



INSTRUCTIONS

Z6 PRO

Super Controller

USER MANUAL

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1. Safety Precautions

Please read all instructions before installing and using the device.

1.1 Never disassemble or modify this product in any way.

To avoid potential hazards, please use this equipment according to the regulations.

1.2 High voltage danger: The operating voltage of this product is 100-240VAC.

Incorrectly connecting the power supply or replacing battery may cause explosion, fire, electric shock, or damage to the product. Securely plug the power cord into the power receptacle.

1.3 Keep this product far away from magnets, motors and transformers.

This product is an electronic product. Contact of functional interface with charged objects may cause damage to circuit components, thus affecting the normal use of the product.

1.4 Keep away from flammable and explosive hazardous substance.

If this product fails to operate normally, contact the nearest service center. Never disassemble or modify this product in any way.

1.5 Do not install the unit in humid, dusty, or sooty locations.

When cleaning, do not spray water directly onto parts of the product. Doing so may cause fire or electric shock.

1.6 If this product fails to operate normally, contact the nearest service center.

2. Overview

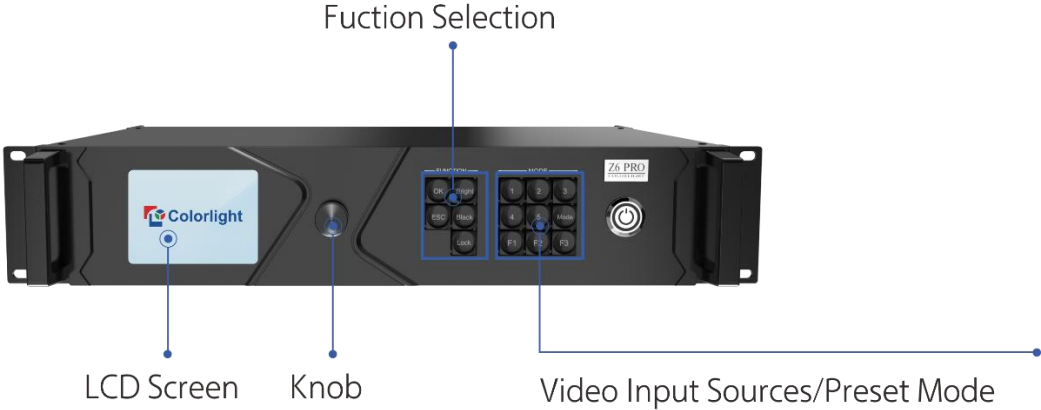
Colorlight Z6 PRO is the newest generation all-in-one super controller, which including the excellent video processing capabilities and sending card function, and it is designed for high-end rental display and high-resolution LED displays, and it is the most competitive in the market.

Key Features

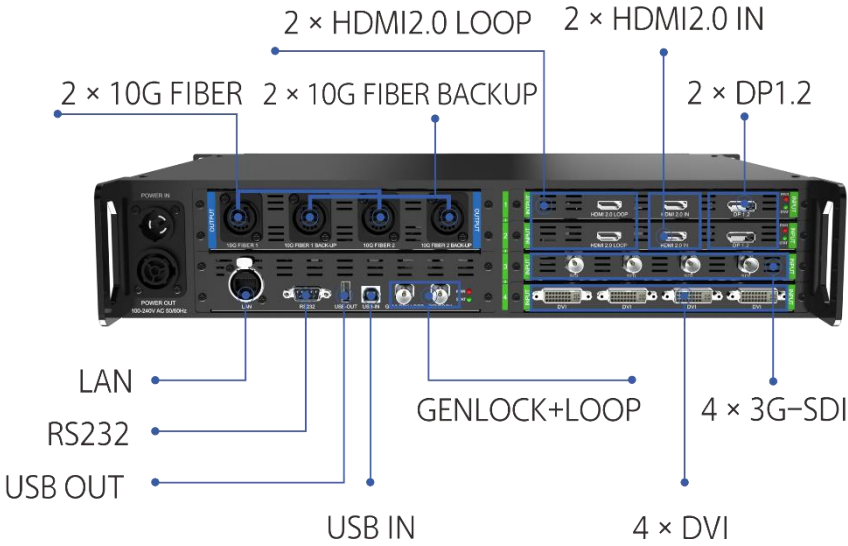
- 4 × 4k input boards, up to 4096×2160@60Hz resolution per board
- Support 3 types of optional 4k input boards, including HDMI/DP, 4×DVI, 4×SDI
- 4 × 10G optical fiber output ports, loading capacity up to 8847360 pixels, maximum width: 8192 pixels, maximum height: 4096 pixels
- Low latency
- Up to 16 PIP layers and allowed to freely adjust size and location
- Video sources switching, splicing, cropping and scaling
- Supports HDR
- Supports 3D display
- Improved gray-scale at low brightness
- Hue, saturation, contrast adjustment
- Supports USB, LAN and RS232 ports control
- Art-Net inside

3. Hardware

The Front Panel



The Back Panel



Optional 4K input boards

1) HDMI/DP board

Input Signal	1 × HDMI2.0+LOOP, 1 × DP1.2 only one of them will be working at the same time	
Standard	HDMI: EIA/CEA-861 standard, HDMI-2.0 compliant, HDCP2.2 compliant DP: DP-1.2 standard and HDCP1.3 compliant	
Input resolution	3840×2160@60Hz	8bit: support RGB444, YCbCr444, YCbCr422, YCbCr420 10bit: supports YCbCr422, YCbCr420
	1920×1080@60Hz	8/10bit: support RGB444, YCbCr444, YCbCr422, YCbCr420
	4096×2160@60Hz	8bit: support RGB444, YCbCr444, YCbCr422, YCbCr420

2) 4 × DVI input board

Input signal	4 x DVI inputs
Standard	VESA standard, support HDCP, compatible with HDCP1.4
Input resolution	1920×1080@60Hz 8bit: support RGB444, YCbCr444, YCbCr422, YCbCr420

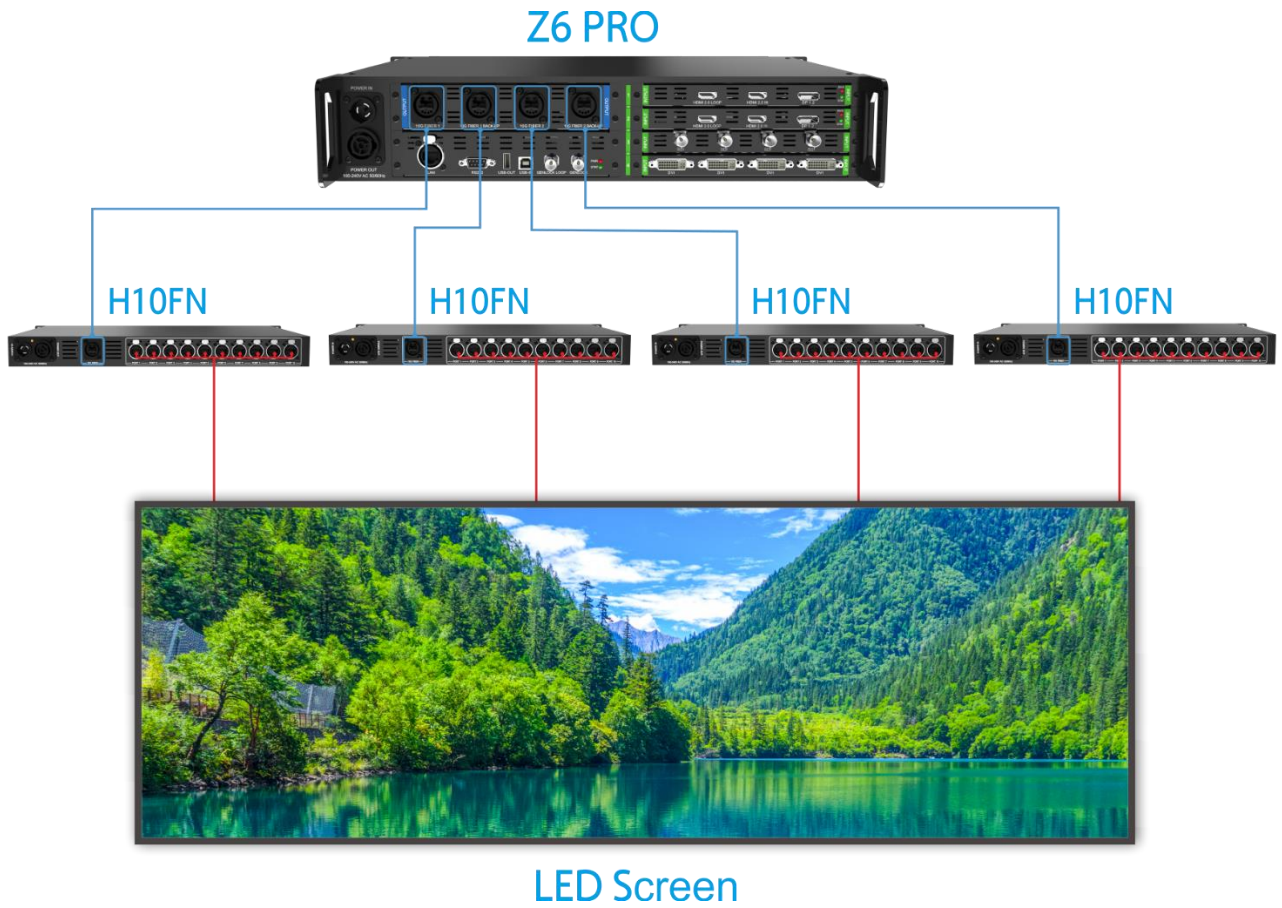
3) 4 × SDI input board

Input signal	4 × 3G-SDI
Video source format	Compatible with 3G-SDI, HD-SDI, SD-SDI
Input resolution	1080p, 1080i, 720p, 480i, 576i
Transmission distance	1080p≤100 meters

The 4 input boards of Z6 Pro can be combined in any combination of above 3 input boards.

4. Connection Diagram

Using Z6 PRO with H10FN



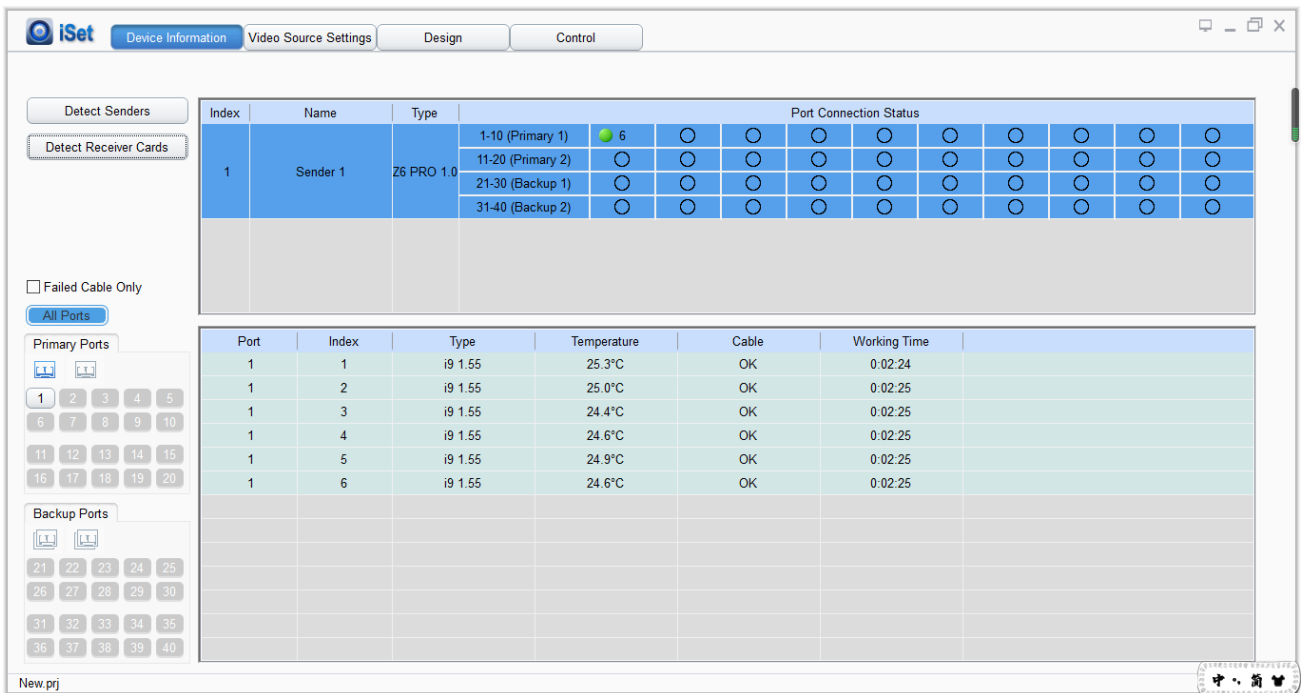
5. Operating Software

Please make sure the correctness of the hardware connection before setting, then use iSet to detect senders and all receiver cards. (Download url: www.colorlightinside.com)

5.1 Device Information

Click **[Device Information]** to enter the **[Devices Information]** page.

