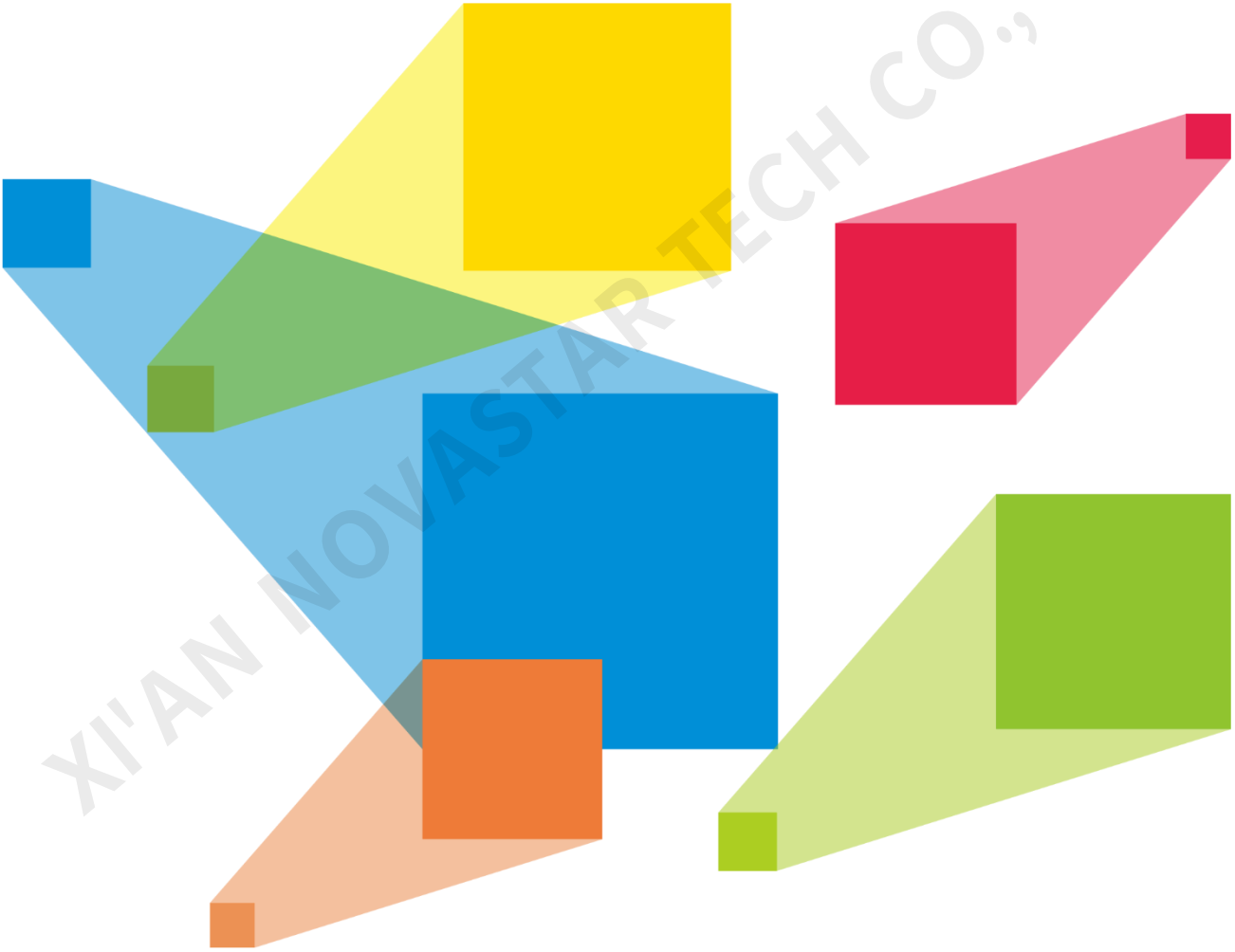
HDR Master 4K

Video Processor

V2.0.0



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User Manual

Change History

Document Version	Release Date	Description
V2.0.0	2020-11-18	• Added the description for HDR display mode. • Added the description for the convertion between SDR and HDR10/HLG. • Added the description for the dynamic range settings for the output connectors. • Added the description for the peak brightness settings for HDR10/HLG outputs. • Added the description for the Gamma adjustment for SDR otuputs. • Updated the maximum width and height that can be loaded by the input or output connector.
V1.0.1	2020-08-26	Updated the long-distance transmission descriptions and connection diagram in Applications.
V1.0.0	2020-07-22	First release

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1 Introduction

The HDR Master 4K is a video processor converting SDR content into an HDR format. By analyzing the SDR content and then intelligently filling in the missing information, the HDR Master 4K raises the dynamic range of brightness, color gamut and color depth to HDR standard. With this all-round upgrade, the SDR video source is converted into an HDR10 format that has a wider dynamic range of brightness, more colors and richer bright and dark details.

The HDR Master 4K provides full 4K×2K@60Hz input and output connectors. Based on a pure hardware system architecture, the HDR Master 4K allows for stable and highly-efficient processing capabilities, output connector converting, SDI mosaic as well as long-distance optical fiber transmission.

Thanks to powerful capabilities of receiving a variety of video signals, ultra HD image processing and HDR10 image output, the HDR Master 4K can be widely used in applications such as high-end rental, stage control, fine-pitch LED screens and video source conversion.

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2 Appearance

2.1 Front Panel

Area	Description
Power button	• Press the button to power on the device. • Press the button and a prompt is displayed asking you whether you want to shut down the device. Rotate the knob to select **Shut Down** and press the knob to power off the device.
Monitoring screen	Displays the monitoring information and input source RGB parade.
Input source and number buttons	Press the buttons to switch the layer input source or to enter numbers. • Status LEDs for input source buttons: – On (green): The input source is accessed and used by the layer. – Flashing (red): The input source is not accessed but used by the layer. – On (yellow): The input source is accessed but not used by the layer. – Off: No input source is accessed or the input source is abnormal. • Status LEDs for number buttons: – On (green): The number button is active and can be used to enter a number.
Control screen	Displays the device statuses, menus, submenus and messages.
Knob	• Rotate the knob to select a menu item or adjust a parameter value. • Press the knob to confirm the selection or enter the submenu screen.
ESC button	Exit the current menu or cancel the operation.
Function buttons	• FN1: A reserved button for a custom function, or used as a number button to enter 5 • FN2: A reserved button for a custom function • HDR: Turn on or turn off the SDR to HDR converting function. – On: SDR to HDR converting function turned on – Off: SDR to HDR converting turned off • TEST: Enter the test pattern menu, or used as a number button to enter 5 – On: Test pattern opened – Off: Test pattern closed • FRZ: Freeze the output image. – On: Freeze function turned on – Off: Freeze function turned off • SCALE: Make the layer size equal to the output resolution. – On: Scaling function turned on (default) – Off: Scaling function turned off
USB port	1x USB 2.0 (Type-A) • Insert a USB drive to update the device. • Insert a USB drive to import the BKG or LOGO files.

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2.2 Rear Panel

Input Card			
R_4x12G SDI+1xHDMI2.0+1xDP1.2 Input Card			
Connector	**Qty**	**Standard**	**Description**
HDMI 2.0	1	HDMI 2.0 Backwards compatible with HDMI 1.4 and HDMI 1.3	• Up to 4K×2K@60Hz input resolution • 1080i/576i/480i deinterlacing • HDCP 2.2 and HDCP 1.4 compliant • HDR10 and HLG supported • Max. width: 4092 pixels, max. height: 4095 pixels
DP 1.2	1	DP 1.2 Backwards compatible with DP 1.1	• Up to 4K×2K@60Hz input resolution • 1080i/576i/480i deinterlacing • HDCP 1.3 compliant • Max. width: 4092 pixels, max. height: 4095 pixels
12G-SDI	4	12G-SDI Backwards compatible with 6G-SDI, 3G-SDI, HD-SDI and SD-SDI	• Supports ST-2082-1 (12G), ST-2081-1 (6G), ST-424 (3G), ST-292 (HD) and SMPTE 259 (SD). • Up to 4K×2K@60Hz input resolution • 1080i/576i/480i deinterlacing • For 3G-SDI, HD-SDI or SD-SDI inputs, SDI mosaic input is supported. **Note:** When the input source is a 12G-SDI signal, you must use CANARE / L-4.5CHD+ / UHDTV-SDI SDI cables and the cable length should be less than 50 m.
Output Card			
R_1xHDMI2.0+4xFiber Output Card			
Connector	**Qty**	**Standard**	**Description**
HDMI 2.0	1	HDMI 2.0 Backward compatible with HDMI 1.4 and HDMI 1.3	• SDR, HDR10 and HLG supported • Up to 4K×2K@60Hz or 8K×1K@60Hz output resolution • Max. width: 8192 pixels, max. height: 7680 pixels
10G optical fiber port	4	10G	• OPT 1 and OPT 2 copy the output on HDMI 2.0. • OPT 3 copies the output on OPT 1. • OPT 4 copies the output on OPT 2.
R_4x12G SDI+1xHDMI2.0 Process Card			
Connector	**Qty**	**Standard**	**Description**

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HDMI 2.0	1	HDMI 2.0 Backward compatible with HDMI 1.4 and HDMI 1.3	• SDR, HDR10 and HLG supported • Up to 4K×2K@60Hz or 8K×1K@60Hz output resolution • Max. width: 8192 pixels, max. height: 7680 pixels
12G-SDI	4	12G-SDI Backward compatible with 6G-SDI, 3G-SDI, HD-SDI and SD-SDI	• Up to 4K×2K@60Hz output resolution on each connector • For 3G-SDI, HD-SDI or SD-SDI outputs, SDI mosaic output is supported.

R_Control Card

ETHERNET	Gigabit Ethernet port Connect to the control PC.
USB	2x USB 2.0 (Type-A) • Insert a USB drive to update the firmware. • Insert a USB drive to import the BKG or LOGO files.
CONTROL UI	A reserved connector
GENLOCK	Connect to a synchronization signal. Supports bi-level and tri-level. • IN: Accept the sync signal. • LOOP: Loop the sync signal.

Note:

- The R_1xHDMI2.0+4xFiber output card and R_ 4x12G SDI+1xHDMI2.0 process card output the same content synchronously.
- Always place the device near the electrical outlet during use.

