



SH3

Splice server

Specification

Version: v1.0.0

Release date: December 2023

Update history

Document version	release time	Revision Notes
V1.0.0	2023-12-12	First version released

Overview

SH3 splicing server is a professional video processing and control equipment developed by Kystar Technology for large-scale small-pitch LED screens. It has a pure hardware FPGA design architecture. All boards adopt modular design and have a comprehensive range of input and output interfaces, which can be customized according to different needs. Project application needs flexible configuration of input and output boards. It can be widely used in TV stations, dispatch rooms, command centers, exhibition halls, conference rooms, stage performances, data centers, multi-function halls and other scenarios.

SH3 splicing server supports 8K UHD video input and output, supports output rotation, multi-screen multi-layer management, input and output EDID management, supports input echo and output preview, supports 3D output, and supports Genlock synchronous phase locking to meet various complex requirements. project requirements.

Features

3U chassis flexible expansion, super load capacity

- Single board supports 8 channels of 2K@60Hz.
- Single board supports 2 channels of 4K@60Hz input and supports splicing input up to 8K×2K@60Hz.
- Single board supports 8 network port outputs and can carry a maximum of 5.2 million pixels.
- The whole machine supports 40 channels of 2K@60Hz input and 48 channels of network port output at the same time, and the whole machine can carry a maximum of 31.2 million pixels.

Input, massive layers

- Single channel supports HDMI2.1 or DP1.4 input, and the maximum resolution supports 8K×4K@30Hz.
- Single board supports up to 32 2K@60Hz layers or 16 4K@30Hz layers or 8 4K@60Hz layers.
- Single machine supports up to 32 2K layers.

Centralized control

- Supports docking with kapollo platform to achieve wireless visual remote control.
- It can be used as a central server to control third-party devices, such as turning on and off lights, closing curtains, adjusting audio systems, etc.
- Can be connected to the kares cloud platform to achieve remote release and maintenance

Multimedia server

- Support 8K video hard decoding and playback process,
- Supports office, web pages, and text playback without adding additional equipment
- Support flying squirrel operation, or recognize gestures to realize functions such as control and page turning.

Web control, convenient and fast

- There is no need to install software, it is controlled via the web and is not restricted by operating systems and operating platforms.
- The operation is simple and fast, with real-time response and easy configuration of complex scenarios.
- No need additional monitoring board, and the web terminal supports real-time input echo and output monitoring.

Multiple management methods, easy management

- Scene management
- Different preset parameters can be saved as scenes, and multi-screen scenes and single-screen scenes can be called with one click and switched easily.
- Group screen management
- Supports up to 8 groups of screen management, and the output resolution of each group of screens can be set separately, easily completing display control of special-shaped screens and complex scenes.
- Pre-edit management
- Layer editing does not affect the current device output.
- LOOP management
- Supports input source loop and regular switching of multiple input sources.
- Supports scene patrol to meet unsupervised application scenarios.

Diversified display, rich vision

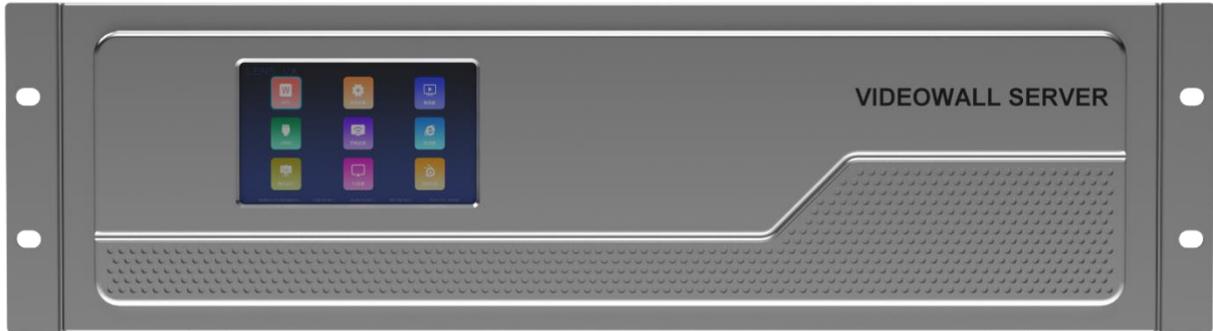
- Input source station logo
Characters are embedded in each input signal to identify the input signal, and the embedded characters are displayed while the input signal is displayed on the screen.
- Rolling subtitles
Text can be superimposed on the layer, and the subtitles can be displayed statically or dynamically scrolled. The user can adjust the background color, scrolling, etc. of the subtitles.
Set the style, etc., and a single screen supports up to 8 subtitles.
- Seamless switching
- When switching layers' signals or calling plans, there is no black screen, no flickering, and no lag in the entire process.