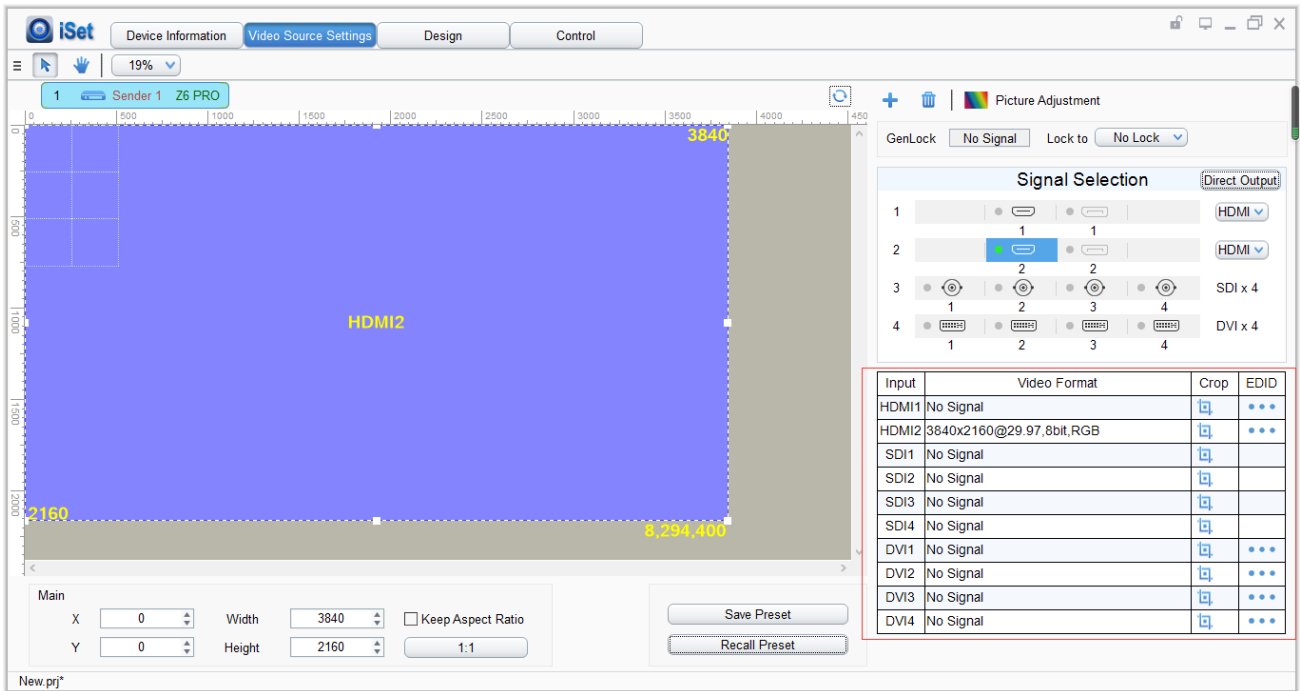
1. Click **[Detect Senders]** in **[Device Information]**. The software will automatically acquire the sender index, name, and type. Please check the hardware connection or the installation of the relevant driver if cannot detect senders.



2. Click **[Detect Receiver Cards]**, the software will automatically acquire the receiver card quantity of each network port of the sender, type of receiver cards, temperature, and other information. Please check corresponding cable if the number of receiver card is inconsistent with the actual status.

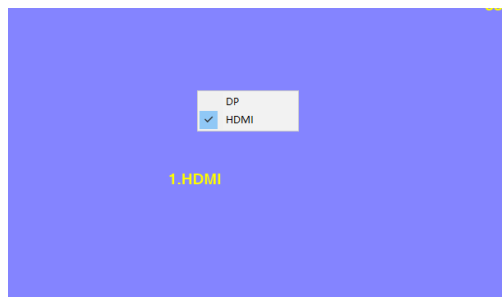
5.2 Video Source Setting

Click the **[Video Source Setting]** and enter the video source setting page. Once the input sources working, the software will automatically acquire the signal information and display on the bottom right corner.



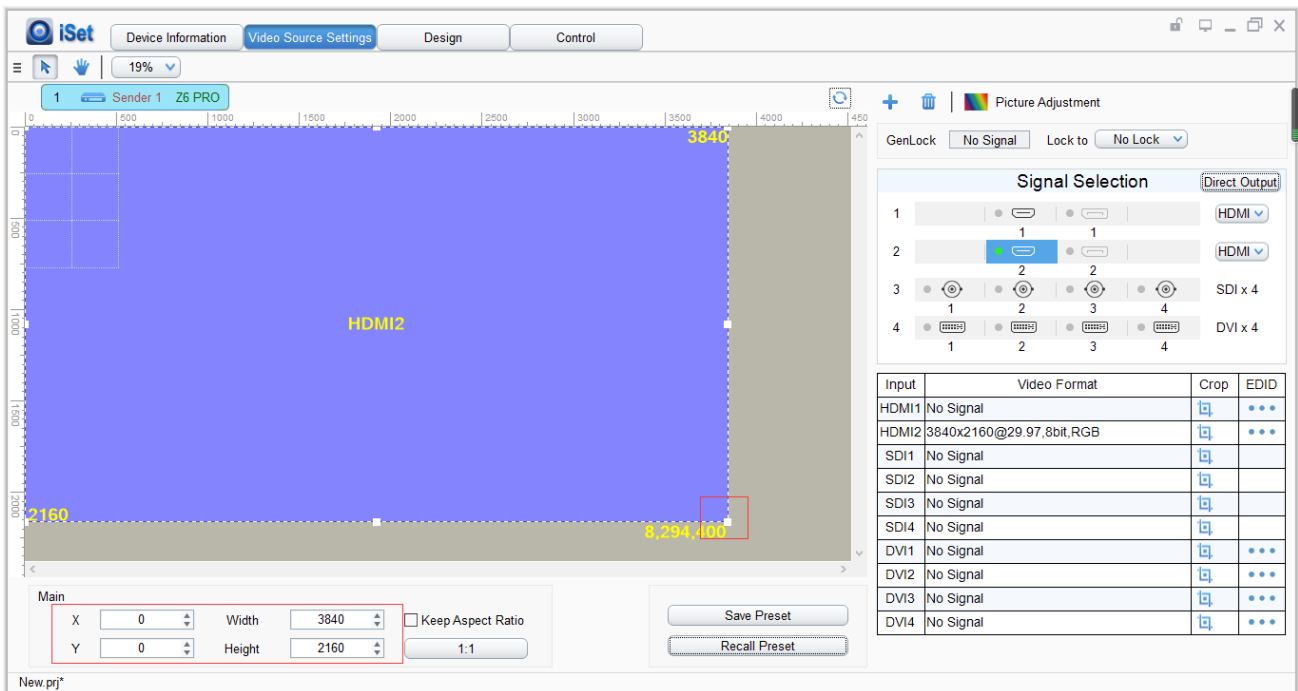
HDMI/DP Exchange

First, please switch the signal to HDMI or DP, then right-click in the image view area, once the list showing up, make a selection.



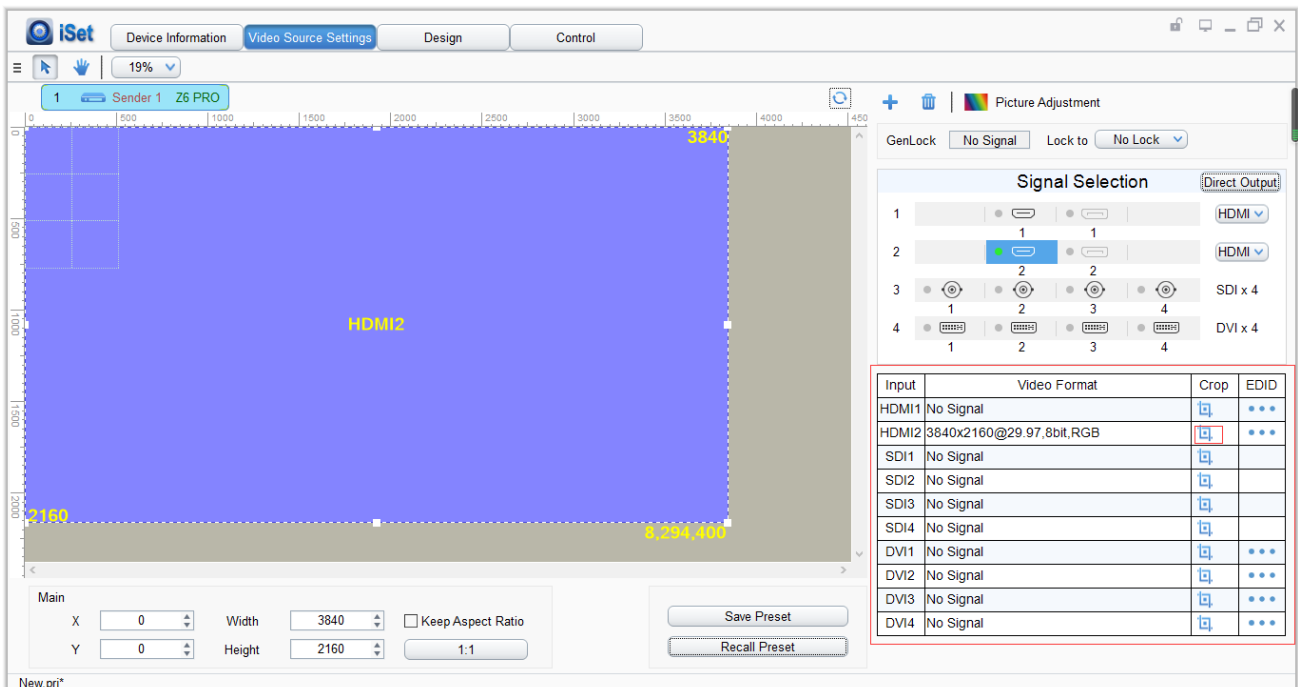
Scale

In **Image View Area**, select the image that needs to scale, set X (Horizontal), Y (Vertical), width, and height, or you can click the white box in the bottom right corner of the image and drag it with the mouse, then click **[Save]**.