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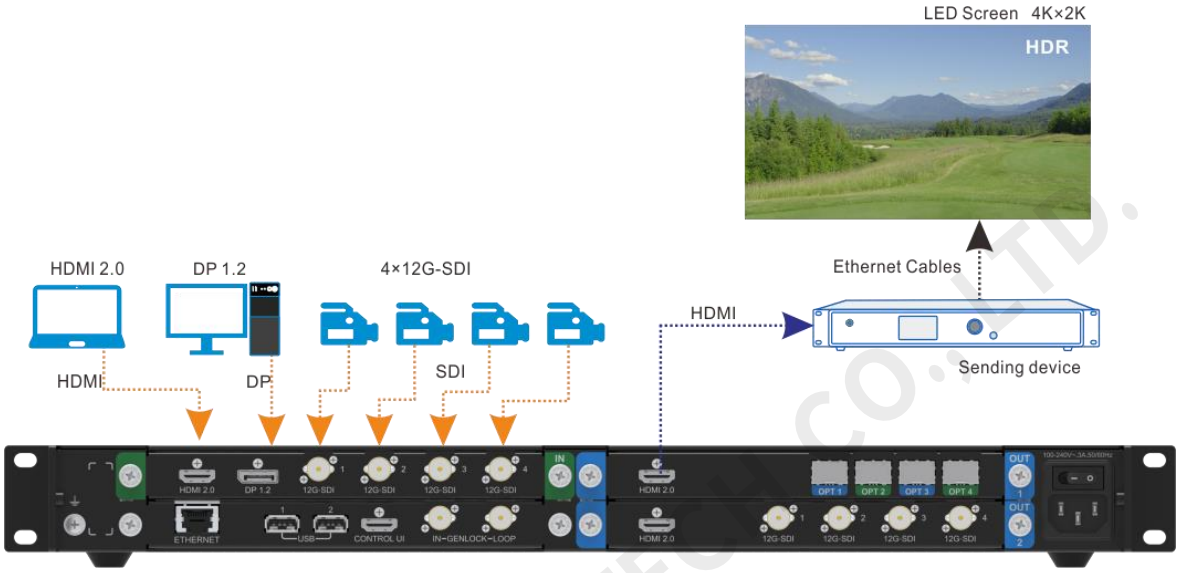
3 Applications

The HDR Master 4K supports the following three connection methods.

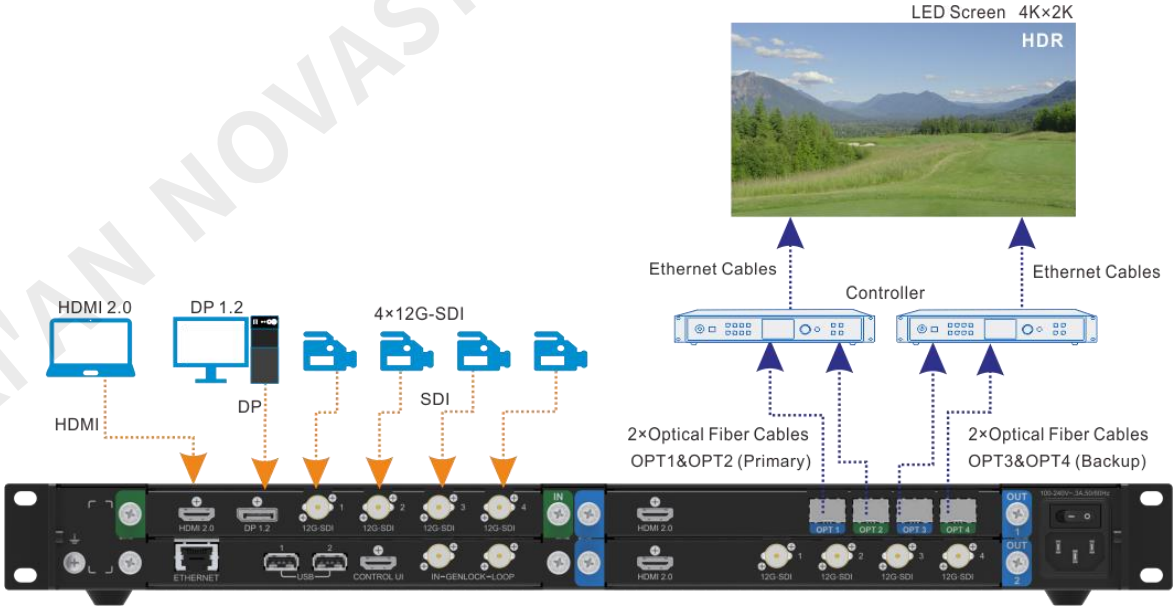
- HDMI connection for short-distance transmission

  Connect the HDMI output connector of the device to the sending device using an HDMI cable, and then connect the sending device to the LED screen using Ethernet cables.



- OPT connection for long-distance transmission

  Connect the OPT ports of the device to the matched controllers using optical fiber cables, and then connect the controllers to the LED screen using Ethernet cables. Currently the supported controller is NovaStar's MCTRL 4K.



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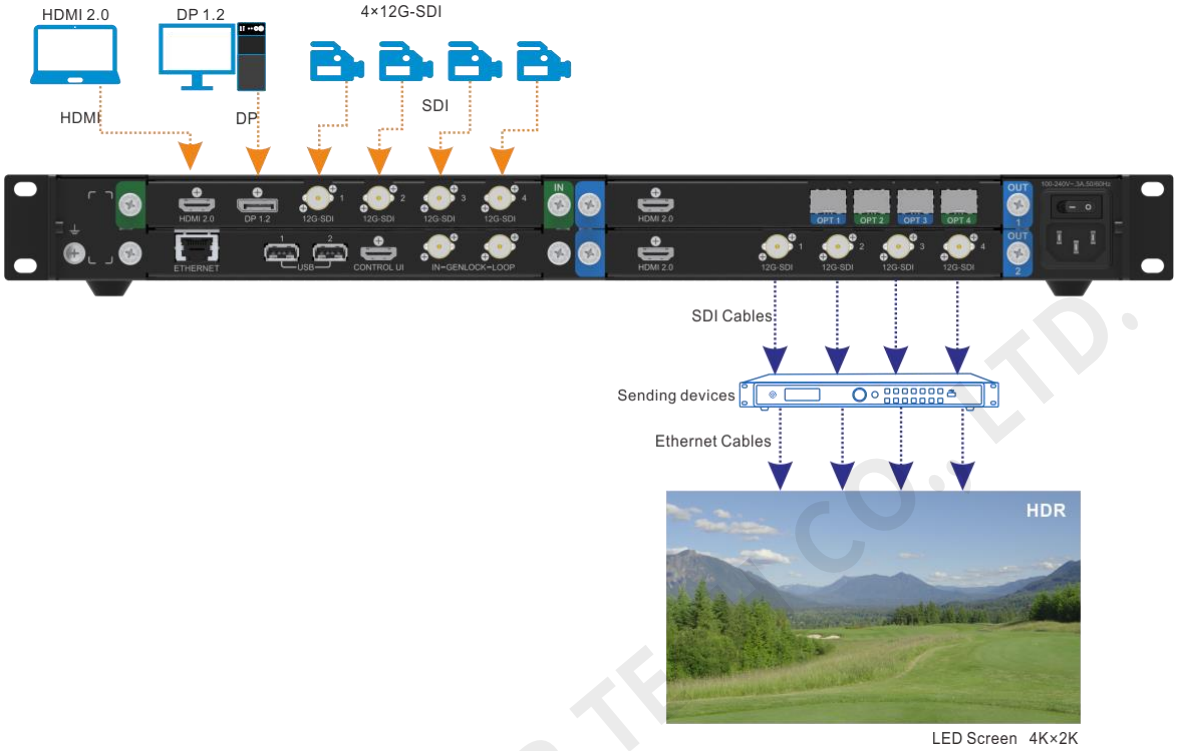
- SDI connection

  One of the four SDI connectors is used for output, and the other three SDI connectors output the same content synchronously. When the output is a 3G-SDI signal, SDI mosaic output is supported.

  Connect the SDI output connectors to the sending device using SDI cables, and then connect the sending device to the LED screen using Ethernet cables.



Note:

When SDR to HDR converting function is enabled, the HDMI output connector cannot be connected to a monitor directly because the monitor does not support the playback of HDR content.

Cable Clip and Cable Tie Installation

The device is provided with a cable clip and a cable tie. Please follow the subsequent procedure to install the cable clip and cable tie.

Step 1 Unfasten the screw on the device ear next to the power connector.

Step 2 Place the cable tie onto the ear and fix the tie with the screw.

Step 3 Insert the cable tie into the fixing hole on the cable clip, and adjust the clip slightly for better usage.

Figure 3-1 Cable clip and cable tie installation

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4 Home Screen

Figure 4-1 Home screen

Area	Description
HDR Master 4K	Displays the device name.
192.168.0.10	Displays the device IP address.
Layer	• Demo: Displays the layer input source. • HDR: Indicates the dynamic range of the current input source, such as HDR and HLG. If the dynamic range of the source is SDR, nothing is displayed here. • 1920×1080@60: Displays the resolution of the current input source.
Output	Displays the current output resolution.
OPT	 Indicates the OPT port working mode. • OPT 3 copies the output data on OPT 1. • OPT 4 copies the output data on OPT 2. • Highlighted: The OPT port is connected. Gray: The OPT port is not connected.
GEN	GEN: The Genlock function is turned on and successfully used.
	GEN: The Genlock function is turned off.
SDR→HDR	SDR → HDR: SDR to HDR converting function is turned on.
	SDR → HDR: SDR to HDR converting function is turned off.
USB	: A USB drive is inserted and has been detected by the device.

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Area	Description
	: No USB drive is detected.
Connection	: The device is connected to the control PC.
	: The device is not connected to the control PC.

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5 Menu Operations

Button descriptions:

Knob:

- On the home screen, press the knob to enter the main menu screen.
- On the main menu screen, rotate the knob to select a menu item, and press the knob to confirm the selection or enter the submenu.
- When a menu item with parameters is selected, rotate the knob to adjust the parameters. Please note that after adjustment, you need to press the knob again to confirm the adjustment.

