KYSTAR®

SE1

Splice Server

Specification

Version: V1.1.2

Release date: March 2024

Update History

Document Version	Release Data	Revision Notes
V1.0.0	2023-08-01	First edition released
V1.0.1	2023-11-10	Modify device size data
V1.1.0	2023-12-25	Update input/output board introduction format Update the maximum resolution of the input/output board □ Support for SEx_2xHDMI1.4 input board □ Support for SEx_4xHDMI1.4 input board □ Support for SEx_4x3G-SDI input/output board □ Support for SEx_1x12G-SDI input board □ Support for SEx_4xHDBaseT input/output board □ Support for SEx_2xHDBaseT_4K30 input/output board □ Support for SEx_4xHDBaseT_4K30 input/output board □ Support for SEx_8x3G-SDI output board
V1.1.1	2024-01-26	Updata SEx_4xHDMI1.3_AUDIO output board
V1.1.2	2024-03-26	Update application scenario diagram

Overview

SE1 splicing server is a professional video processing and control equipment, pure hardware FPGA design architecture, all boards adopt modular design, with comprehensive input and output interfaces, and can flexibly configure input and output boards according to different project application requirements. It can be widely used in TV stations, dispatching rooms, command centers, exhibition halls, conference rooms, stage performances, data centers, multi-function halls and other scenarios.

SE1 splicing server supports 8K ultra-high-definition video input and output, supports multi-screen and multi-layer management, and input and output EDID management to meet diverse and complex project requirements.

Features

1.5U chassis flexible expansion, super load

- The single board supports 8 channels of 2K@60Hz.
- The single board supports 2 channels of 4K@60Hz input, and supports splicing input up to 8K×2K@60Hz.
- The single board supports 2 channels of 4K@60Hz splicing output, and supports up to 8K×2K@60Hz load.
- The whole machine supports 44 channels of 2K@60Hz input and 40 channels of 2K@60Hz output at the same time.

8K input, massive layers

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

Web control, convenient and fast

- There is no need to install software, and it is controlled by the web terminal, which is not limited by the operating system and operating platform.
- Simple and fast operation, real-time response, and easy configuration of complex scenarios.

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 key, and can be easily switched.

- Group Screen Management

  It supports up to 8 groups of screen management, and the output resolution of each group of screens

can be set separately, which can easily complete the display control of special-shaped screens and complex scenes.

- Pre-Edit Management

  The current device output is not affected when the layer is edited.

- Loop management

  Support input source patrolling, multi-channel input source timing switching. Support scene patrol to meet unsupervised application scenarios.

Diversified display, rich visual

- Input source logo

  Characters are embedded in each input signal, the input signal is identified, and the embedded characters are displayed while the input signal is displayed on the screen.

- Scrolling subtitles

  Text can be superimposed on the layer, and subtitles can be displayed statically or scrolled dynamically. Users can adjust the background color and scrolling of subtitles.

  Style, etc. can be set, and a single screen supports up to 8 subtitles.

- Seamless switching

  When switching the signal of the layer or calling the plan, there is no black screen, no flicker, and no freeze during the whole process.

Intelligent monitoring and backup, stable and reliable

- Hardware real-time monitoring

  Support hardware monitoring, including real-time monitoring of hardware module temperature and voltage, firmware version, operating status, fan speed, etc.

- Support remote upgrade

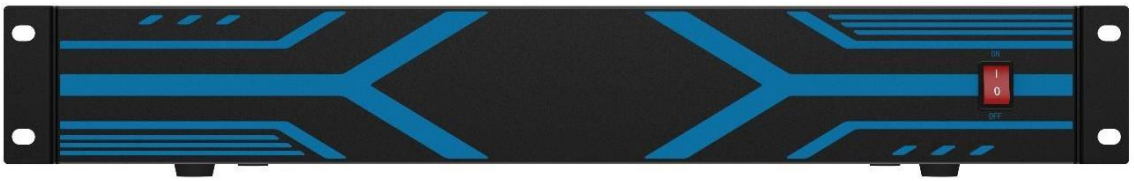
  The program can be upgraded remotely, and the system maintenance is simple.

- Support input module, output module hot backup

  Automatic switching in case of failure, double guarantee of system operation, switching process does not affect equipment operation.

