

# Z4 Pro

# **LED Video Controller**

Specification v2.0



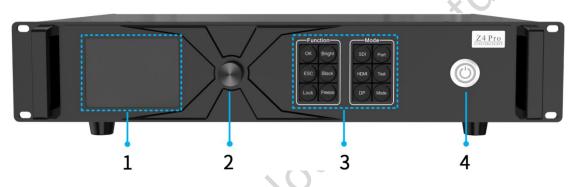


#### Overview

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. Z5 includes features providing excellent vision effect for user.

# **Appearance**

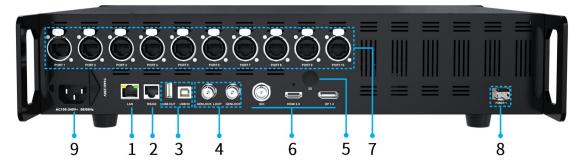
#### Front panel



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			
2		confirm your selection or adjustment.			
		• OK: confirm button.			
		• ESC: exit the current interface.			
	( )	• Lock: lock buttons of front panel.			
		• Bright: tune brightness.			
		• Black: black screen.			
3	Franctica kara	• Freeze: freeze screen.			
3	Function keys	• SDI: switch to SDI signal.			
		• HDMI: switch to HDMI signal.			
		• <b>DP</b> : 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



Coi	ntrol						
1	LAN	RJ45 port for accessing local area network.					
2	RS232	RJ11(6P6C) port* for connecting to central control.					
3	USB IN	USB2.0 Type-B port, enabling connection to a PC for debugging or cascading input.					
	USB OUT	USB2.0 Type-A port for cascading output.					
Genlock							
4	GENLOCK	<ul> <li>1× BNC port, male, for the input of an external synchronization source.</li> <li>Support Bi-level and Tri-level sync.</li> <li>Support 23.98~60Hz frame rates.</li> </ul>					
	GENLOCK LOOP	<ul><li>1× BNC port, male.</li><li>Loop out Genlock sync signal.</li></ul>					
3D							
5	4-pin S terminal connector, output 3D sync signal (optional, for use with active 3D glasses).						
Inp	ut O						
6	12G-SDI	<ul> <li>1× BNC port.</li> <li>Comply with SMPTE 2082/2081/424M/292M standards, and support HD/3G/6G-SDI/12G-SDI (2SI format) / Level A/B.</li> <li>Maximum resolution: 4096×2160@60Hz.</li> <li>Support de-interlaced display.</li> <li>Not support EDID settings.</li> </ul>					
	HDMI2.0	<ul> <li>1× HDMI Type A port.</li> <li>Comply with HDMI 2.0 standard, support HDCP2.3 and compatible with HDCP1.4.</li> <li>Maximum resolution: 4096×2160@60Hz,minimum resolution:</li> </ul>					



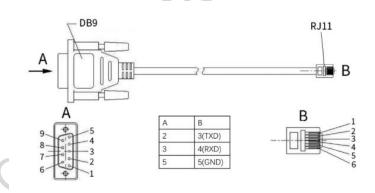
		24 Pro Specification				
		800×600@60Hz,maximum pixel clock: 600MHz.				
		Custom resolution:				
		- Maximum width: 8192 (8192×1080@60Hz).				
		- Maximum height:8192 (1080×8192@60Hz).				
		Support HDR.				
		Support independent EDID settings and comply with EDIDV1.3				
		standard.				
		Not support audio input.				
		Not support interlaced signal inputs.				
		• 1× DisplayPort1.2.				
		Comply with DP1.2 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:				
	DP1.2	- Maximum width: 8192 (8192×1080@60Hz).				
	·	- Maximum height: 8192 (1080×8192@60Hz).				
		Support HDR.				
		<ul> <li>Support independent EDID settings and comply with EDIDV1.3</li> </ul>				
		standard.				
		Not support audio input.				
		Not support interlaced signal inputs.				
Our	tput					
Ju	tput	• 10-channel Gigabit Ethernet port, Neutrik (NE8FBH) port,				
		compatible with standard RJ45 port.				
	c 0°	Device load capacity:				
		- Maximum width t is 16384 pixels, Maximum heigh is 8192				
		pixels.				
		'				
7		- When output frame rate is 60Hz, 8bit color depth supports up				
7	PORT 1-10	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				
		7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7				



		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 million pixels and 10bit supports up to 240 million
		pixels.
		• 1-channel 10G output fiber port (purchase separately10G SFP+
		optical module, transmission distance depends on optical
		module specifications).
8	FIBER 1	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.
Pov	wer	
9	Power Socket	AC100-240V, 50 / 60Hz, built-in fuse.