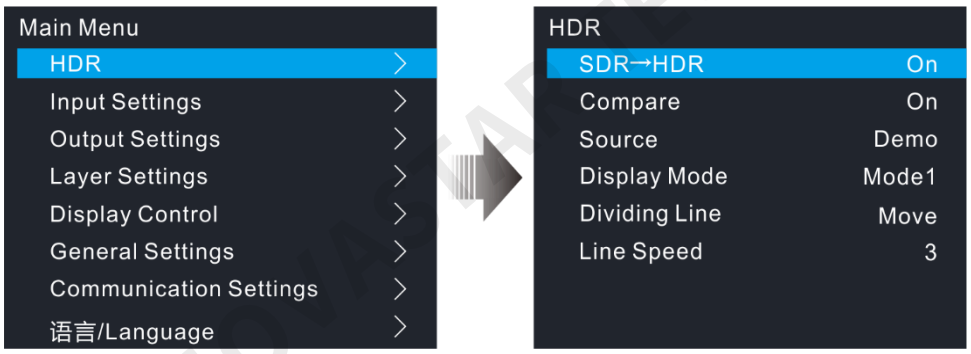
ESC: Press the button to exit the current menu or cancel the operation.

Hold down the knob and ESC button simultaneously for 3s or longer to lock or unlock the device front panel buttons.

5.1 HDR

On the home screen, press the knob to enter the main menu screen. Rotate the knob to select **HDR** and press the knob to enter the HDR settings screen.

Figure 5-1 HDR-1



- SDR→HDR: Turn on or turn off SDR to HDR converting function.
  - On: Turn on the converting function.
  - Off: Turn off the converting function.
- Compare: Turn on or turn off the comparing function between the two output images.
  - On: Show the contrast between the SDR and HDR images.
  - Off: Do not show the contrast.
- Source: Select the input source for the comparison. The connected input sources or the built-in demo can be used as the source.
- Display Mode: Two display modes are provided.
  - Mode 1: A single image is displayed with a dividing line moving from left to right to show the contrast between SDR and HDR.
  - Mode 2: Two images are displayed but show different effects. One is SDR and the other is HDR. The image size and position are both adjustable.

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Mode 1

When **Mode 1** is selected, the menu items of **Dividing Line** and **Line Speed** are available.

The HDR content is on the left and the SDR content is on the right.

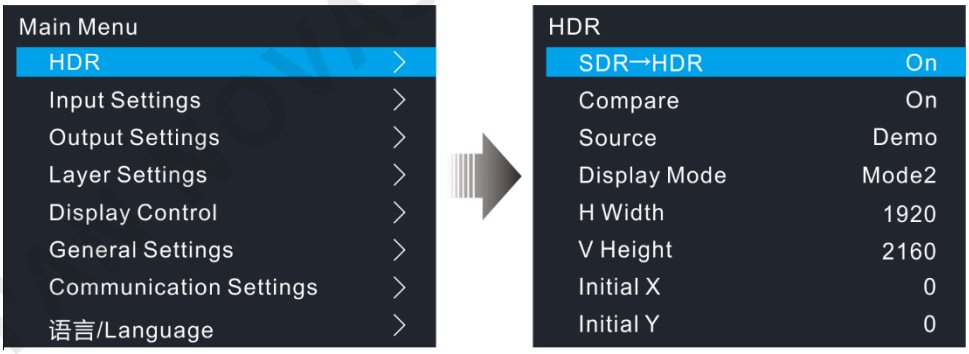
- Move: The dividing line moves from the left to right.
- Pause: The dividing line stops moving.

- Line Speed: Set the moving speed of the dividing line. The value range is 1 to 5. 1 stands for the slowest speed and 5 stands for the fastest speed.

Mode 2

When **Mode 2** is selected, the menu items of **H Width**, **H Height**, **Initial X** and **Initial Y** are available. You can set the size and postision of each image.

Figure 5-2 HDR-2



- H Width: Set the width of the desired area of the output image.
- V Height: Set the height of the desired area of the output image.
- Initial X: Set the horizontal position of the desired area upon the output image. The reference is the left edge of the output image.
- Initial Y: Set the vertical position of the desired area upon the output image. The reference is the top edge of the output image.

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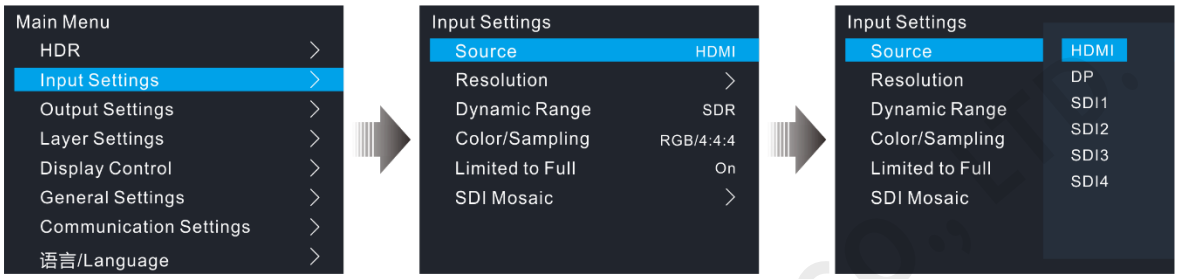
5.2 Input Settings

5.2.1 Input Source

The HDR Master 4K provides a variety of input connectors, including DP 1.2, HDMI 2.0, SDI-1, SDI-2, SDI-3 and SDI-4.

On the main menu screen, go to **Input Settings** > **Source** to show the input source list. Rotate the knob to select the target input source and press the knob to confirm the selection.

Figure 5-3 Selecting input source

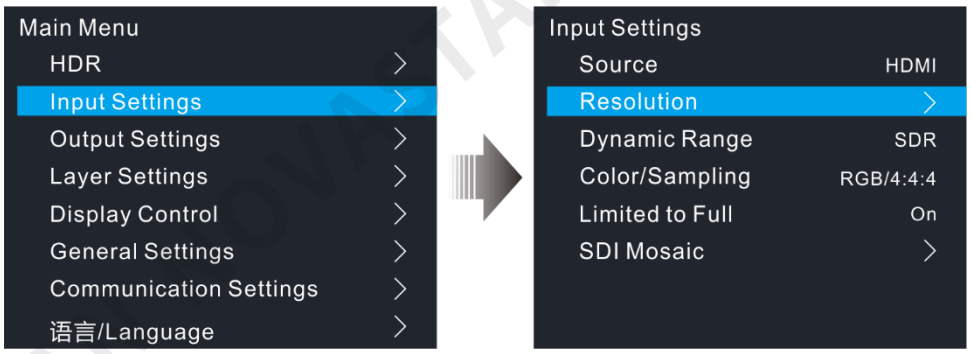


5.2.2 Input Resolution

You can set the input resolution by either of the following ways.

- Standard resolution
- Custom resolution

Figure 5-4 Setting input resolution



Note:

The SDI connector does not support input resolution settings.

Standard Resolution

On the input resolution screen, rotate the knob to select **Standard Resolution**. After you have selected the desired resolution and frame rate, rotate the knob to select **Apply** and press the knob to apply the settings. If **Apply** is not selected, the settings will not take effect.

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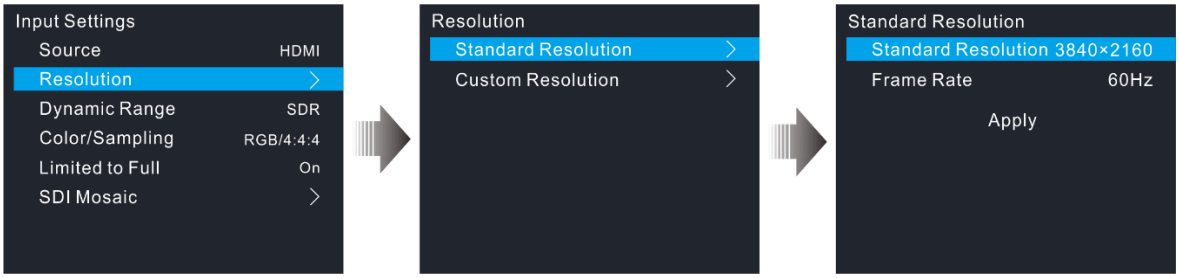
Figure 5-5 Standard resolution



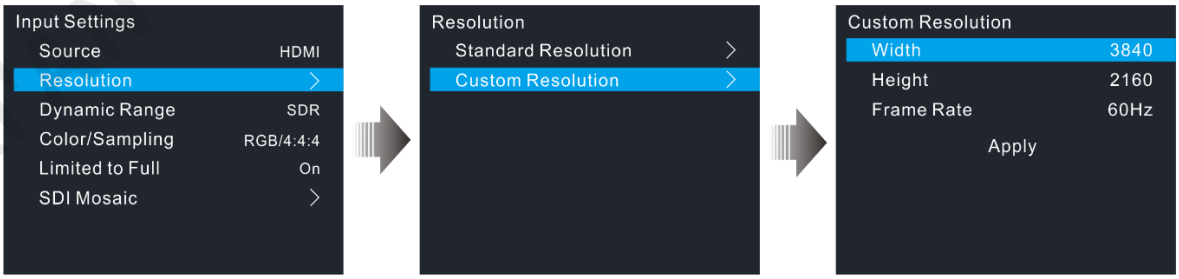
The HDMI 2.0 and DP 1.2 connectors support the following standard resolutions.

- 1024×768@48/50/59.94/60/75/85Hz
- 1280×720@23.98/24/25/29.97/30/48/50/59.94/60Hz
- 1280×1024@48/50/59.94/60/75/85Hz
- 1440×900@60/75/85Hz
- 1600×1200@48/50/59.94/60Hz
- 1680×1050@60Hz
- 1920×1080@23.98/24/25/29.97/30/48/50/59.94/60Hz
- 1920×1200@50/59.94/60Hz
- 2048×1080@30/48/50/59.94/60Hz
- 2048×1152@30/60Hz
- 2560×1080@50/59.94/60Hz
- 2560×1600@50/59.94/60/120Hz
- 3840×1080@30/50/59.94/60/120Hz
- 3840×2160@23.98/24/25/29.97/30/60Hz

Custom Resolution

On the input resolution screen, rotate the knob to select **Custom Resolution**. After you have set the desired width, height and frame rate, rotate the knob to select **Apply** and press the knob to apply the settings.

Figure 5-6 Custom resolution



5.2.3 Dynamic Range

Check the dynamic range of the current input source, such as SDR and HDR. It is automaitcailly identified and cannot be set.

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5.2.4 Color Space and Sampling Rate

Check the color space and sampling rate of the current input source. It is automaitcailly identified and cannot be set.

5.2.5 Limited to Full

RGB full means the ability to show 0-255 which is the full color range, but RGB limited can only show a limited color range.

