Colorlight

X100-4U/7U

Video Splicer

Specification V1.5

Contents

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Overview

X100-4U/7U video splicers are brand-new professional devices designed for large splicing screen elaborately developed by Colorlight. The video splicers integrate video processing functions such as cropping, zooming, splicing and multi-screen display. X100-4U/7U can be used as a video processor for LCD and DLP splicing screens and can also be employed as LED professional master controller for fine pitch screens with ultrahigh resolution. And the video splicers can be widely applied in various scenarios such as conference center, data visualization center, broadcast and TV center, live event, etc.

X100-4U/7U video splicers adopt modular design and employ a powerful FPGA architecture. The video splicers provide not only stable and efficient video processing capabilities, but also excellent picture quality and powerful video processing functions. For input, X100-4U and X100-7U support the common HDMI, DP, SDI, DVI, VGA, CVBS video input ports in the market. Not only 1080P HD input is supported, but also 4K input up to 4096x2160@60Hz resolution is available. In terms of output, X100-4U and X100-7U support Gigabit Ethernet port output and 10 Gigabit optical fiber output, which can easily realize large and over-distance fine pitch display. Additionally, DVI and HDMI video output are supplied, allow for flexibly LCD and DLP applications. The modular design allows customers to flexibly select and configure input and output boards according to requirements, which greatly satisfy the needs of different scenarios in the field.

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Features

Input

- HDMI2.0, DP1.2, 3G-SDI and single port supports up to 4096x2160@60Hz.
- DVI, HDMI1.4 and other types of input boards with up to 4 channels of 1920x1200@60Hz.
- VGA and other types of input boards with up to 4 channels of 1920x1080@60Hz.
- CVBS and other types of input boards with up to 2 channels of 720x576i@60Hz.
- 3G-3DI port and other types of input boards with up to 4 channels of 1920x1080p@60Hz.
- Input frame rate from 23.98Hz to 144Hz.
- 8bit/10bit video source input.
- HD ports (DVI/HDMI1.4) support HDCP.
- Customized inputs names and real-time monitoring of online status.

Output

- LED transmitter output integrated with Gigabit Ethernet port and optical fiber port of 10x Gigabit. Load capacity of single transmitter is up to 6.5 million pixels.
- HDMI1.4, DVI video board output, single board support maximum 4 channels of 1920x1200@60Hz.

- HDMI2.0 video board interface, single board support up to 4096x2160@60Hz.
- Output port arbitrary setting within device control area while not affected by cross-board.
- Output display from 23.98Hz to 120Hz.
- 8bit /10bit output.
- Backup of output ports within single-device or between multi-device.

Preview and Monitoring

- Preview and monitoring board (X100-4U not supported), can preview the picture of the input source, and monitor the output from the device.

Video Processing

- Multi-layer display, support window roaming, free splicing, cross-board and cross-port.
- Each signal supports independent cropping. A new signal source is created after cropping.
- Moving Subtitle supports customizable text, font, font size, moving direction, speed, background color, etc.
- Ultra HD Background supports high-resolution picture, which can be up to 32767 pixels in width and height.
- Support input source logo, available in text and picture.
- 3D display (purchase separately 3D accessories)
- Independent zooming and EDID management of each input signal.
- Genlock function.
- Custom frame rate, you can customize the output of 30/60/120/144/240Hz and other frame rates.

Color Management

- Independent color adjustment for each input source. You can customize brightness, contrast, saturation, brightness compensation, color temperature and RGB independent adjustment.
- The overall color adjustment of device output display and can be customized to adjust the brightness, contrast, saturation, brightness compensation, color temperature and RGB independent adjustment.
- The brightness grouping adjustment of the output port and manage the brightness of screens independently.

Device Control

- Multi-screen management.
- USB, Ethernet, RS232 and various connection methods; support PC and processor control.
- Web-side control; compatible with Windows, iOS, Android, Linux platforms with real-

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time operation response.

- Device control via APPs of Kylin Visualization Intelligent Control Platform.
- Simultaneous access and device management by multiple users.
- Device information viewing and control from front panel.
- Preset management where you can customize to store up to 2000 presets and timing tour of presets.

Easy Maintenance

- Support upgrade firmware, image file, Logo, font library via U-disk.

Stability and Reliability

- Dual power backup (backup power is optional) and redundant backup of output signal.
- Temperature alert, disconnection reminder, etc.