<sup>\*</sup>The equipment shown in the picture is for reference only. Due to the difference of boards assembled, the appearance of the equipment may be different from the picture. Please refer to the actual product.

<sup>\*</sup> The schematic of RJ11 (6P6C) to DB9 cable is shown as follows:



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

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#### **Features**

#### Input

- Full 4K inputs: HDMI2.0, DP1.2, 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 or 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.
- RS232 port.
- LAN port for TCP/IP control.



# Signal format

HDMI2.0					
Input	Max Resolution	Color space	Sam pling	Color depth	Frame rate(Hz)
		YCbCr	4:2:0	8,10bit	60
	4096x2160	YCbCr	4:2:2	8,10,12bit	23.98,24,25,29.97,30,50, 59.94,60
	4090X2100	YCbCr/RGB	4:4:4	8,10,12bit	23.98,24,25,29.97,30
4K		YCbCr/RGB	4:4:4	8bit	50,59.94,60
	3840x2160	YCbCr	4:2:2	8,10,12bit	23.98,24,25,29.97,30,50, 59.94,60
		YCbCr/RGB	4:4:4	8,10,12bit	23.98,24,25,29.97,30
		YCbCr/RGB	4:4:4	8bit	50,59.94,60
	2048x1080	YCbCr	4:2:2	8,10,12bit	23.98,24,25,29.97,30,50, 59.94,60
		YCbCr/RGB	4:4:4	8,10,12bit	
	1920x1080	YCbCr	4:2:2	8,10,12bit	23.98,24,25,29.97,30,50, 59.94,60
21/		YCbCr/RGB	4:4:4	8,10,12bit	
2K	2048x1080	YCbCr	4:2:2	8bit	100 120
		YCbCr/RGB	4:4:4	8bit	100,120
	1020~1000	YCbCr	4:2:2	8bit	100 120 240
	1920x1080	YCbCr/RGB	4:4:4	8bit	100,120,240

Only some of the regular resolutions are shown above.

### **DP1.2**

Input	Max Resolution	Color space	Sam pling	Color depth	Frame rate (Hz)
	4096x2160	YCbCr	4:2:2	8,10bit	23.98,24,25,29.97,30,50, 59.94,60
4K		YCbCr/RGB	4:4:4	8,10bit	
4N	3840x2160	YCbCr	4:2:2	8,10bit	
		YCbCr/RGB	4:4:4	8,10bit	
	2048x1080	YCbCr	4:2:2	8,10bit	23.98,24,25,29.97,30,50, 59.94,60
		YCbCr/RGB	4:4:4	8,10bit	
	1000 1000	YCbCr	4:2:2	8,10bit	
21/	1920x1080	YCbCr/RGB	4:4:4	8,10bit	
2K	2048x1080	YCbCr	4:2:2	8bit	100,120
		YCbCr/RGB	4:4:4	8bit	
	1920x1080	YCbCr	4:2:2	8bit	100,120,240
		YCbCr/RGB	4:4:4	8bit	
Only so	me of the regula	r resolutions are	shown al	oove.	

