

# H Series

## Video Wall Splicers

V1.0.0



Specifications

## Change History

Document Version	Firmware Version	Release Date	Description
V1.0.0	V1.0.0.0	2020-05-15	First release

## Introduction

The H series are NovaStar's new generation video wall splicers that feature excellent image quality and are designed especially for fine-pitch LED screens. The H series products can work as splicing processors that integrate both video processing and video control capabilities, or work as pure splicing processors. The whole unit adopts modular and plug-in design, and allows for flexible configuration and hot swapping of input and output cards. Thanks to the excellent features and stable performance, the H series products can be widely used in applications, such as energy and power, judicial departments and prisons, military command, water conservancy and hydrology, meteorologic earthquake prediction, enterprise management, metallurgy of steel, banking and finance, national defense, public security traffic management, exhibitions and presentations, production scheduling, radio and television, educational and scientific research, as well as stage rental applications.

Based on the powerful hardware FPGA system architecture, modular and plug-in design, the H series feature stable and highly efficient pure hardware architecture, and provide a variety of connector modules for flexible and personalized configuration, allowing for easy maintenance and low failure rate. This series of products provide the industry-standard input connectors, including HDMI, DVI, DP and IP, and support 10-bit video source input and processing, as well as 4K high-definition inputs and outputs. The H series also provide an LED splice sender card with sixteen Ethernet ports and two OPT ports, allowing for the backup between the OPT ports and Ethernet ports as well as ultra-long distance transmission. Moreover, the H series support multi-screen and multi-layer management, input and output EDID management and monitoring, input source renaming, BKG and OSD settings and more, thus bringing you a rich image construction experience.

In addition, the H series adopt the B/S architecture and support cross-platform, cross-system access and control without the need to install the application program. On a Windows, Mac, iOS, Android or Linux platform, online collaboration of multiple users are supported and the Web page responding speed is fast, which greatly improves the on-site setup efficiency. What's more, the H series support online firmware update, allowing for easy hardware update on a PC.

## Features

### Modular and plug-in design, for flexible configuration

- A single LED splice sender card loads up to 10,400,000 pixels.
- A single LED splice sender card provides two OPT output ports, allowing for ultra-long distance transmission and simplified system connection.
- Multi-capacity configuration on a single card slot
  - Four 1920×1080@60Hz
  - Two 3840×1080@60Hz
- One 4096×2160@60Hz
- Screen configuration using simply a single card and connector
- Online status monitoring of all input and output cards
- Hot-swappable input and output cards
- Up to 3840×2160@30Hz IP camera inputs and input mosaic
- Auto HDCP decoding of any input source

### Multi-screen management, for centralized control

- Each screen can have its own output resolution that is different from that of other screens.
- Output mosaic
  - Adopt the frame synchronization technology, which ensures all the output connectors output the image synchronously, and the image is complete and played smoothly, without any stuck, frame loss, tearing or piecing.
- Irregular screen configuration
  - Support irregular rectangle mosaic without any limitations.

## Diversified display possibilities, for richer visual experience

- **Multi-layer display**  
A single card supports sixteen 2K layers, eight DL layers or four 4K layers.  
All layers support cross connector output and the layer quantity is not reduced for cross-connector output.
- **High-definition scrolling text**  
Customize the scrolling text content, such as slogans or notification messages, and set the text style, scrolling direction and speed.
- **Up to 2000 presets**  
Fade effect and seamless switching supported, less than 60ms preset switching duration
- **Scheduled playback of preset playlist**  
Set whether to add the presets to playlist, which is ideal for monitoring, exhibitions, presentations, and other applications.
- **OSD settings on a single screen and OSD transparency adjustable**
- **BKG settings**  
BKG images do not occupy the layer resources. The max. width or height of a BKG image size is up to 8192 pixels.
- **Channel logo management**  
Set a text or image logo for identifying the input source.
- **Input source cropping and renaming after cropping**  
Crop any input source image and form a new input source after cropping.
- **HDR and 10-bit video processing, allowing for a more exquisite and clearer image**
- **Color adjustment**  
Input, output and layer color adjustable, including the brightness, contrast, saturation, hue and Gamma

## User-friendly Web control page, for easy and convenient operations

- **Web control**  
Real-time responding and 1000M/100M self-adaptive network control, allowing for multi-user collaboration
- **Monitoring inputs and outputs on Web page**
- **Firmware update on Web page**

## Status monitoring and dual power supply design, better stability and reliability

- **Self-test for fault detection**
- **Auto monitoring and alarms**  
Support hardware monitoring, such as fan rotation speed, module temperature and voltage, running status, and sends fault alarms if necessary.
- **Dual power supply design for higher system stability**

## Appearance

### Front Panel

Figure 1 H5 front panel



Figure 2 H9 front panel



Name	Description
LCD Screen	Touch screen Display the device status, monitoring information, menus, submenus and messages.