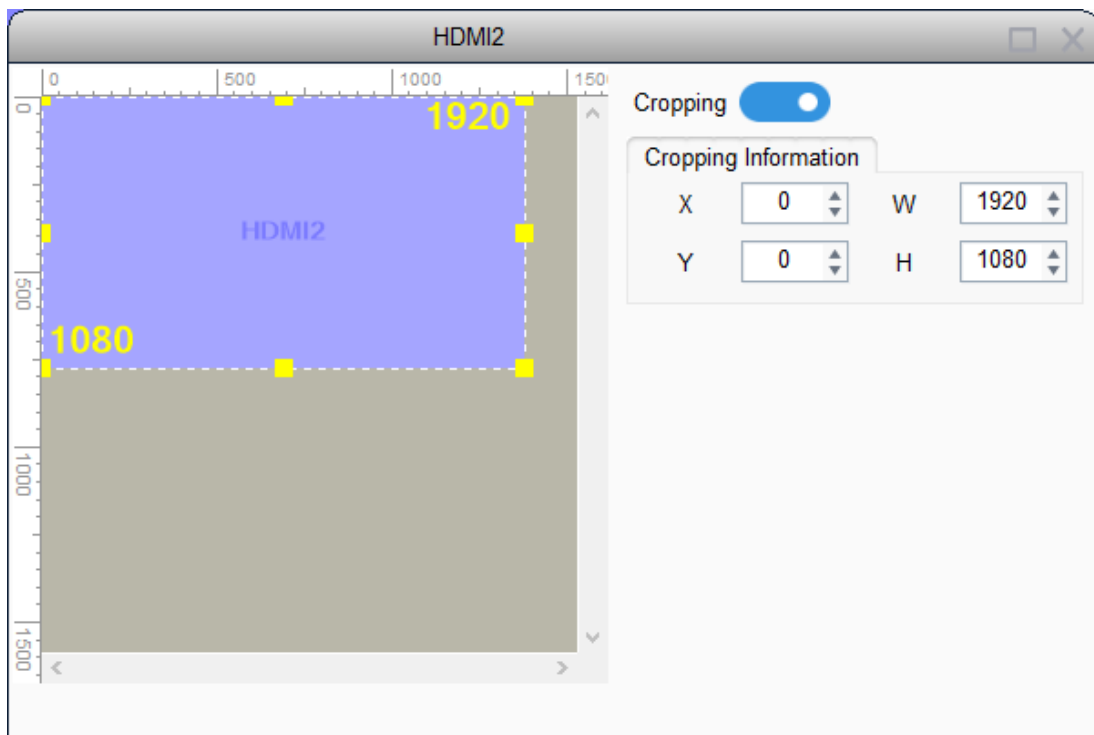


Cropping

In the [video format] area, chose the signal and click “” to enter the setting.

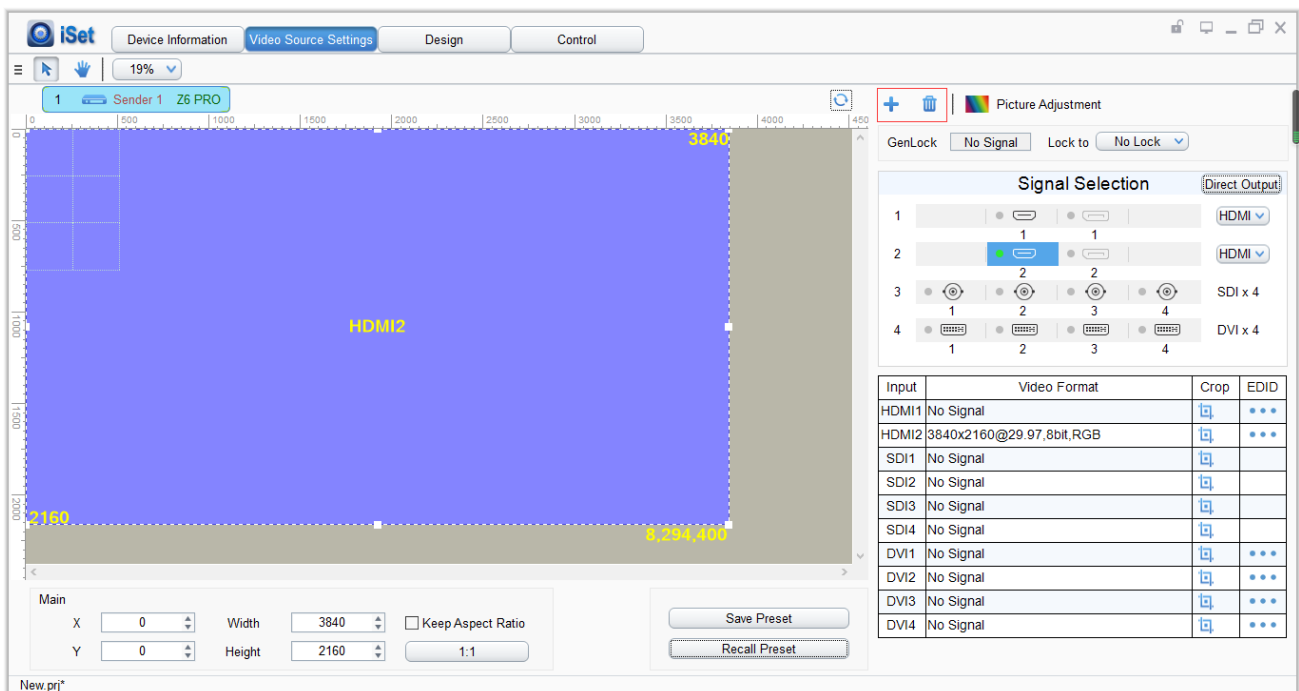


In the cropping interface, check [Cropping], select the image that needs to scale, set X (Horizontal), Y (Vertical), width, and height.

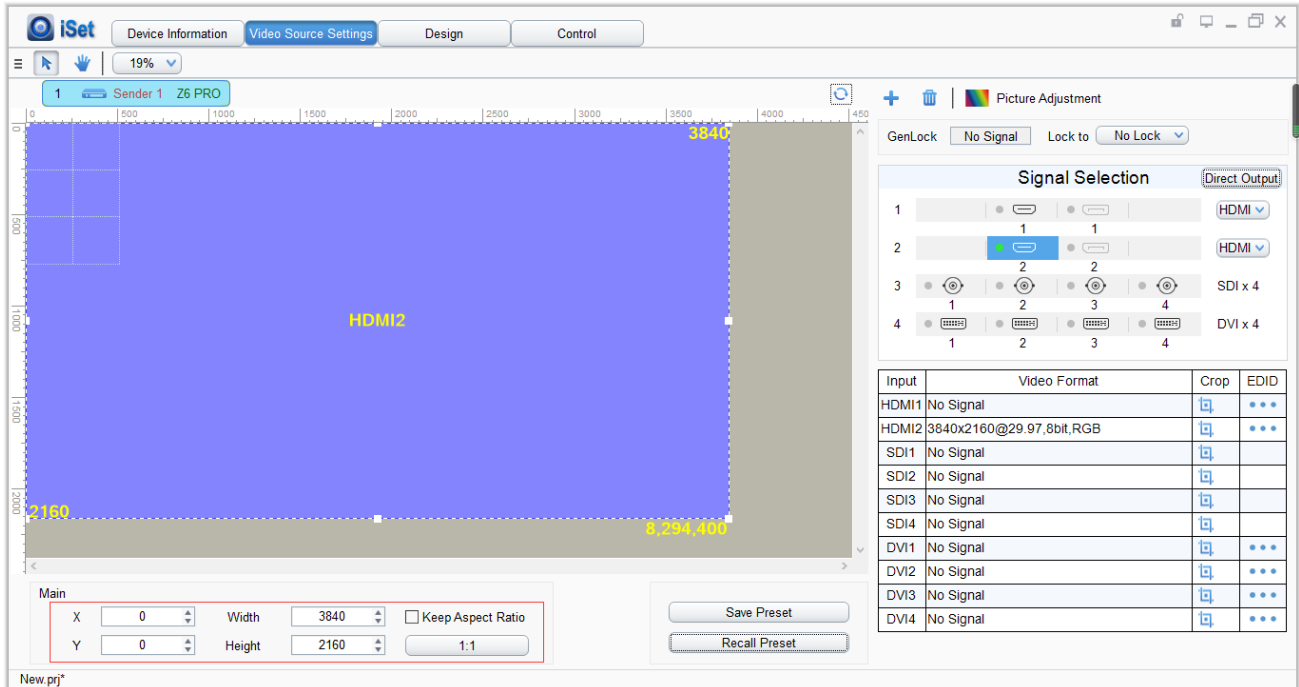


PIP

The Z6 PRO supports up to 10 freely placable windows, each PIP window can be set individually.



Click “+” to add a new PIP window, select PIP window and right-click on it to select the signal, meanwhile, cropping and scaling can be set as before.



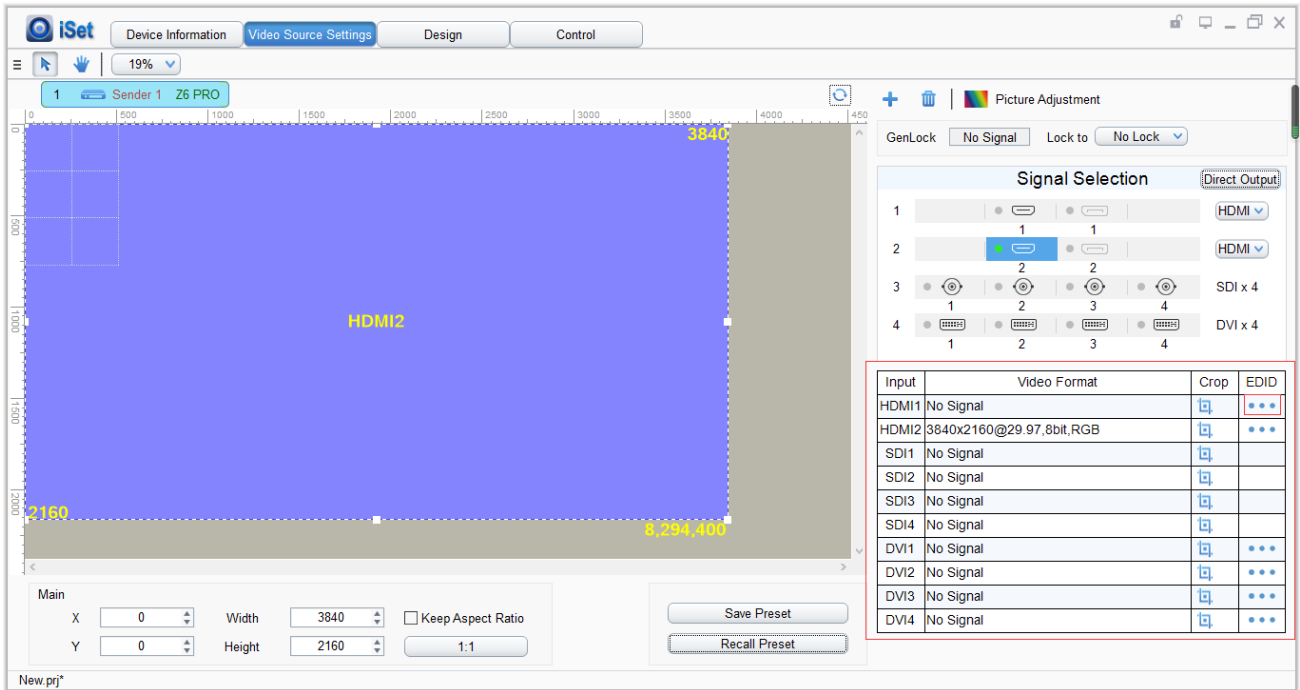
EDID

EDID: Set sender resolution, the first one is the default as the current resolution.

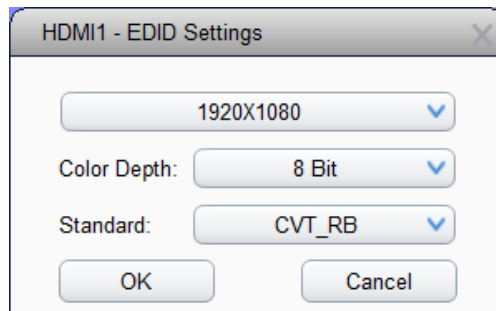
In the **[Signal Selection]** area, and select the correct video format, and click “...” to enter the setting window.

Mainstream resolution can be selected from the dropdown list, and you can also customize the sender resolution, by setting the width/height and frame rate.