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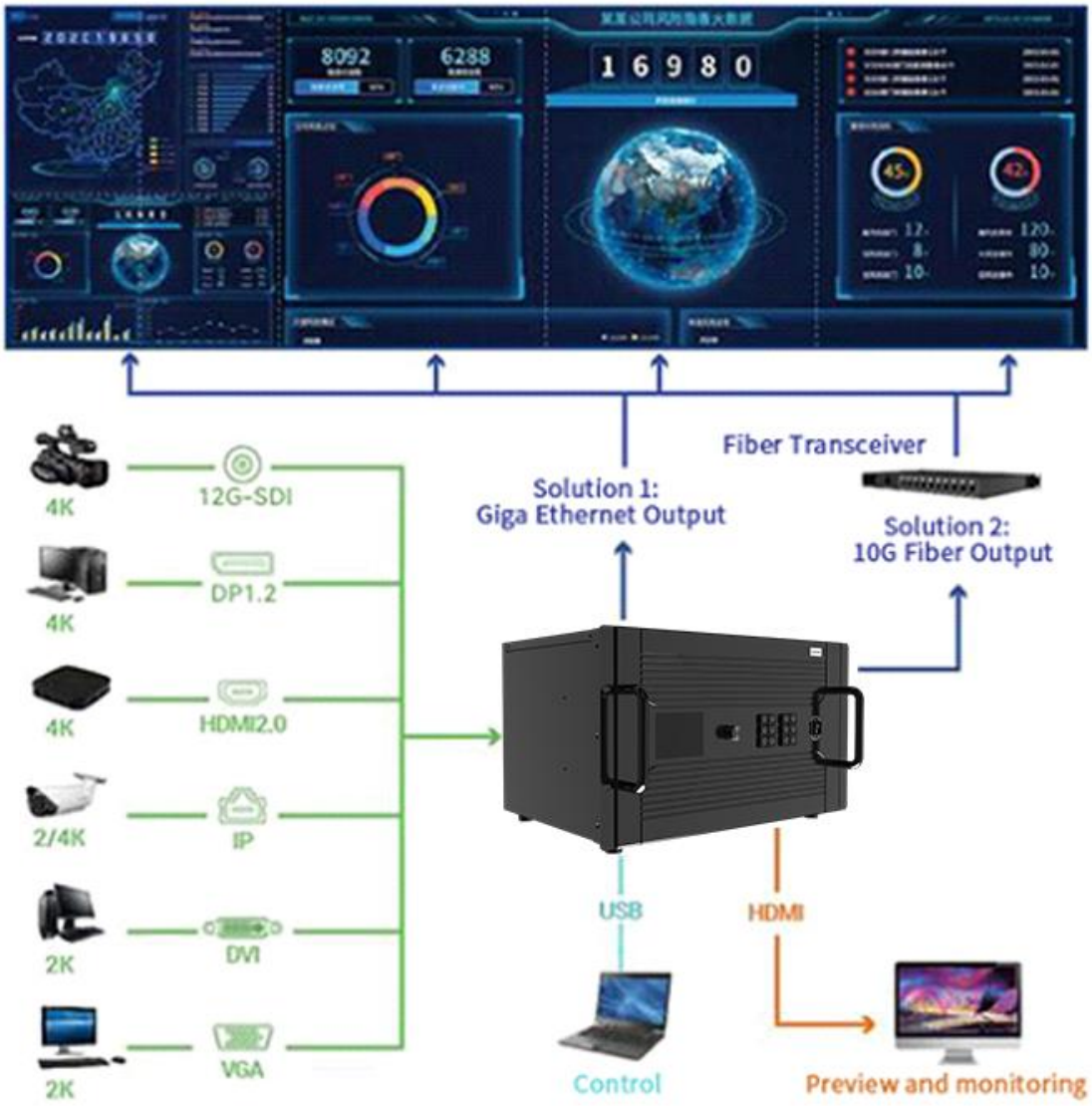
Application Scenarios



* Here takes the X100-7U as an example.

Hardware

Front panel

X100-4U　　X100-7U

No.	Name	Functions
1	3.5-inch LCD screen	Displays the menu, system information as well as the status of the device.
2	Knob	Parameter selection.
3	Function keys	OK：confirm button. ESC：exit the current operation or back to previous menu. Lock：lock buttons. Bright：tune brightness. Black：black screen. Freeze：freeze screen.
4	Menu keys	Home：startup interface. Menu：main menu. Input：display input signals information. Output：output settings. Signal： input source information. Mode：select a preset.
5	Power switch	Device on / off.