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Resolution   Color space   pling   depth   Frame rate (Hz)		Max		Sam	Color	
12G       4096x2160p       YCbCr       4:2:2       10bit       50,59.94,60         3840x2160p       YCbCr       4:2:2       10bit       23.98,24,25,29.97,30         6G       4096x2160p       YCbCr       4:2:2       10bit       23.98,24,25,29.97,30         3G       2048x1080p       YCbCr       4:2:2       10bit       50,59.94,60         Level A/B       1920x1080p       YCbCr       4:2:2       10bit       50,59.94,60         HD       1920x1080p       YCbCr       4:2:2       10bit       23.98,24,25,29.97,30         1920x1080p       YCbCr       4:2:2       10bit       23.98,24,25,29.97,30         1920x1080i       YCbCr       4:2:2       10bit       50,59.94,60         1280x720p       YCbCr       4:2:2       10bit       23.98,24,25,29.97,30,50,59.94,60	Input		Color space			Frame rate (Hz)
12G       3840x2160p       YCbCr       4:2:2       10bit       50,59.94,60         6G       4096x2160p       YCbCr       4:2:2       10bit       23.98,24,25,29.97,30         3G       2048x1080p       YCbCr       4:2:2       10bit         Level A/B       1920x1080p       YCbCr       4:2:2       10bit         4D       1920x1080p       YCbCr       4:2:2       10bit       23.98,24,25,29.97,30         1920x1080p       YCbCr       4:2:2       10bit       23.98,24,25,29.97,30         1920x1080i       YCbCr       4:2:2       10bit       50,59.94,60         1920x1080i       YCbCr       4:2:2       10bit       50,59.94,60         1280x720p       YCbCr       4:2:2       10bit       23.98,24,25,29.97,30,50,59.94,60				-	<u>.</u>	
3840x2160p YCbCr 4:2:2 10bit 23.98,24,25,29.97,30  36 2048x1080p YCbCr 4:2:2 10bit 23.98,24,25,29.97,30  Level A/B 2048x1080p YCbCr 4:2:2 10bit 50,59.94,60  HD 20x1080p YCbCr 4:2:2 10bit 23.98,24,25,29.97,30  4:2:2 10bit 50,59.94,60  1920x1080p YCbCr 4:2:2 10bit 23.98,24,25,29.97,30  1920x1080p YCbCr 4:2:2 10bit 23.98,24,25,29.97,30  1920x1080i YCbCr 4:2:2 10bit 50,59.94,60  1280x720p YCbCr 4:2:2 10bit 23.98,24,25,29.97,30,50,59.94,60	12G					50.59.94.60
6G 3840x2160p YCbCr 4:2:2 10bit 23.98,24,25,29.97,30  3G 2048x1080p YCbCr 4:2:2 10bit 50,59.94,60  Level A/B 1920x1080p YCbCr 4:2:2 10bit 23.98,24,25,29.97,30  HD 1920x1080p YCbCr 4:2:2 10bit 23.98,24,25,29.97,30  1920x1080p YCbCr 4:2:2 10bit 23.98,24,25,29.97,30  1920x1080i YCbCr 4:2:2 10bit 50,59.94,60  1280x720p YCbCr 4:2:2 10bit 23.98,24,25,29.97,30,50,59.94,60		3840x2160p	YCbCr	4:2:2	10bit	,
3840x2160p YCbCr 4:2:2 10bit 23.98,24,25,29.97,30  3G 2048x1080p YCbCr 4:2:2 10bit  Level A/B 1920x1080p YCbCr 4:2:2 10bit 50,59.94,60  HD 1920x1080p YCbCr 4:2:2 10bit 23.98,24,25,29.97,30  1920x1080p YCbCr 4:2:2 10bit 23.98,24,25,29.97,30  1920x1080i YCbCr 4:2:2 10bit 50,59.94,60	6G	4096x2160p	YCbCr	4:2:2	10bit	23.98,24,25,29.97,30
Level A/B       1920x1080p       YCbCr       4:2:2       10bit       50,59.94,60         HD       2048x1080p       YCbCr       4:2:2       10bit       23.98,24,25,29.97,30         1920x1080p       YCbCr       4:2:2       10bit       23.98,24,25,29.97,30         1920x1080i       YCbCr       4:2:2       10bit       50,59.94,60         1280x720p       YCbCr       4:2:2       10bit       23.98,24,25,29.97,30,50,59.94,60		3840x2160p	YCbCr	4:2:2	10bit	23.98,24,25,29.97,30
A/B	3G	2048x1080p	YCbCr	4:2:2	10bit	
HD 1920x1080p YCbCr 4:2:2 10bit 23.98,24,25,29.97,30 1920x1080i YCbCr 4:2:2 10bit 50,59.94,60 1280x720p YCbCr 4:2:2 10bit 23.98,24,25,29.97,30,50,59.94,60		1920x1080p	YCbCr	4:2:2	10bit	50,59.94,60
HD 1920x1080i YCbCr 4:2:2 10bit 50,59.94,60 1280x720p YCbCr 4:2:2 10bit 23.98,24,25,29.97,30,50, 59.94,60		2048x1080p	YCbCr	4:2:2	10bit	23.98,24,25,29.97,30
1920x1080i YCbCr 4:2:2 10bit 50,59.94,60 1280x720p YCbCr 4:2:2 10bit 23.98,24,25,29.97,30,50, 59.94,60		1920x1080p	YCbCr	4:2:2	10bit	23.98,24,25,29.97,30
	ΗD	1920x1080i	YCbCr	4:2:2	10bit	50,59.94,60
Only some of the regular resolutions are shown above.		1280x720p	YCbCr	4:2:2	10bit	23.98,24,25,29.97,30,50, 59.94,60
Clong	Only so	me of the regula	ar resolutions are	shown al	oove.	
<b>Y</b>					oudi	