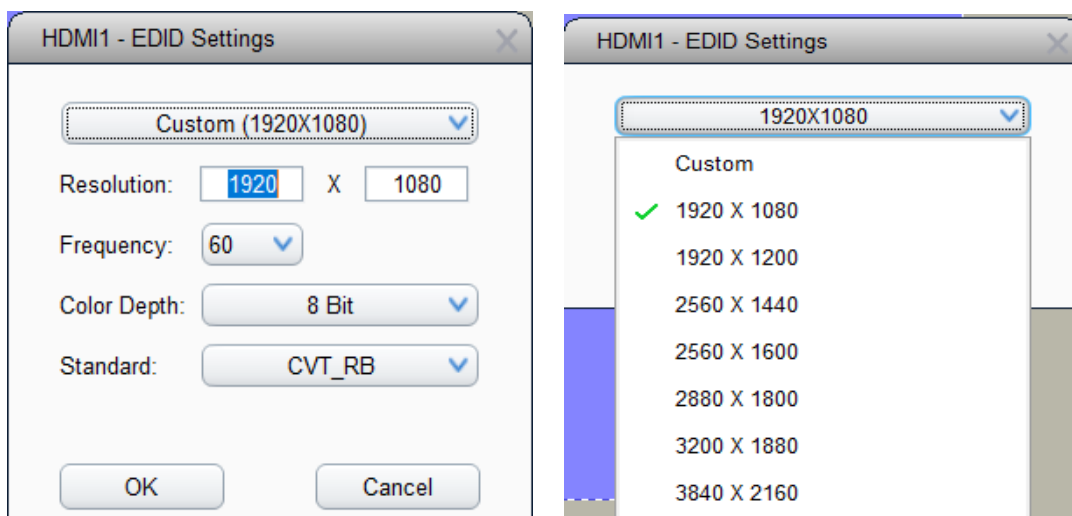
Click **[Save]** after setting.



In the EDID Setting window, it will show the current computer resolution.



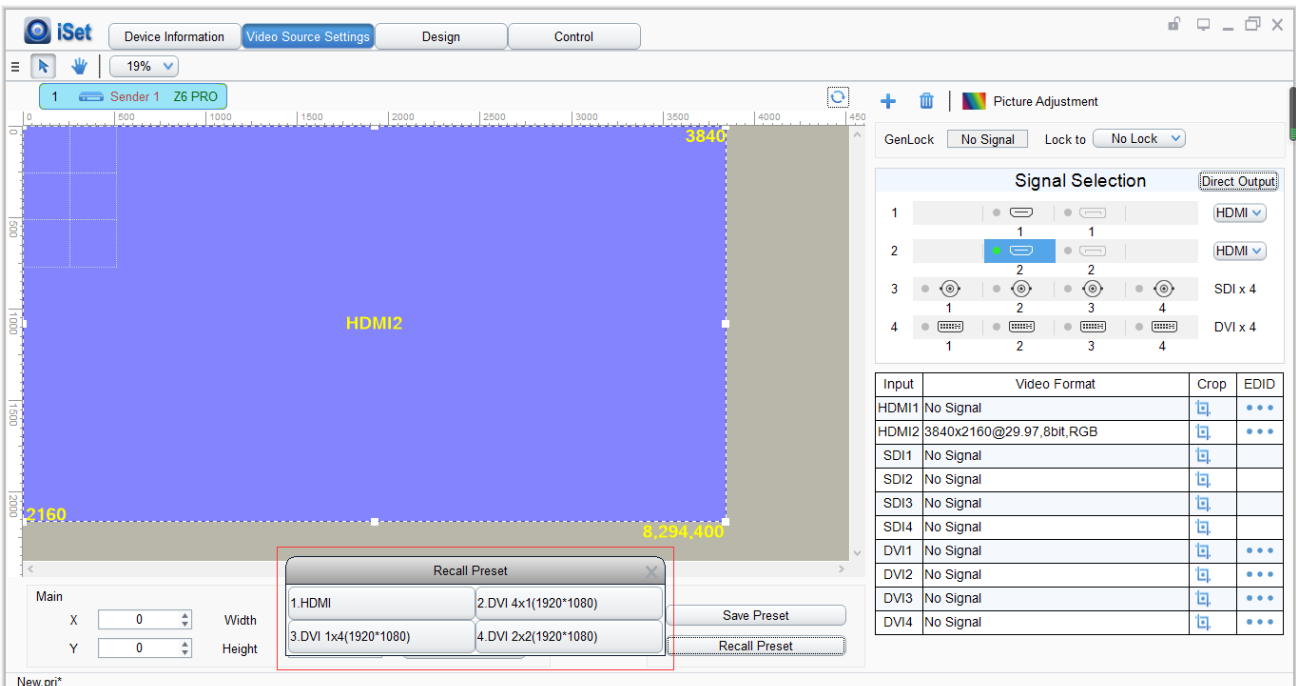
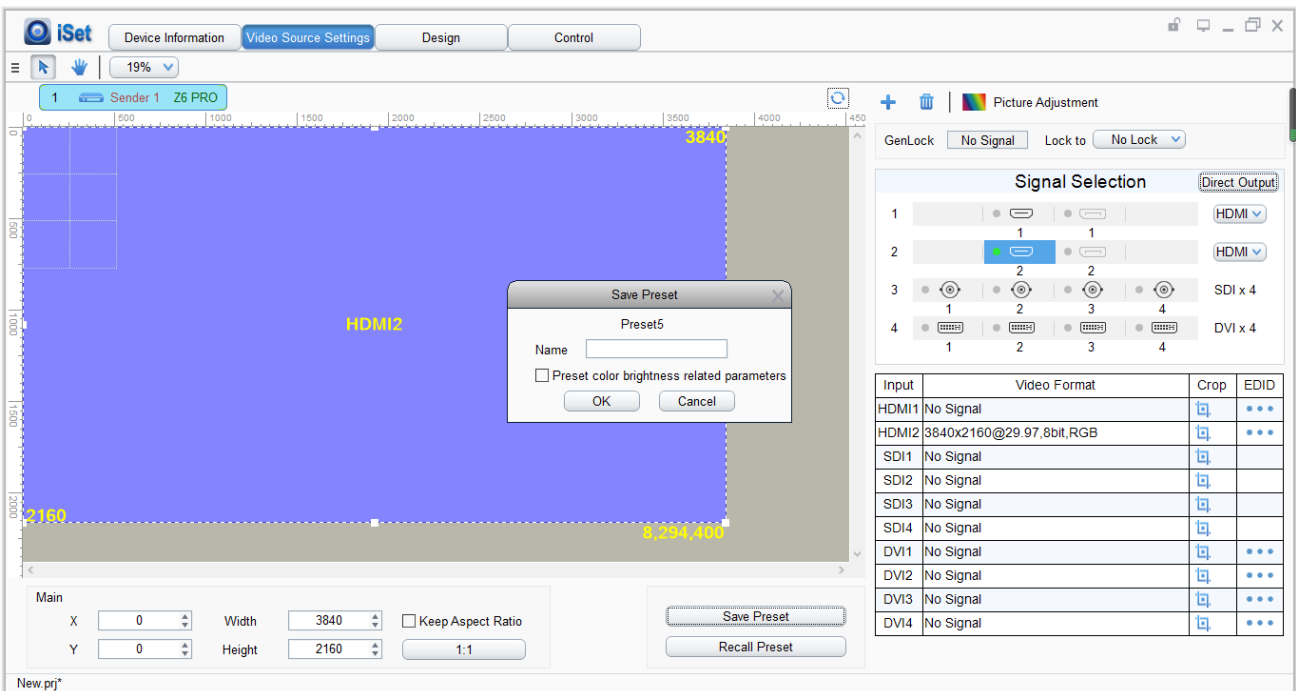
Click the resolution will show the list of all resolution options, and customs resolution allows to set the height and width. The **[Color Depth]** and **[Stand choose]** are allowed to choose by users. In the end, click **[OK]** to save.



Preset

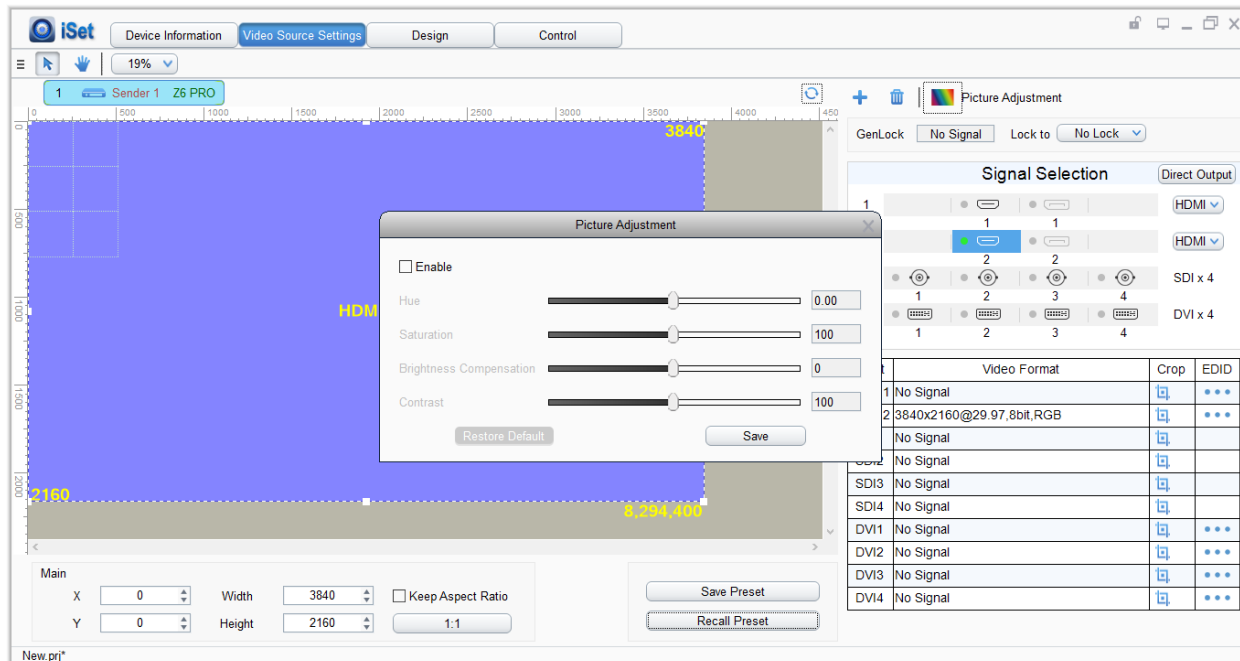
In **[Video Source Setting]**, the user may set up to 16 preset models. All the preset models support renaming, and setting information such as cropping, PIP, EDID, Brightness, color setting information.

When the user finished setting in **[Video Source Setting]**, click **[save]** to save preset and need to set a name for it, click **[ok]** to finish. Click **[Recall Preset]** allows the user to use the preset as saved before.



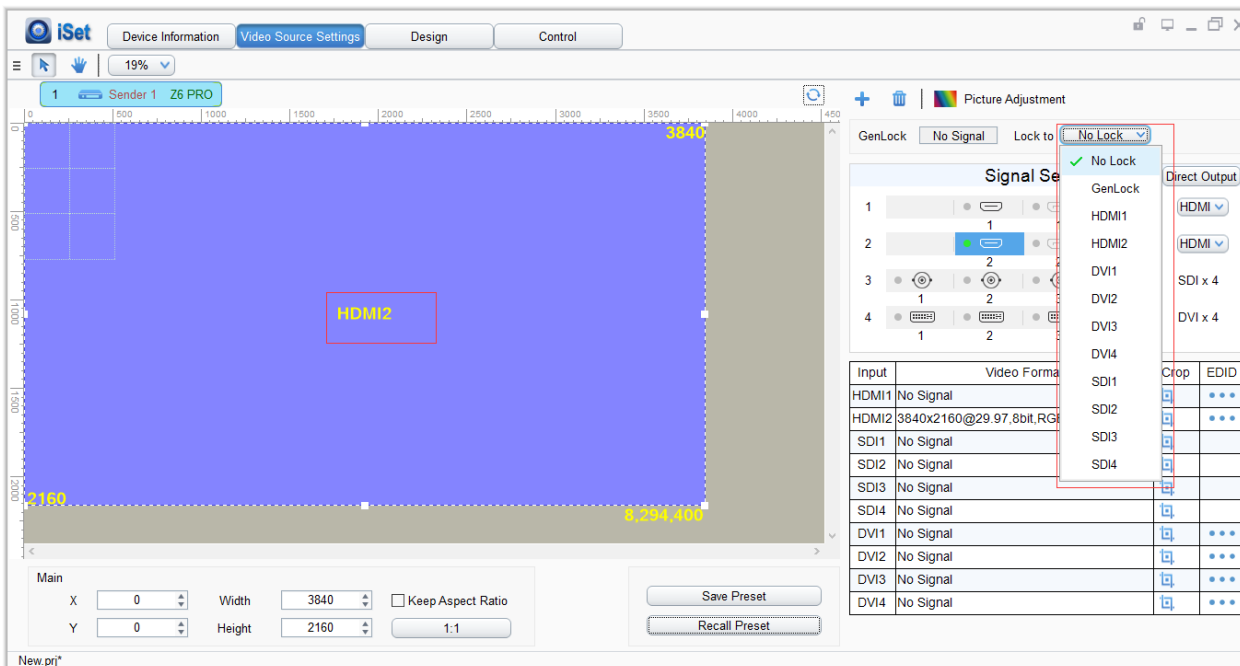
Screen Adjustment

In [Screen Adjustment], user can change information which includes Hue, Saturation, Brightness Compensation, and Contract.