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Rear panel

4U Chassis

7U Chassis

Input	
INPUT	• The input board slots are located on the left side of the rear chassis. X100 4U can be equipped with 4 input cards while X100 7U 8 boards. • A single board supports signal source resolution up to 4-channel of 1920x1200@60Hz or 1-channel signal source of 4096x2160@60Hz. • The following board types are supported. For board parameters, please refer to the board specifications in next chapter. - 1x HDMI2.0 input board (4K). - 1x DP1.2 input board (4K). - 1x 12G-SDI input board (4K). - 1x HDMI2.0+1x DP1.2 input board (4K). - 4x DVI input board. - 4x HDMI1.4 input board. - 4x VGA input board. - 2x VGA+2x CVBS input board. - 4x 3G-SDI input board.
Output	
OUTPUT	• X100 4U can be equipped with 4 output boards while X100 7U 8 boards. • The following board types are supported. For board parameters, please refer to the board specifications in next chapter. - 8x 1G output board (Ethernet port). - 10x 1G output board (Ethernet port). - 1x 10G Fiber port +1x 10G Fiber backup port. - 1x HDMI2.0 output board (4k). - 4x DVI output board. - 4x HDMI output board.
Preview	
PREVIEW	• A preview and monitoring board can be installed on the bottom right of board slot at the rear chassis. • The following board types are supported. For board parameters, please refer

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	to the board specifications in next chapter. • 2x HDMI preview and monitoring board.
Control	
USB/LAN	• A control board can be installed on the bottom left slot at the rear chassis, support control using USB, RS232, and LAN.
Genlock	
GENLOCK	• 1x BNC, male, input synchronized source. - Support Bi-level and Tri-level sync, 23.98~60Hz frame rate.
GENLOCK LOOP	• 1x BNC, male. - Output synchronized source.
Power	
MAINS INPUT	• AC power supply: AC 100-240V and 50/60Hz is the standard single power, where a dual power is optional.

* The illustration is for reference only. Due to the actual hardware configuration and production process, there may be differences from the illustration, please refer to the actual product.

Board Specification

Input board	
Input board of 1x HDMI 2.0 port	 • 1x HDMI Type-A port, 1-channel 4K@60Hz input. • HDMI2.0 standard and is compatible with HDMI1.4/1.3. • The maximum resolution of the single port is 4096x2160@60Hz and the maximum pixel clock is 600MHz. - Maximum pixel width is 8192 (8192x1080@60Hz). - Maximum pixel height is 8192 (1024x8192@60Hz). • Independent EDID setting, using EDID V1.3 standard. • Independent cropping, seamless zooming and color adjustment.
Input board of 1x DP1.2 port	 • 1x DP, 1-channel 4K@60Hz input. • DP1.2 standard and is compatible with DP1.1. • The maximum resolution of the single port is 4096x2160@60Hz and the maximum pixel clock is 600MHz. - Maximum pixel width is 8192 (8192x1080@60Hz). - Maximum pixel height is 8192 (1024x8192@60Hz). • Independent EDID setting, using EDID V1.3 standard. • Independent cropping, seamless zooming and color adjustment.

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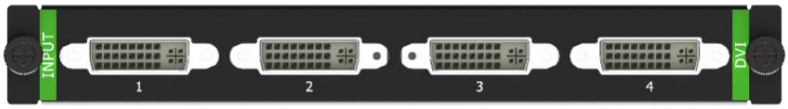
Input board of 1x 12G-SDI port	 • 1-channel 12G-SDI input. • The maximum resolution of the single port is 4096x2160@60Hz. • SMPTE 424M/292M standard, support SD/HD/3G/6G/12G-SDI (Level A/B). • Different resolution signal inputs. • Independent cropping, infinite scaling and color adjustment. • De-interlacing display, EDID setting not supported.
Input board of 1x HDMI2.0 port+1x DP1.2 port	 • 1x HDMI Type-A port, 1xDP. • A single board supports 1-channel 4K@60Hz input, choose one of two. • HDMI port adopts HDMI2.0 standard and is compatible with HDMI 1.4/1.3. • DP port adopts the DP1.2 standard and is compatible with DP1.1. • The maximum resolution of the single port is 4096x2160@60Hz and the maximum pixel clock is 600MHz. - Maximum pixel width is 8192 (8192x1080@60Hz). - Maximum pixel height is 8192 (1024x8192@60Hz). • Independent EDID setting, using EDID V1.3 standard. • Independent cropping, seamless zooming and color adjustment.
Input board of 4x HDMI ports	 • 4x HDMI Type-A ports. • A single board supports 4-channel 1920x1200@60Hz input and HDCP 1.4. • HDMI adopts the HDMI1.4 standard and is compatible with HDMI1.3. • The maximum resolution of a single port is 1920x1200@60Hz. - Maximum pixel width is 4096 (4096x512@60Hz). - Maximum pixel height is 4096 (512x4096@60Hz). • Independent EDID setting, using EDID V1.3 standard. • Independent cropping, seamless zooming and color adjustment.
Input board of 4x DVI ports	 • 4x DVI-I ports. • A single board supports 4-channel 1920x1200@60Hz input and HDCP 1.4. • The maximum resolution of a single port is 1920x1200@60Hz. - Maximum pixel width is 4096 (4096x512@60Hz). - Maximum pixel height is 4096 (512x4096@60Hz). • Independent EDID setting, using EDID V1.3 standard. • Independent cropping, seamless zooming and color adjustment.

