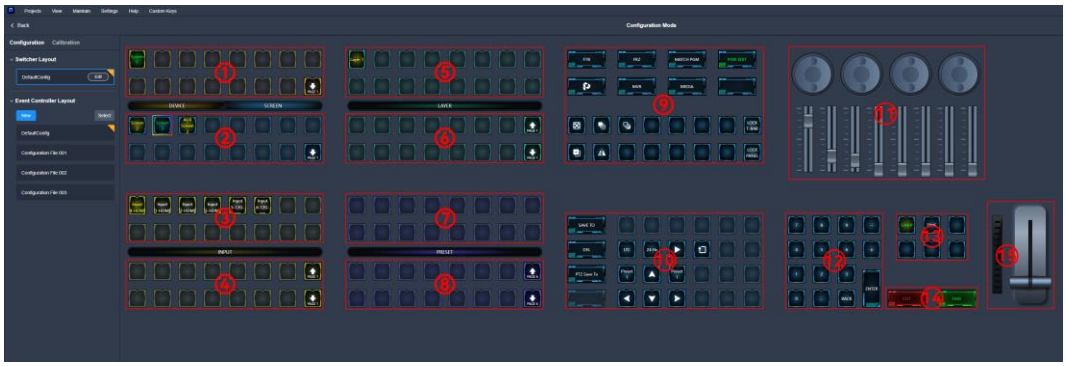


Table 8-1 Binding area restrictions

Business/Event Properties		Available Key Areas
Switcher layout configuration	Device	1
	Screen	2
	Input	3, 4
	Layer	5, 6
	Preset	7, 8

Business/Event Properties			Available Key Areas
Event controller layout configuration	System functions	Page+, Page-	1 to 10, 12 to 15, custom property key area
		Others	9, 10, 13, custom property key area
	Layer editing		9, 10, 13, custom property key area
	Timecode editing		9, 10, 13, custom property key area
	PTZ control		9, 10, 13, custom property key area
	Input parameter adjustment		11
	Output parameter adjustment		11
	Screen parameter adjustment		11
	Layer parameter adjustment		11
	PTZ parameter adjustment		11

Table 8-2 Key area description

Key Area	Key Property Settings	Number of Businesses/Events That Can Be Bound to a Key
1 to 8	None	1 business
9	Support common style settings	1 event
10	Support common style settings	1 event
11	Support event and MIDI settings	Multiple events (The preconditions for these events must be distinct.)
12 to 15	None	Do not support binding.

8.3.18 Keyboard

The U5 Pro has a built-in 61-key mechanical keyboard. To open the keyboard, just pull the middle section on the front panel.

8.3.19 Drawers

The U5 Pro is equipped with two drawers for you to put some wires or small objects. To open the drawers, just pull the two sections next to the keyboard out on the front panel.

9 Stream Deck Control

About This Chapter

The Q8 and P series (P10 and P20) seamless switchers support control through a third-party device - Stream Deck. When controlling through Stream Deck, it is necessary to complete the configuration of Stream Deck device through the Companion software.

This chapter walks you through how to control the seamless switchers through Companion.