Intelligent monitoring and backup, stable and reliable

- Hardware real-time monitoring
- Supports hardware monitoring, including real-time monitoring of the temperature and voltage of each hardware module, firmware version, operating status, fan speed, etc.
- Support remote upgrade
- Program upgrades can be performed remotely, and system maintenance is simple.
- Support hot backup of input module and output module
- Automatic switching in case of failure provides double guarantee of system operation, and the switching process does not affect the operation of the equipment.

Exterior

Front panel



Rear panel



Explanation:

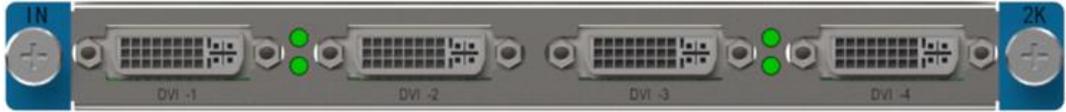
The back panels of the machines posted in this article are all samples and are for reference only. Please refer to the actual product purchased.

Rear panel silk screen instructions:

-  The marked card slot is the input card slot, and only the input card can be installed.
-  The marked card slot is the output card slot, and only the output card can be installed.
-  The marked card slot is the control board card slot, and only the control board card can be installed.

Product Specifications

Input card

4×DVI Input card (Optional)	
Performance parameters	 <p>DVI input interface</p> <ul style="list-style-type: none"> ● Number of input interfaces: 4 channels DVI ● Maximum input resolution: 1920×1200@60Hz, Custom resolution: limit width 2048 (2048×1152@60Hz), limit height 2048 (1152×2048@60Hz) ● Video input format: RGB444, YCbCr444, YCbCr422 <p>Input card specifications</p> <ul style="list-style-type: none"> ● Input signal level: TMDS /CML ● Impedance: Differential 100ohm ● Power consumption: 5W <p>Indicator light status description</p> <ul style="list-style-type: none"> ● Steady on: Input signal is connected normally ● Not on: The input is not connected or the input is abnormal.
4×HDMI1.3 Input card	
Performance parameters	 <p>HDMI 1.3 input interface</p> <ul style="list-style-type: none"> ● Number of input interfaces: 4 HDMI 1.3 ● Maximum input resolution: 1920×1200@60Hz Solution: Limit width 2048 (2048×1152@60Hz) Limit height 2048 (1152×2048@60Hz) ● Video input format: RGB444, YCbCr444, YCbCr422 ● Support audio <p>Input card specifications</p> <ul style="list-style-type: none"> ● Input signal level: TMDS /CML ● Impedance: Differential 100ohm ● Power consumption: 5W <p>Indicator light status description</p> <ul style="list-style-type: none"> ● Steady on: Input signal is connected normally ● Off: The input is not connected or the input is abnormal. ● *The first column of lights from left to right, the upper side indicates HDMI-1, and the lower side indicates HDMI-2; similarly, the second column of lights, the upper side indicates HDMI-3, and the lower side indicates HDMI-4;

8×HDMI1.3 Input card (Optional)**HDMI 1.3 input interface**

- Number of input interfaces: 8 HDMI 1.3
- Maximum input resolution: 1920×1200@60Hz
Resolution: limit width 2048 (2048×1152@60Hz)
Limit height 2048 (1152×2048@60Hz)
- Video input format: RGB444, YCbCr444, YCbCr422
- Support accompanying audio

Input card specifications

- Input signal level: TMDS /CML
- Impedance: Differential 100ohm
- Power consumption:5W

Indicator light status description

- Steady on: Input signal is connected normally
- Off: The input is not connected or the input is abnormal.

