Colorlight

Z3

LED Video Controller

User Manual V1.0

Contents

Safety Information

To avoid personal injury and equipment damage, please comply with the following precautions:

- **Do not remove the top cover**

  Do not attempt to remove the top cover, as it may lead to personal injury. This must be undertaken by Colorlight service technicians.

- **Only use power supply and accessories specified by the manufacturer**

  The device is designed to operate safely and properly within the voltage range of 100-240V AC. Please use the power cords provided with this package or standard-compliant power cords.

- **Avoid direct contact with charged objects**

  This product is an electronic device. Direct contact between physical interfaces and charged objects may cause damage to circuit elements, affecting normal product use.

- **Grounding Instructions**

  - This product must be grounded. When equipment fails, the protective grounding contact in the power socket should be reliably connected to the protective grounding terminal in the equipment. This product is equipped with a power cord with a grounding plug. The plug must be plugged into an outlet that is properly installed and grounded in accordance with all local codes ordinances.
  - Improper connection of equipment grounding is able to result in a risk of electric shock. Check with a qualified electrician if you are in doubt as to whether the product is properly grounded. Do not modify the plug included with the product. If the plug is not suitable for the socket, please have a qualified electrician install a suitable socket.

- **FCC statement**

  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.

- **Environmental notice**

  This product is only suitable for safe use at altitudes no higher than 5000m above sea level.

- Avoid moisture

  This product is not designed to be waterproof. Please avoid direct contact with liquids and do not use the equipment in a wet environment.

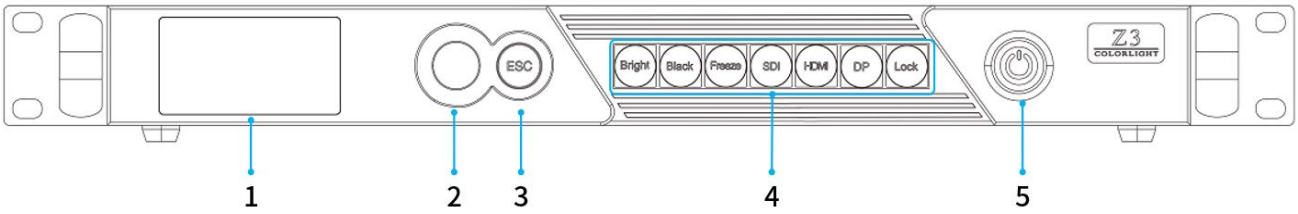
- Keep away from flammable, explosive and other hazardous materials

Unpacking and inspection

After unpacking the equipment, please check the items according to the packing list and contact the sales team in case of incomplete order.

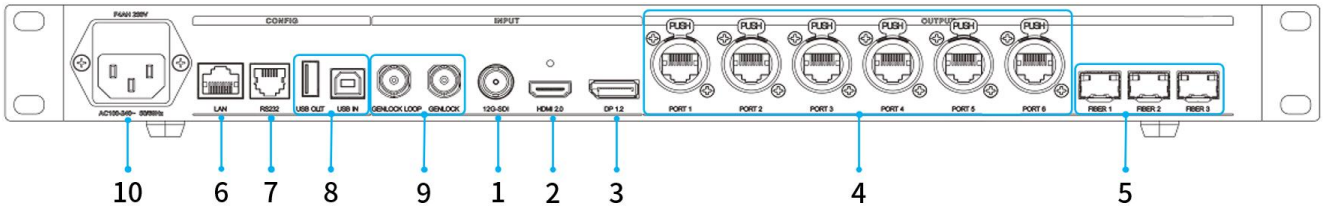
1 Appearance

1.1 Front panel



No.	Name	Description
1	LCD screen	Show operation menu and system info
2	Knob	Press the knob to enter the sub-menu or confirm the selection. Rotate the knob to scroll through the menu items or adjust the parameters
3	ESC button	Press the ESC button to exit the current menu
4	Shortcuts	**Bright:** Tune brightness **Black:** Blackout the screen **Freeze:** Freeze the screen **SDI:** Switch to SDI signal **HDMI:** Switch to HDMI signal **DP:** Switch to DP signal **Lock:** Lock the buttons on the front panel
5	Power button	Switch the device ON/OFF

