Colorlight

VX20

Specification V1.0

CONTENTS

01 INTRODUCTION

1.1 Overview

VX20 is a versatile video processor developed by Colorlight, succeeding the VX10 in the VX series. It excels in controlling and processing video display, and provides 3 operational modes — Video processor mode, Fiber optic transceiver mode, and Bypass mode — making it ideal for diverse scenarios like stage rentals, grand performances and commercial exhibitions.

VX20 is capable of handling up to 13.1 million pixels, and features HDMI 2.0, DP 1.2, 12G-SDI, and HDMI 1.4 input ports for 4K video input. It can also transmit processed video content to LED displays via 1G Ethernet or 10G fiber ports. It supports 8/10/12-bit video input and 8/10-bit video output at super high definition, and allows for scaling and cropping of videos while maintaining high visual fidelity. Moreover, the device supports the display of BKG, OSD, and logos, and provides Multiviewer at high resolution.

In terms of signal reliability and data security, the VX20 delivers robust features such as hot backup, fiber port backup or copying, and Ethernet port redundancy configurations. Such versatility positions VX20 as an optimal companion for high-end rental scenarios and fine-pitch video walls.

When it comes to operation, VX20 offers intuitive Web-based controls, and is compatible with multiple operation systems including Windows, macOS, and Linux. With a single network cable, users can control VX20 and manage the display on the screen without the need for extra software installation, which can best meet the demands of stage rental applications.

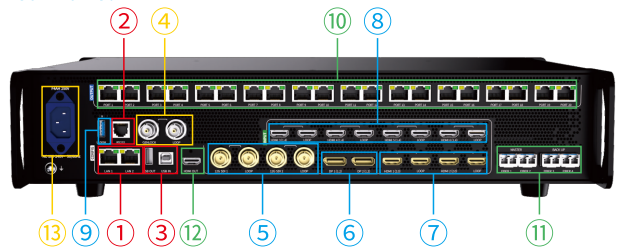
1.2 Appearance

Front Panel

No.	Name	Description
1	Touch screen	Displays device status and provides menus for parameters settings and device control.
2	Knob	• Press this knob to access sub-menu or confirm selection. • Rotate this knob to select menu items or tune parameters.
3	ESC	Press this button to exit the current touch screen interface and return to the previous interface.
4	Function buttons	• **Main/PIP 1/PIP 2**: Press these layer buttons to view status of the corresponding layers; supports switching between layers for corresponding signal image. • **BKG**: Press this button to switch to the background image. • **SIZE**: Button for setting the size and position of the layers. • **Full Screen**: Press this button to scale the top layer to full screen. • **HDMI 1 / HDMI 2/ DP 1/ DP 2 / SDI 1 / SDI 2 / HDMI 3 / HDMI 4 / HDMI 5 / HDMI 6 / Mosaic**: Press these video source buttons to switch between signals for a selected layer. • **0~9**: Press these number buttons to enter corresponding numbers. • **←**: Deletion button/Backspace button. • **.** : Press this button to enter a space character. • **Status**: Press this button to view device's status. • **Preset**: Press this button to select a preset. • **Bright**: Press this button to adjust the output brightness. • **Freeze**: Press this button to pause the incoming video signal and hold the final frame indefinitely. • **FN**: Function for this button can be defined by users. • **Cut**: Press this button to output the current PVW image to the screen. • **Take**: Press this button to output the current PVW image to the screen with a set effect.
5	Power button	Press this button to power on/off the device.

1.2 Appearance

Rear Panel



No.	Name	Description
Control		
1	LAN 1/2	● RJ45 Gigabit Ethernet ports; both can be connected to a host PC for device control. ● Supports bridge function (connects to another VX20 to realize a virtual LAN).
2	RS232	RJ11(6P6C) port for connection to a central control.
3	USB IN	USB 2.0 (type B); connects to the PC for parameter debugging or for cascading input.
	USB OUT	USB 2.0 (type A) for cascading output.
Genlock		
4	GENLOCK	● 1× BNC male connector for sync signal input. ● Supports Black Burst, Bi-level, and Tri-level; supported frame rate: 23.98Hz~60Hz
	GENLOCK LOOP	1× BNC male connector for looping out the GENLOCK sync signal.
Input		
5	2×12G SDI	● Compatible with 6G-SDI, 3G-SDI (LEVEL A/B) and HD-SDI. ● Supports SMPTE-2082-1 (12G), ST-2081-1 (6G), ST-424 (3G) and ST-292 (HD) video source. ● Supports up to 4096×2160@60Hz video input per port.