*The first column of lights from left to right, the upper side indicates HDMI-1, and the lower side indicates HDMI-2. Similarly, the second column of lights, the upper side indicates HDMI-3, and the lower side indicates HDMI-4.

The third column of lights, the upper side indicates HDMI-5, and the lower side indicates HDMI-6; the fourth column of lights, the upper side indicates HDMI-7, and the lower side indicates HDMI-8.

2×HDMI1.4 Input card (Optional)**HDMI 1.4 input interface**

- Number of input interfaces: 2 HDMI 1.4
- Maximum input resolution: 4096×2160@30Hz
Custom resolution: limit width 4096 (4096×2160@30Hz)
Limit height 4096 (2000×4096@30Hz)
- Video input format: RGB444, YCbCr444, YCbCr422
- Support accompanying audio

Input card specifications

- Input signal level: TMDS /CML
- Impedance: Differential 100ohm
- Power consumption: 5W

Indicator light status description

- Steady on: Input signal is connected normally
- OFF: The input is not connected or the input is abnormal.

Performance parameters

- *The first column of lights from left to right, the upper side indicates HDMI1.4-1, and the lower side indicates HDMI1.4-2.

4×HDMI1.4 Input card (Optional)



HDMI 1.4 input interface

- Number of input interfaces: 4 HDMI 1.4
- Maximum input resolution: 4096×2160@30Hz
- Custom resolution: limit width 4096 (4096×2160@30Hz)
- Limit height 4096 (2000×4096@30Hz)
- Video input format: RGB444, YCbCr444, YCbCr422
- Support accompanying audio

Input card specifications

- Input signal level: TMDS /CML
- Impedance: Differential 100ohm
- Power consumption: 5W

Indicator light status description

- Steady on: Input signal is connected normally
- OFF: The input is not connected or the input is abnormal.
- The first column of lights from left to right, the upper side indicates HDMI1.4-1, and the lower side indicates HDMI1.4-2; similarly, the second column of lights, the upper side indicates HDMI1.4-3, and the lower side indicates HDMI1.4-4.

4×3G-SDI input card (Optional)



3G-SDI input interface

- Number of input interfaces: 4 pcs 3G-SDI
- Maximum input resolution: 1920×1080@60Hz
- Video source standard: ST-424 (3G), ST-292 (HD) and SMPTE 259 SD
- Video input format: RGB444, YCbCr444, YCbCr422
- Support accompanying audio
- Compatible with HD-SDI and SD-SDI standards
- Supports loop-out, the SDI loop-out interface corresponds to the input interface one-to-one
- Support 1080i/576i/480i deinterlacing
- Setting input resolution is not supported