Overview

- Software Obtaining and Preparations
- Software Configuration

9.1 Software Obtaining and Preparations

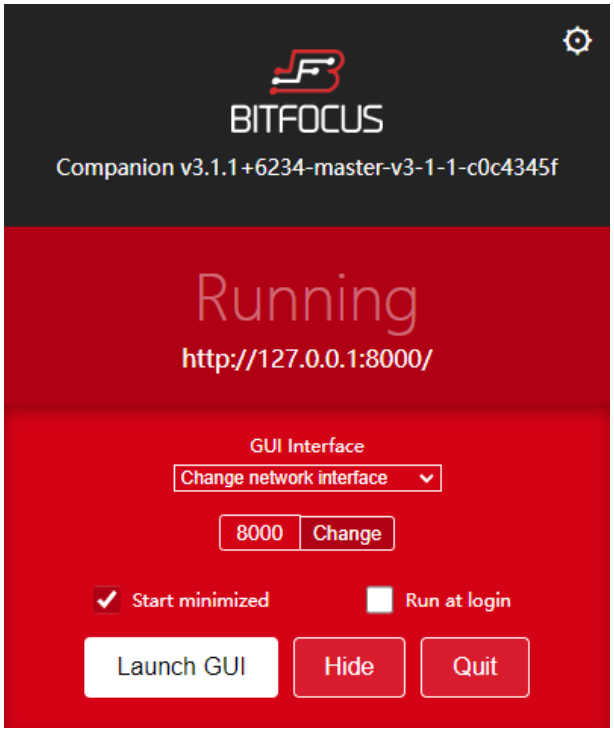
- User registration has been completed in companion official website (https://bitfocus.io/companion).
- The supported Companion software version has been obtained from technical support.
- Ensure that Stream Deck is connected to a computer with Companion installed, using a USB cable, and that both the computer and the seamless switcher are on the same network segment.

9.2 Software Configuration

Step 1 After downloading the Companion installation package, double click the package to install the software.

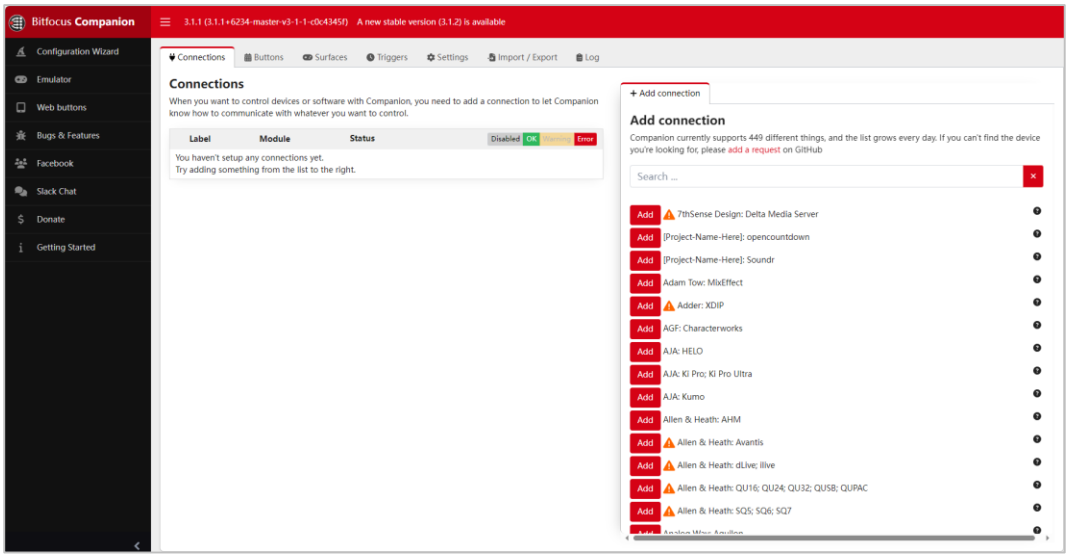
Step 2 After the installation, double click the Companion software shortcut to open the software.

Figure 9-1 Companion software interface



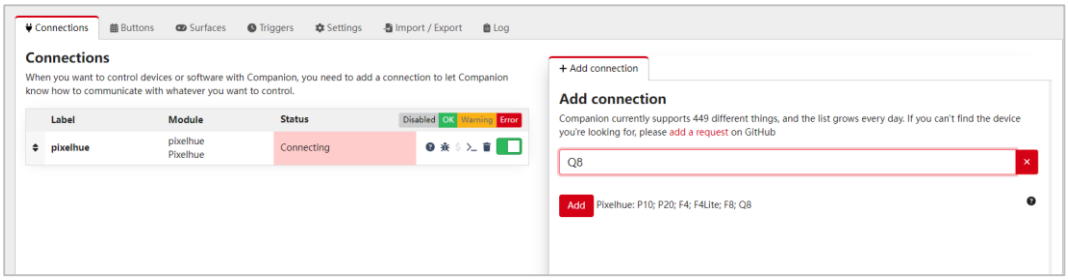
Step 3 Click **Launch GUI** to enter the Companion configuration page.