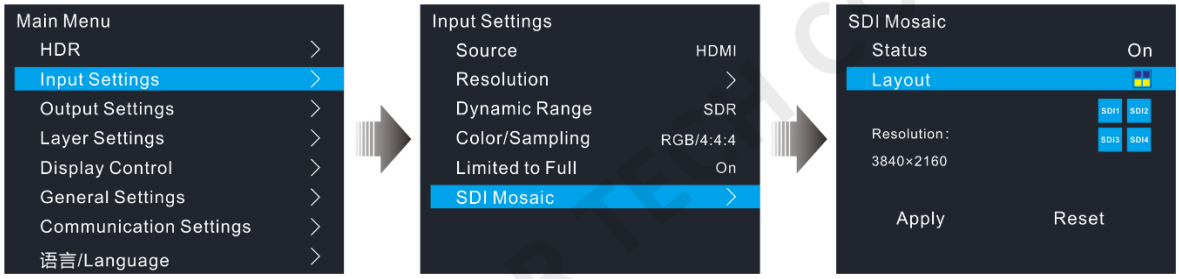
When the color range for the input source is RGB limited, turn on this function. The device will automatically perform the conversion calculation and convert the color range of the input source to RGB full.

5.2.6 SDI Mosaic

Step 1 Go to **Input Settings** > **SDI Mosaic** to enter the SDI mosaic screen.

Step 2 Turn on the SDI mosaic function.

Figure 5-7 SDI mosaic



Step 3 Rotate the knob to select **Layout** and press the knob to show the available layouts.

Four SDI mosaic layouts are provided as follows.

- : Two vertical mosaic areas
- : Four vertical mosaic areas
- : Two horizontal mosaic areas
- : Two vertical and two horizontal mosaic areas

Step 4 Rotate the knob to select the desired layout and press the knob to apply the layout.

Note:

SDI mosaic function is available when the input signal is in 3G-SDI, HD-SDI or SD-SDI format.

All the SDI sources used in the SDI mosaic must be of the same resolution and frame rate.

5.3 Output Settings

5.3.1 Output Connector

On the main menu screen, go to **Output Settings** > **Connector** to show the output connector list. Rotate the knob to select the target output connector and press the knob to confirm the selection.

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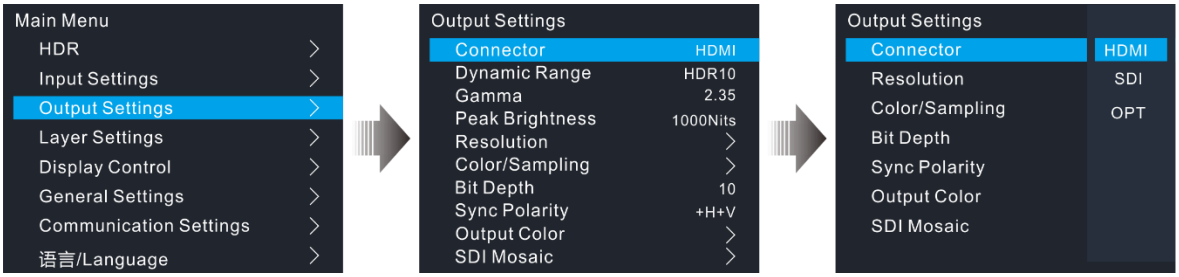


5.3.2 Dynamic Range

Set the dymanic range for the output. Four options are provided, including **SDR**, **HDR10**, **HLG** and **Auto**.

- SDR: When SDR→HDR converting function is not turned on, this item is availbale and you can convert the output to SDR content.
- HDR10: When SDR→HDR converting is turned on, this item is available and you can convert the output to HDR10 content.
- HLG: When SDR→HDR converting is turned on, this item is available and you can convert the output to HLG content.
- Auto: Do not convert the output to any of the prededing formats.

5.3.3 Gamma

When the **Dynamic Range** is set to **SDR**, this item is available. The value ranges from 1.3 to 3.0 and defaults to 2.6

5.3.4 Peak Brightness

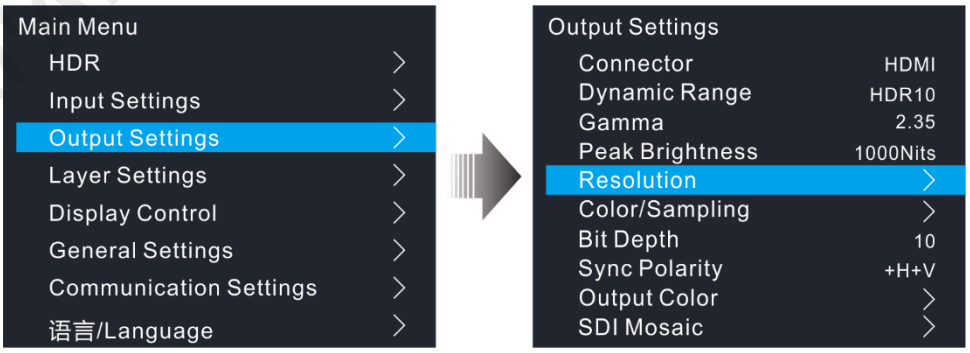
When the **Dynamic Range** is set to **HDR10** or **HLG**, this item is available. The value options are 300/450/600/750/800/1000/1300/1700/2000/4000Nits and defaults to 1000Nits.

5.3.5 Output Resolution

You can set the output resolution by either of the following ways.

- Standard resolution
- Custom resolution

Figure 5-8 Output resolution



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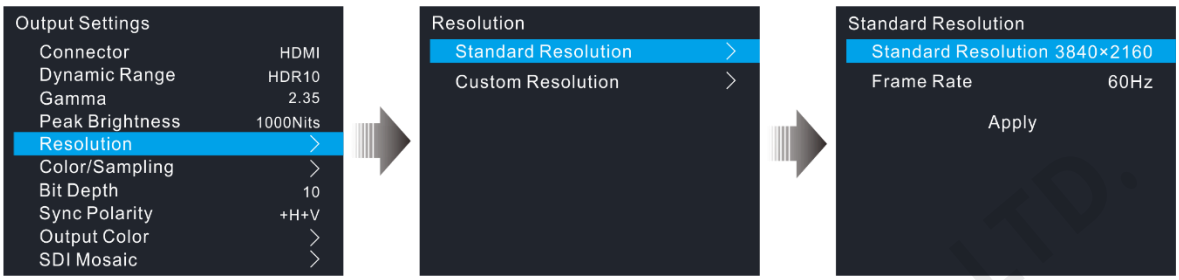
Standard Resolution

On the output resolution screen, rotate the knob to select **Standard Resolution**. After you have selected the desired resolution and frame rate, rotate the knob to select **Apply** and press the knob to apply the settings. If **Apply** is not selected, the settings will not take effect.

Figure 5-9 Standard resolution



- The HDMI connector supports the following standard resolutions.

  1024×768@48/50/59.94/60/75/85Hz

  1280×720@23.98/24/25/29.97/30/48/50/59.94/60Hz

  1280×1024@48/50/59.94/60/75/85Hz

  1440×900@60/75/85Hz

  1600×1200@48/50/59.94/60Hz

  1680×1050@60Hz

  1920×1080@23.98/24/25/29.97/30/48/50/59.94/60Hz

  1920×1200@50/59.94/60Hz

  2048×1080@30/48/50/59.94/60Hz

  2048×1152@30/60Hz

  2560×1080@50/59.94/60Hz

  2560×1600@50/59.94/60/120Hz

  3840×1080@30/50/59.94/60/120Hz

  3840×2160@23.98/24/25/29.97/30/60Hz

  4096×2160@30/60Hz

  7680×1080@30/60Hz

  8192×1080@30/60Hz

- The SDI connector supports the following standard resolutions.

  720×480i@59.94Hz

  720×576i@50Hz

  1280×720@23.98/24/25/29.97/30/50/59.94/60Hz

  1920×1080@23.98/24/25/29.97/30/50/59.94/60Hz

  1920×1080i@50/59.94/60Hz

  2048×1080@23.98/24/25/29.97/30/50/59.94/60Hz

  3840×2160@23.98/24/25/29.97/30/50/59.94/60Hz

  4096×2160@23.98/24/25/29.97/30/50/59.94/60Hz

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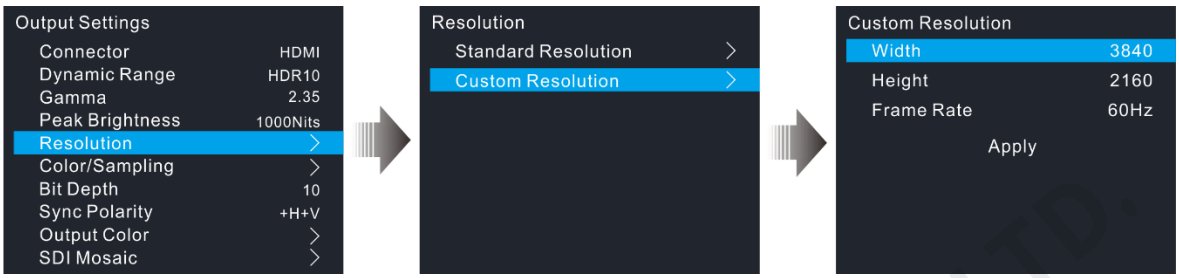
Custom Resolution

On the output resolution screen, rotate the knob to select **Custom Resolution**. After you have set the desired width, height and frame rate, rotate the knob to select **Apply** and press the knob to apply the settings.

Figure 5-10 Custom resolution



5.3.6 Color Space and Sampling Rate

Set the color space and sampling rate for the current output connector, to enable the connected device to receive and process the signal.

The HDR Master 4K supports the following three color spaces and sampling rates.

- RGB/4:4:4
- YCbCr/4:4:4
- YCbCr/4:2:2

5.3.7 Bit Depth

Bit depth is the number of bits used by each pixel in the computer and refers to the color information stored in an image. The higher the bit depth of the input image, the more colors it can store. The HDR Master 4K supports 8, 10 and 12-bit depth output. It defaults to 10-bit.

5.3.8 Sync Polarity

Set the sync polarity of the output image according to the requirements of the backend device so that it can be compatible with the backend device.

5.3.9 Output Color

Rotate the knob to select **Output Color** and press the knob to enter the **Output Color** screen. Then press the knob again and rotate it to edit the values of the color parameters. For detailed parameter settings, see Table 5-1.