Input card specifications

- Input signal level: TMDS /CML
- Impedance: 100ohm

	<ul style="list-style-type: none"> ● Power consumption: 5W <p>Indicator light status description</p> <ul style="list-style-type: none"> ● Steady on: Input signal is connected normally ● OFF: The input is not connected or the input is abnormal. ● *The first column of lights from left to right, the upper side indicates SDI-1, and the lower side indicates SDI-2. Similarly, the second column of lights, the upper side indicates SDI-3, and the lower side indicates SDI-4. ● In the third column of lights, the upper side indicates SDI-5 and the lower side indicates SDI-6; in the fourth column of lights, the upper side indicates SDI-7 and the lower side indicates SDI-8.
1×HDMI2.0 Input card (Optional)	
Performance parameters	 <p>The image shows a black HDMI 2.0 input card. On the left, there is a blue 'IN' label with a plus sign icon. In the center, there is a silver HDMI 2.0 port and a green indicator light. On the right, there is a blue '4K' label with a plus sign icon. The text '4K(60Hz)' is printed in the center, and 'HDMI 2.0' is printed below the port.</p> <p>HDMI 2.0 input interface</p> <ul style="list-style-type: none"> ● Number of input interfaces: 1 pcs HDMI 2.0 ● Maximum input resolution: 4096×2160@60Hz or 7680×1200@60Hz Custom resolution: limit width 8192 (8192×1080@60Hz) Limit height 8192 (960×8192@60Hz) ● Video input format: RGB444, YCbCr444, YCbCr422 ● Support accompanying audio <p>Input card specifications</p> <ul style="list-style-type: none"> ● Input signal level: TMDS /CML ● Impedance: 100ohm ● Power consumption: 5W <p>Indicator light status description</p> <ul style="list-style-type: none"> ● Steady on: Input signal is connected normally ● OFF: The input is not connected or the input is abnormal.
1×DP1.2 Input card (Optional)	
Performance parameters	 <p>The image shows a black DP 1.2 input card. On the left, there is a blue 'IN' label with a plus sign icon. In the center, there is a silver DP 1.2 port and a green indicator light. On the right, there is a blue '4K' label with a plus sign icon. The text '4K(60Hz)' is printed in the center, and 'DP1.2' is printed below the port.</p> <p>DP 1.2 input interface</p> <ul style="list-style-type: none"> ● Number of input interfaces: 1 pcs DP 1.2 ● Maximum input resolution: 4096×2160@60Hz or 7680×1200@60Hz Custom resolution: limit width 8192 (8192×1080@60Hz) Limit height 8192 (960×8192@60Hz) ● Video input format: RGB444, YCbCr444, YCbCr422 ● Support accompanying audio <p>Input card specifications</p> <ul style="list-style-type: none"> ● Input signal level: TMDS /CML

	<ul style="list-style-type: none"> ● Impedance: 100ohm ● Power consumption: 5W <p>Indicator light status description</p> <ul style="list-style-type: none"> ● Steady on: Input signal is connected normally ● OFF: The input is not connected or the input is abnormal.
2×HDMI2.0 Input card	
Performance parameters	 <p>HDMI 2.0 input interface</p> <ul style="list-style-type: none"> ● Number of input interfaces: 2 pcs HDMI 2.0 ● Maximum input resolution: 4096×2160@60Hz or 7680×1200@60Hz Custom resolution: limit width 8192 (8192×1080@60Hz) Limit height 8192 (960×8192@60Hz) ● Video input format: RGB444, YCbCr444, YCbCr422 ● Support accompanying audio <p>Input card specifications</p> <ul style="list-style-type: none"> ● Input signal level: TMDS /CML ● Impedance: 100ohm ● Power consumption: 10W <p>Indicator light status description</p> <ul style="list-style-type: none"> ● Steady on: Input signal is connected normally ● OFF: The input is not connected or the input is abnormal. <p>*The first column of lights from left to right, the upper side indicates HDMI2.0-1, and the lower side indicates HDMI2.0-2.</p>
2×DP1.2 Input card (Optional)	
Performance parameters	 <p>DP 1.2 input interface</p> <ul style="list-style-type: none"> ● Number of input interfaces: 2 pcs DP 1.2 ● Maximum input resolution: 4096×2160@60Hz or 7680×1200@60Hz Custom resolution: limit width 8192 (8192×1080@60Hz) Limit height 8192 (960×8192@60Hz) ● Video input format: RGB444, YCbCr444, YCbCr422 ● Support accompanying audio <p>Input card specifications</p> <ul style="list-style-type: none"> ● Input signal level: TMDS /CML ● Impedance: 100ohm ● Power consumption: 10W <p>Indicator light status description</p>

	<ul style="list-style-type: none"> ● Steady on: Input signal is connected normally ● OFF: The input is not connected or the input is abnormal. <p>*The first column of lights from left to right, the upper side indicates DP1.2-1, and the lower side indicates DP1.2-2.</p>
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Output board introduction