No.	Name	Description
5	2×12G SDI	● Not support custom EDID. ● Supports 10-bit video source. ● Supports 23.98Hz~60Hz video source. ● Supports YCbCr422 color format. ● Supports interlace processing (12G SDI 1 only).
	2×12G-SDI _LOOP	2× 12G-SDI loop out ports
6	2×DP1.2	● Compatible with DP 1.1. ● The maximum pixel clock rate is 600MHz; supports up to 4096×2160@60Hz or 8192×1080@60Hz video source. ● Supports setting custom resolution via the EDID: - Max. width: 4096 (4096×2160@60Hz) - Max. height: 4096 (2160×4096@60Hz) ● For video input: - Max. width: 8192 - Max. height: 8192 ● Supports 8/10/12-bit video source. ● Supports 23.98Hz~240Hz video source. ● Supports HDR10 and HLG. ● Supports RGB, YCbCr444, and YCbCr422 color formats. ● Supports HDCP 2.2 and HDCP 1.4. ● Supports embedded audio input. ● Not support interlaced signal input.
7	2×HDMI2.0	● Compatible with HDMI 1.4 and HDMI 1.3. ● Max. pixel clock rate: 600MHz; supports up to 4096×2160@60Hz or 8192×1080@60Hz video source. ● Supports setting custom resolution via the EDID: - Max. width: 4096 (4096×2160@60Hz) - Max. height: 4096 (2160×4096@60Hz) ● For video input: - Max. width: 8192 - Max. height: 8192 ● Supports 8/10/12-bit video source. ● Supports 23.98Hz~240Hz. ● Supports HDR10 and HLG. ● Supports RGB, YCbCr444, and YCbCr422 color formats. ● Supports HDCP 2.2 and HDCP 1.4. ● Not support interlaced signal input.

No.	Name	Description
7	2×HDMI2.0 _LOOP	2× HDMI 2.0 loop out ports
8	4×HDMI1.4	● Max. pixel clock frequency: 330MHz ● Max. resolution: 4096×1080@60Hz or 4096×2160@30Hz ● Min. resolution: 800×600@60Hz ● Supports setting custom resolution via the EDID: - Max. width: 4096 (4096×1080@60Hz) - Max. height: 4096 (1080×4096@60Hz) ● Supports 8bit video source. ● Supports inputs at 23.98Hz~120Hz. ● Supports RGB, YCbCr444, and YCbCr422. ● Supports HDCP 1.4. ● Supports audio input (HDMI3 only). ● Not support HDR. ● Not support interlaced signal input.
	4×HDMI1.4 _LOOP	4× HDMI 1.4 loop out ports
9	U-DISK	USB driver connector; supports import and configuration of receiving card parameters.
Output		
10	PORT 1-20	● Total load capacity: 13.1 million pixels - Max. width: 16,384 pixels; Max. height: 8192 pixels - 8-bit@60Hz: 13.1 million pixels; 10-bit@60Hz: 9.8 million pixels - 8-bit@120Hz: 6.55 million pixels; 10-bit@120Hz: 4.9 million pixels - 8-bit@240Hz: 3.27 million pixels; 10-bit@240Hz: 2.45 million pixels ● Load capacity per port: 650,000 pixels - 8-bit@60Hz: 650,000 pixels; 10-bit@60Hz: 490,000 pixels - 8-bit@120Hz: 320,000 pixels; 10-bit@120Hz: 240,000 pixels - 8-bit@240Hz: 160,000 pixels; 10-bit@240Hz: 120,000 pixels ● Communication distance: the recommended maximum cable (CAT5e) run length is 100 meters. ● Supports Ethernet ports loop redundancy.
11	Fiber 1-4	● 4× 10G fiber ports (optional 10G SFP+Optical module, the transmission distance depends on the specification of the optical module) ● Fiber1/Fiber2 - When used with a fiber optic transceiver, the fiber ports serve as the output ports automatically.