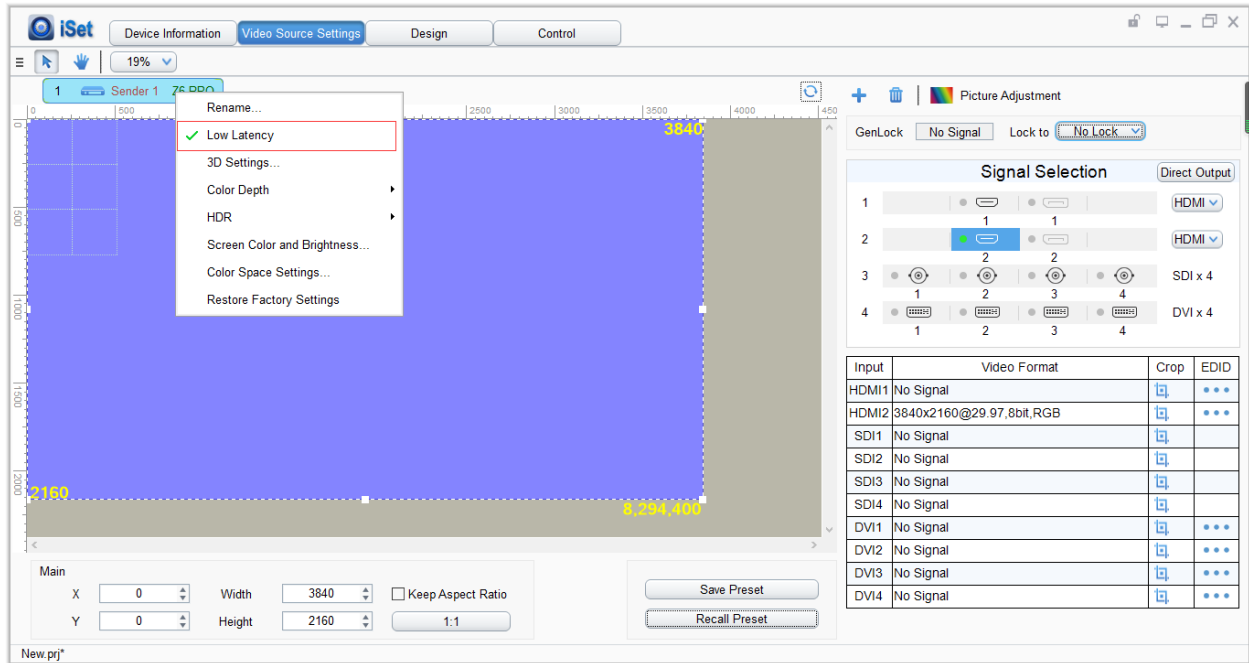
Video Genlock

The Z6 PRO supports Genlock for every signal. Genlock will default to the main signal when no setting on it.



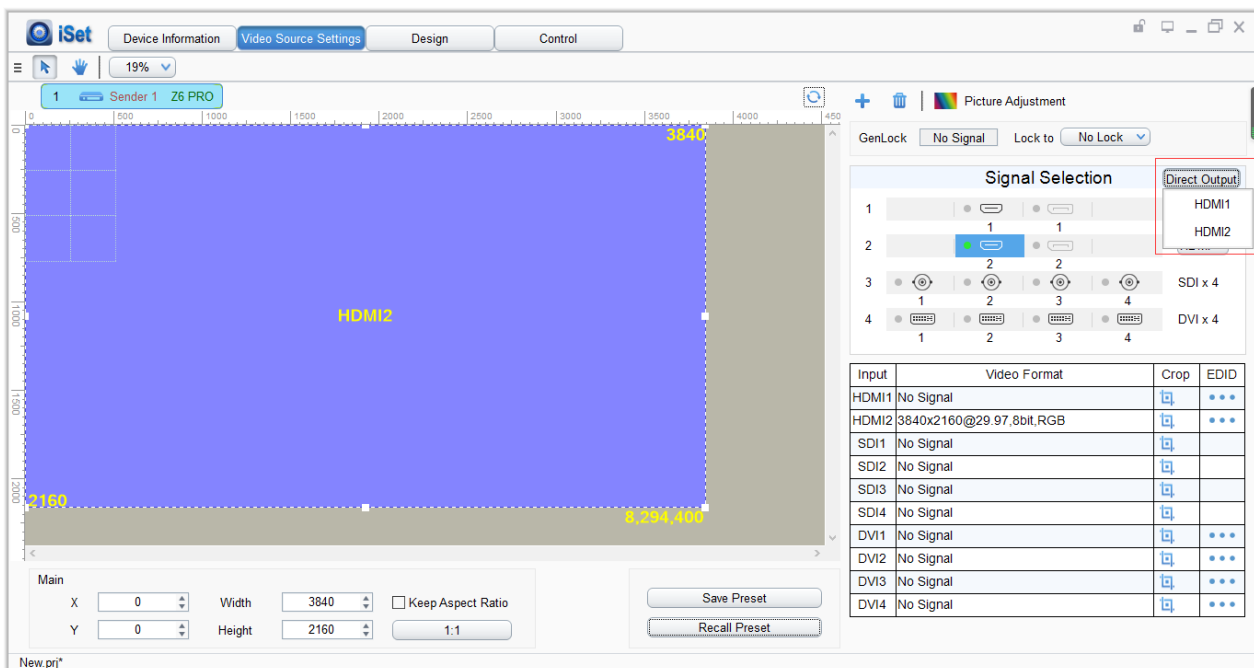
Low Latency

In the [Sender Setting], user can enable the [Low Latency], and HDMI/DP could achieve 0 latency if they are the unique input signal.



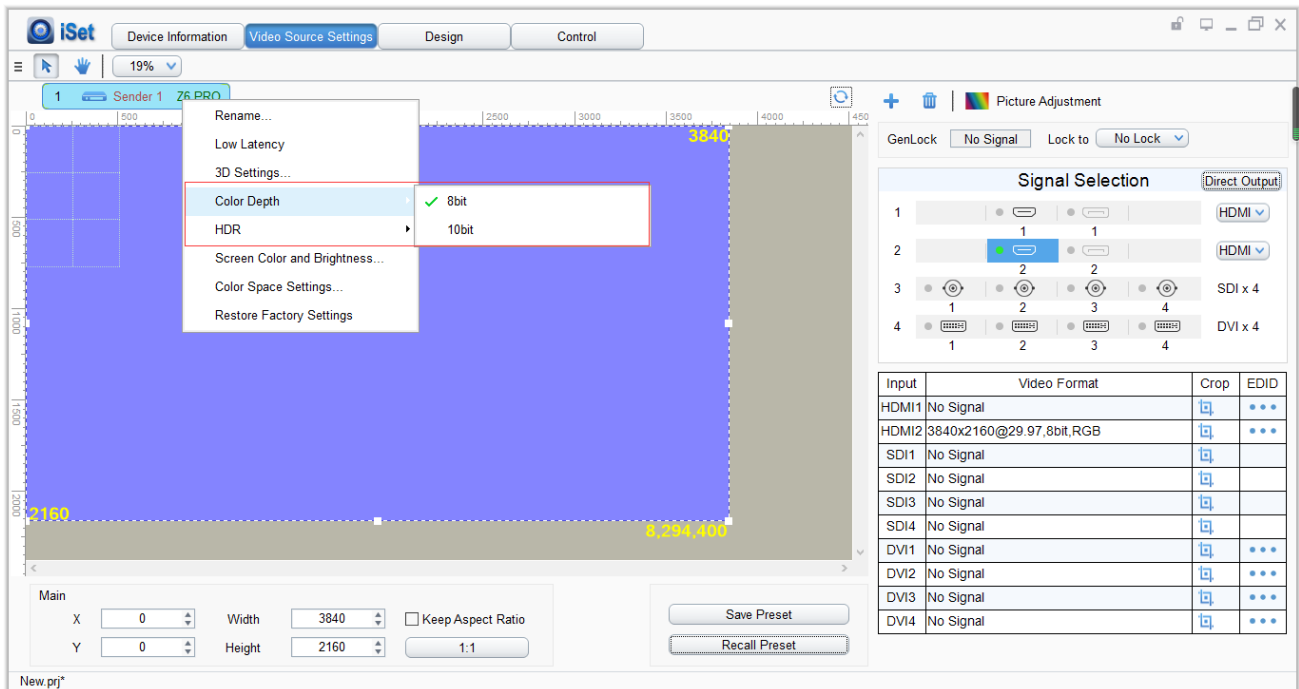
Direct Output

This is the fast way to enable low latency,after selected [Direct Output] mode,all the signal processing will turned off automatically, like PIP/scale/cropping, output mode would be 1:1.



Color Depth

The [Color Depth] output of 8 bit up to 4096x216 and 10 bit up to 3820x2160.



Loop

Use two H10FN to connect the Z6 PRO optical fiber output port 1 and 2. Make the port 1 as the main output, and port 2 as redundant output. Then, use network cables to connect start of cabinets from the first H10FN and end connect to the second H10FN. When the main output loses output signal, and the redundant one will work automatically, once the main signal working again and output will switch to the main one.

Screen Color and Brightness

In [Screen Color and Brightness] setting, make [Unknown] disable to change the information or make the selection in [Color Space Setting].

The screenshot shows the iSet software interface with the 'Screen Color and Brightness' dialog box open. The dialog box contains the following settings:

- Unknown
- Red Brightness: 244 X 0.6870 Y 0.3130
- Green Brightness: 584 X 0.1880 Y 0.7110
- Blue Brightness: 55 X 0.1370 Y 0.0510
- White Brightness: 883 X 0.3127 Y 0.3296