1.2 Rear panel

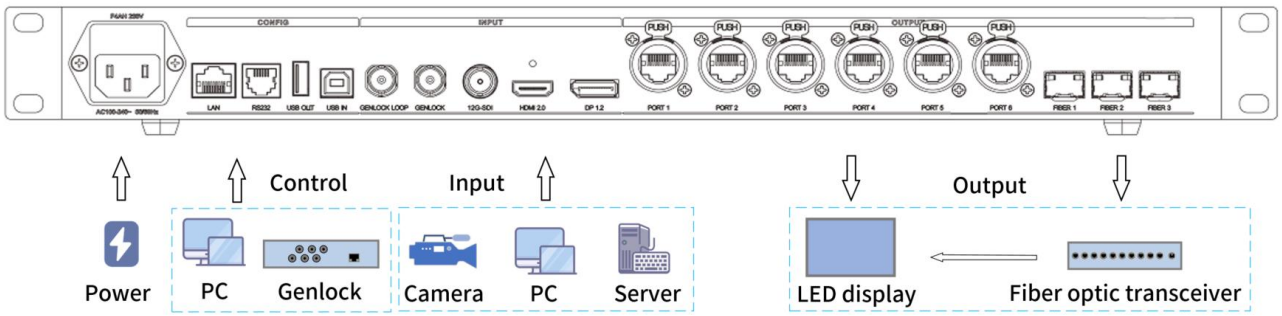


Inputs		
1	12G-SDI	• 1x BNC connector • SMPTE 2082/2081/424M/292M standards, support HD/3G/6G-SDI/12G-SDI（2SI format） • Max. resolution 4096×2160@60Hz • Support de-interlacing display • EDID settings not supported
2	HDMI2.0	• 1x HDMI Type A connector • HDMI2.0 supports HDCP2.2 and HDCP1.3 • Max. resolution 4096×2160@60Hz，max. pixel clock at 600MHz（TMDS） - Max. width 8192（8192×1080@60Hz） - Max. height 8192（1080×8192@60Hz） • Support EDID settings with V 1.3 compatible • De-interlacing display not supported
3	DP1.2	• 1x DisplayPort 1.2 connector • DP1.2 supports HDCP2.2 and HDCP1.3 • Max. resolution 4096×2160@60Hz，max. pixel clock at 600MHz（TMDS） - Max. width 8192（8192×1080@60Hz,highly recommended） - Max. height 8192（1080×8192@60Hz,highly recommended） • Support EDID settings of V1.3 data format • De-interlacing display not supported
Output		
4	PORT 1-6	• 6x 5G Ethernet connectors which are compatible with Neutrik cable • Outputs per Z3： • Max. width 16,384 pixels, max. height 8,192 pixels - Output 8.84 megapixels @60Hz 8bit and 6.63 megapixels @60Hz 10bit - Output 4.42 megapixels @120Hz 8bit and 3.31 megapixels @120Hz 10bit - Output 2.21 megapixels @240Hz 8bit and 1.65 megapixels @240Hz 10bit • Outputs per port： - Output 2.8 megapixels @60Hz 8bit and 2.1 megapixels @60Hz 10bit - Output 1.4 megapixels @120Hz 8bit and 1.05 megapixels @120Hz 10bit - Output 700,000 pixels @240Hz 8bit and 520,000 pixels @240Hz 10bit • Recommended shielded cable (CAT6 and above), with maximum run length of 80 meters