No.	Name	Description
11	Fiber 1-4	- When Fiber 1 and any one of the Ethernet port 1~10 are connected at a time, Fiber 1 takes precedence for output; when Fiber 2 and any one of the Ethernet port 11~20 are connected at a time, Fiber 2 takes precedence for output. - When no fiber port is connected while any of the 20 Ethernet ports is connected, the Ethernet port works. ● Fiber3/Fiber4 In Copy mode by default and can be set to Backup mode; respectively copies or backs up the data transmitted via Fiber 1 and Fiber 2.
12	HDMI OUT	● 1× HDMI 2.0 ● Connects to a monitor for viewing the image of PVW, PGM, and all input signals.
Power		
13	AC100-240V	Port for power input; 100-240V; 50/60Hz.

02 FEATURES

Multiple ports

Provides multiple ports for inputting and looping out various signals, including:

- 2× HDMI 2.0+2× HDMI 2.0_LOOP
- 2× DP 1.2
- 2× 12G-SDI+2× 12G-SDI_LOOP
- 4× HDMI 1.4*+4× HDMI 1.4_LOOP

*Only supports 2× HDMI1.4 or 4× HDMI1.3 inputs at the same time.

Large load capacity

- Total capacity: up to 13.1 million pixels
- Max. width: 16,384 pixels; Max. height: 8192 pixels
- 20× Gigabit Ethernet ports for output
- 4× 10G fiber ports for output
  - Fiber 1 and Fiber 2 work as the primary fiber output ports, respectively serving as the alternatives to the Ethernet port 1~10 and Ethernet port 11~20. The fiber ports take precedence as the output ports over the Ethernet ports when both these 2 types of ports are connected.
  - Fiber 3 and Fiber 4 work as the backup fiber output ports, either copying or backing up the output from Fiber 1 and Fiber 2 respectively.
- 1× HDMI 2.0 port for output
  - Connects to a monitor for viewing the image of PVW, PGM, and all input signals.

High image quality, true 4K

- True 4K: 4096×2160@60Hz
- True HDR
  - Supports HDR10 and complies with SMPTE 2086/2084
  - Supports HLG
- Input color depth: 8/10/12 bit
- Output color depth: 8/10 bit
- Frame rate: up to 240Hz

Versatile

- Supports multiple working modes
  - Video processor mode: receives and processes multiple video sources, 3 of which can be selected and outputted to the receiving cards with 1 frame delay by default.
  - Fiber optic transceiver mode: uses Fiber1/Fiber2 as the input ports for receiving the video signal from another VX-series device, and outputs the signal via the Ethernet ports to the screen.
  - Bypass mode: receives multiple video sources, 1 of which can be selected and outputted to the screen with 0 frame delay.

Powerful video processing

- Canvas view: **PVW&PGM** / **PGM Only**
  - **PVW&PGM**: The PVW image can be viewed and edited in **Multiviewer**. Next, it can be sent to the area of PGM for displaying on the screen via the **Take/Cut** button.
  - **PGM Only**: Modifications to layers on the PGM area can be viewed in **Multiviewer**, and will be simultaneously applied to the display.
  - The loading capacities of the Ethernet ports for these two views are both 13.1 million pixels.
- Multi-layer display: supports displaying 3 layers (all at 4K resolution) at a time, and allows for image splicing and Picture-in-Picture (PiP).
- Supports scaling and cropping of video sources.
- Supports opacity settings for overlays.
- Supports fade in/out.
- Supports precise color management.
- Multiple supported color formats: RGB, YCbCr444, and YCbCr422.

Customizable display

- Image library:
  - Supports uploading PNG or JPG images (total storage: 1GB).
  - The stored images can be applied to BKG/Logo.

- Supports setting BKG (HD or solid-color)
  - Not use layer resources; up to 4 stored images can be added to BKG list.
  - Supports 1:1 display (max. width: 16,384 pixels; max. height: 8192 pixels)
- Supports logo display
  - Not use layer resources; up to 10 stored images can be added to logo list.
  - Resolution: up to 512×512 (max. width: 512; max. height: 512)
  - Supports setting opacity.
- Supports OSD text
  - Not use layer resources; supports up to 4 OSDs in the list.
  - Resolution: up to 2 million pixels (max. width: 16,384; max. height: 8192 pixels)
  - Supports scrolling text.
  - Supports opacity settings for overlays.
  - Supports setting scrolling direction, speed, and OSD style.
- Provides advanced test pattern, with 15 test patterns supporting customizable colors.