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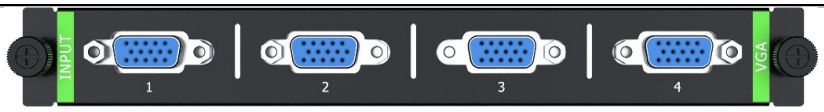
Input board of 4x VGA ports	 • 4x VGA ports. • A single board supports 4-channel 1920x1080@60Hz input. • The maximum resolution of a single port is 1920x1080@60Hz. - Maximum pixel width is 1920. - Maximum pixel height is 1080. • Independent cropping, seamless zooming and color adjustment.
Input board of 2x VGA port+2x CVBS port	 • 2x VGA, 2x CVBS ports. • A single board supports 2-channel VGA input. - The maximum resolution of a single port is 1920x1080@60Hz. - Maximum pixel width is 1920. - Maximum pixel height is 1080. - Independent cropping, seamless zooming and color adjustment. • A single board supports 2-channel CVBS input. - The maximum input resolution of a single port is 720x576i@60Hz. - Independent cropping, seamless zooming and color adjustment.
Input board of 4x 3G-SDI ports	 • 4x 3G-SDI ports. • The maximum input resolution of a single port is 1920x1200@60Hz. • Adopts SMPTE 424M/292M standard and support SD-SDI/HD-SDI/3G-SDI (Level A/B). • Each channel supports input of different resolutions. • Independent cropping, seamless zooming and color adjustment. • Deinterlaced display and not support EDID settings.
Output board	
Output board of 8x Ethernet ports	 • 8x RJ45 Gigabit Ethernet ports. • A single card supports up to 5.2 million pixels. • Output screen of each Ethernet port can be set arbitrarily within the control area of the device. - The maximum width or height of the board can reach 32767 pixels. • Load capacity of single Ethernet port: - When frame rate of output is 60Hz, 8bit data width supports 650,000

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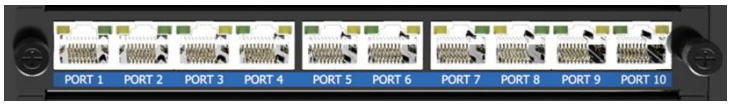
	pixels and 10bit data width supports 490,000 pixels. - When frame rate of output is 120Hz, 8bit data width supports 320,000 pixels and 10bit data width supports 240,000 pixels. • Indicator status: Indicator constant on means the board is connected and flashing shows the port is undergoing signal output.
Output board of 10x Ethernet ports	 • 10x RJ45 Gigabit Ethernet ports. • A single card supports up to 6.5 million pixels. • Output screen of each network port can be set arbitrarily within the control area of the device. - The maximum width or height of the board can reach 32767 pixels. • Load capacity of single Ethernet port: - When frame rate of output is 60Hz, 8bit data width supports 650,000 pixels and 10bit data width supports 490,000 pixels. - When frame rate of output is 120Hz, 8bit data width supports 320,000 pixels and 10bit data width supports 240,000 pixels. • Indicator status: Indicator constant on means the board is connected and flashing shows the port is undergoing signal output.
Output board of 1x Fiber port + 1x backup Fiber port	 • 1x 10G Fiber port + 1x backup Fiber port. • By default, this board is equipped with optical modules of 2x 10G single-mode SFP+ (dual-core LC interface, transmission distance of 2km, wavelength 1310nm) and other optical modules are optional. • Fiber port 1 is the main output port and Fiber port 2 copies and backs up data of Fiber port 1 automatically. - To be used with a dedicated optical fiber transceiver, each Fiber port can be converted to 10 Gigabit Ethernet ports. • A single board supports up to 6.5 million pixels and its backups. • Output of each network port can be set arbitrarily within the control area of the device. - The maximum width or height of the board can reach 32767 pixels. • Load capacity of single Fiber port: - When frame rate of output is 60Hz, 8bit data width supports 6.5 million pixels and 10bit data width supports 4.9 million pixels. - When frame rate of output is 120Hz, 8bit data width supports 3.2 million pixels and 10bit data width supports 2.4 million pixels.