Figure 9-2 Companion configuration page



Step 4 Enter the desired device name in the **Add connection** area search box on the **Connections** interface, “Q8” for example, and the system will automatically display all relevant product models.

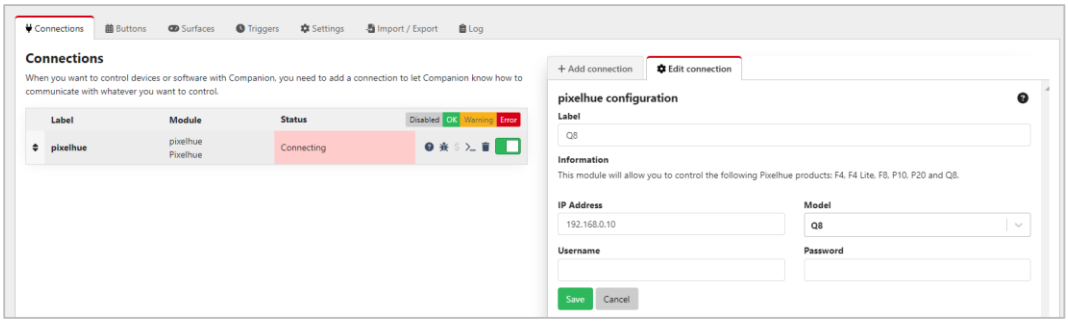
Figure 9-3 Search software



Step 5 Click **Add** before the device model you want to control.

Step 6 After adding the device, the system enters the **Edit Connection** configuration interface.

Figure 9-4 Connection configuration



Step 7 Configure the control device.

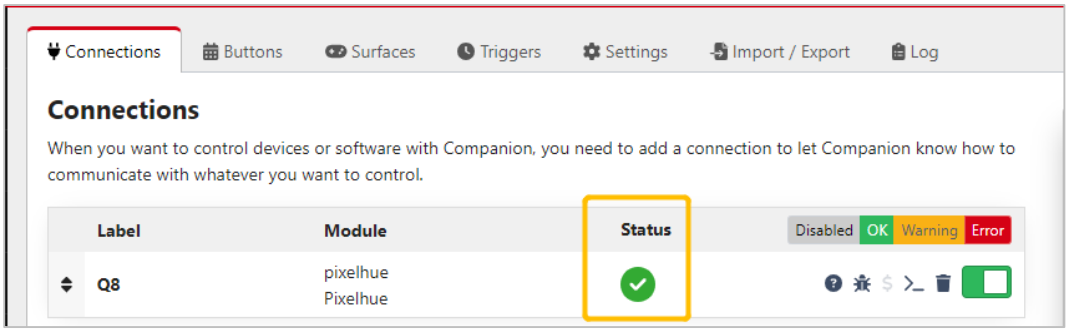
- Label: The name of the controlled device is required. The name can only contain letters, numbers, underscores and dashes.

- IP Address: Enter the IP address of the device to be controlled.
- Model: Select the controlled device.
- Username: For the P series and Q8 with firmware version below 1.3.1, enter the username (default: “admin”). For those with firmware version 1.3.1 or above, this parameter is not displayed.
- Password: For the P series and Q8 with firmware version below 1.3.1, enter the password (default: “MTIzNDU2”). For those with firmware version 1.3.1 or above, this parameter is not displayed.

Step 8 Click **Save** to complete the connection configuration.