Buttons: Import, Export, Save

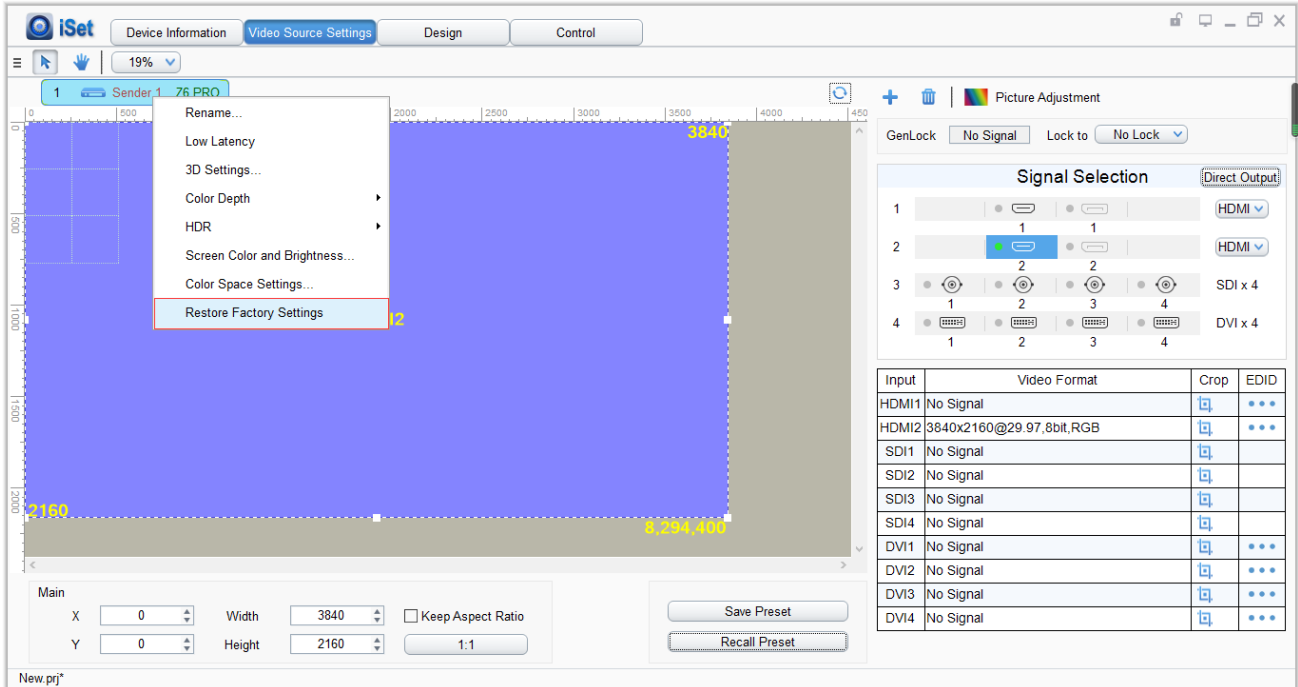
The screenshot shows the iSet software interface with the 'Color Space Settings' dialog box open. The dialog box contains the following settings:

- Original
- sRGB/Rec
- adobeRGB
- PAL
- NTSC
- Rec.601
- Rec.709
- Rec.2020
- DCI-P3
- Custom

Button: Save

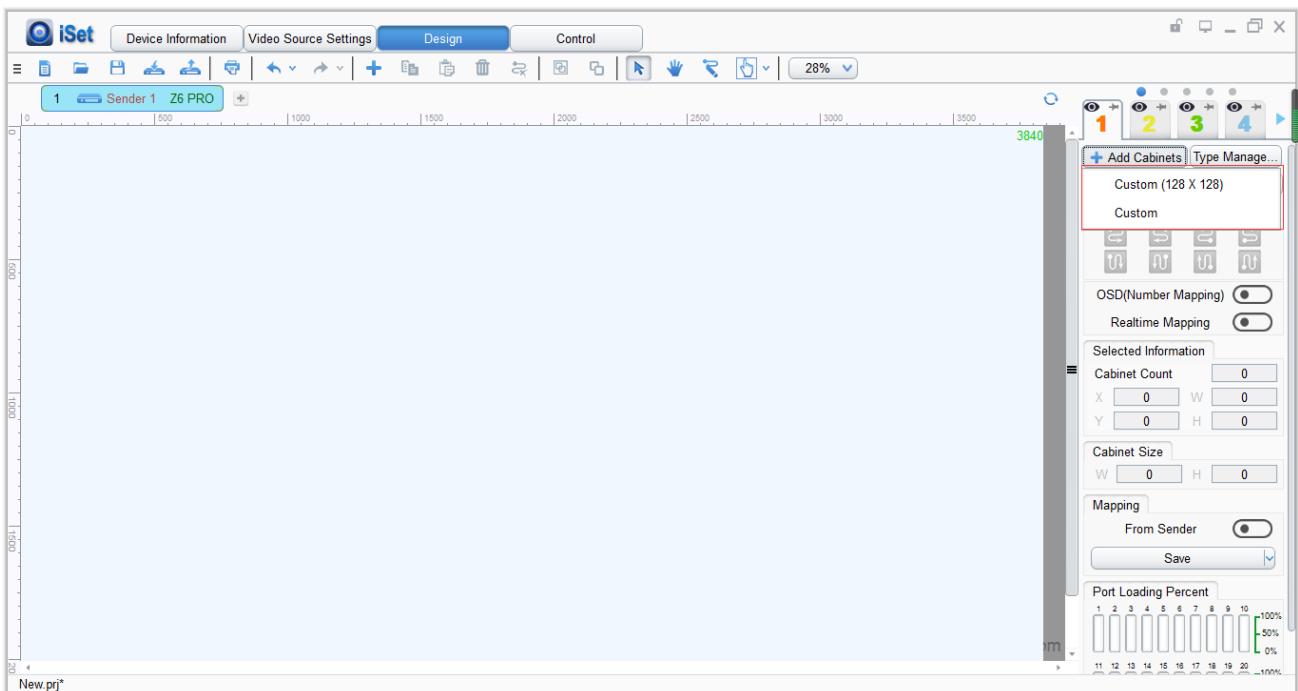
Restore Factory Settings

Click **[Video Source Settings]** to enter the setting, and right-click the sender, then click **[Reset Factory Settings]**.



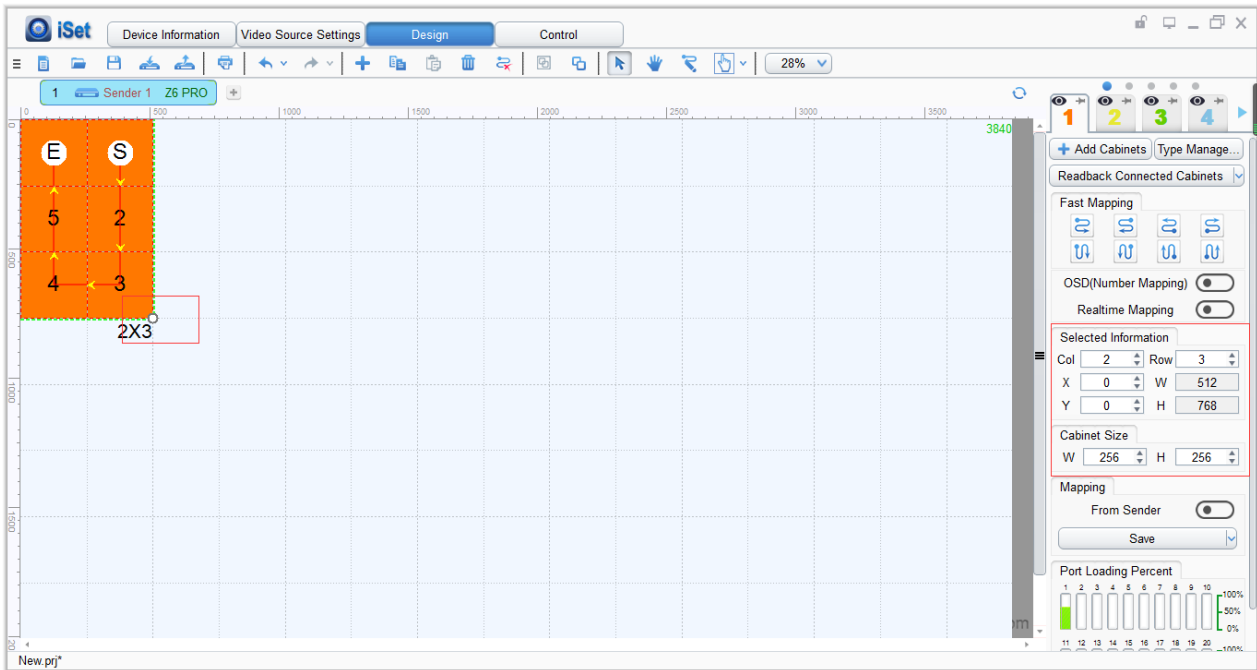
5.3 Design

Click **[Design]** to enter setting.



1. Add Cabinets


Select the right sender output port, and click **[Add Cabinets]**, click **[Custom]**, fill out in the **[Cabinets Size]** box, and click **[OK]**. Moving a box with mouse to the right place and click, the cabinets will be added. More boxes can be created by dragging the circle at the bottom right corner or setting at **[Selected Information]** on the right.

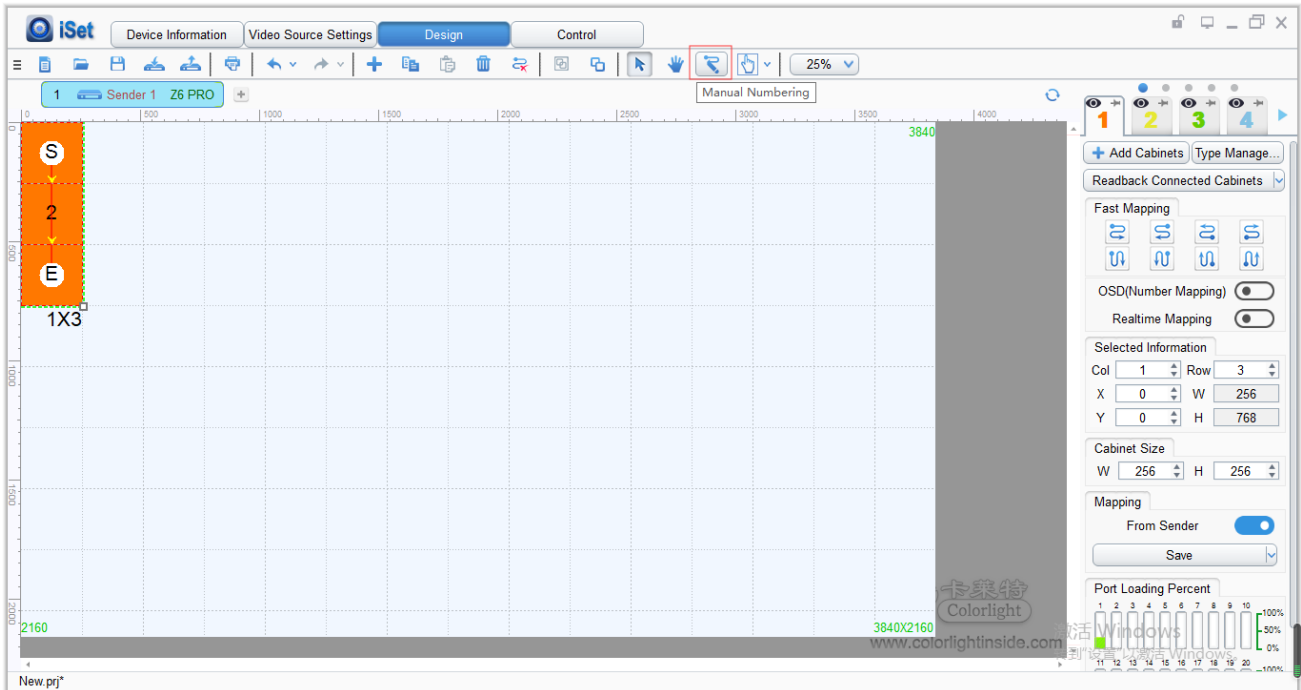


2. Setting Mapping

Added Cabinets will set default connection mapping, it may not correct. Before resetting the new mapping, please make sure the sender port is correct.

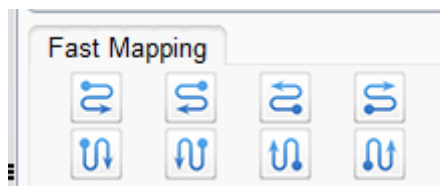
① Manual number

Click “” at the top symbol line, then click the cabinets one by one from the start to the end.



② Fast Mapping

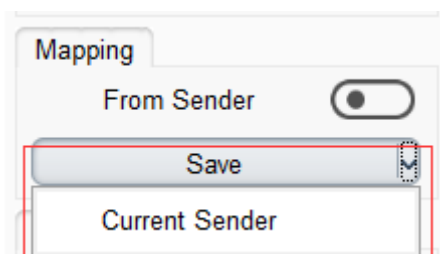
Using mouse to select the cabinets, then choose the right type of mapping



Tips: Since the cabinets may not be the same size, each of them can be set individually.

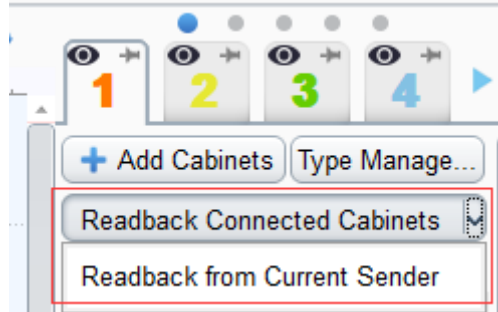
3. Save Mapping

Once the cabinets connection mapping is finished, click **[Save]**, the cabinets connection mapping will be sent to sender and saved. Then, the screen will display correctly.