5	FIBER 1~3	• 3x 10G Fiber connectors（10G SFP+ optical,transmission distance depends on optical module specifications） • 3 FIBER ports output the same image data as 6 Ethernet ports. FIBER 1 corresponds to Ethernet ports 1-2, FIBER 2 to Ethernet ports 3-4, FIBER 3 to Ethernet ports 5-6 • The Ethernet port and Fiber port need to be selected manually
Control		
6	LAN	• 1x Ethernet RJ45 network connector, male • 100M Ethernet port, communicate via TCP/IP protocol when connected to a PC or WLAN
7	RS232	• 1x RJ11 (6p6c) connector，male • Support RS232 serial communication protocol for connection to central control or external devices, 115,200 bit rate
8	USB IN	• 1x USB2.0 Type-B connector • Connect to the computer for device management or cascading input
	USB OUT	• 1x USB2.0 Type-A connector • Cascading output, connect to the next device
Genlock		
9	GENLOCK	• 1x BNC male connector for sync signal input • Support Bi-level and Tri-level standard, frame rate 23.98~60Hz
	GENLOCK LOOP	• 1x BNC male connector • GENLOCK sync signal loop-through output
Power		
10	MAINS INPUT	Power input with built-in power protection device, 100-240V~,50/60Hz - Fuse (F4AH) input voltage is AC250V/4A ✧ 250V/4A fuse is selected and installed for the instrument with a spare fuse in the fuse case ✧ To replace the fuse, please unplug the external power cord first, then open the fuse slot under the power connector. Replace the old fuse with a new one and reinstall the fuse slot when finished - Appliance coupler or plug used as disconnect device

2 Connections

Before using the equipment, connect the input, output, and control ports according to hardware interfaces, then connect the power cord.



Ethernet Port Output: When using an Ethernet port board, the port is directly connected the LED screen via a network cable.

Fiber Port Output: When using a fiber port board, the port is connected to an LED screen through an optical fiber transceiver.

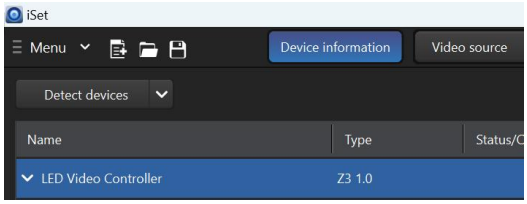
3 Operating Software

Before setting the parameters, please ensure the correct hardware connection so that the iSet software can detect senders and all receiving cards. To download and install iSet, please visit our official website www.colorlightinside.com. The software version number must be higher than 6.0.

3.1 Device information

The **Device information** interface contains the information of all the devices connected to PC.

- Click **Detect devices** for the software to automatically acquire related device information, including processor type, connection status, receiving card type, uptime, etc.
- If the detection failed, verify that USB cables are properly connected and that related drives are installed correctly.
- Check the corresponding cables when the connected receiving card quantity does not match the actual port load.



3.2 Video source

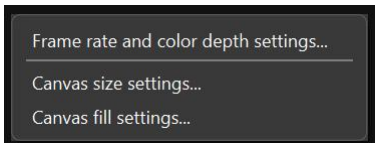
The **Video source** interface allows for setting up canvas, PIP, scaling, cropping, EDID, and other functions, which can adjust the scale of output image.

- On the left side of **Video source** interface is the input signal information such as resolution.
- Set relevant parameters of video source according to user needs.

3.2.1 Frame rate & Color depth

To change frame rate and color depth, right-click the canvas or the bottom of the panel to select **Frame rate and color depth settings**.

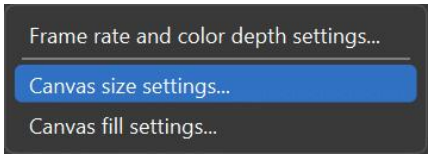
- The device supports 8-bit and 10-bit color depth.



3.2.2 Canvas size

Canvas size settings limits the maximum number of supported pixels of output device. Z3 supports a maximum width/height of up to 16,384/8,192 pixels.

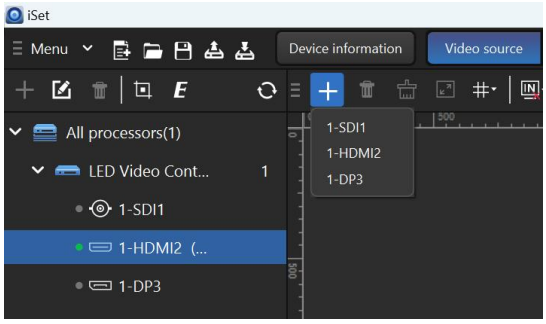
- Users can modify the canvas size according to the resolution of LED screen in use, and all the windows of input signals are restricted within the canvas.
- To set the width and height of canvas, right-click the gray area on the right side of the panel and select **Canvas size settings**.