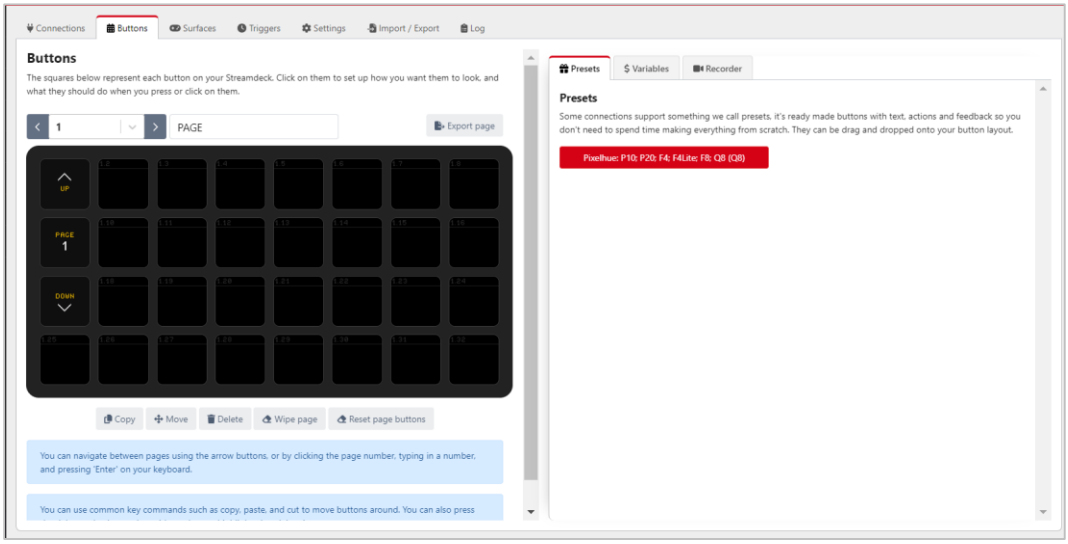
If the configuration is correct, under the **Connections** tab, the status of the connected device is displayed as .

Figure 9-5 Device connection complete



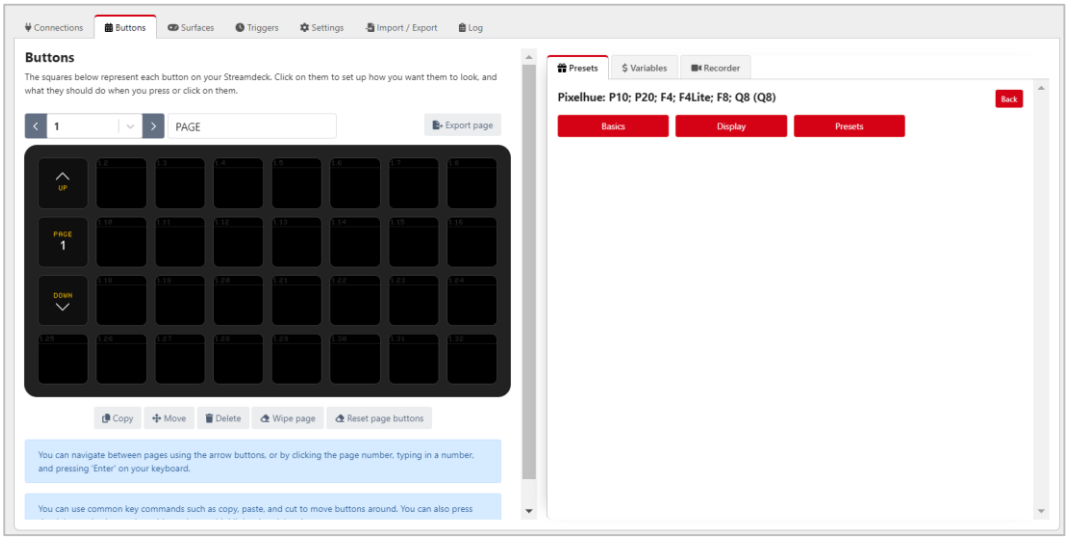
Step 9 Click **Buttons** to enter the Stream Deck button configuration interface.