### Rear Panel

Figure 3 H5 rear panel

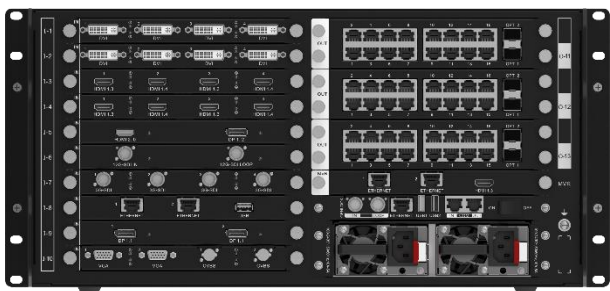
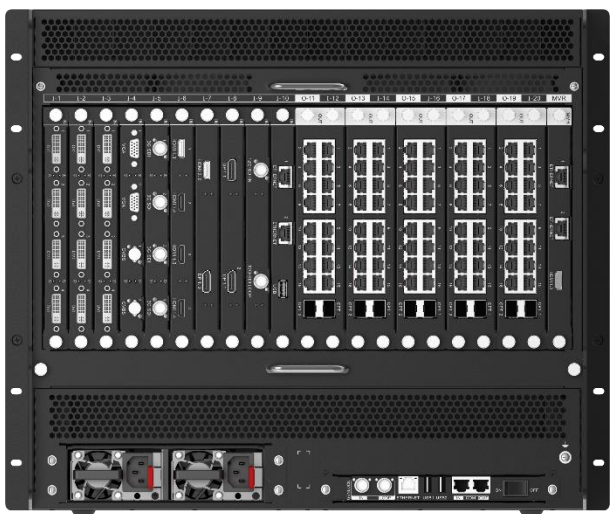



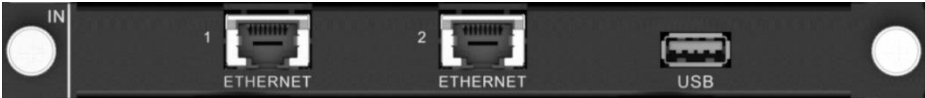



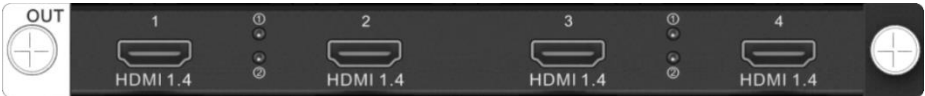
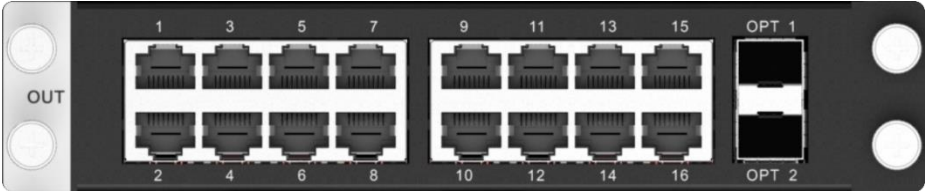
Figure 4 H9 rear panel





The pictures shown are for illustration purpose only. Actual product may vary due to product enhancement.