8×NET Output card	
Performance parameters	 <p>Network output interface</p> <ul style="list-style-type: none"> ● 8 pcs RJ45 Gigabit network port ● Single board supports a maximum of 5.2 million pixels, a single network port has a maximum bandwidth of 4096 pixels, and a maximum load of 4096 pixels. ● Single network port loading <ul style="list-style-type: none"> - When outputting a 60Hz frame rate, 8bit supports 650,000 pixels - When outputting 120Hz frame rate, 8bit supports 320,000 pixels ● Support network port backup ● Supports arbitrary layout of network port locations within the device loading range ● Output card specifications ● Power consumption: 5W <p>Network port indicator status description</p> <ul style="list-style-type: none"> ● Yellow light is not on and the green light is not on: the network cable is not connected or the network port hardware is faulty. ● Yellow light is always on, green light is always on: connection is normal, no communication ● The yellow light flashes and the green light stays on: the connection is normal and the communication is normal. <p>*A single network port has a yellow light on the left and a green light on the right.</p>

Control board introduction

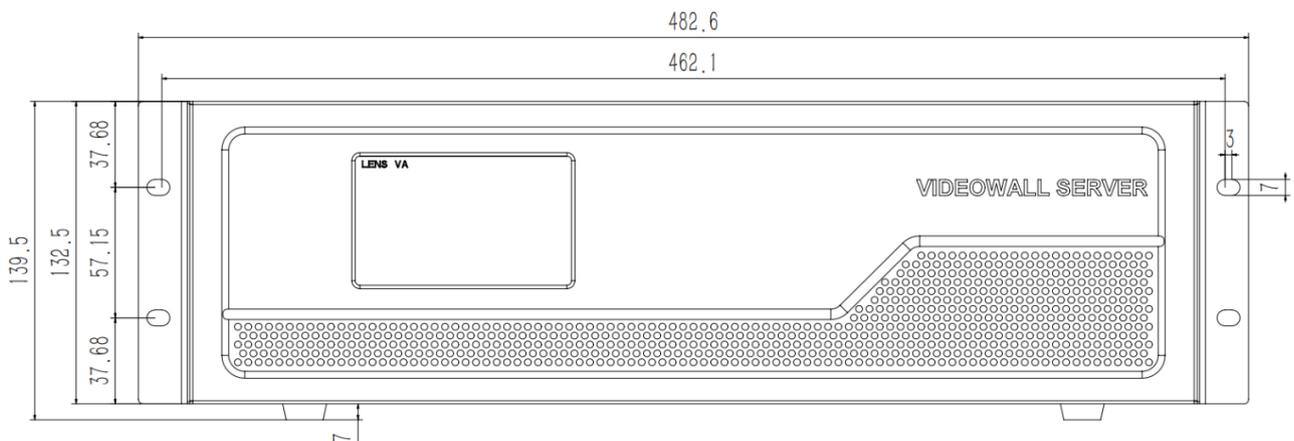
Control card	
Performance parameters	 <p>Interface parameters</p> <ul style="list-style-type: none"> ● COM-1: RS232 control port, can be connected with the central control system ● COM-2: RS232 control port, which can be connected with the central control system; can be used as a COM-1 loop out port ● USB: USB3.0 interface is only used for system upgrades and cannot be used to power