All-round preview and monitoring

- 1× HDMI 2.0 port for preview and monitoring the image of PVW, PGM, and all input signals.
- Supports device control and preview and monitoring using the matching software, with a single network cable connecting the device and the host PC.
- HD PVW display available on the front panel LCD, supporting preview and switching of the image displayed on screen without the need for any external control device.

Intuitive UI interaction, easy operation

- Supports cross-platform Web control with optimized UI design and user experience.
- Compatible with *iSet*, providing professional and powerful features to ensure optimal display control.
- Supports both single and dual canvas user interfaces, ensuring flexibility for different application scenarios.
- Supports saving up to 1000 presets for easy application and switching.

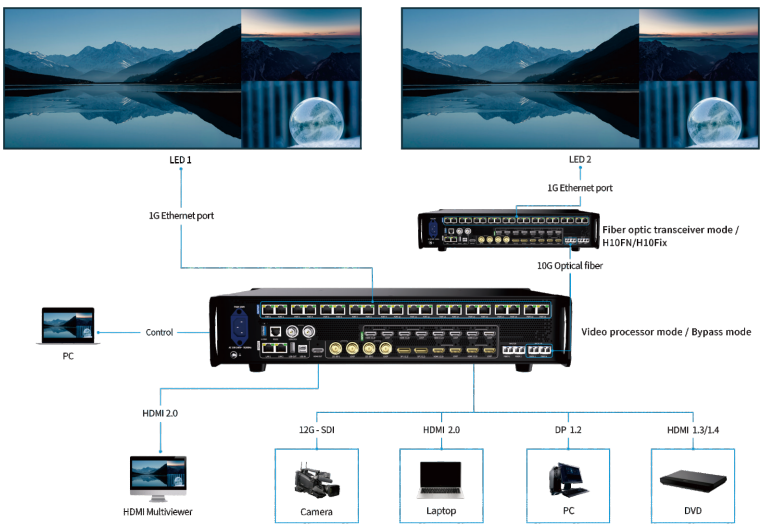
- Supports selection of audio output in both auto and manual modes.
  - Auto audio output: automatically selects audio source from the topmost layer that has valid audio for output.
  - Manual audio output: manually selects desired audio for output.

Multiple redundancy solutions, stable and reliable

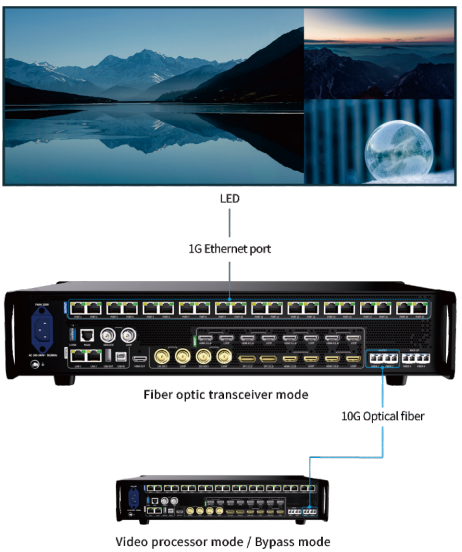
- Supports Ethernet port loop redundancy (manually configured).
- Built-in fiber port redundancy (Fiber 3/4 for Fiber 1/2).
- Supports processor redundancy, allowing for automatic switching to the backup device if failure occurs to the primary device.
- Supports video source input redundancy, ensuring seamless switching to the backup signal if failure occurs during the transmission of the primary video source.