<b>Input Card</b>	
H_4×DVI input card	 <p>Supports single link and dual link input modes, and 10-bit input source</p> <p>HDCP 1.4 compliant</p> <p>DOES NOT support interlaced signal input.</p> <ul style="list-style-type: none"> <li>● Single link mode:                     <ul style="list-style-type: none"> <li>– Four DVI connectors are all used for input.</li> <li>– Each connector supports the maximum resolution of 1920×1080@60Hz and the minimum resolution of 800×600@60Hz.</li> <li>– For custom resolutions:                             <ul style="list-style-type: none"> <li>Max. width: 2560 pixels (2560 × 972@60Hz)</li> <li>Max. height: 2560 pixels (884 × 2560@60Hz)</li> </ul> </li> </ul> </li> <li>● Dual link mode:                     <ul style="list-style-type: none"> <li>– Connectors 2 and 4 are used for input, and connectors 1 and 3 are unavailable.</li> <li>– Each connector supports the maximum resolution of 3840×1080@60Hz and the minimum resolution of 800×600@60Hz.</li> <li>– For custom resolutions:                             <ul style="list-style-type: none"> <li>Max. width: 3840 pixels (3840 × 1198@60Hz)</li> <li>Max. height: 3840 pixels (1092×3840@60Hz)</li> </ul> </li> </ul> </li> </ul> <p>Status LEDs:</p> <ul style="list-style-type: none"> <li>● On: The input source is accessed normally.</li> <li>● Off: No input source is accessed or the input source is abnormal.</li> </ul>
H_4×HDMI input card	 <p>Supports single link and dual link input modes, and 10-bit input source.</p> <p>DOES NOT support interlaced signal input.</p> <ul style="list-style-type: none"> <li>● Single link mode:                     <ul style="list-style-type: none"> <li>– 2 × HDMI 1.3 connectors                             <ul style="list-style-type: none"> <li>Each connector supports the maximum resolution of 2560×1152@60Hz, and the minimum resolution of 800×600@60Hz.</li> <li>For custom resolutions:                                     <ul style="list-style-type: none"> <li>Max. width: 2560 pixels (2560×972@60Hz)</li> <li>Max. height: 2560 pixels (884×2560@60Hz)</li> </ul> </li> <li>HDCP 1.4 compliant</li> </ul> </li> <li>– 2 × HDMI 1.4a connectors                             <ul style="list-style-type: none"> <li>Each connector supports the maximum resolution of 2560×1152@60Hz, and the minimum resolution of 800×600@60Hz.</li> <li>For custom resolutions:                                     <ul style="list-style-type: none"> <li>Max. width: 2560 pixels (2560 × 972@60Hz)</li> <li>Max. height: 2560 pixels (884 × 2560@60Hz)</li> </ul> </li> <li>HDCP 1.4 compliant</li> </ul> </li> </ul> </li> <li>● Dual link mode:                     <ul style="list-style-type: none"> <li>– HDMI 1.3 connectors are not used for input, and HDMI 1.4a connectors are used for input.</li> <li>– Each connector supports the maximum resolution of 3840×1080@60Hz, and is</li> </ul> </li> </ul>