Figure 9-6 Stream Deck button configuration



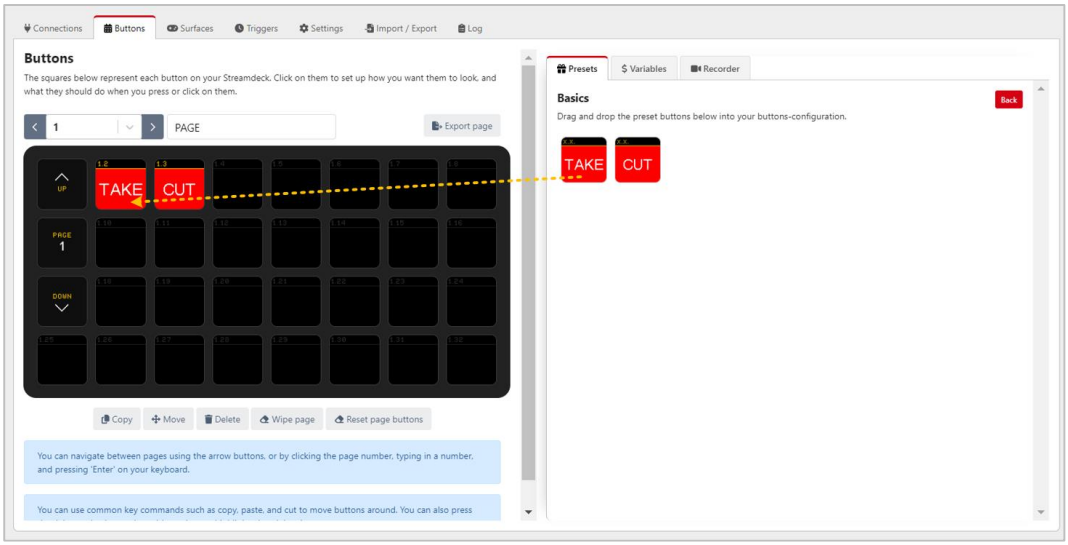
Step 10 In the **Presets** area on the right, click the added control device to expand the preset function menu.

Figure 9-7 Preset function menu



Step 11 Click one of the **Basics**, **Display** and **Presets** menu buttons on the right side to expand the function list, drag the function buttons on the right side to the buttons of Stream Deck on the left side, and complete the button binding between the control function and Stream Deck.

Figure 9-8 Function binding - Basics



Note

Since Stream Deck does not support page navigation horizontally, when adding functions to the buttons on the Stream Deck, make sure the number of buttons horizontally matches the physical device.

Step 12 Click **Back** to select a different function menu and complete more function bindings.

