Colorlight

Z4 Pro

LED Video Controller

Specification V2.0



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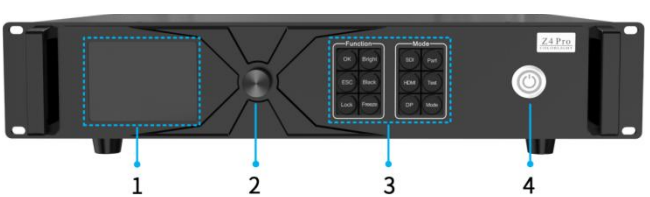
01 INTRODUCTION

1.1 Overview

Z4 Pro, a new generation of professional LED video controller, is designed specially to meet the ultra-low latency display, HDR and wide color gamut needs of live event, broadcast, television, filming and other scenarios, where real time, low-latency processing and color fidelity is required for Ultra HD image and LED display control. Z4 Pro includes features providing excellent vision effect for user.

1.2 Appearance

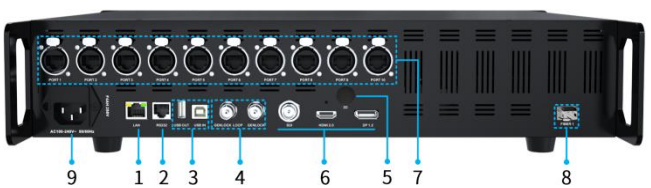
Front panel



No.	Name	Description
1	LCD screen	Displays the operation menu and system information.
2	Knob	Select an item or adjust the parameter, press the knob to confirm your selection or adjustment.
3	Function keys	• **OK**: confirm button. • **ESC**: exit the current interface. • **Lock**: lock buttons of front panel. • **Bright**:tune brightness. • **Black**: black screen. • **Freeze**:freeze screen. • **SDI**:switch to SDI signal. • **HDMI**:switch to HDMI signal.

		• **DP**:switch to DP signal. • **Part**: crop or show the switch buttons in full screen. • **Test**: test patterns. • **Mode**: select a preset.
4	Power switch	Power button.

Rear panel



Control		
1	LAN	RJ45 port for accessing local area network.
2	RS-232	RJ11(6P6C) port* for connecting to central control.
3	USB IN	USB 2.0 Type-B port, enabling connection to a PC for debugging or cascading input.
	USB OUT	USB 2.0 Type-A port for cascading output.
Genlock		
4	GENLOCK IN	• 1×BNC port, male, for the input of an external synchronization source. • Support Bi-level and Tri-level sync. • Support 23.98~60Hz frame rates.
	GENLOCK LOOP	• 1×BNC port, male. • Loop out Genlock sync signal.
3D		
5	3D*	4-pin S terminal connector, output 3D sync signal (optional, for use with active 3D glasses).
Input		
6	12G-SDI	• 1×BNC port.

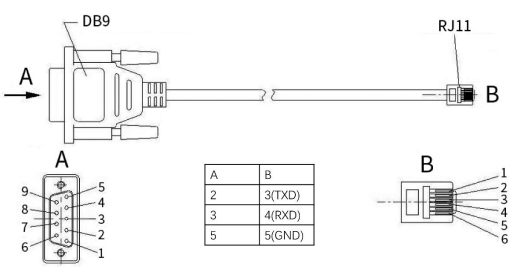
		• Comply with SMPTE 2082/2081/424M/292M standards, and support HD/3G/6G-SDI/12G-SDI (2SI format) / Level A/B. • Maximum resolution: 4096×2160@60Hz. • Support de-interlaced display. • Not support EDID settings.
	HDMI 2.0	• 1×HDMI Type A port. • Comply with HDMI 2.0 standard, support HDCP2.3 and compatible with HDCP1.4. • Maximum resolution: 4096×2160@60Hz, minimum resolution: 800×600@60Hz, maximum pixel clock: 600MHz. • Custom resolution: - Maximum width: 8192 (8192×1080@60Hz, highly recommended). - Maximum height: 8192 (1080×8192@60Hz, highly recommended). • Support HDR. • Support independent EDID settings and comply with EDID V1.3 standard. • Not support audio input. • Not support interlaced signal inputs.
	DP 1.2	• 1×DisplayPort1.2. • Comply with DP 1.2 standard, support HDCP2.3 and compatible with HDCP1.3. • Maximum resolution: 4096×2160@60Hz, minimum resolution: 800×600@60Hz, maximum pixel clock: 600MHz. • Custom resolution: - Maximum width: 8192 (8192×1080@60Hz, highly recommended). - Maximum height: 8192 (1080×8192@60Hz, highly recommended). • Support HDR. • Support independent EDID settings and comply with EDID V1.3 standard. • Not support audio input. • Not support interlaced signal inputs.
Output		
7	PORT 1-10	• 10-channel Gigabit Ethernet port, Neutrik (NE8FBH) port, compatible with standard RJ45 port. • Device load capacity:

		- Maximum width is 16384 pixels, maximum height is 8192 pixels. - When output frame rate is 60Hz, 8bit color depth supports up to 6.55 million pixels and 10bit supports up to 4.91 million pixels. - When output frame rate is 120Hz, 8bit color depth supports up to 3.27 million pixels and 10bit supports up to 2.45 million pixels. • Load capacity of one network port: - When output frame rate is 60Hz, 8bit color depth supports up to 650 thousand pixels and 10bit supports up to 490 thousand pixels. - When output frame rate is 120Hz, 8bit color depth supports up to 320 thousand pixels and 10bit supports up to 240 thousand pixels.
8	FIBER 1	• 1-channel 10G output fiber port (purchase separately 10G SFP+ optical module, transmission distance depends on optical module specifications). • Automatically copy the output data of 10 network ports. FIBER 1 corresponds to network port PORT 1-10. • Select manually the signal output between network ports and fiber.
Power		
9	Power Socket	AC 100-240V, 50/60Hz, built-in fuse.

*The equipment shown in the picture is for reference only. Due to the difference ofboards assembled, the appearance of the equipment may be different from the
picture. Please refer to the actual product.

* The illustration is for reference only. Since the appearance of equipment may vary due to different production process, please refer to the actual product.

* The schematic of RJ11 (6P6C) to DB9 cable is shown as follows:



A	B
2	3(TXD)
3	4(RXD)
5	5(GND)

02 FEATURES

Input

- Full 4K inputs: HDMI 2.0, DP 1.2, 12G-SDI.
- Single port supports up to 4096×2160@60Hz.
- Support 8bit / 10bit video signal input.
- Support HDCP1.4/HDCP1.3/HDCP2.3.
- Support input frame rate from 23.98Hz to 240Hz.

Output

- Maximum capacity of 6.55 million pixels, with maximum 16384 pixels in width and 8192 pixels in height.
- 10-channel Gigabit Ethernet port output; 1-channel 10 Gigabit fiber port output, choose any of two types.
- Support output frame rate of 23.98Hz to 240Hz.
- Support both Ethernet port redundancy and controller redundancy.

Video processing

- Video signal cropping, switching, and broadcasting level scaling.
- Multi-screen display (maximum three screens).
- Low latency, a minimal latency of one frame.
- Lag-free processing, 0 frame delay at minimum.
- HDR10/HLG display.
- Genlock.
- Crossfade of a single layer.
- Virtual pixel, support 3x virtual and 4x virtual.
- Multi-function card automatic brightness.