03 APPLICATIONS

Video Processor Mode & Bypass Mode



Fiber Optic Transceiver Mode



04 REFERENCE SIGNAL FORMATS

12G-SDI

Input	Color space	Color depth (bit)	Frame rate (Hz)
12G-SDI 4096×2160 3840×2160	YCbCr422	8/10	50,59.94,60
6G-SDI 4096×2160 3840×2160	YCbCr422	8/10	23.98,24,25,29.97,30
3G-SDI 2048×1080 1920×1080	YCbCr422	8/10	50,59.94,60
HD-SDI 1920×1080i	YCbCr422	8/10	50,59.94,60
HD-SDI 2048×1080 1920×1080	YCbCr422	8/10	23.98,24,25,29.97,30
HD-SDI 1280×720	YCbCr422	8/10	23.98,24,25,29.97,30,50,59.94,60

HDMI2.0

Input	Color space	Color depth (bit)	Frame rate (Hz)
DCI4K 4096×2160	YCbCr422	8/10	23.98,24,25,29.97,30,50,59.94,60
	YCbCr444/RGB	8	
	YCbCr444/RGB	10	23.98,24,25,29.97,30,50

Input	Color space	Color depth (bit)	Frame rate (Hz)
UHD 3840×2160	YCbCr422	8/10	23.98,24,25,29.97,30,50,59.94,60
	YCbCr444/RGB	8	
	YCbCr444/RGB	10	23.98,24,25,29.97,30,50
QHD 2560×1440	YCbCr422	8/10	23.98,30,50,59.94,60,100,119.88, 120,144
	YCbCr444/RGB	8	
	YCbCr444/RGB	10	23.98,30,50,59.94,60,100
2K 2048×1152	YCbCr422	8/10	23.98,24,30,50,59,94,60,100,120, 144
	YCbCr444/RGB	8	
	YCbCr444/RGB	10	
WUXGA 1920×1200	YCbCr422	8/10	23.97,24,30,50,59,94,60,100,120, 144
	YCbCr444/RGB	8	
	YCbCr444/RGB	10	
FHD 1920×1080	YCbCr422	8/10	23.98,24,30,50,59,94,60,100,120, 144
	YCbCr444/RGB	8	
	YCbCr444/RGB	10	
UXGA 1600×1200	YCbCr422	8/10	23.97,24,30,50,59,94,60,100,120, 144
	YCbCr444/RGB	8	
	YCbCr444/RGB	10	
SXGA 1280×1024	YCbCr422	8/10	23.97,24,30,50,59,94,60,100,120, 144,200,240
	YCbCr444/RGB	8	
	YCbCr444/RGB	10	
HD 1280×720	YCbCr422	8/10	23.97,24,30,50,59,94,60,100,120, 144,200,240
	YCbCr444/RGB	8/10	

HDMI1.4			
Input	Color space	Color depth (bit)	Frame rate (Hz)
DCI4K 4096×2160	YCbCr422	8	23.98,24,25,29.97,30
	YCbCr444/RGB	8	
UHD 3840×2160	YCbCr422	8	23.98,24,25,29.97,30
	YCbCr444/RGB	8	
QHD 2560×1440	YCbCr422	8	23.98,30,50,59.94,60
	YCbCr444/RGB	8	
2K 2048×1152	YCbCr422	8	23.98,24,25,29.97,30,50,59.94,60, 100,120
	YCbCr444/RGB	8	
WUXGA 1920×1200	YCbCr422	8	23.98,24,25,29.97,30,50,59.94,60, 100,120
	YCbCr444/RGB	8	
FHD 1920×1080	YCbCr422	8	23.98,24,25,29.97,30,50,59.94,60, 100,120
	YCbCr444/RGB	8	
UXGA 1600×1200	YCbCr422	8	23.98,24,25,29.97,30,50,59.94,60, 100,120
	YCbCr444/RGB	8	
SXGA 1280×1024	YCbCr422	8	23.98,24,25,29.97,30,50,59.94,60, 100,120
	YCbCr444/RGB	8	
HD 1280×720	YCbCr422	8	23.98,24,25,29.97,30,50,59.94,60, 100,120
	YCbCr444/RGB	8	
XGA 1024×768	YCbCr422	8	23.98,24,25,29.97,30,50,59.94,60, 100,120
	YCbCr444/RGB	8	
SVGA 800×600	YCbCr422	8	23.98,24,25,29.97,30,50,59.94,60, 100,120
	YCbCr444/RGB	8	