Version: V2.0



# **Parameters**

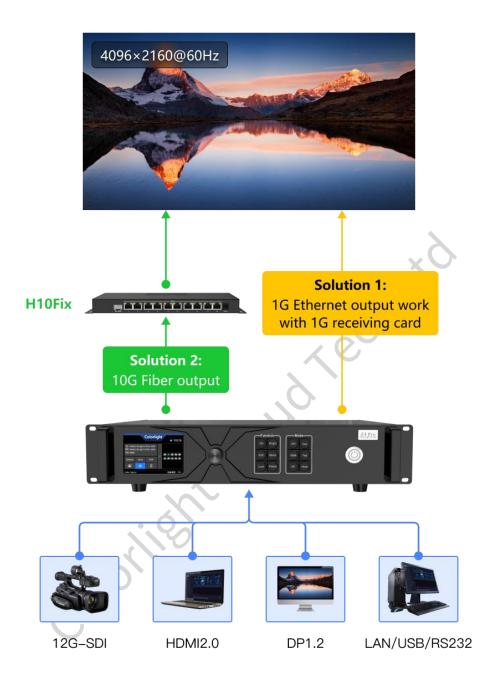
Dimensions (	W×H×D)				
Unboxed	482.6mm (19") $\times$ 88.0mm (3.4") $\times$ 407.1mm (16.0"), 2U chassis ( w / o				
	foot pads)				
Boxed	655.0mm (25.7")×245.0mm (9.6")×615.0mm (24.2")				
Weight					
Net weight	5.40kg (11.90lbs)				
Total weight	7.20kg (15.87lbs)				
Electrical specif	Electrical specification				
Power input	AC100-240V, 50 / 60Hz				
Rated power	70W				
Operating envir	onment				
Temperature	-20°C~55°C (-4°F~131°F)				
Humidity	0%RH-90%RH, no-condensing				
Storage environment					
Temperature	-30°C~80°C (-22°F~176°F)				
Humidity	0%RH-90%RH, no-condensing				
Certification					

# CCC, CE, FCC, CB, IC, cTUVus.

<sup>\*</sup> If there is no certification for the country or region where the product is sold, please contact Colorlight to confirm it right away. Otherwise, if the relevant legal risks are caused, the customer shall bear it or Colorlight has the right of recourse.



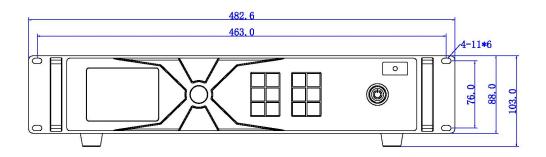
# **Application**

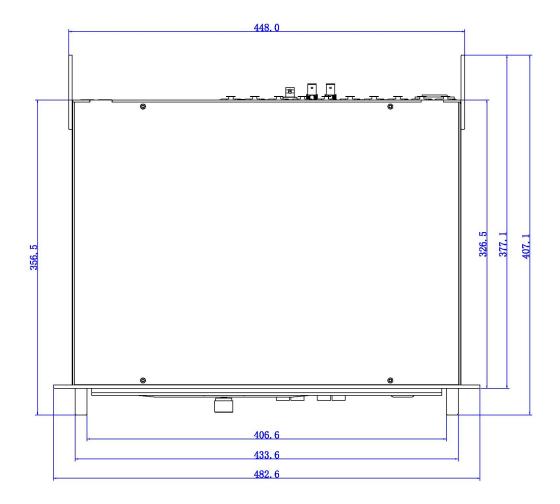




# Reference dimensions

Unit: mm





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