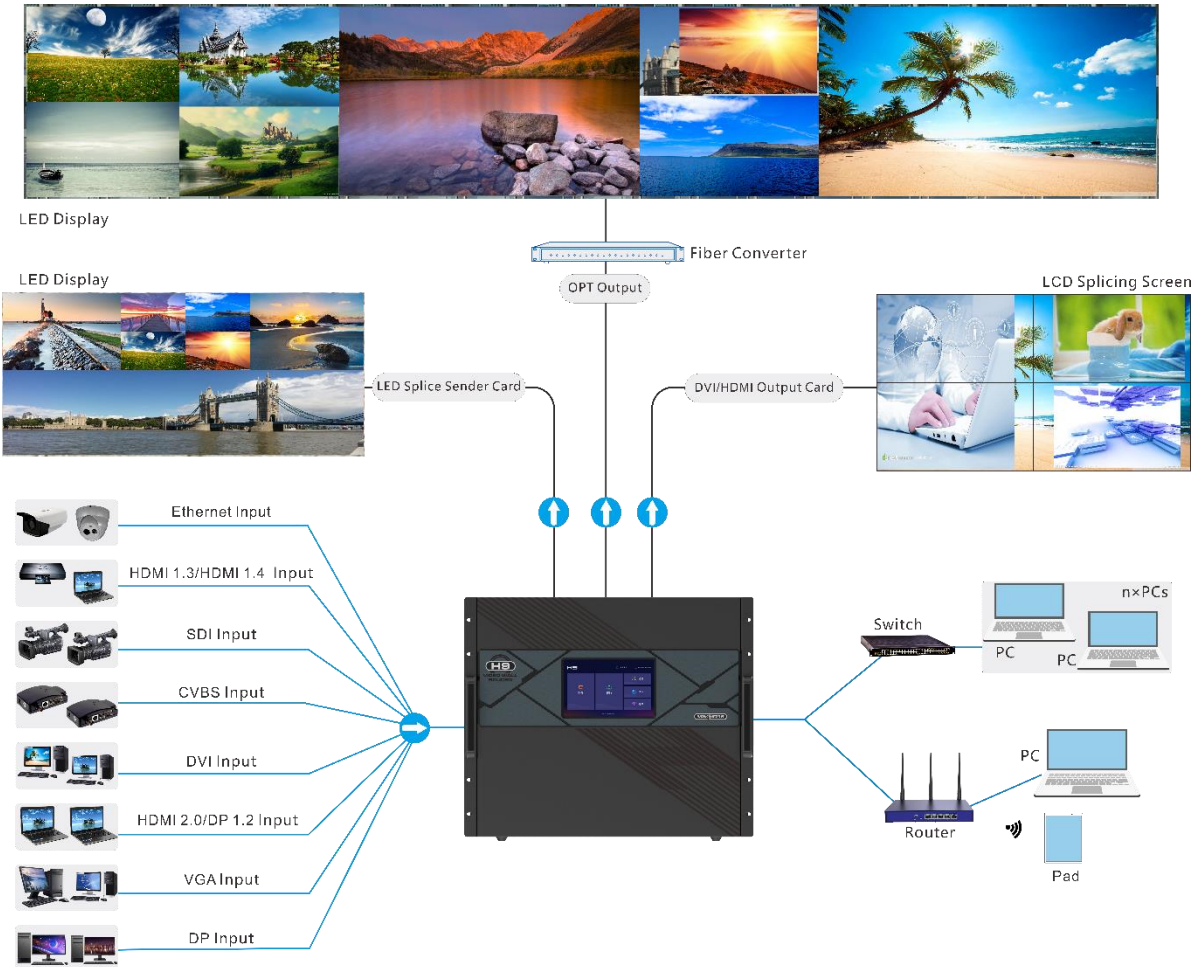
	<p>compatible with the resolution of HDMI 1.3 connector.</p> <ul style="list-style-type: none"> <li>- The maximum width and height can be up to 3840 pixels for a custom resolution.</li> <li>- For custom resolutions:                      Max. width: 3840 pixels (3840 × 1198@60Hz)                      Max. height: 3840 pixels (1092×3840@60Hz)</li> <li>- HDCP 1.4 compliant</li> </ul> <p>Status LEDs:</p> <ul style="list-style-type: none"> <li>• On: The input source is accessed normally.</li> <li>• Off: No input source is accessed or the input source is abnormal.</li> </ul>
<p>H_1 ×HDMI2.0+1 ×DP1.2 input card</p>	 <p>Only one connector can be used each time, which can be configured on the Web page.          The default option is HDMI 2.0 connector.</p> <ul style="list-style-type: none"> <li>• 1 × HDMI 2.0 connector             <ul style="list-style-type: none"> <li>- The connector can accommodate the HDMI 1.4a and HDMI 1.3 inputs.</li> <li>- The connector supports the maximum resolution of 8192×1080@60Hz or 4096×2160@60Hz.</li> <li>- HDCP 2.2 compliant</li> <li>- For custom resolutions:                      Max. width: 4095 pixels (4095 × 2261 @60Hz)                      Max. height: 4095 pixels (2188 × 4095@60Hz)</li> </ul> </li> <li>• 1 × DP 1.2 connector             <ul style="list-style-type: none"> <li>- The connector can accommodate the DP 1.1 inputs.</li> <li>- The connector supports the maximum resolution of 4096×2160@60Hz / 8192 × 1080@60Hz (Setting via NVIDIA graphics card).</li> <li>- HDCP 2.2 compliant</li> <li>- For custom resolutions:                      Max. width: 8192 pixels (8192 × 1146@60Hz)                      Max. height: 8192 pixels (1146 × 8192@60Hz)</li> </ul> </li> </ul> <p>Status LEDs:</p> <ul style="list-style-type: none"> <li>• On: The input source is accessed normally.</li> <li>• Off: No input source is accessed or the input source is abnormal.</li> </ul>
<p>H_2 ×RJ45+1 ×USB3.0 input card</p>	 <p>Supports interlaced signal input. Either USB port or Ethernet port can be used each time.</p> <p>2 × RJ45 Gigabit Ethernet ports</p> <ul style="list-style-type: none"> <li>• Supports the stream media file inputs that are compliant with the RTSP protocol, GB28181 protocol, ONVIF protocol and H.264/H.265 protocol.</li> <li>• H.264 protocol-compliant stream media: Up to 1920×1080@60Hz input resolution</li> <li>• H.265 protocol-compliant stream media: Up to 3840×2160@60Hz input resolution</li> <li>• HDCP compliant</li> </ul>
<p><b>Output Card</b></p>	
<p>H_4 ×DVI output card</p>	