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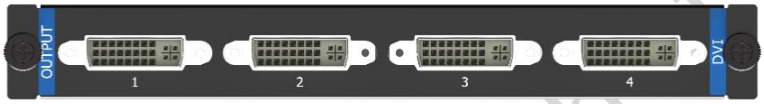
Output board of 1x HDMI2.0 port	 • 1x HDMI2.0 video port. • A single board supports 1-channel 4K@60Hz, up to 4096x2160@60Hz resolution output. - Maximum pixel width is 8192 (8192x1080@60Hz). - Maximum pixel height is 8188 (1024x8188@60Hz). • Output of each network port can be set arbitrarily within the control area of the device. - The maximum width or height of the board can reach 32767 pixels. • Each signal has the same customized resolutions.
Output board of 4x DVI ports	 • 4x DVI ports. • A single board supports up to 4-channel 1920x1200@60Hz output simultaneously. • The maximum output resolution of a single port is 1920x1200@60Hz. - Maximum pixel width is 4096 (4096x512@60Hz). - Maximum pixel height is 4096 (512x4096@60Hz). • Output of each network port can be set arbitrarily within the control area of the device. - The maximum width or height of the board can reach 32767 pixels. • Each signal has the same customized resolutions.
Output board of 4x HDMI ports	 • 4x HDMI1.4 ports. • A single board supports up to 4-channel 1920x1200@60Hz output simultaneously. • The maximum output resolution of a single port is 1920x1200@60Hz. - Maximum pixel width is 4096 (4096x512@60Hz). - Maximum pixel height is 4096 (512x4096@60Hz). • Output of each network port can be set arbitrarily within the control area of the device. - The maximum width or height of the board can reach 32767 pixels. • Each signal has the same customized resolutions.
Preview and monitoring	
Preview and monitoring board	 • 2x HDMI 1.4 ports. • Connect to a monitor to view the preview and monitoring screen, fixed output 1920x1080@60Hz. X100-4U is not supported.

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Technical Specifications

HDMI2.0					
Input	Resolution	Color space	Chroma sampling	Color depth	Frame rate
4K	4096×2160	YCbCr	4:2:2	8bit	23.97,24,30,50,59.94,60
		YCbCr/RGB	4:4:4	8bit	
	3840×2160	YCbCr	4:2:2	8/10bit	
		YCbCr/RGB	4:4:4	8bit	
		YCbCr/RGB	4:4:4	10bit	23.97,24,30,50
2K	1920×1200	YCbCr	4:2:2	8/10bit	23.97,24,30,50,59.94,60,100,120, 144,240
		YCbCr/RGB	4:4:4	8bit	
		YCbCr/RGB	4:4:4	10bit	23.97,24,30,50,59.94,60,100,120, 144
	1920×1080	YCbCr	4:2:2	8/10bit	23.97,24,30,50,59.94,60,100,120, 144,240
		YCbCr/RGB	4:4:4	8bit	
		YCbCr/RGB	4:4:4	10bit	23.97,24,30,50,59.94,60,100,120, 144
DP1.2					
Input	Resolution	Color space	Chroma sampling	Color depth	Frame rate
4K	4096×2160	YCbCr	4:2:2	8bit	23.98,30,50,59.94,60
		YCbCr/RGB	4:4:4	8bit	
	3840×2160	YCbCr	4:2:2	8/10bit	
		YCbCr/RGB	4:4:4	8/10bit	
2K	1920×1200	YCbCr	4:2:2	8/10bit	23.97,24,30,50,59.94,60,100,120, 144,240
		YCbCr/RGB	4:4:4	8/10bit	
	1920×1080	YCbCr	4:2:2	8/10bit	
		YCbCr/RGB	4:4:4	8/10bit	
HDMI1.4/DVI					
Input	Resolution	Color space	Chroma sampling	Color depth	Frame rate
2K	1920×1200	YCbCr	4:2:2	8bit	23.98,24,30,50,59.94,60
		YCbCr/RGB	4:4:4	8bit	
	1920×1080	YCbCr	4:2:2	8bit	
		YCbCr/RGB	4:4:4	8bit	
VGA					
Input	Resolution	Color space	Chroma sampling	Color depth	Frame rate
2K	1920×1080	YCbCr	4:2:2	8bit	23.98,24,30,50,59.94,60
		YCbCr/RGB	4:4:4	8bit	