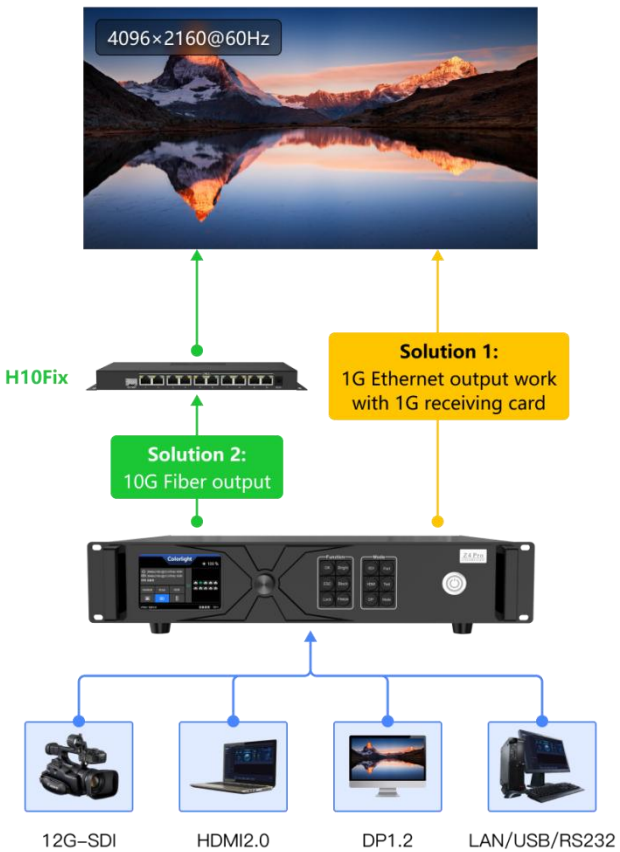
Color adjustment

- Picture adjustment for hue, saturation, contrast, and brightness compensation.
- Brightness adjustment, support network port grouping brightness adjustment.
- Color temperature adjustment with precision and RGB independent adjustment.

Control

- USB port for control and cascading.
- RS-232 port.
- LAN port for TCP/IP control.

03 APPLICATION



04 SIGNAL FORMAT

HDMI 2.0					
Input	Max Resolution	Color space	Sampling	Color depth(bit)	Frame rate (Hz)
4K	4096×2160	YCbCr	4:2:0	8/10	60
		YCbCr	4:2:2	8/10/12	23.98,24,25,29.97,30, 50,59.94,60
		YCbCr/RGB	4:4:4	8/10/12	23.98,24,25,29.97,30
		YCbCr/RGB	4:4:4	8	50,59.94,60
	3840×2160	YCbCr	4:2:2	8/10/12	23.98,24,25,29.97,30, 50,59.94,60
		YCbCr/RGB	4:4:4	8/10/12	23.98,24,25,29.97,30
		YCbCr/RGB	4:4:4	8	50,59.94,60
2K	2048×1080	YCbCr	4:2:2	8/10/12	23.98,24,25,29.97,30, 50,59.94,60
		YCbCr/RGB	4:4:4	8/10/12	
	1920×1080	YCbCr	4:2:2	8/10/12	23.98,24,25,29.97,30, 50,59.94,60
		YCbCr/RGB	4:4:4	8/10/12	
	2048×1080	YCbCr	4:2:2	8	100,120
		YCbCr/RGB	4:4:4	8	
	1920×1080	YCbCr	4:2:2	8	100,120,240
		YCbCr/RGB	4:4:4	8	
Note: Only some of the regular resolutions are shown above.					

DP 1.2					
Input	Max Resolution	Color space	Sampling	Color depth(bit)	Frame rate (Hz)
4K	4096×2160	YCbCr	4:2:2	8/10/12	23.98,24,25,29.97,30, 50,59.94,60
		YCbCr/RGB	4:4:4	8/10/12	23.98,24,25,29.97,30
		YCbCr/RGB	4:4:4	8	50,59.94,60

	3840×2160	YCbCr	4:2:2	8/10/12	23.98,24,25,29.97,30, 50,59.94,60
		YCbCr/RGB	4:4:4	8/10/12	23.98,24,25,29.97,30
		YCbCr/RGB	4:4:4	8/10	50,59.94,60
2K	2048×1080	YCbCr	4:2:2	8/10/12	23.98,24,25,29.97,30, 50,59.94,60
		YCbCr/RGB	4:4:4	8/10/12	
		YCbCr	4:2:2	8/10	100,120
		YCbCr/RGB	4:4:4	8/10	
	1920×1080	YCbCr	4:2:2	8/10/12	23.98,24,25,29.97,30, 50,59.94,60
		YCbCr/RGB	4:4:4	8/10/12	
		YCbCr	4:2:2	8/10	100,120
		YCbCr/RGB	4:4:4	8/10	
		YCbCr	4:2:2	8	240
		YCbCr/RGB	4:4:4	8	
Note: Only some of the regular resolutions are shown above.					