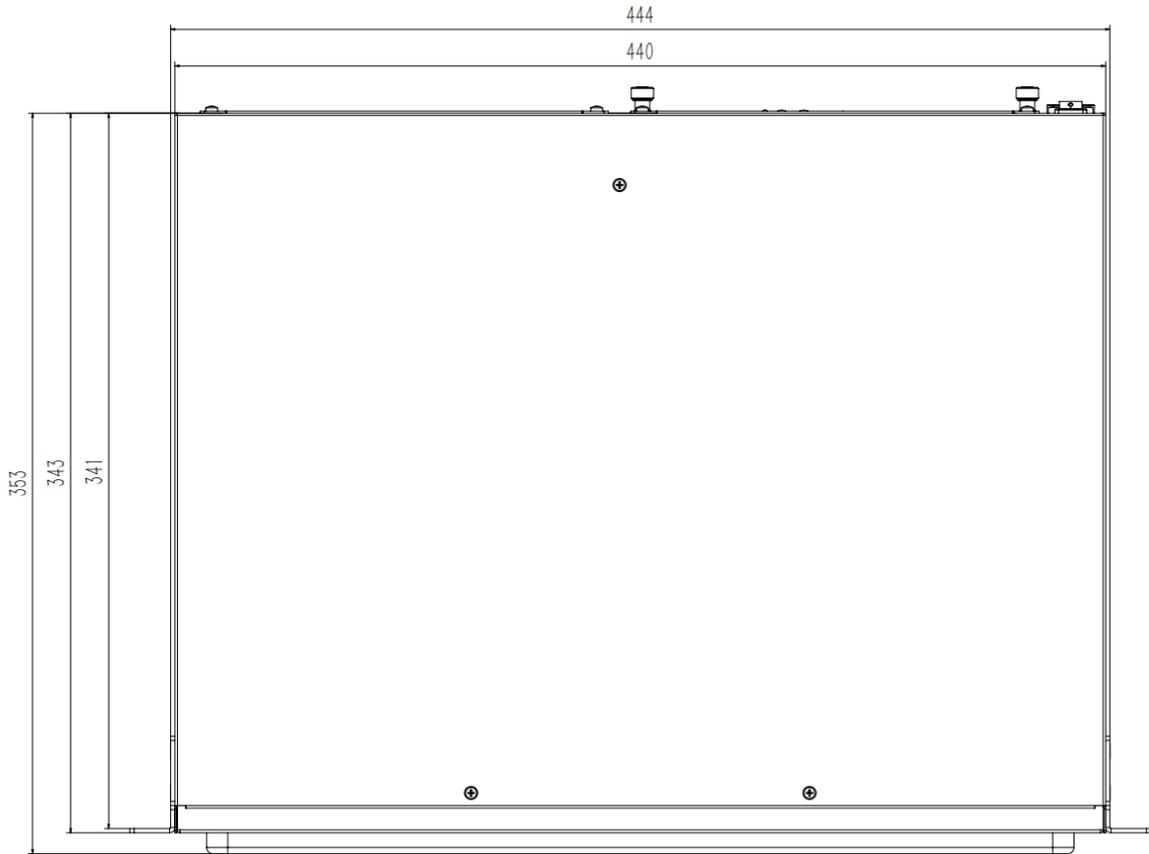
	<p>other devices.</p> <ul style="list-style-type: none"> ● ETHERNET: 2Gigabit network port, communication interface, connected to control computer, router or switch for Web control and echo <p>Indicator light status description</p> <ul style="list-style-type: none"> ● RUN light status <ul style="list-style-type: none"> - Flashing: The device is starting up - Fixed frequency flashing: 1/2S, the system operates normally - Not flashing or lighting up: system failure (after the device is turned on) ● PWR light status <ul style="list-style-type: none"> - Steady on: The device is powered normally - OFF: Device power supply abnormality
Enhanced control card (Optional)	
Performance parameters	 <p>The image shows the front panel of the Enhanced control card. From left to right, it features: a 3D-SYNC port, an IN port, a GENLOCK port, a LOOP port, two COM ports (COM-1 and COM-2), a USB port, an ETHERNET port, two indicator lights (RUN and PWR), a Monitor port, and a speaker. The card is housed in a metal chassis with a dark grey finish.</p> <p>Interface parameters</p> <ul style="list-style-type: none"> ● 3D-SYNC: 3D sync signal output interface ● GENLOCK: External sync signal source <ul style="list-style-type: none"> - IN: External signal source input - LOOP: Synchronous output from external signal source ● COM-1: RS232 control port, can be connected with the central control system ● COM-2: RS232 control port can be connected to the central control system; it can be used as a COM-1 loop out port ● USB: USB3.0 interface is only used for system upgrades and cannot be used to power other devices. ● ETHERNET: 2Gigabit network port, communication interface, connected to control computer, router or switch for Web control and echo ● Monitor: HDMI preview interface. Output resolution: 1920×1080@60Hz ●  Audio output interface: You can set a certain input source audio output to LED screen speaker or do audio monitoring during control <p>Indicator light status description</p> <ul style="list-style-type: none"> ● RUN light status <ul style="list-style-type: none"> - Flashing: The device is starting up - Fixed frequency flashing: 1/2S, the system operates normally - Not flashing or lighting up: system failure (after the device is turned on) ● PWR light status <ul style="list-style-type: none"> - Steady on: The device is powered normally - OFF: Device power supply abnormality