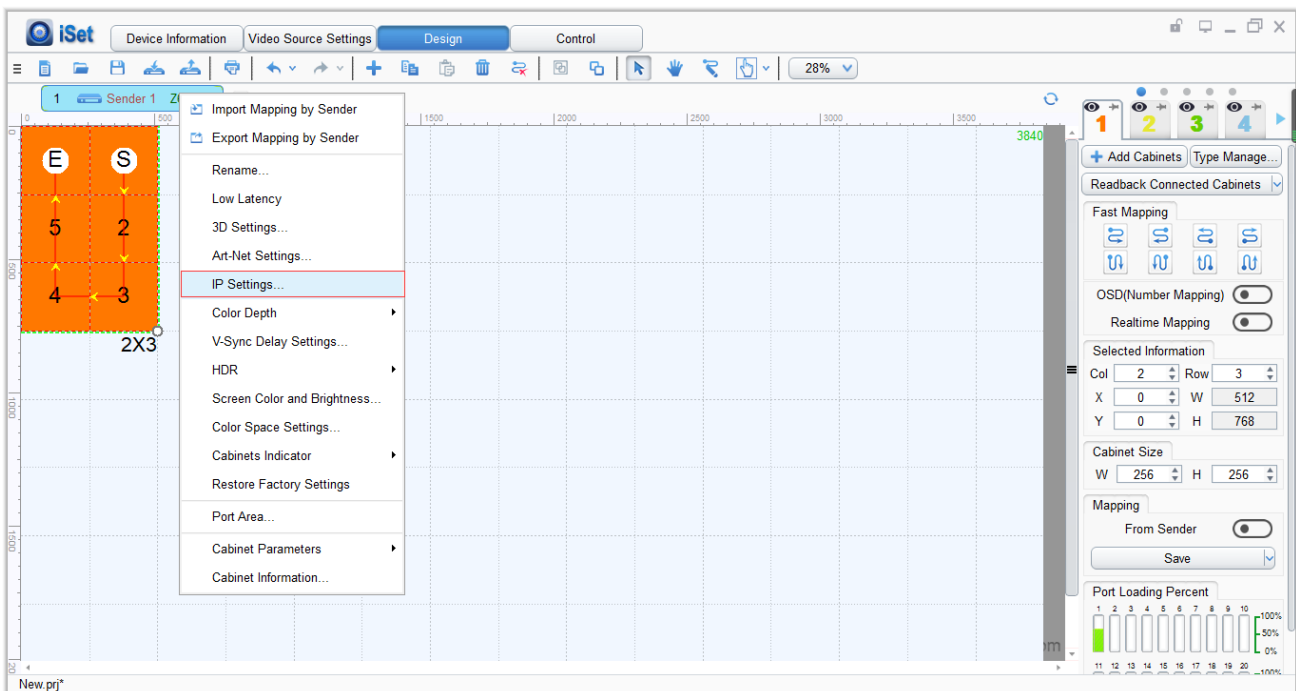
4. Readback Connected Cabinets

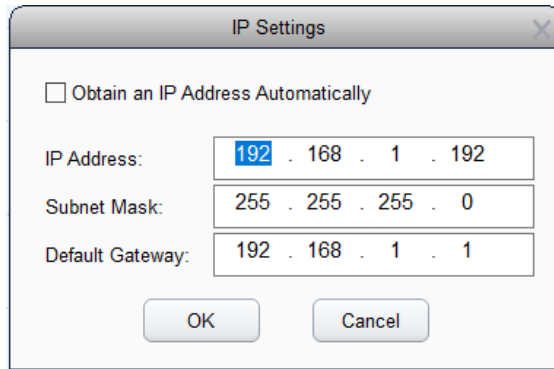
Click **[Read Readback Connected Cabinets]**, the saved mapping will be readback from receiver.



5. Configure IP Address

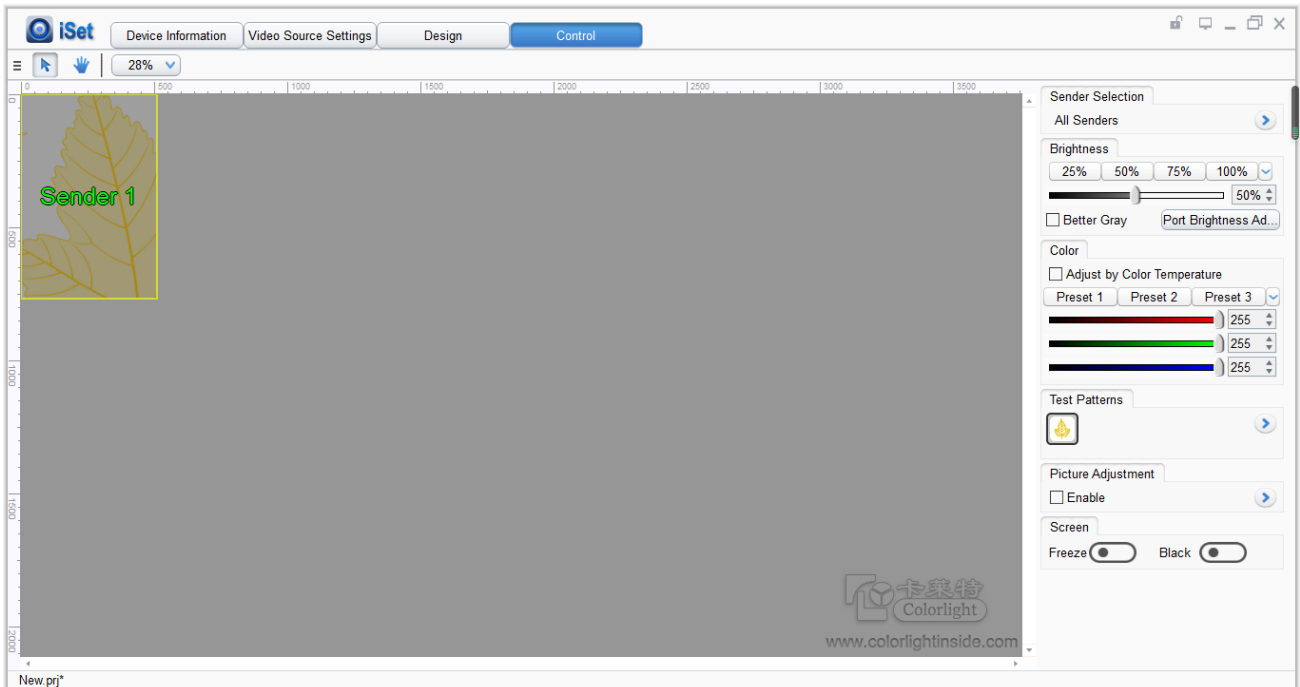
Click **[Design]** to enter Setting, and right-click on the **[Sender]**. Click the **[IP Settings]** on the list, and make the selection on **[Obtain an IP Address Automatically]**, the sender will automatically obtain an IP address. Configure IP address by self need to fill the **[IP Address]**, **[Subnet Mask]**, **[Default Gateway]**, and click **[OK]**.





5.4 Control

Click **[Control]** to enter sender setting. Making a selection in **[All Sender]** to set the brightness, color temperature, test patterns, screen freeze, and screen black.



6. LCD Operate Instruction

6.1 Operational Instruction

Knob/OK:

- Press the knob/OK under the main interface to enter the operation interface of the menu.
- Rotate the knob to select the menu or press the knob/OK under the operation interface of the menu to select current menu or enter submenu.
- Rotate the knob to adjust parameters after selecting the menu with parameter; press the knob/OK again for confirmation after adjustment.

ESC: Return key, exit current menu or operation.

Lock: Lock all front keys, and repress and following the directions to press “**OK**” to quit.

Black: Press the knob/OK to switch on/off LED screen.

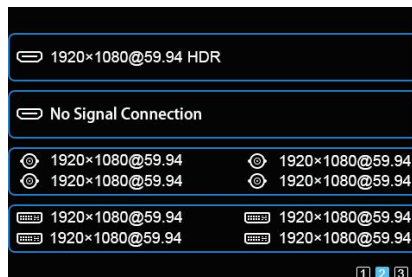
Brightness: Enter the adjustment interface of “**Brightness**”, press the knob/OK to turn on/off the function of broadcast in the option of “**Broadcast**”, and rotate the knob to change the percentage of brightness in the option of “**Brightness**”.

Mode: Once press “**Model**”, the screen will load the default setting.

F1: Press “**F1**” will direct to the main.



F2: Press “**F2**” will direct to signal list.



F3: Press “F3” will direct to signal exchange.



6.2 Starter

When powering on the Z6 PRO, it will show the picture until Z6 PRO ready.



6.3 Main Interface

After starting the controller, the main interface of the LCD display is as follows:



First row: Company name and logo.

Second row: Signal sources and resolution of the main image, brightness.

Third/Fourth row: Connection status of the signal sources and genlock, 10bit mode on/off.

Fifth row: Connection status of the network ports.

Sixth row: Product type, the IP Address of Z6 PRO.

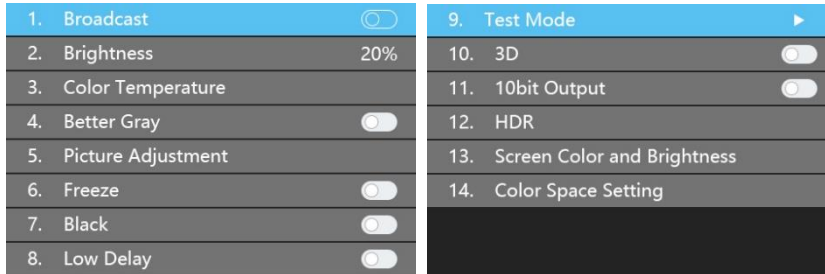
6.4 Operation Instruction

Press the knob/OK to enter the operation interface of the menu, and it includes 11 operation instructions: Display Setting, EDID Setting, Splicing Setting, Input Clip Setting, Output Setting, Output Shift, Lock to Input, Art-Net Setting, Network Setting, Language Setting, System Setting.

1. Display Setting ▶	9. Network Setting ▶
2. EDID Setting	10. Language Setting
3. Cropping Setting	11. System Setting
4. Preset Setting	
5. Lock to Input	
6. Tile Mapping	
7. Output Shift	
8. HDMI/DP Selection	

6.4.1 Display Setting

Rotate the knob to select display setting, then press the knob/OK to enter submenu of “Display Setting”.



Broadcast

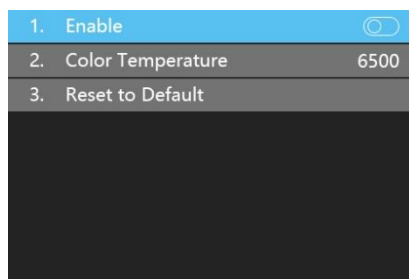
Press “OK” to turn on and turn off broadcast, the broadcast is allowed to set in one Z6 PRO to control all Z6 PROs.

Brightness

In the option of “**Brightness**”, rotate the knob to change the brightness, and it will be auto-saved if there is no following operation.

Color Temperature

Color temperature adjustment, rotate the knob to change the value of color temperature in the option of “**Color Temperature**”, and it will be auto-saved within 10 seconds if there is no continuing operation; otherwise, you can press the knob/OK to reset the value of color temperature as 6500 in the option of “**Reset to Default**”.



Better Gray

Press the knob/OK to switch on/off LED better gray.

Picture Adjustment

Enter the setting interface of “**Picture Adjustment**”, and press the knob/OK to turn on/off “**Enable**”. If “**Enable**” has been turned on, users can set hue, saturation, brightness, and contrast of the image by knob, and then save the data. Users can also reset all parameters

to default values, hue and brightness default to 0, saturation and contrast default to 100.