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CVBS					
Input	Resolution	Color space	Chroma sampling	Color depth	Frame rate
SD	720×576i	YCbCr	4:2:2	8bit	50
	720×480i	YCbCr	4:2:2	8bit	59.94
12G-SDI					
Input	Resolution	Color space	Chroma sampling	Color depth	Frame rate
12G	4096×2160p	YCbCr	4:2:2	10bit	50,59.94,60
	3840×2160p	YCbCr	4:2:2	10bit	
6G	4096×2160p	YCbCr	4:2:2	10bit	23.98,24,25,29.97,30
	3840×2160p	YCbCr	4:2:2	10bit	
3G	1920×1080p	YCbCr	4:2:2	10bit	50,59.94,60
HD	1920×1080p	YCbCr	4:2:2	10bit	23.98,24,25,29.97,30
	1920×1080i	YCbCr	4:2:2	10bit	50,59.94,60
	1280×720p	YCbCr	4:2:2	10bit	23.98,24,25,29.97,30,50,59.94,60
SD	720×576i	YCbCr	4:2:2	8bit	50
	720×480i	YCbCr	4:2:2	8bit	59.94
12G SDI supports Level A/B.					
3G-SDI					
Input	Resolution	Color space	Chroma sampling	Color depth	Frame rate
3G	1920×1080p	YCbCr	4:2:2	10bit	50,59.94,60
HD	1920×1080p	YCbCr	4:2:2	10bit	23.98,24,25,29.97,30
	1920×1080i	YCbCr	4:2:2	10bit	50,59.94,60
	1280×720p	YCbCr	4:2:2	10bit	23.98,24,25,29.97,30,50,59.94,60
SD	720×576i	YCbCr	4:2:2	8bit	50
	720×480i	YCbCr	4:2:2	8bit	59.94
3G SDI supports Level A/B.					

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Device Specifications

Device type		X100-4U/7U	
Cabinet		4U	7U
Maximum input boards		4	8
Maximum input ports		16 channels	32 channels
Maximum output boards		4	8
Preview and monitoring boards		-	1
Layers		16	32
Ethernet port output	Max ports	40 channels	80 channels
	Max load	26 million Pixels	52 million Pixels
Fiber port output	Max ports	4 channels	8 channels
	Max load	26 million Pixels	52 million Pixels
Video output	Max ports	16 channels	32 channels
	Max load	16 channels of 1080P	32 channels of 1080P
Load range (max width or height)		32767 Pixels	32767 Pixels
Operating environment	Temp.	10°C~45°C/50°F~113°F	
	Humidity	0%RH~85%RH, non-condensing	
Storage environment	Temp.	-10°C~60°C/14°F~140°F	
	Humidity	0%RH~95%RH, non-condensing	
Electrical parameters	Power supply	AC 100~240V, 50/60Hz, supports dual-power backup (backup power optional)	
	Avg. board power	10W	10W
	Max power	120W	230W
Device parameters	Dimension (W*H*D)	483.0mm×178.0mm×397.3mm	483.0mm×276.5mm×423.3mm
	Net weight	14.0kg	20.8kg

Certification

CCC, CE, FCC, IC.

* 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. Otherwise, the customer shall be responsible for the legal risks caused or Colorlight has the right to claim compensation.