Figure 9-9 More function binding - Display

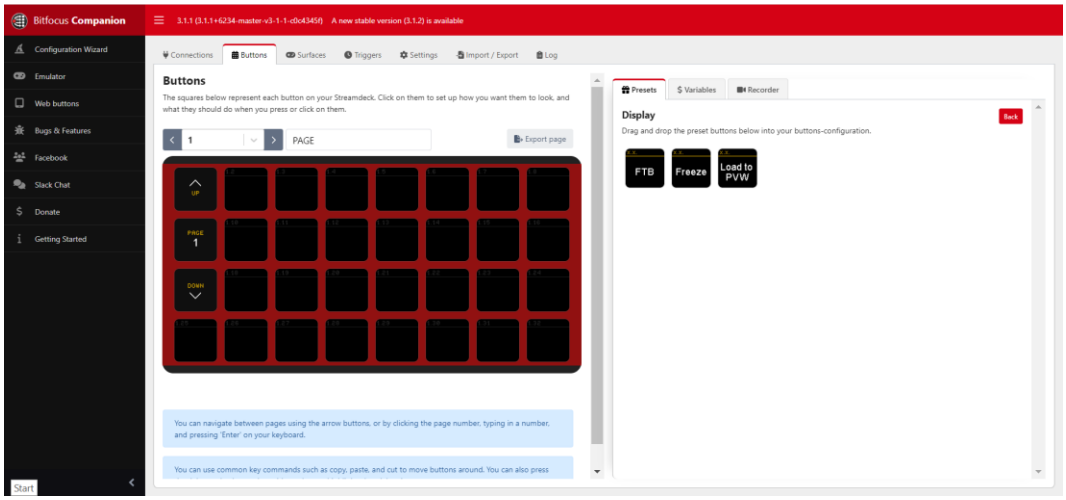
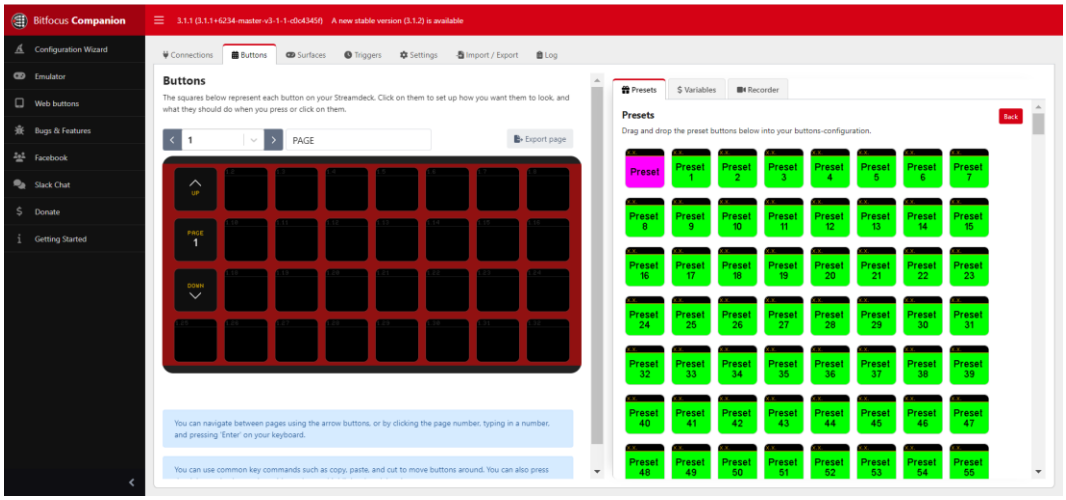


Figure 9-10 More function binding - Presets



Step 13 After the configuration is completed, the function name will be displayed on the button of Stream Deck. Press the corresponding button, and check whether the function bound to the button is triggered in the controlled device.

- Yes = > Stream Deck is successfully configured.
- No = > Contact your technical support to find out the reason and reconfigure.

Other Operations

- Replace button function

  Directly drag a new function from the right side list to the target button to replace the existing function.

- Delete button function

  Click **Delete** at the bottom to activate button function deletion. Click the function on the button that needs to be deleted to delete the corresponding function.

- Clear button functions

  Select the button page that needs to be cleared, click **Wipe page** at the bottom to clear all the added buttons functions on that page.

Note

For more information, please refer to the Companion user manual.

A Specifications

A.1 P10/P20 Specifications

	P20	P10
Inputs	8x DP 1.2/HDMI 2.0 4x 12G-SDI	4x DP 1.2/HDMI 2.0 2x 12G-SDI
Outputs	8x HDMI 2.0	2x HDMI 2.0 6x HDMI 1.3
OPT Ports	8	4
AUX Connectors	4x HDMI 1.3	2x HDMI 1.3
3.5 mm Audio Jacks	2x Line in & 2x Line out (The audio function will be implemented in future updates)	
Layers	12x DL layers or 6x 4K layers	6x DL layers or 3x 4K layers
Multiviewer Connectors	1x HDMI 1.3	
Screen presets	128	
BKG & LOGO	Up to 255 BKGs & LOGOs (Maximum storage space: 512 MB)	
Front Screen	5" LCD	
Gigabit Ethernet Ports	2	
Control	• Front panel buttons and LCD • Event Controller U5/U5 Pro • Event Management Software PixelFlow • Third-party control system Stream Deck	
Processing	• FPGA-based high-performance image enhancement architecture • Real 4K60p 4:4:4 10-bit internal video processing	
Chassis	3 RU	2 RU
Dimensions	W 482.6 × D 501.0 × H 139.0 mm W 19.0 × D 19.7 × H 5.5 inches	W 482.6 × D 493.0 × H 94.6 mm W 19.0 × D 19.4 × H 3.7 inches