Figure 5-11 Output color

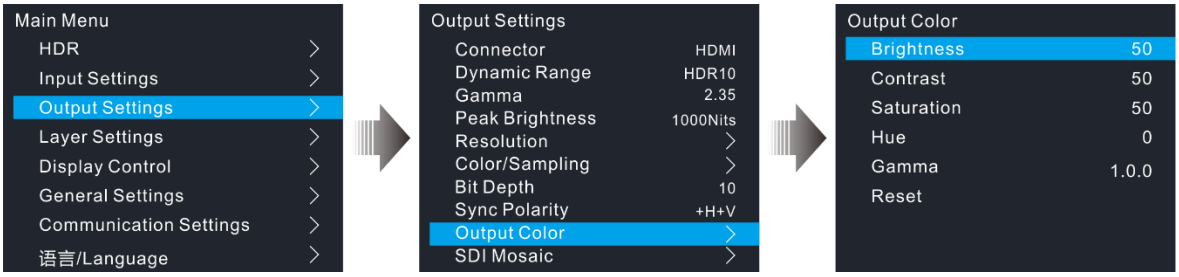


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Table 5-1 Output color

Parameter	Range	Default	Description
Brightness	0 to 100	50	Adjust the brightness of the output image. The greater the value, the brighter the image.
Contrast	0 to 100	50	Adjust the brightness difference between the white and black of the output image. The greater the value, the bigger the difference.
Saturation	0 to 100	50	Adjust the colorfulness of the output image. The greater the value, the more colorful the image.
Hue	–180 to +180	0	Adjust the color performance of the image. The greater the value, the more intense the colors.
Gamma	0.25 to 4.00	1.00	Adjust the image distortion from the input to output. The greater the value, the stronger the image distortion.
Reset			Reset all the settings to defaults.

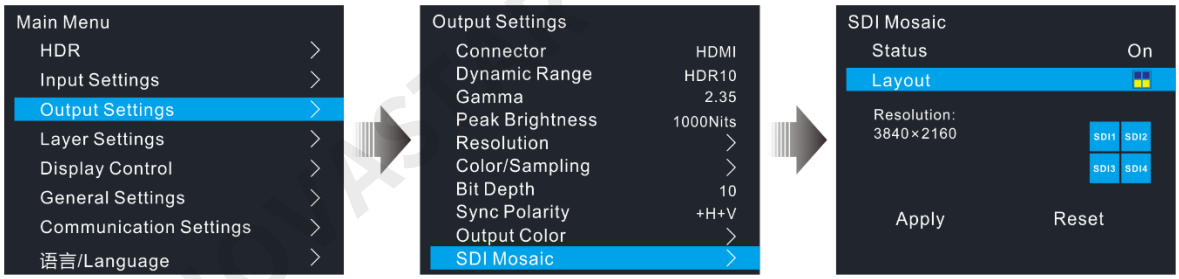
5.3.10 SDI Mosaic

When the output signal is in 3G-SDI, HD-SDI or SD-SDI format, the HDR Master 4K supports SDI output mosaic.

Step 1 Go to **Output Settings** > **SDI Mosaic** to enter the SDI mosaic screen.

Step 2 Turn on the SDI mosaic function.

Figure 5-12 SDI mosaic



Step 3 Rotate the knob to select **Layout** and press the knob to show the available layouts.

Four SDI mosaic layouts are provided as follows.

- : Two vertical mosaic areas
- : Four vertical mosaic areas
- : Two horizontal mosaic areas
- : Two vertical and two horizontal mosaic areas

Step 4 Rotate the knob to select the desired layout and press the knob to apply the layout.

5.4 Layer Settings

The HDR Master 4K supports layer, BKG and LOGO settings.

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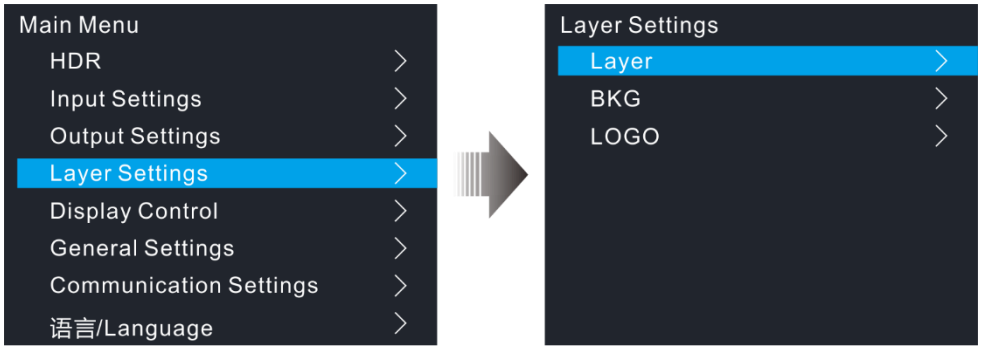
On the main menu screen, rotate the knob to select **Layer Settings** and press the knob to enter the submenu screen.

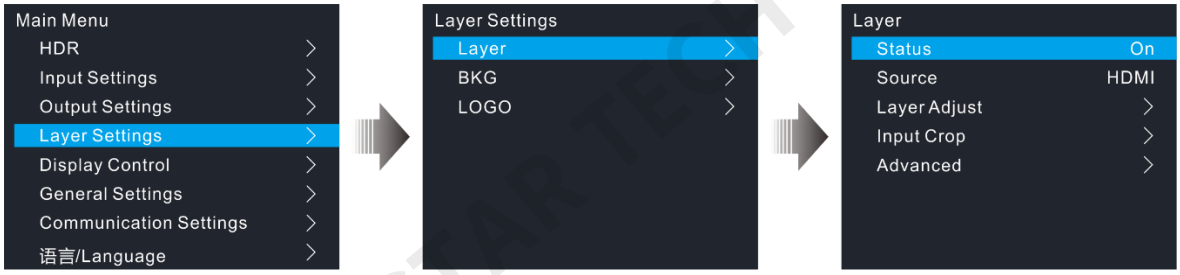
Figure 5-13 Layer settings



5.4.1 Layer

On the layer settings screen, rotate the knob to select **Layer** to enter the layer settings screen.

Figure 5-14 Layer

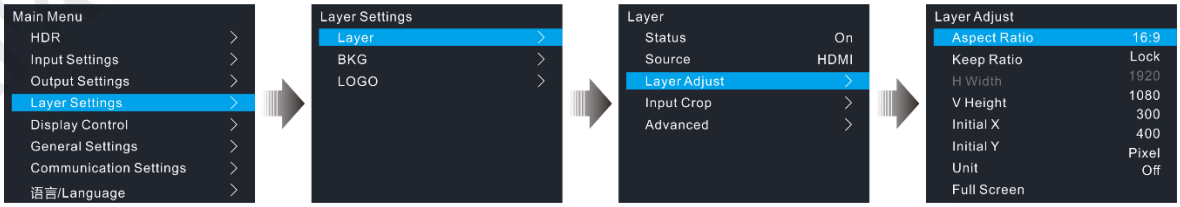


- Status: Select to open or close the layer.
- Source: Select the layer input source.

Layer Adjust

Set the layer related parameters, including the layer size, position and display mode.

Figure 5-15 Adjusting layer



- Aspect Ratio: Set the ratio of the layer's width and height.
- Keep Ratio: Lock or unlock the aspect ratio of the layer.
  - Lock: The aspect ratio is fixed. The vertical height and horizontal width of the layer can be adjusted based on the selected fixed aspect ratio, for example, when the aspect ratio is 2:1, and **Keep Ratio** is to **Lock**, the vertical height can be set but the horizontal width cannot be set, and the horizontal width and vertical height are adjusted based on the 2:1 aspect ratio.
  - Unlock: The aspect ratio is customizable. The horizontal width and vertical height can be adjusted as you wish.

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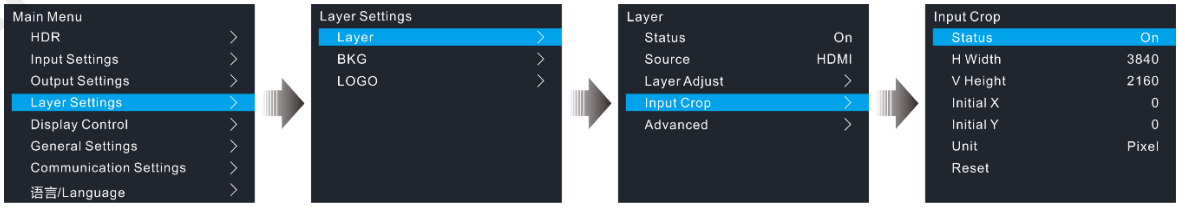
- H Width: Set the horizontal width of the image.
- V Height: Set the vertical height of the image.
- Initial X: Set the horizontal initial coordinate of the image by using the top left of the output as the reference position. This parameter defaults to 0.
- Initial Y: Set the vertical initial coordinate of the image by using the top left of the output as the reference position. This parameter defaults to 0.
- Unit: Set the unit of layer adjustment. The unit can be pixel or percentage.
- Full Screen: Set the display mode of the output image.
  - On: Display the layer in full screen.
  - Off: Display the layer based on the specified size.
- Reset: Reset all the settings to defaults.

Figure 5-16 Adjusting layer

Input Crop

Crop the input source as needed and make the cropped part display in full screen.

Figure 5-17 Input crop



- H Width: Set the width of the cropped part.
- V Height: Set the height of the cropped part.
- Initial X: Set the horizontal initial coordinate of the cropped part by using the top left as the reference position.
- Initial Y: Set the vertical initial coordinate of the cropped part by using the top left as the reference position.

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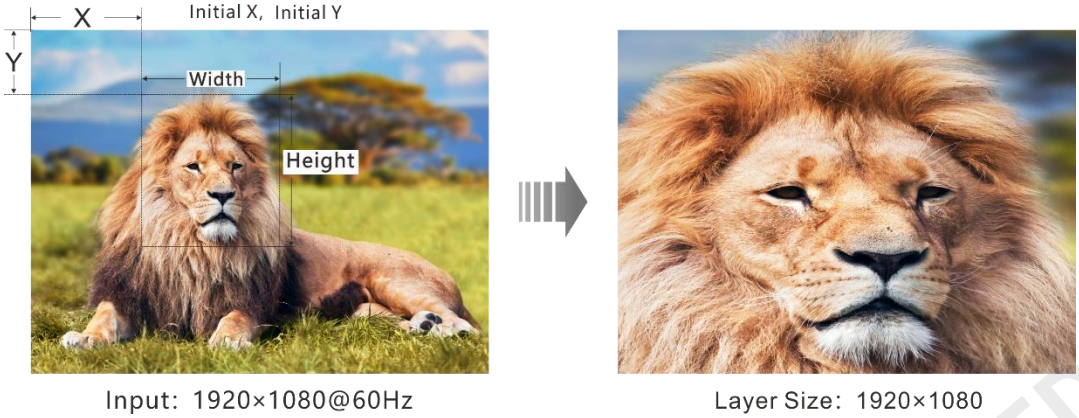
Figure 5-18 Input crop



Advanced Settings

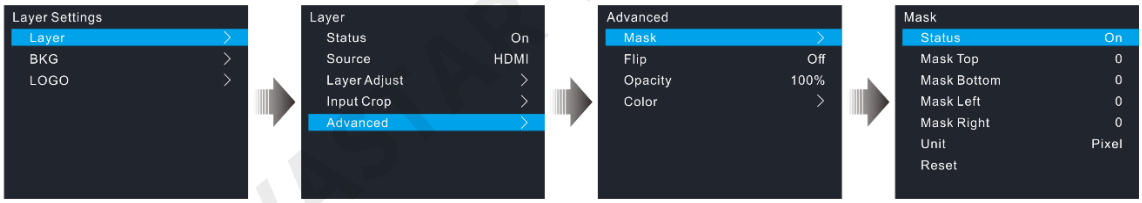
On the advanced settings screen, the layer mask, opacity, flipping and color can be set.