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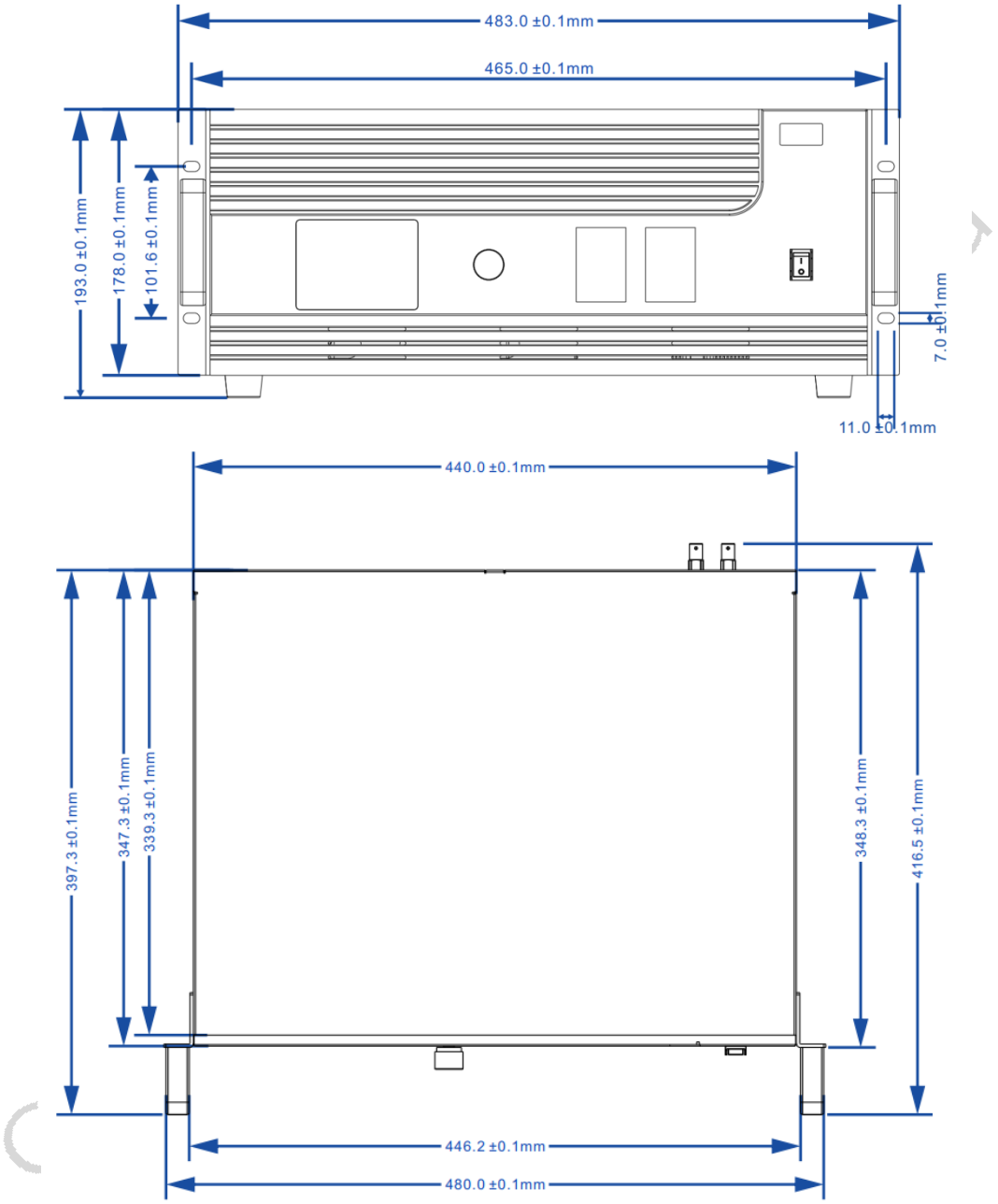
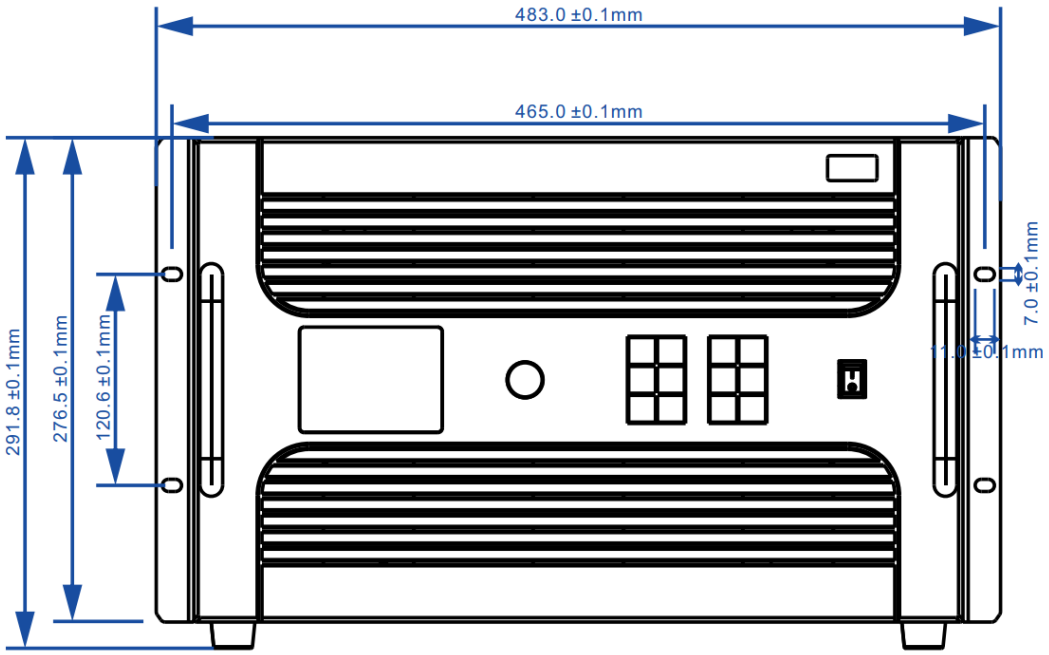
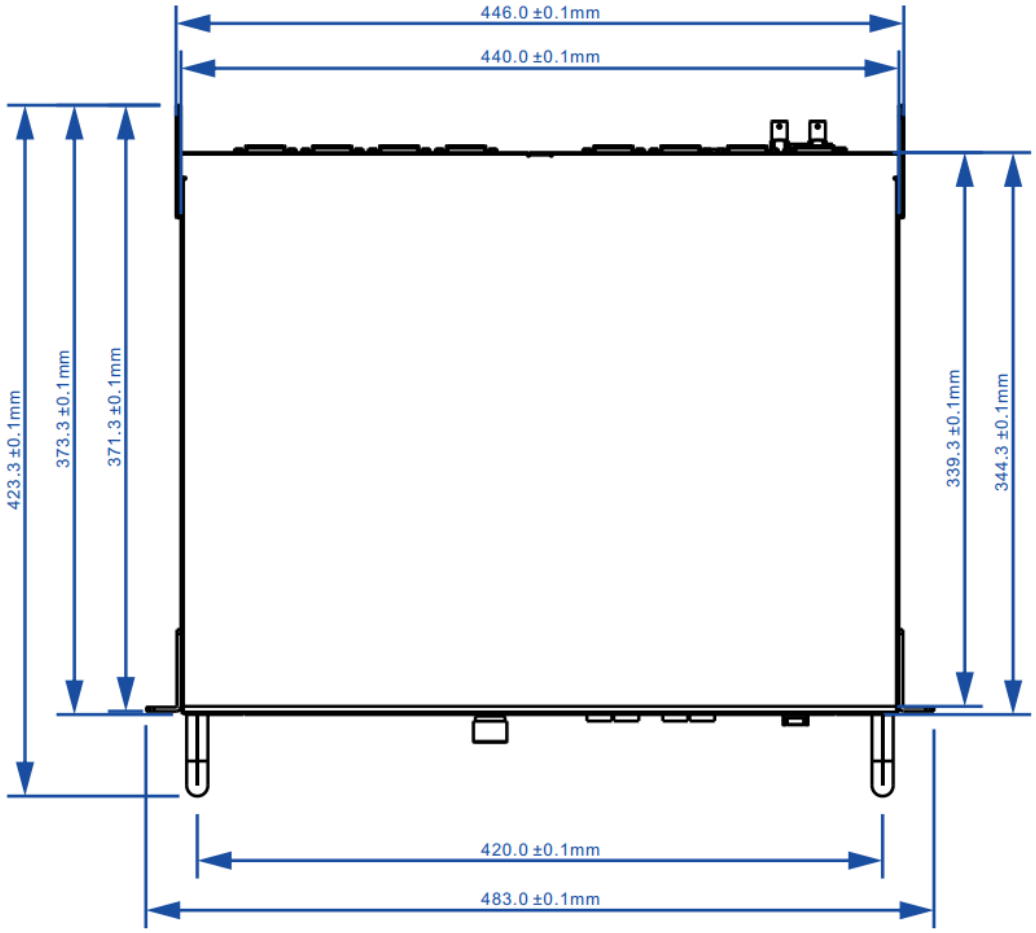
Reference dimensions

X100-4U



X100-7U


483.0 ±0.1mm
465.0 ±0.1mm
291.8 ±0.1mm
276.5 ±0.1mm
120.6 ±0.1mm
7.0 ±0.1mm
11.0 ±0.1mm


446.0 ±0.1mm
440.0 ±0.1mm
423.3 ±0.1mm
373.3 ±0.1mm
371.3 ±0.1mm
339.3 ±0.1mm
344.3 ±0.1mm
420.0 ±0.1mm
483.0 ±0.1mm

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