	<p>4 × SL-DVI connectors</p> <ul style="list-style-type: none"> <li>• Each connector supports the maximum resolution of 2048×1152@60Hz.</li> <li>• For custom resolutions:             <ul style="list-style-type: none"> <li>– Max. width: 2560 pixels (2560×972@60Hz)</li> <li>– Max. height: 2560 pixels (972×2560@60Hz)</li> </ul> </li> <li>• Supports 8-bit RGB 4:4:4/YCbCr 4:4:4/YCbCr 4:2:2 outputs and the maximum output resolution is 2048×1152@60Hz.</li> <li>• Supports 10-bit YCbCr 4:4:4 outputs and the maximum output resolution is 2048×1152@60Hz.</li> </ul> <p>Status LEDs:</p> <ul style="list-style-type: none"> <li>• On: The output connector is connected normally.</li> <li>• Off: The output connector is not connected.</li> </ul>
<p>H_4×HDMI output card</p>	 <p>4 × HDMI 1.4 connectors</p> <ul style="list-style-type: none"> <li>• Each connector supports the maximum resolution of 2048×1152@60Hz.</li> <li>• For custom resolutions:             <ul style="list-style-type: none"> <li>– Max. width: 2560 pixels (2560×972@60Hz)</li> <li>– Max. height: 2560 pixels (972×2560@60Hz)</li> </ul> </li> <li>• Supports 8-bit RGB 4:4:4/YCbCr 4:4:4/YCbCr 4:2:2 outputs and the maximum output resolution is 2048×1152@60Hz.</li> <li>• Supports 10-bit YCbCr 4:4:4 outputs and the maximum output resolution is 2048×1152@60Hz.</li> </ul> <p>Status LEDs:</p> <ul style="list-style-type: none"> <li>• On: The output connector is connected normally.</li> <li>• Off: The output connector is not connected.</li> </ul>
<p>H_16×RJ45+2×Fiber sender card</p>	 <p>This card loads up to 10,400,000 pixels.          Max. width: 10240 pixels. Max. height:10240 pixels          This card occupies the positions of two other cards.</p> <ul style="list-style-type: none"> <li>• 16 × RJ45 Gigabit Ethernet ports             <ul style="list-style-type: none"> <li>– Bit depth: 8-bit A single Ethernet port loads up to 650,000 pixels.</li> <li>– Bit depth: 10-bit A single Ethernet port loads up to 320,000 pixels.</li> <li>– Backup between Ethernet ports</li> </ul> </li> <li>• 2 × OPT ports             <ul style="list-style-type: none"> <li>– Support both SMF and MMF transmission. In SMF mode, the maximum transmission distance reaches up to 10 km.</li> <li>– OPT 1 copies and outputs the data on Ethernet ports 1–8.</li> <li>– OPT 2 copies and outputs the data on Ethernet ports 9–16.</li> </ul> </li> </ul>

<p>H_2×RJ45+1×HDMI1.3 preview card</p>	 <ul style="list-style-type: none"> <li>• 2 × RJ45 Gigabit Ethernet ports Connect to the network for monitoring the inputs and outputs.</li> <li>• 1 × HDMI 1.3 connector Connect to a monitor for displaying the inputs and outputs.</li> </ul>
<p><b>H_Control Card</b></p>	
	
<p>GENLOCK</p>	<p>A connector for connecting the Genlock signal</p> <ul style="list-style-type: none"> <li>• IN: Accept the Genlock signal</li> <li>• LOOP: Loop the Genlock signal.</li> </ul>
<p>ETHERNET</p>	<p>A Gigabit Ethernet port</p> <ul style="list-style-type: none"> <li>• Connect to the control PC for communication.</li> <li>• Connect to the router, switch or PC for Web control and NovaLCT screen configuration.</li> </ul>
<p>USB 1 &amp; USB 2</p>	<p>2 × USB 2.0 ports</p> <ul style="list-style-type: none"> <li>• Insert a USB drive to update the device program.</li> <li>• Insert a USB drive to import or export the device configuration parameters.</li> </ul>
<p>COM</p>	<p>A serial port that adopts RS232 serial protocol</p> <p>Connect to the central control system for device control.</p> <ul style="list-style-type: none"> <li>• IN: Accept the signal from the central control system.</li> <li>• OUT: Loop the signal to other connected devices.</li> </ul>
<p>Power switch</p>	<ul style="list-style-type: none"> <li>• ON: Power on the device.</li> <li>• OFF: Power off the device.</li> </ul>