1. Enable	<input type="checkbox"/>
2. Hue	0
3. Saturation	100
4. Brightness	0
5. Constrast	100
6. Reset	
7. Save	

Freeze

Press the knob/OK to switch on/off LED screen freeze.

Black

Press the knob/OK to switch on/off LED screen.

Low Latency

Press the knob/OK to switch on/off “**Low Latency**”.

Test mode

Enter the interface of “Test Mode”, rotate the knob to select test mode, press ESC back to normal mode.

1. Normal ✓	9. Right Slash Move Down ✓
2. Red	10. Grid Move Down
3. Green	11. Gradient Red
4. Blue	12. Gradient Green
5. White	13. Gradient Blue
6. Horizontal Moving Line	14. Gradient White
7. Vertical Moving Line	15. Black
8. Left Slash Move Down	

3D

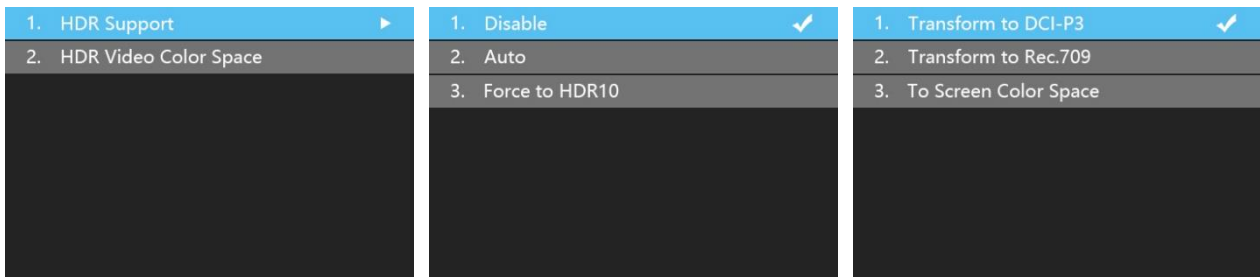
Press the knob/OK to turn on/off 3D.

10bit

Press the knob/OK to turn on/off 10bit mode.

HDR

Press the knob/OK to enter “**HDR menu**”, and press knob/OK to enable “**HDR**”. In “**HDR Video Color Space**” to choose the screen space.



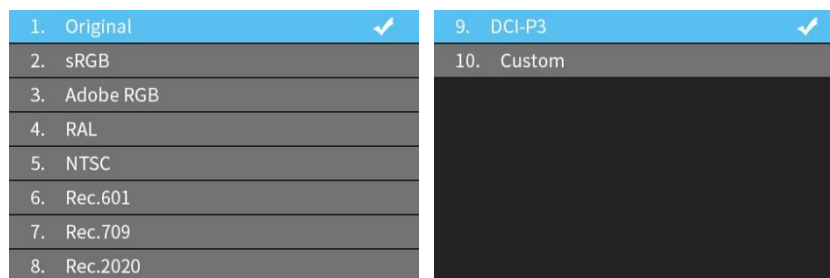
Screen Color and Brightness

Rotate the knob/OK to select “**Color and Brightness**” setting, make it as “**Know**”, and color and bright need could be changed.



Screen Space Color Setting

When the “**Screen Space Color Setting**” set to “**Know**”, the space color can be changed in a list as shown in the following picture.



6.4.2 EDID Setting

Rotate the knob/ok to select **EDID** setting, then press the knob/OK to enter submenu of **“EDID Setting”**. The list may differ due to the different input boards.

1. DVI1	▶
2. DVI2	
3. DVI3	
4. DVI4	
5. HDMI1	
6. HDMI2	
7. HDMI3	

Here is the example of the HDMI setting. Press **“OK”** to HDMI setting, and select the correct resolution and press **“OK”** or can select **“Custom”** to change the width, height, frame rate, and save it.

1. 1920×1080	✓
2. 1920×1200	
3. 2048×1024	
4. 1600×900	
5. 1280×1024	
6. 1024×768	
7. 800×600	
8. Custom	

1. Width	1920
2. Height	1080
3. Frame Rate	60
4. Save	

1. 3840×2160	✓
2. 3200×1880	
3. 2880×1800	
4. 2560×1600	
5. 2560×1440	
6. 1920×1200	
7. 1920×1080	
8. Custom	

6.4.3 Cropping Setting

Rotate the knob/OK to select cropping setting, then press the knob/OK to enter submenu of **“Cropping Setting”**.

Rotate the knob to select cropping setting, then press the knob/OK to enter submenu of **“Cropping Setting”**. The input boards may be mixed-use, and the name will show as order.

1. DVI1	▶
2. DVI2	
3. DVI3	
4. DVI4	
5. HDMI1	
6. HDMI2	
7. HDMI3	

Enter the clip interface of “HDMI” or “DVI×4” or “SDI1” or “SDI2”, press the knob/OK to turn on/off cropping. Set X, Y, width, and height of the input signal by knob then save the data.

1. Enable	<input type="checkbox"/>
2. X	0
3. Y	0
4. Width	1920
5. Height	1080
6. Save	

6.4.4 Preset Setting

Rotate the knob to select the preset setting, then press the knob/OK to enter submenu of “Preset Setting”.

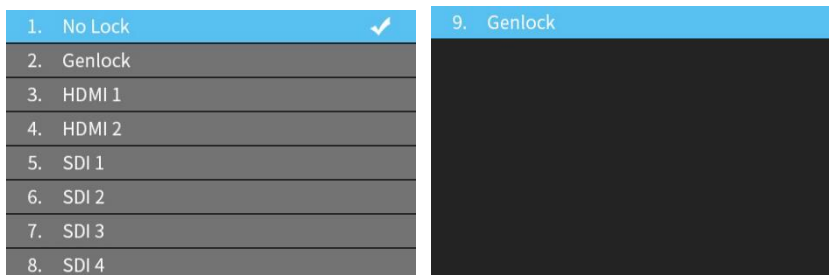
1. Broadcast	<input type="checkbox"/>
2. Preset Color and Bright Parameters	
3. Load Preset	
4. Save to Preset	

In the submenu, 16 preset parameters can be saved, and every preset parameter includes all parameter information of source setup (signal source, PIP, scaling, cropping, picture adjustment), users can also directly load the saved preset parameter to display the image according to needs, and don't need to set up all parameters again.

1. HDMI	9. Unnamed
2. DVI4×1 (1920*1080)	10. Unnamed
3. DVI1×4 (1920*1080)	11. Unnamed
4. DVI2×2 (1920*1080)	12. Unnamed
5. Unnamed	13. Unnamed
6. Unnamed	14. Unnamed
7. Unnamed	15. Unnamed
8. Unnamed	16. Unnamed

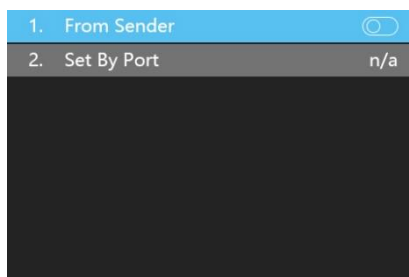
6.4.5 Lock To Input

When several controllers were cascaded with each other, “**Lock To Input**” is necessary to ensure the synchronization of the video display. Rotate the knob to select “Lock To Input”, then press the knob/OK to enter submenu of it, in the submenu, you can select Genlock synchronous signal source by the Knob/OK.



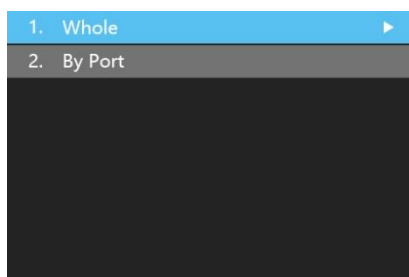
6.4.6 Title Mapping

Rotate the knob to select cabinets mapping, then press the knob/OK to enter submenu of “**Cabinets Mapping**”.



6.4.7 Output Shift

Rotate the knob to select output shift, then press the knob/OK to enter submenu of “**Output Shift**”.



Output shift includes two ways: “**Whole**” and “**By Port**”. In the setting interface of “**Whole**”, you can rotate the knob to set X and Y of the whole image and save it, in the setting interface of “**By Port**”, you can set X and Y of the image of each net port respectively, then save it.

1. X	0	1. Port 1 X	0
2. Y	0	2. Port 1 Y	0
3. Save		3. Port 2 X	256
		4. Port 2 Y	0
		5. Port 3 X	1536
		6. Port 3 Y	0
		7. Port 4 X	2304
		8. Port 4 Y	0
9. Port 5 X	3072	17. Port 9 X	2304
10. Port 5 Y	0	18. Port 9 Y	540
11. Port 6 X	0	19. Port 10 X	3072
12. Port 6 Y	540	20. Port 10 Y	540
13. Port 7 X	768	21. Port 11 X	0
14. Port 7 Y	540	22. Port 11 Y	1080
15. Port 8 X	1536	23. Port 12 X	768
16. Port 8 Y	540	24. Port 12 Y	1080
25. Port 13 X	1536	33. Port 17 X	768
26. Port 13 Y	1080	34. Port 17 Y	1620
27. Port 14 X	2304	35. Port 18 X	1536
28. Port 14 Y	1080	36. Port 18 Y	1620
29. Port 15 X	3072	37. Port 19 X	2304
30. Port 15 Y	1080	38. Port 19 Y	1620
31. Port 16 X	0	39. Port 20 X	3072
32. Port 16 Y	1620	40. Port 20 Y	1620

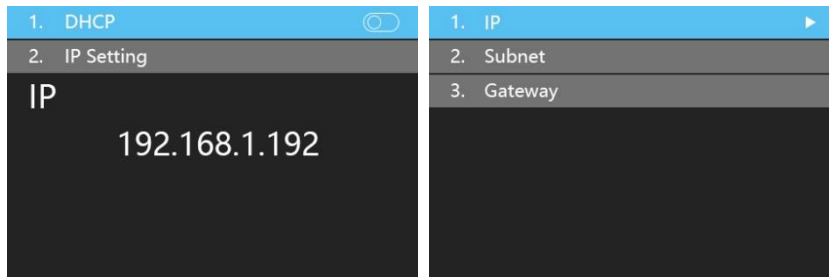
6.4.8 HDMI/DP exchange

Rotate the knob to select “**HDMI/DP**” setting, then press the knob/OK to enter submenu to choose HDMI or DP.

1. HDMI/DP Board1	▶	1. HDMI	✓
2. HDMI/DP Board2		2. DP	

6.4.9 Network Setting

Users can automatically obtain an IP address or set manually. Enter the setting of “**Network Setting**”, press the knob/OK to turn on/off DHCP. Or press the knob/OK to enter manual IP setting, you can set up the IP address, subnet mask, and gateway respectively via the knob.



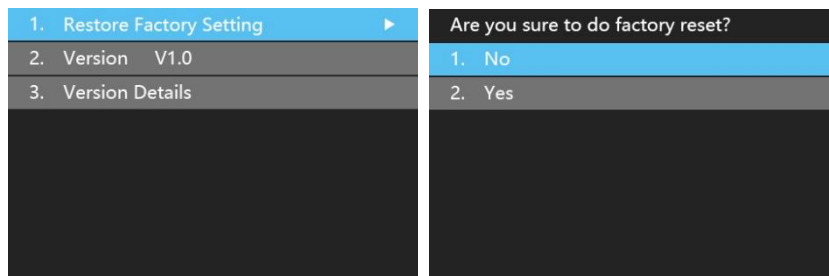
6.4.10 Language Setting

Enter the setting interface of “**Language**”, press the knob/OK to switch the language.



6.4.11 System Setting

Enter the setting interface of “**System Setting**”, you can restore factory settings and check current firmware information.



Main Board		FPGA1:	V1.02
FPGA1:	V1.00	FPGA2:	V1.02
FPGA2:	V1.00	HDMI/DP Board 1:	
ARM:	V1.02	FPGA:	V1.02
Network:	V1.68	ARM:	V1.61
Back Board:	V1.00	HDMI/DP Board 2:	
Front Board:	V1.02	FPGA:	V1.02
Fiber:		ARM:	V1.61

SDI Board:	
FPGA 1:	V1.00
FPGA 2:	V3.02
DVI Board:	V1.00
[Redacted]	



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