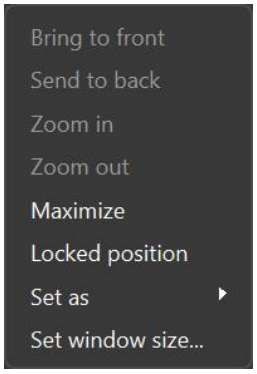
3.2.3 Window

Z3 supports only single-layer display. The position and size of each window can be set individually.

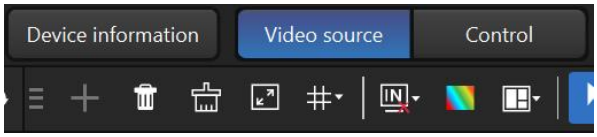
- Click “ ” in the top menu bar to select desired input and add a window.
- Directly click the input signal, then drag it onto the canvas to add a window.



- Right-click the window to change its position, size, and to switch inputs. Or you can simply drag the window and its border to adjust its position and size.



- Clicking “ 🗑 ” or “ 🗑 ” can delete the window.



3.2.4 Cropping

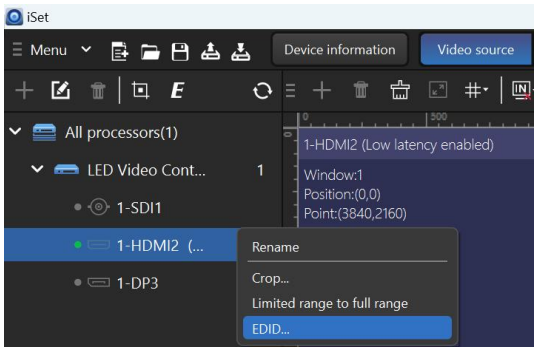
Select the signal you want to crop in the left list, choose **Crop**, then a pop-up window is displayed.

- Click the toggle button “ ⬭ ” in the window to enable cropping, then specify the values of X (horizontal), Y (vertical), W (width), and H (height) to finish the process.

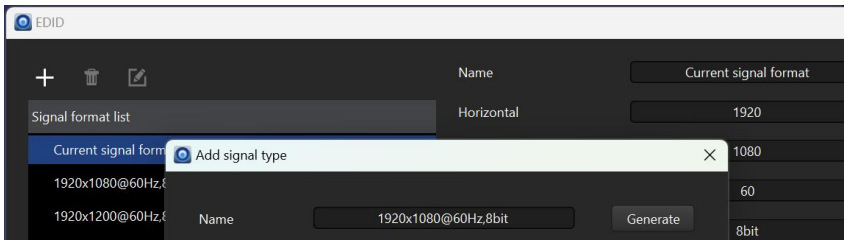
3.2.5 EDID

The **EDID** (Extended Display Identification Data) describes the display capabilities of the processor to video sources so that the source devices offer a corresponding resolution for display devices.

- Right-click the signal source from the input list on the left and the EDID management window appears. Users can directly select preset EDID.



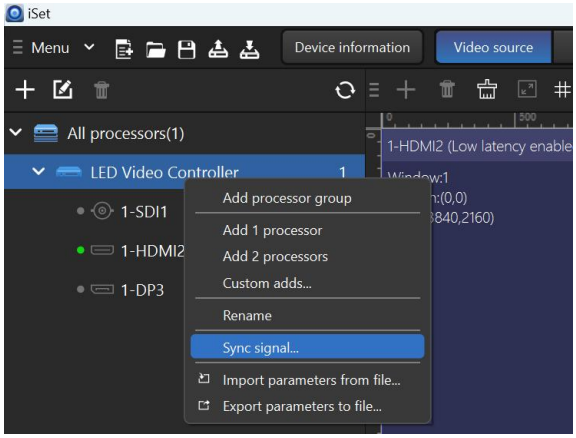
- Click “ ” in the window to create a custom signal format. Specify width, height, frame rate (Z3 supports 23.98Hz-240Hz), color depth and timing standard, then click **Generate** and **Add**. The newly added EDID may be selected in the signal format list.



3.2.6 Signal sync

Z3 can be locked to any one of its video inputs. The reference signal can also be an external sync signal from <GENLOCK IN> or a sync signal generated internally.