		P20	P10
Weight	Net Weight	10.2 kg / 22.5 lbs	7.9 kg / 17.4 lbs
	With Paper Box	14.3 kg / 31.5 lbs	10.2 kg / 22.5 lbs
	With Flight Case	25.2 kg / 55.6 lbs	20.6 kg / 45.4 lbs
Electric Parameters		Input Power: 100-240V~, 50/60Hz, 3.0-1.5A Max power consumption: 140 W	Input Power: 100-240V~, 50/60Hz, 3.0-1.5A Max power consumption: 82 W
Noise on Average (@1, 0.75m height)		45.6 dB	41.9 dB
Operating Environment		Temperature: 0°C to 50°C (32°F to 122°F) Humidity: 0% RH to 80% RH, non-condensing	
Storage Environment		Temperature: –20°C to +60°C (–4°F to 140°F) Humidity: 0% RH to 95% RH, non-condensing	

A.2 Q8 Specifications

		Description
Inputs		Up to 48x 4K concurrent inputs through 6 input cards
Outputs		Up to16x 4K concurrent outputs through 4 output cards
OPT Ports		8
Layers		32x 4K mixing layers in switcher mode
Multiviewer Connectors		2x HDMI 2.0
Presets		1024
BKG & LOGO		Unlimited picture quantity in 1G storage space
Front Screen		7" touchscreen
Gigabit Ethernet Ports		2
Control		• Front screen • Event Management Software PixelFlow • Event Controller U5/U5 Pro • Third-party control system Stream Deck
Processing		FPGA based high performance image processing architecture with SuperView scaling engine inside
Chassis		7 RU
Dimensions		W 482.6 mm × D 694.7 mm × H 335.3 mm W 19 × D 27.4 × H 13.2 inches
Weight	Net Weight	42.6 kg / 93.9 lbs
	With Flight Case	99.7 kg / 219.8 lbs

Electric Parameters	Power connector: 100–240V~, 10A-5A, 50/60Hz Max power consumption: 1400 W
Noise on Average (@1, 0.75m height)	45 dB
Operating Environment	Temperature: 0°C to 50°C (32°F to 122°F) Humidity: 0% RH to 80% RH, non-condensing
Storage Environment	Temperature: –20°C to +60°C (–4°F to 140°F) Humidity: 0% RH to 95% RH, non-condensing

A.3 U5/U5 Pro Specifications

		U5	U5 Pro
Front Screen		Main touchscreen: 21.5" Smart touchscreen: 8"	Main touchscreen: 43.8" Smart touchscreen: 8"
Dimensions		W 740 × D 651.4 × H 431.6 mm W 29.13 × D 25.65 × H 16.99 inches	W 1129.6 × D 695.4 × H 422.7 mm W 44.47 × D 27.38 × H 16.64 inches
Weight	Net Weight	24 kg	46 kg
	With Flight Case	55 kg	107 kg
Electric Parameters		Power connector: AC100-240V~, 6A, 50/60Hz Max power consumption: 240 W	Power connector: AC100-240V~, 6A, 50/60Hz Max power consumption: 330 W
Noise on Average (@1, 0.75m height)		40 dB	40 dB
Operating Environment		Temperature: 0°C to 50°C (32°F to 122°F) Humidity: 0% RH to 80% RH, non-condensing	
Storage Environment		Temperature: –20°C to +60°C (–4°F to 140°F) Humidity: 0% RH to 95% RH, non-condensing	