HDMI1.3

Input	Color space	Color depth (bit)	Frame rate (Hz)
2K 2048×1152	RGB/YCbCr444/ YCbCr422	8	23.98,24,25,29.97,30,50,59.94,60
WUXGA 1920×1200	RGB/YCbCr444/ YCbCr422	8	23.98,24,25,29.97,30,50,59.94,60
FHD 1920×1080	RGB/YCbCr444/ YCbCr422	8	23.98,24,25,29.97,30,50,59.94,60
UXGA 1600×1200	RGB/YCbCr444/ YCbCr422	8	23.98,24,25,29.97,30,50,59.94,60
SXGA 1280×1024	RGB/YCbCr444/ YCbCr422	8	23.98,24,25,29.97,30,50,59.94,60, 100
HD 1280×720	RGB/YCbCr444/ YCbCr422	8	23.98,24,25,29.97,30,50,59.94,60, 100,120
XGA 1024×768	RGB/YCbCr444/ YCbCr422	8	23.98,24,25,29.97,30,50,59.94,60, 100,120
SVGA 800×600	RGB/YCbCr444/ YCbCr422	8	23.98,24,25,29.97,30,50,59.94,60, 100,120

DP1.2

Input	Color space	Color depth (bit)	Frame rate (Hz)
DCI4K 4096×2160	YCbCr422	8/10	23.98,24,25,29.97,30,50,59.94,60
	YCbCr444/RGB	8	
	YCbCr444/RGB	10	

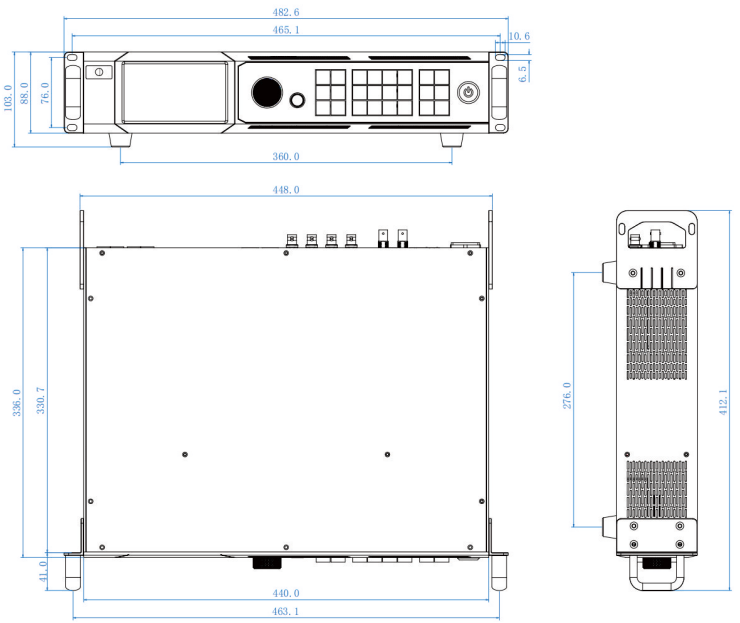
Input	Color space	Color depth (bit)	Frame rate (Hz)
UHD 3840×2160	YCbCr422	8/10	23.98,24,25,29.97,30,50,59.94,60
	YCbCr444/RGB	8	
	YCbCr444/RGB	10	
QHD 2560×1440	YCbCr422	8/10	23.98,24,25,29.97,30,50,59.94,60, 100,120,144
	YCbCr444/RGB	8	
	YCbCr444/RGB	10	
2K 2048×1152	YCbCr422	8/10	23.98,24,25,29.97,30,50,59.94,60, 100,120,144
	YCbCr444/RGB	8	
	YCbCr444/RGB	10	
WUXGA 1920×1200	YCbCr422	8/10	23.98,24,25,29.97,30,50,59.94,60, 100,120,144
	YCbCr444/RGB	8	
	YCbCr444/RGB	10	
FHD 1920×1080	YCbCr422	8/10	23.98,24,30,50,59,94,60,100,120, 144
	YCbCr444/RGB	8	
	YCbCr444/RGB	10	
UXGA 1600×1200	YCbCr422	8/10	23.97,24,30,50,59,94,60,100,120, 144
	YCbCr444/RGB	8	
	YCbCr444/RGB	10	
SXGA 1280×1024	YCbCr422	8/10	23.97,24,30,50,59,94,60,100,120, 144,200,240
	YCbCr444/RGB	8	
	YCbCr444/RGB	10	
HD 1280×720	YCbCr422	8/10	23.97,24,30,50,59,94,60,100,120, 144,200,240
	YCbCr444/RGB	8/10	