# Applications

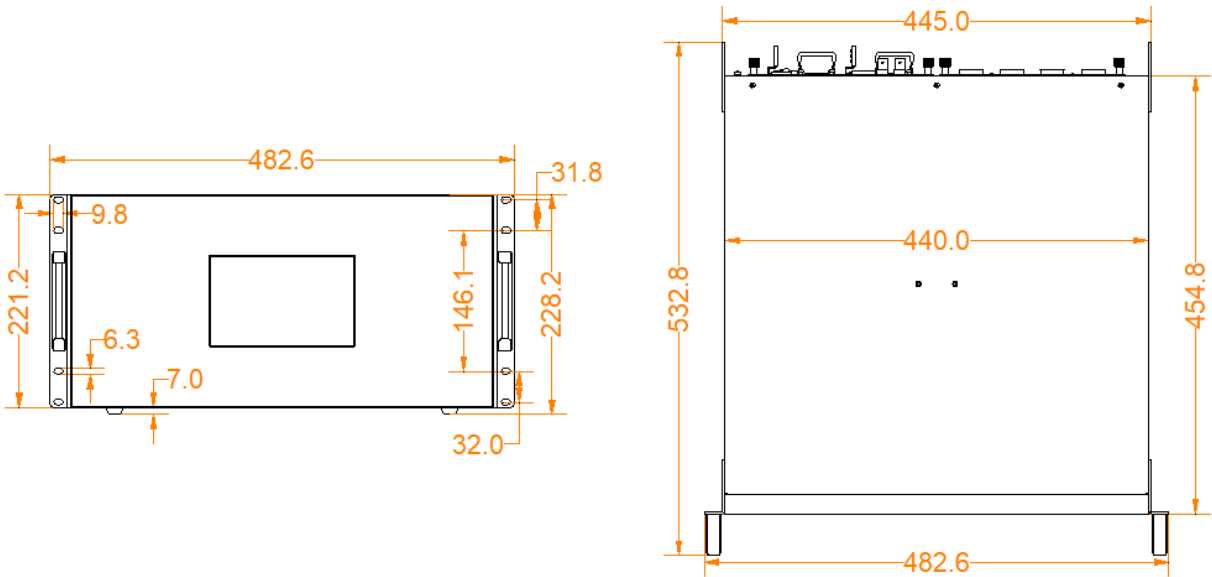


**Note:**

Here take the H9 as an example to illustrate the applications.