B Supported Resolutions

B.1 P20/P10

Input	Bit Depth	Sampling	Supported Resolutions	Supported Bandwidth
DP 1.2	8bit	RGB 4:4:4	4096×2160@60Hz 8192×1080@60Hz	18 Gbps
		YCbCr 4:4:4		
		YCbCr 4:2:2		
	10bit	RGB 4:4:4	4096×2160@30Hz 4096×1080@60Hz	
		YCbCr 4:4:4		
		YCbCr 4:2:2	4096×2160@60Hz	
	12bit	RGB 4:4:4	4096×2160@30Hz 4096×1080@60Hz	
		YCbCr 4:4:4		
		YCbCr 4:2:2	4096×2160@60Hz	
HDMI 2.0	8bit	RGB 4:4:4	4096×2160@60Hz 8192×1080@60Hz	18 Gbps
		YCbCr 4:4:4		
		YCbCr 4:2:2		
	10bit	RGB 4:4:4	4096×2160@30Hz 4096×1080@60Hz	
		YCbCr 4:4:4		
		YCbCr 4:2:2	4096×2160@60Hz	
	12bit	RGB 4:4:4	4096×2160@30Hz 4096×1080@60Hz	
		YCbCr 4:4:4		
		YCbCr 4:2:2	4096×2160@60Hz	
12G-SDI	10bit	YCbCr 4:2:2	4096×2160@60Hz	11.88 Gbps

B.2 Q8

Input	Bit Depth	Sampling	Supported Resolutions	Supported Bandwidth
DP 1.2	8bit	RGB 4:4:4	8192×1080@60Hz 4096×2160@30Hz 3840×2160@60Hz	21.6 Gbps
		YCbCr 4:4:4		
		YCbCr 4:2:2		
	10bit	RGB 4:4:4		
		YCbCr 4:4:4		
		YCbCr 4:2:2		
	12bit	RGB 4:4:4		
		YCbCr 4:4:4		
		YCbCr 4:2:2		
HDMI 2.0	8bit	RGB 4:4:4	4096×2160@60Hz 8192×1080@60Hz	18 Gbps
		YCbCr 4:4:4		
		YCbCr 4:2:2		
	10bit	RGB 4:4:4	4096×2160@30Hz 4096×1080@60Hz	
		YCbCr 4:4:4		
		YCbCr 4:2:2	4096×2160@60Hz	
	12bit	RGB 4:4:4	4096×2160@30Hz 4096×1080@60Hz	
		YCbCr 4:4:4		
		YCbCr 4:2:2	4096×2160@60Hz	
12G-SDI	8bit	YCbCr 4:2:2	4096×2160@60Hz	11.88 Gbps
	10bit	YCbCr 4:2:2		
	12bit	YCbCr 4:2:2		
SFP25G	8bit	RGB 4:4:4 YCbCr 4:4:4 YCbCr 4:2:2	4096×2160@60Hz	25 Gbps
	10bit			

B.3 U5/U5 Pro

Input	Bit Depth	Sampling	Supported Resolutions	Supported Bandwidth
HDMI 2.0	8bit	RGB 4:4:4	4096×2160@60Hz 8192×1080@60Hz	18 Gbps
		YCbCr 4:4:4		
		YCbCr 4:2:2		
	10bit	RGB 4:4:4	4096×2160@30Hz 4096×1080@60Hz	
		YCbCr 4:4:4		

Input	Bit Depth	Sampling	Supported Resolutions	Supported Bandwidth
		YCbCr 4:2:2	4096×2160@60Hz	
	12bit	RGB 4:4:4	4096×2160@30Hz 4096×1080@60Hz	
		YCbCr 4:4:4		
		YCbCr 4:2:2	4096×2160@60Hz	
HDMI 1.3	8bit	RGB 4:4:4		4.95 Gbps
		YCbCr 4:4:4		
		YCbCr 4:2:2		
	10bit	RGB 4:4:4		
		YCbCr 4:4:4	2048×1152@60Hz	
		YCbCr 4:2:2		
	12bit	RGB 4:4:4		
		YCbCr 4:4:4		
		YCbCr 4:2:2		