- Layer mask

  Layer mask is used to display the desired part of a layer and mask the undesired part.

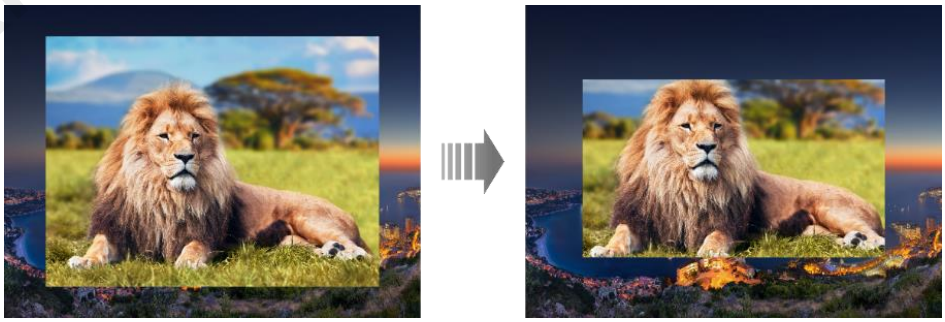
  On the layer screen, go to **Advanced** > **Mask** to enter the mask settings screen. Turn on the layer mask function.

Figure 5-19 Layer mask



- Mask Top: Set the height of part to be masked at the top.
- Mask Bottom: Set the height of the part to be masked at the bottom.
- Mask Left: Set the width of the part to be masked on the left.
- Mask Right: Set the width of the part to be masked on the right.
- Reset: Reset all the settings to defaults.

Figure 5-20 Layer mask



- Layer flipping

  Set whether to flip the layer image. The options include **Off**, **H**, **V**, and **H+V**.

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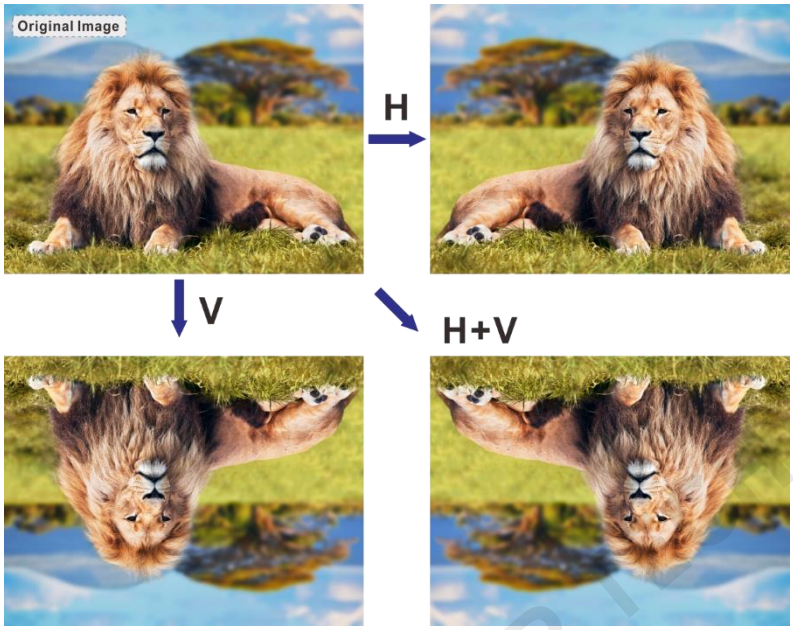
- Off: Do not flip the layer image.
- H: Flip the layer image horizontally.
- V: Flip the layer image vertically.
- H+V: Flip the layer image both horizontally and vertically.

Figure 5-21 Layer flipping



- Opacity

  Set the layer transparency degree. The value range is 0% to 100%. 0% stands for totally transparent and 100% stands for non-transparent.

- Layer color

  Set the layer color parameters. When SDR to HDR converting function is enabled, the layer color cannot be set.

Figure 5-22 Layer color

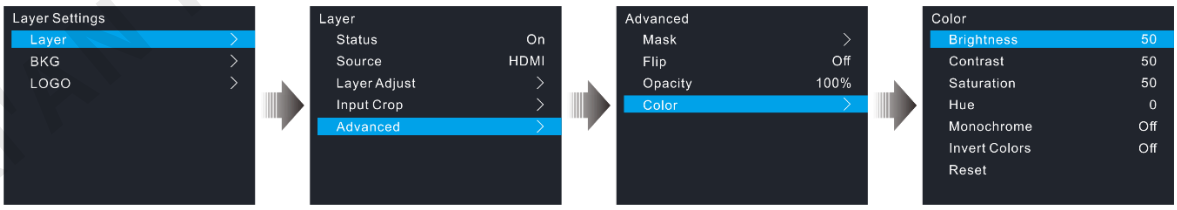


Table 5-2 Layer color

Parameter	Range	Default	Description
Brightness	0 to 100	50	Adjust the brightness of the output image. The greater the value, the brighter the image.
Contrast	0 to 100	50	Adjust the brightness difference between the white and black of the output image. The greater the value, the bigger the difference.

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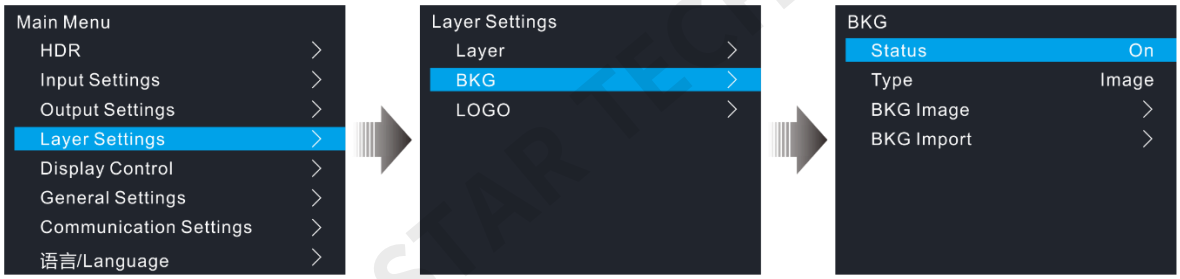
Parameter	Range	Default	Description
Saturation	0 to 100	50	Adjust the colorfulness of the output image. The greater the value, the more colorful the image.
Hue	–180 to +180	0	Adjust the image distortion from the input to output. The greater the value, the stronger the image distortion.
Monochrome	• On • Off	Off	• On: The output image is displayed in black and white. • Off: The output image is displayed in its original colors.
Inverted Colors	• On • Off	Off	• On: The output image is displayed in its inverted colors. • Off: The output image is displayed in its original colors.
Reset			Reset all the settings to defaults.

5.4.2 BKG

The HDR Master 4K supports BKG settings.

On the layer settings screen, rotate the knob to select **BKG** to enter the BKG settings screen.

Figure 5-23 BKG



Step 1 Turn on the BKG function.

Step 2 Select the BKG type. Pure color BKG and BKG images are both supported.

- Pure Color BKG: Set the individual R, G and B values to specify a color.
- BKG Image: Select an imported BKG image as the BKG image.

Step 3 (Optional) Rotate the knob to select **BKG Import** to import the BKG images from the inserted USB drive.

Note:

The HDR Master 4K supports at most 10 BKG images. The width or height of the BKG image cannot be greater than 8192 pixels.

Before the import, a folder named BKG must be created in the root directory in the inserted USB drive and all the needed BKG images must be stored in the folder.

5.4.3 LOGO

On the layer settings screen, rotate the knob to select **LOGO** and then press the knob to enter the LOGO settings screen.

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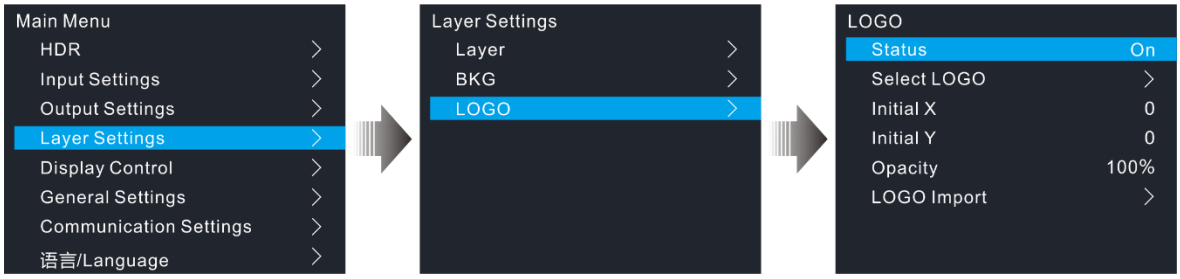
Figure 5-24 LOGO



Step 1 Turn on the LOGO function.

Step 2 Select a LOGO image.

Step 3 Select **Initial X** to set the horizontal initial coordinate of the LOGO image upon the screen.

Step 4 Select **Initial Y** to set the vertical initial coordinate of the LOGO image upon the screen.

Step 5 Set the opacity of the LOGO image. The greater the value, the more opaque the image. 100% denotes non-transparent.

Step 6 (Optional) Rotate the knob to select **LOGO Import** to import the LOGO images from the inserted USB drive.