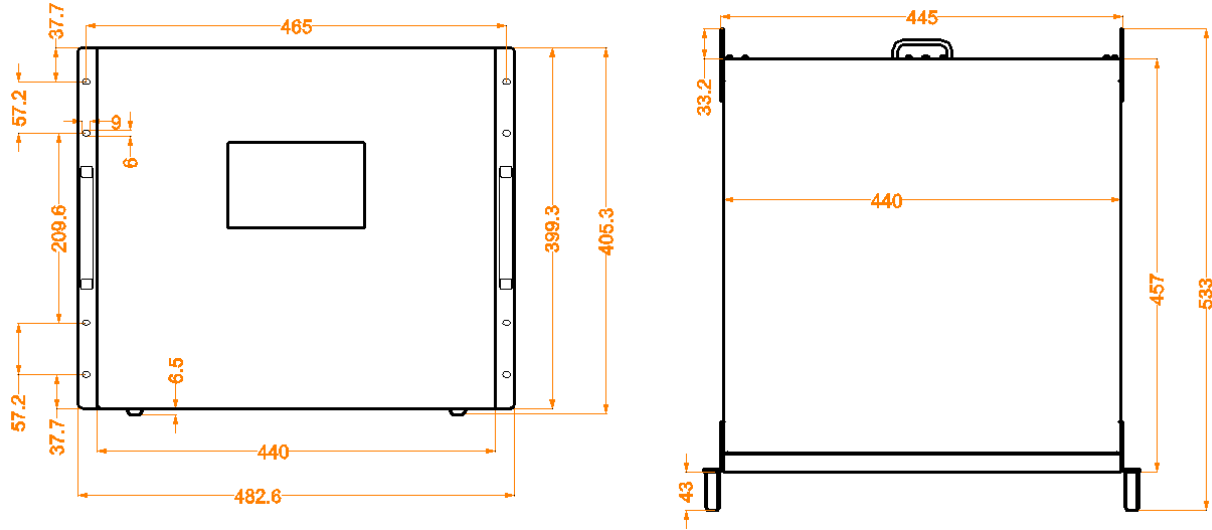
# Dimensions

## H5 Dimensions



Unit: mm  
Tolerance: ±0.5 mm

## H9 Dimensions



Unit: mm  
Tolerance: ±0.5 mm

## Specifications

Model		H5	H9
Chassis		5U	9U
Max. Input Cards		10	15
Max. Input Channels		40	60
Max. Output Cards		3	5
Max. Output Channels		12	20
Max. Loading Capacity (LED splice sender card)		31,200,000 pixels	52,000,000 pixels
Max. Screens		12	20
Electrical Specifications	Power connector	100–240V~, 50/60Hz, 10A–5A, dual power supply design	
	Power consumption	400 W	450 W
Operating Environment	Temperature	0 °C–45 °C	
	Humidity	0% RH–80% RH, non-condensing	
Storage Environment	Temperature	–10 °C to +60 °C	
	Humidity	0% RH–95% RH, non-condensing	
Physical Specifications	Dimensions	482.6 mm × 532.8 mm × 228.2 mm	482.6 mm × 533.0 mm × 405.8 mm
	Net weight	25 kg	35 kg
	Gross weight	28 kg	49 kg
Packing Information	Packing box	780 mm × 615 mm × 345 mm	780 mm × 680 mm × 590 mm
	Accessories	<ul style="list-style-type: none"> <li>● 1 × Power cord</li> <li>● 1 × RJ45 Ethernet cable</li> <li>● 1 × Quick Start Guide</li> <li>● 1 × Certificate of Approval</li> <li>● 1 × Safety Manual</li> <li>● 1 × Custom Letter</li> <li>● 1 × Warranty Card</li> </ul>	<ul style="list-style-type: none"> <li>● 2 × Power cords</li> <li>● 1 × RJ45 Ethernet cable</li> <li>● 1 × Quick Start Guide</li> <li>● 1 × Certificate of Approval</li> <li>● 1 × Safety Manual</li> <li>● 1 × Custom Letter</li> <li>● 1 × Warranty Card</li> </ul>
Certifications		CCC	

## Video Source Features

Input Connector	Color Depth		Max. Input Resolution
<ul style="list-style-type: none"> <li>HDMI 2.0</li> <li>DP 1.2</li> </ul>	8-bit	RGB 4:4:4	4096×2160@60Hz
		YCbCr 4:4:4	8192×1080@60Hz
		YCbCr 4:2:2	
		YCbCr 4:2:0	
	10-bit	RGB 4:4:4	4096×1080@60Hz
		YCbCr 4:4:4	
		YCbCr 4:2:2	
		YCbCr 4:2:0	
	12-bit	RGB 4:4:4	1920×1080@60Hz
		YCbCr 4:4:4	
		YCbCr 4:2:2	
		YCbCr 4:2:0	
HDMI 1.4a	8-bit	RGB 4:4:4	3840×1080@60Hz
		YCbCr 4:4:4	
		YCbCr 4:2:2	
		YCbCr 4:2:0	
	10-bit	RGB 4:4:4	2560×600@60Hz
		YCbCr 4:4:4	600×2560@60Hz
		YCbCr 4:2:2	
		YCbCr 4:2:0	
12-bit	-	Not supported	
HDMI 1.3	8-bit	RGB 4:4:4	2560×600@60Hz
		YCbCr 4:4:4	600×2560@60Hz
		YCbCr 4:2:2	
	10-bit	RGB 4:4:4	1920×1080@60Hz
		YCbCr 4:4:4	
		YCbCr 4:2:2	
	12-bit	-	Not supported
	SL-DVI	8-bit	RGB 4:4:4

Input Connector	Color Depth		Max. Input Resolution
			600×2560@60Hz
DL-DVI	8-bit	RGB 4:4:4	3840×1080@60Hz

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