- Right-click the device, select **Sync signal**, and enter the signal sync interface.
- Choose the sync mode according to the need. Users can select different frame rates as necessary in self-generated signal mode (generated internally).



3.3 Control

Select the device and adjust the display brightness, color temperature, test pattern, HDR, and others of this device in the **Control** interface.

3.3.1 General settings

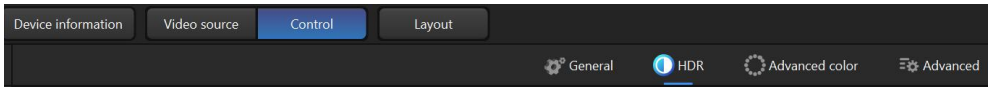
The **General settings** allows for brightness adjustment, color adjustment, test pattern, screen adjustment, and freeze or blackout screen settings.

3.3.2 HDR

HDR high dynamic range display provides higher contrast and more detailed image relative to the conventional display.

- Both the HDMI and DP ports of this device support HDR, including HDR10 and HLG standards.
- HDR10 or the HLG function can be disabled or enabled in HDR interface.

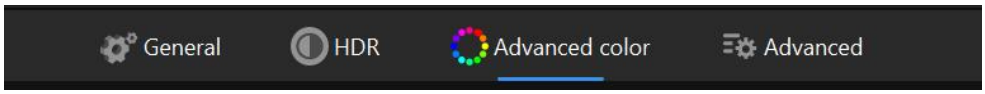
*This function must be used with i9 and above receiving cards.



3.3.3 Advanced Color Settings

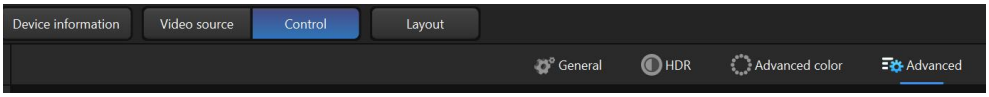
The precise color management function can be enabled in **Advanced Color Settings** for adjusting the color gamut of the LED display and finer color processing.

*This function must be used with i9 and above receiving cards.



3.3.4 Advanced Settings

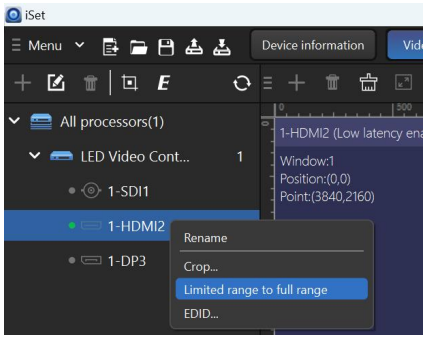
The **Advanced Settings** allows you to enable/disable grayscale improvement, select fiber optic output, set IP address and restore factory settings.



3.3.5 Limited to Full

This function is used to convert the color space from a limited range to a full range which is suitable for LED screen image display.

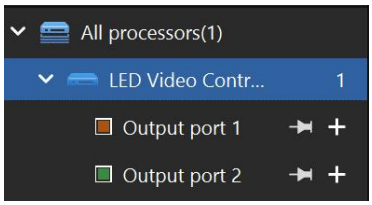
- This function can be enabled by right clicking on a signal source in the input source area on the left and clicking **Limited to Full**.



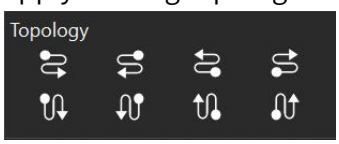
3.4 Layout

Click Layout to enter the receiving card settings interface. The layout should be set according to the actual LED cabinet arrangement and cabling topology.

- Choose an output port, click “ + ” to add imported cabinets, or select Custom to add cabinets with customized resolution.
- Drag the corner to increase or reduce the cabinet quantity.



- Auto-generated when adding cabinets, the topology can be cleared by clicking “ ” on the top menu bar.
- To reset topology, click the ordering icon “ ” , select cabinets of the corresponding output port one by one (or press and hold the mouse key, then move it around) in order until the end of the string.
- For display screens with relatively standard cabling, user can select cabinets and apply existing topologies as shown below:



- Once the cabinets and cabling topology of each port on the sender are set up, click **Save topology** to save the configuration on the current device.

Statement

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