Machine specifications

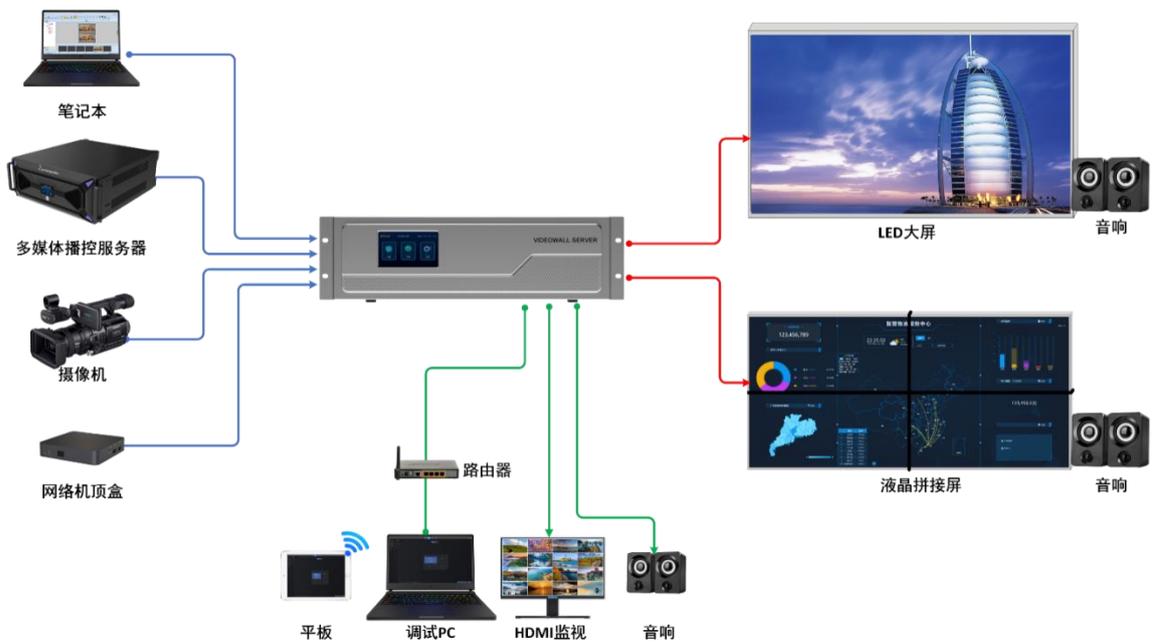
Model	SH3
Chassis specifications	3U
Input cards	<ul style="list-style-type: none"> - 4×HDMI1.3 Input card: 1 pcs - 2×HDMI2.0 Input card: 1 pcs
Output cards	8×NET Output card: 5 pcs (40 Network output ports) <ul style="list-style-type: none"> - Maximum of 26 million pixels - Maximum width of 20480 pixels, maximum height of 20480 pixels.
Max layers	32 pcs
Power	110-240V~, 47-63Hz, 1A
Power consumption	160W
Working environment	0~45°C, 0%RH ~ 80%RH, no condensation
Storage environment	-20°C~65°C, 0%RH ~ 95%RH, no condensation
Dimensions	482.6mm×353mm×139.5mm (L×W×H)
Net weight	15KG
Total weight	16KG

Product size





Application scenarios



Beijing KYSTAR Technology Co., Ltd.

Professional ultra-high-definition video display and control comprehensive
solution provider and operation service provider

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