05 SPECIFICATIONS

Dimensions (W×H×D)		
Device	482.6mm(19.0")×88.0mm(3.5")×412.1mm(16.2"), 2U (without rubber feet)	
Packing	525.0mm(20.7")×150.0mm(5.9")×495mm(19.5")	
Weight		
Net	5.65 kg (12.45lbs)	
Gross	9.10 kg (20.06lbs)	
Electrical parameters		
Power supply	AC100-240V , 50/60Hz	
Rated power	92W	
Operating environment		
Temperature	-20°C~50°C (-4°F~122°F)	
Humidity	0%RH-90%RH, non-condensing	
Storage environment		
Temperature	-30°C~80°C (-22°F~176°F)	
Humidity	0%RH-90%RH, non-condensing	
Flight case	Optional	
Packing list	VX20	1PC
	User Manual	1PC
	After-Sales Service Card	1PC
	Gigabit Ethernet cable	1PC
	USB A/B cable	1PC
	Power cord	1PC
	HDMI 2.0 cable	1PC
	DP1.2 cable	1PC
	10G FIBER optical module	Optional

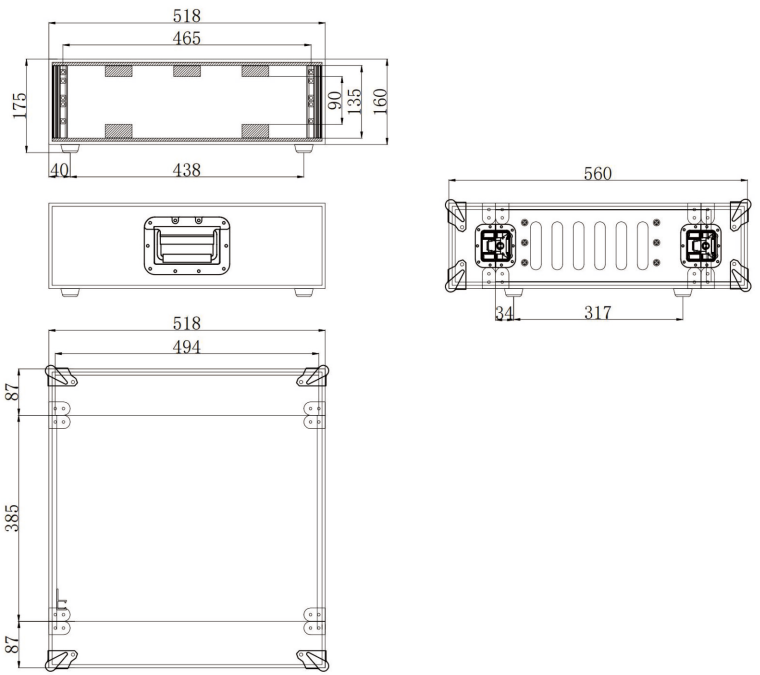
06 REFERENCE DIMENSIONS

Unit: mm



07 FLIGHT CASE DIMENSIONS

Unit: mm



*Flight case is optional.

08 STATEMENTS

8.1 Certifications

RoHS, CCC, CE, FCC, IC, UKCA, CB, cTUVus, EAC, KCC

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.

8.2 Legal Statement

Due to possible changes in product batches and production processes, the text and pictures in the document may be adjusted and revised to match accurate product information, specifications, and features. Colorlight may make improvements and changes to this document without prior notice. Please refer to the actual product.

Thank you for choosing Colorlight Cloud Tech Ltd. product. If you have any questions or suggestions during use, please contact us through official channels. We will do our utmost to provide support and listen to your valuable suggestions. For more information and updates, please visit www.colorlightinside.com or scan the QR code.

Colorlight

Official Website

Colorlight Cloud Tech Ltd

Service Phone：4008 770 775
Official Website：www.colorlightinside.com
Head Office Address: 37F-39F, Block A, Building 8, Zone C, Phase III,
Vanke Cloud City, Xili Street, Nanshan District, Shenzhen, China