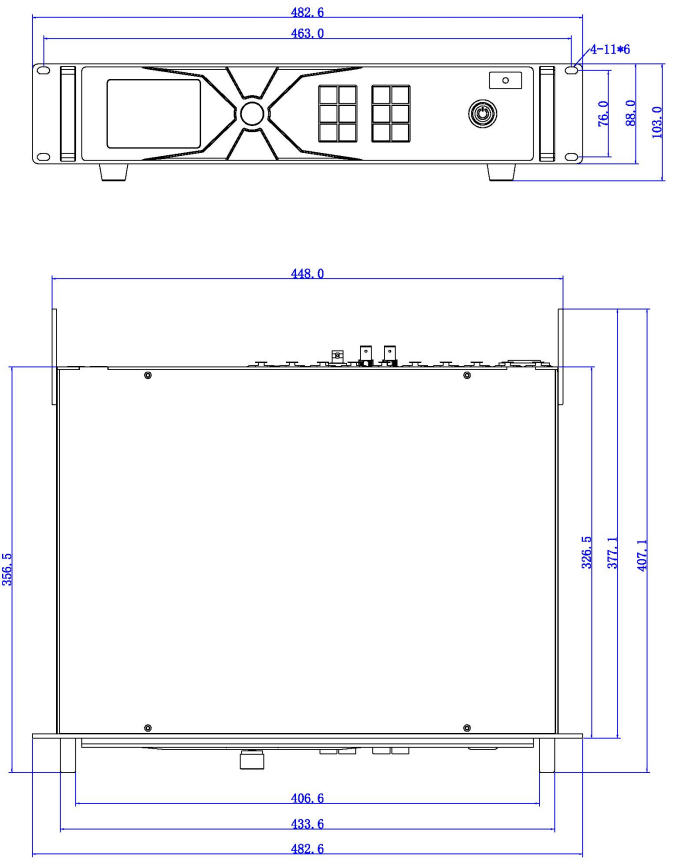
12G-SDI					
Input	Max Resolution	Color space	Sampling	Color depth(bit)	Frame rate (Hz)
12G	4096x2160p	YCbCr	4:2:2	10	50,59.94,60
	3840x2160p	YCbCr	4:2:2	10	
6G	4096x2160p	YCbCr	4:2:2	10	23.98,24,25,29.97,30
	3840x2160p	YCbCr	4:2:2	10	23.98,24,25,29.97,30
3G Level A/B	2048x1080p	YCbCr	4:2:2	10	50,59.94,60
	1920x1080p	YCbCr	4:2:2	10	
HD	2048x1080p	YCbCr	4:2:2	10	23.98,24,25,29.97,30
	1920x1080p	YCbCr	4:2:2	10	23.98,24,25,29.97,30
	1920x1080i	YCbCr	4:2:2	10	50,59.94,60
	1280x720p	YCbCr	4:2:2	10	23.98,24,25,29.97,30,50,59.94,60
Note: Only some of the regular resolutions are shown above.					

05 PARAMETERS

Dimensions (W×H×D)	
Unboxed	482.6mm (19") × 88.0mm (3.5") × 407.1mm (16.03"), 2U chassis (w / o foot pads)
Boxed	655.0mm (25.7")×245.0mm (9.6")×615.0mm (24.2")
Weight	
Net weight	5.40kg (11.90lbs)
Total weight	7.20kg (15.87lbs)
Electrical specification	
Power input	AC 100-240V, 50/60Hz
Rated power	70W
Operating environment	
Temperature	-20℃~55℃ (-4° F~131° F)
Humidity	0%RH~90%RH, non-condensing
Storage environment	
Temperature	-30℃~80℃ (-22° F~176° F)
Humidity	0%RH~90%RH, non-condensing

06 REFERENCE DIMENSIONS

Unit: mm



07 STATEMENT

7.1 Certifications

CCC, CE, FCC, CB, IC, cTUVus

Note: If the product does not have the relevant certifications required by the countries or regions where it is to be sold, please contact Colorlight to confirm or address the problem as soon as possible. Otherwise, the customer shall be responsible for the legal risks or Colorlight has the right to claim compensation.

7.2 Legal Statement

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