Note:

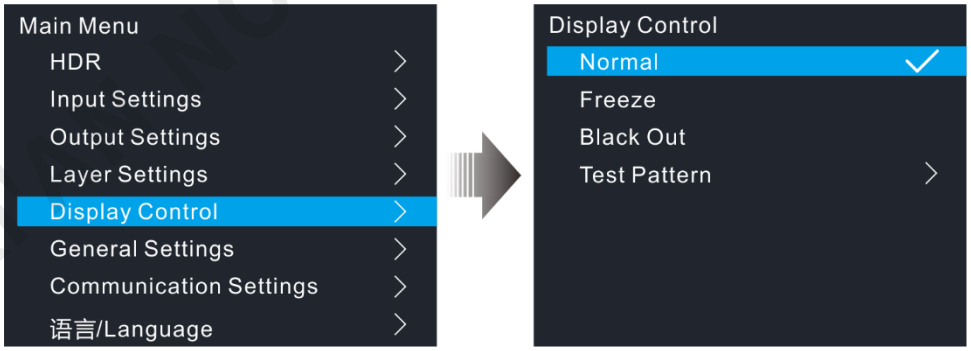
The HDR Master 4K supports at most 10 LOGO images. The width or height of the LOGO image cannot be greater than 512 pixels.

Before the import, a folder named LOGO must be created in the root directory in the inserted USB drive and all the needed LOGO images must be stored in the folder.

5.5 Display Control

On the main menu screen, rotate the knob to select **Display Control** and press the knob to enter the submenu screen. On the submenu screen, you can make the LED screen go black, freeze the LED screen, let the LED screen display test patterns or the input source normally.

Figure 5-25 Display control



- Normal: Display the current input source normally.
- Freeze: Freeze the current frame of the output image.
- Black Out: Make the screen go black.
- Test Pattern: Test the display effect and working status of the LED screen. Test patterns include Pure Color, Gradient, Grid and so on.

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5.6 General Settings

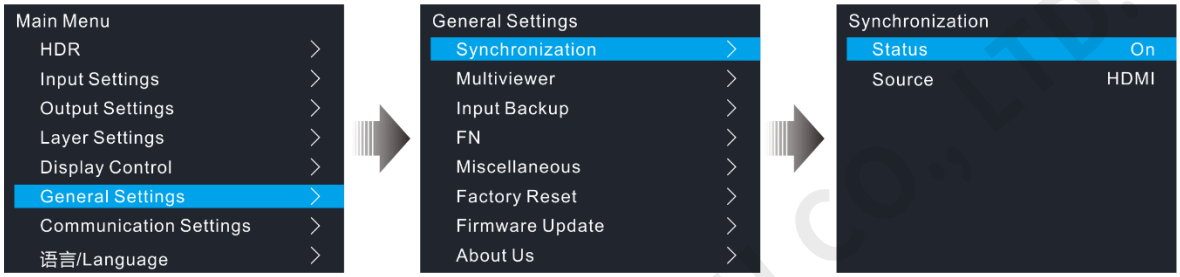
On the main menu screen, rotate the knob to select **General Settings** and press the knob to enter the submenu screen. On the submenu screen, you can perform the synchronization settings, input backup settings, FN button setting, and miscellaneous settings. You can also reset all the device settings to defaults, update the device firmware, and view the device information.

5.6.1 Synchronization

Status: Turn on or turn off the synchronization function. The default option is **Off**.

Source: Rotate the knob to select a sync source. The default option is **Genlock**.

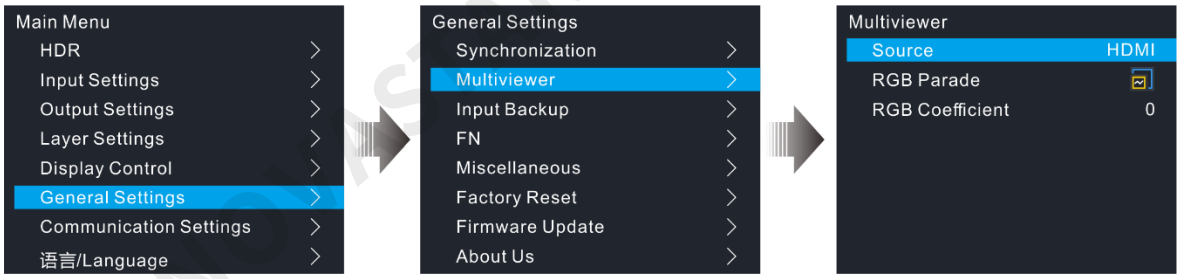
Figure 5-26 Synchronization settings



5.6.2 Multiviewer

Set the monitoring information displayed on the monitoring screen of the HDR Master 4K device.

Figure 5-27 Multiviewer settings



- Source: Set the target content that will be monitored on the monitoring screen. The options include the input sources and the output (“MON”).
- RGB Parade: Set the effect of the RGB color distribution.
  - : The monitoring screen does not display the RGB Parade curve distribution effect.
  - : The monitoring screen displays only the RGB Parade curve distribution effect.
  - : The monitoring screen displays the RGB Parade curve distribution thumbnail.
- RGB Coefficients: Set the RGB coefficients to provide the professionals with guidance on image parameter adjustment.

5.6.3 Input Backup

If the input hot backup is set, when the connected input source or the input connector has a fault, the backup input source from the backup input connector begins to work to ensure that the LED screen does not go black.

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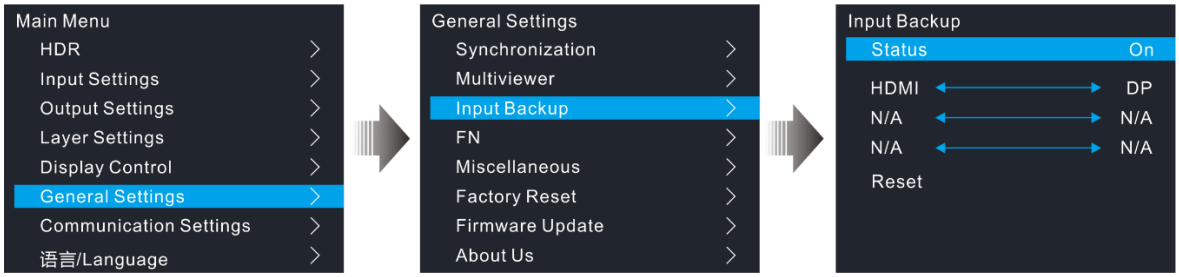
Figure 5-28 Input hot backup

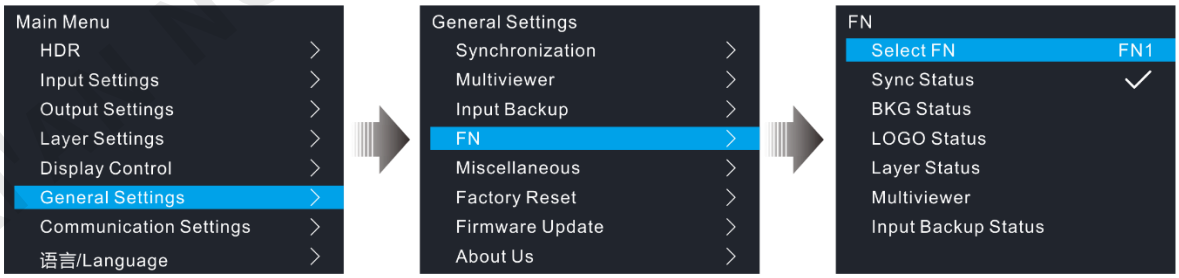


- Each pair of input sources serve as a backup for each other.
- The input hot backup has the following constraints.
  - Input A and Input B serve as a backup for each other. The layer input source is Input A currently.
  - When Input A has no signal but Input B has signal, the layer input source automatically switches to Input B. When the Input A signal recovers, the layer input source is still Input B.
  - When Input A has no signal but Input B has signal, the layer input source automatically switches to Input B. When the Input A signal recovers but Input B has no signal, the layer input source switches to Input A.
  - When both Input A and Input B have no signal, the layer input source does not switch.
  - When Input A has signal but Input B has no signal, if you manually switch the layer input source to Input B, the layer input source automatically switches to Input A.
  - An input source has one backup input source only and an input source serves as the backup of only one input source. You cannot set an input source to have multiple backup input sources, or set one input source as the backup of multiple input sources. After the backup function is turned on, once the input source has any changes, including but not limited to resolution change and input fault, the layer input source automatically switches to the backup input source.

5.6.4 FN Button

The **FN** button on the device front panel can be customized to a shortcut button for the functions including sync status, BKG status, LOGO status, layer status, Multiviewer settings, and input backup. After the function is customized, if you press the **FN** button, you can directly enter the menu screen of the function you customized.

Figure 5-29 FN button setting



5.6.5 Miscellaneous

5.6.5.1 Return to Home

Set the period of time during which the system stays at the current page before returning to the homepage automatically when there is no operation performed.

- Value range: 30s to 3600s
- Default value: 60s

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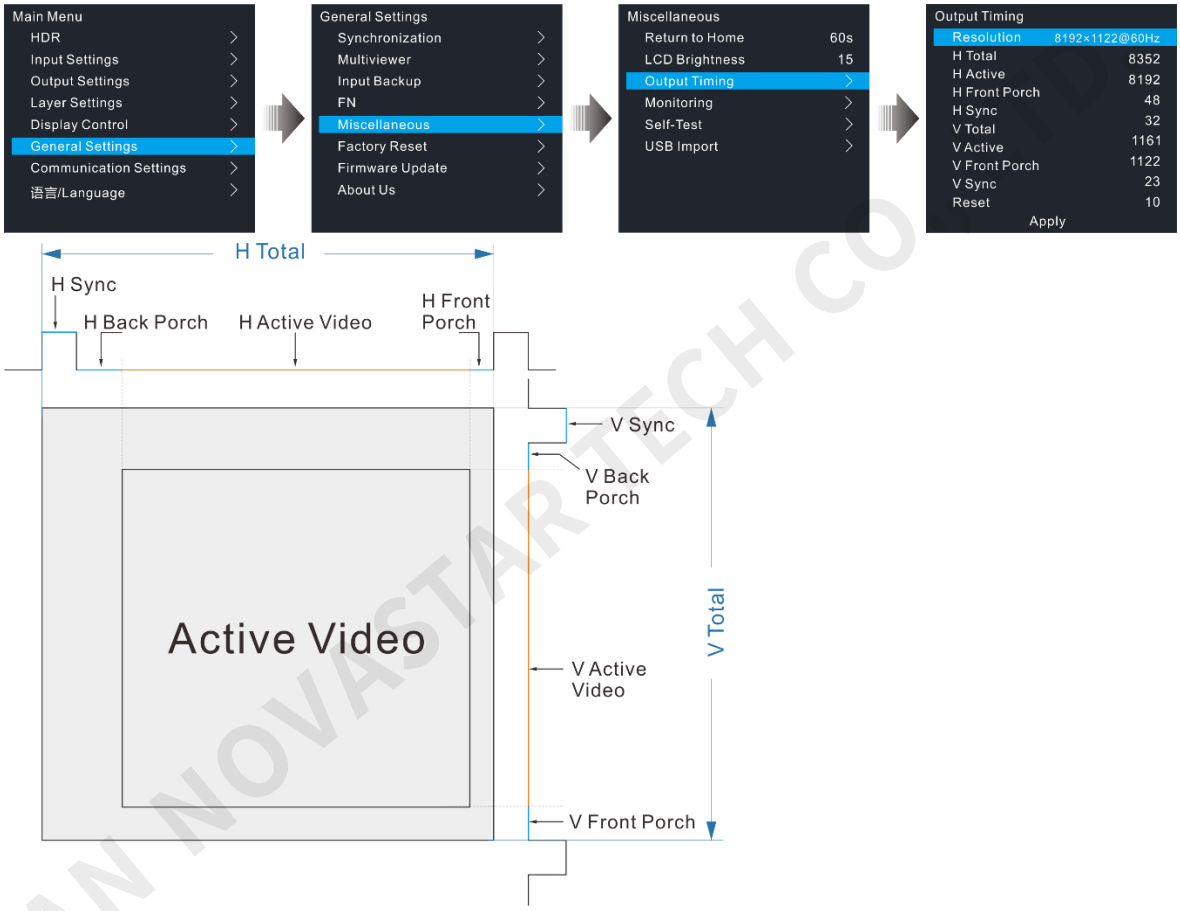
5.6.5.2 LCD Brightness

Adjust the LCD brightness. The value range is 1 to 100, and defaults to 50.

5.6.5.3 Output Timing

Set the Blank area information for the resolution to let the HDR Master 4K be compatible with different display devices or backend devices.

Figure 5-30 Output timing



Parameter	Description
Resolution	Displays the resolution of the current output.
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 H sync
H Sync	H sync width in pixels
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 output active area and the beginning of V sync
V Sync	V sync width in lines

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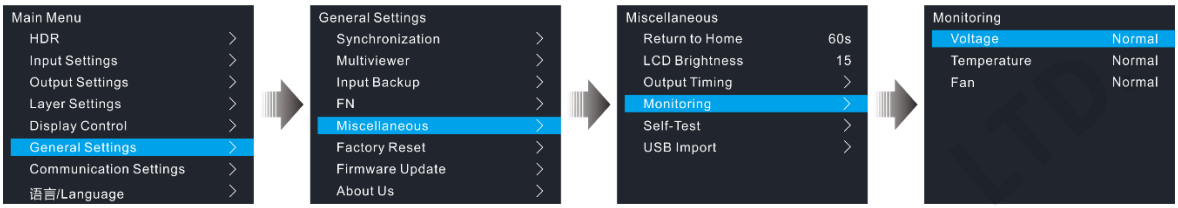
After the adjustment is done, rotate the knob to select **Apply** and press the knob to let the adjustment parameters take effect. You can also rotate the knob to select **Reset** and press the knob to reset the adjusted parameter values to the default values.

5.6.5.4 Monitoring

Monitor the device to see whether the power supply voltage, temperature, and fan are normal. If they are normal, you will see **Normal** displayed on the menu. If they are abnormal, you will see **Alarm**. Please troubleshoot the problem before using the device.

Figure 5-31 Monitoring

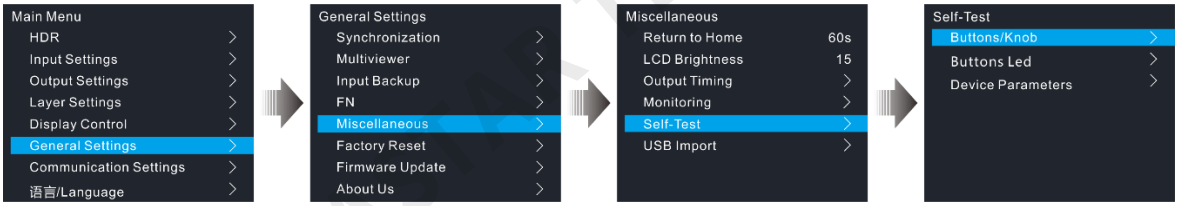


5.6.5.5 Self-Test

Diagnose the device to check if everything works well. If any problem is detected, the test result will be sent to NovaStar's technical support staff to solve the problem as soon as possible.

The test includes the button test, knob test and device parameter test.

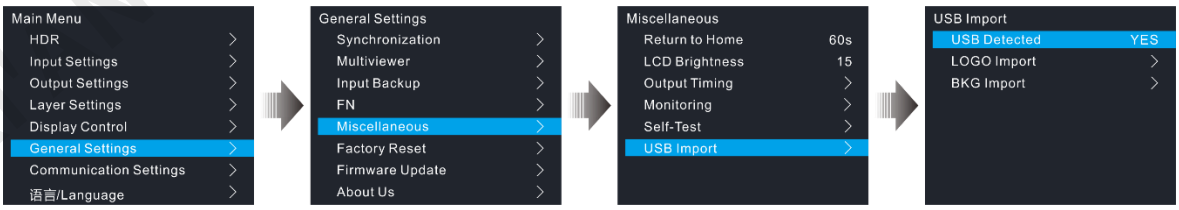
Figure 5-32 Self-test



5.6.5.6 USB Import

Import the BKG and LOGO images from the inserted USB drive.

Figure 5-33 USB import



USB Detected

The device detects automatically whether a USB drive is inserted.

- Yes: A USB drive is inserted.
- No: No USB drive is inserted.

LOGO and BKG Import

Before the import, a folder named BKG or LOGO must be created in the root directory in the inserted USB drive and all the needed BKG or LOGO images must be stored in the folder.

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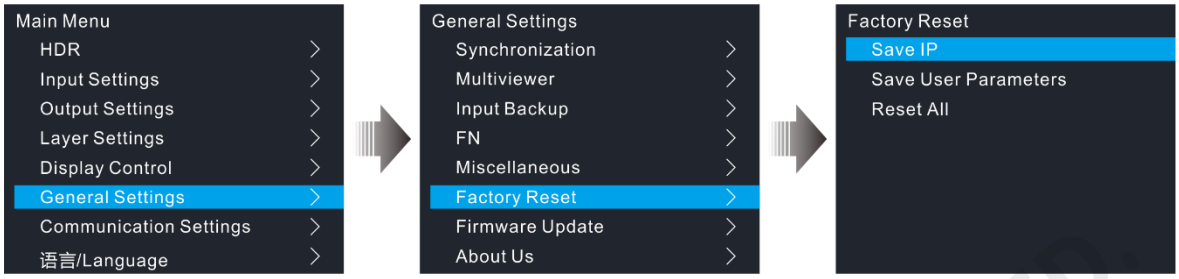
5.6.6 Factory Reset

Reset the device parameters to factory defaults.

Figure 5-34 Factory reset



- Save IP: Reset all the device parameters to defaults, except the device IP address.
- Save User Parameters: Reset all the device parameters to defaults, except the communication, FN button and language settings, as well as the imported BKG and LOGO images.
- Reset All: Reset all the device parameters to defaults.

5.6.7 Firmware Update

The HDR Master 4K can be updated via a USB drive. This function is available when a USB drive that comes with the update package is inserted into the device.

Step 1 Store the target update package into the root directory of the USB drive.

Step 2 Insert the USB drive into the device.

Step 3 On the main menu screen, go to **General Settings** > **Firmware Update**. Select **Update**, and then the device will automatically search for the update package and perform the update.

Note:

The update package must be in ZIP format.

5.6.8 About Us

View the device hardware version, company website and email address.

- Hardware Version: Displays the current device version.
- Official Website: www.novastar.tech
- Email: support@novastar.tech

5.7 Communication Settings

On the main menu screen, go to **Communication Settings** > **Mode**. Rotate the knob to select **Automatic** or **Manual**. For manual mode, the device IP address cannot conflict with the IP addresses of other devices on this network segment. Select **Reset** to reset all the network parameters to default settings.

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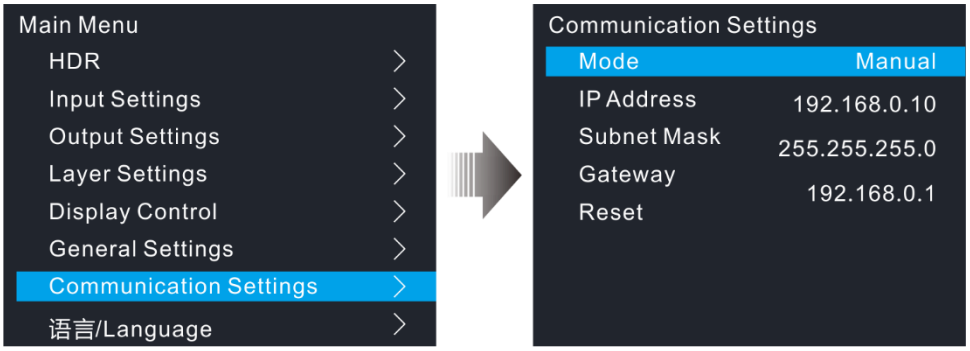
Figure 5-35 Communication settings



5.8 Language

The HDR Master 4K supports English and Chinese. You can switch to either language according to your preference.

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6 Specifications

Electrical Parameters	Power connector	100–240V~, 3A, 50/60Hz
	Max. power consumption	120 W
Operating Environment	Temperature	0°C to 45°C
	Humidity	10% to 85%, non-condensing
Storage Environment	Temperature	–20°C to +60°C
	Humidity	10% to 90%, non-condensing
Physical Specifications	Dimensions	482.6 mm × 442.5 mm × 50.5 mm
	Net Weight	7.5 kg
	Gross Weight	12.1 kg
Packing Information	Packing box	612 mm × 225 mm × 595 mm
	Carrying case	582 mm × 185 mm × 555 mm
	Accessories	2x HDMI cables 1x Mini DP to DP cable 1x DP cable 1x Ethernet cable 1x Power cord (EU) 1x Power cord (UK) 1x Power cord (US) 1x Power cord (CN) 1x Cable clip 1x Cable tie 1x Quick Start Guide 1x Safety Manual 1x Customer Letter 1x Certificate of Approval
Certifications	CE, FCC, IC, RoHS	
Noise Level (typical at 25°C/77°F)	50 dB (A)	

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