Appearance

Front panel



Rear panel

Notes:

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:

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

Product Specifications

Input board introduction

SEx_4×DVI input board	
Performance parameters	 **DVI input** □ Number of input interfaces: 4 channels DVI □ Maximum input resolution: 2048×1152@60Hz □ Custom resolution: Limit width 2048 (2048×1152@60Hz) Limit height 2048 (1152×2048@60Hz) □ Video input format: RGB444, YCbCr444, YCbCr422 **Specifications** □ Input signal level: TMDS/CML □ Impedance: Difference 100ohm □ Power: 5W **Status LEDs** □ On: The power supply of the device is normal □ Off: Abnormal power supply of the device *The first column of lights from left to right indicates DVI-1 on the upper side and DVI-2 on the lower side; Similarly, the second column of lights indicates DVI-3 on the upper side and DVI-4 on the lower side.

SEx_4×HDMI1.3 input board	
Performance parameters	 **HDMI 1.3 input** □ Number of input interfaces: 4 channels HDMI 1.3 □ Maximum input resolution: 2048×1152@60Hz □ Custom resolution: Limit width 2048 (2048×1152@60Hz) Limit height 2048 (1152×2048@60Hz) □ Video input format: RGB444, YCbCr444, YCbCr422 □ Support audio **Specifications**

	□ Input signal level: TMDS/CML □ Impedance: Difference 100ohm □ Power: 5W **Status LEDs** □ On: The power supply of the device is normal □ Off: Abnormal power supply of the device *The first column of lights from left to right indicates HDMI-1 on the upper side and HDMI-2 on the lower side; Similarly, the second column of lights indicates HDMI-3 on the upper side and HDMI-4 on the lower side.
SEx_8×HDMI1.3 input board	
Performance parameters	 **HDMI 1.3 input** □ Number of input interfaces: 8 channels HDMI 1.3 □ Maximum input resolution: 2048×1152@60Hz □ Custom resolution: Limit width 2048 (2048×1152@60Hz) Limit height 2048 (1152×2048@60Hz) □ Video input format: RGB444, YCbCr444, YCbCr422 □ Support audio **Specifications** □ Input signal level: TMDS/CML □ Impedance: Difference 100ohm □ Power: 5W **Status LEDs** □ On: The power supply of the device is normal □ Off: Abnormal power supply of the device *From left to right, the first column of lights indicates HDMI-1 on the upper side and HDMI-2 on the lower side. Similarly, the second column of lights indicates HDMI-3 on the upper side and HDMI-4 on the lower side. The third column of lights indicates HDMI-5 on the upper side and HDMI-6 on the lower side; The fourth column of lights indicates HDMI-7 on the upper side and HDMI-8 on the lower side.
SEx_4×3G-SDI input board	
Performance parameters	 **3G-SDI input** □ Number of input interfaces: 4 channels 3G-SDI □ Maximum input resolution: 1920 × 1080@60Hz

	□ Video source standards: ST-424 (3G), ST-292 (HD), and SMPTE 259 SD □ Compatible with HD-SDI and SD-SDI standards □ Support loop, SDI loop interface corresponds one-to-one with input interface □ Support 1080i/576i/480i de interlacing □ Not supporting setting input resolution **Specifications** □ Input signal level: TMDS/CML □ Impedance: Coaxial 75ohm □ Power: 10W **Status LEDs** □ On: The power supply of the device is normal □ Off: Abnormal power supply of the device *The first column of lights from left to right indicates SDI-1 on the upper side and SDI-2 on the lower side; Similarly, the second column of lights indicates SDI-3 on the upper side and SDI-4 on the lower side.
SEx_2×HDMI1.4 input board	
Performance parameters	 **HDMI 1.4 input** □ Number of input interfaces: 2 channels 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 audio **Specifications** □ Input signal level: TMDS/CML □ Impedance: Difference 100ohm □ Power: 5W **Status LEDs** □ On: The power supply of the device is normal □ Off: Abnormal power supply of the device *From left to right, the first column of lights indicates HDMI1.4-1 on the upper side and HDMI1.4-2 on the lower side.
SEx_4×HDMI1.4 input board	

Performance parameters	 **HDMI 1.4 input** □ Number of input interfaces: 4 channels 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 audio **Specifications** □ Input signal level: TMDS/CML □ Impedance: Difference 100ohm □ Power: 10W **Status LEDs** □ On: The power supply of the device is normal □ Off: Abnormal power supply of the device *From left to right, the first column of lights indicates HDMI1.4-1 on the upper side and HDMI1.4-2 on the lower side. Similarly, the second column of lights indicates HDMI1.4-3 on the upper side and HDMI1.4-4 on the lower side.
SEx_4×HDBaseT_2K input board	
Performance parameters	 **HDBaseT_2K input** □ Number of input interfaces: 4 channels RJ45 □ Maximum input resolution: 2048×1152@60Hz □ Custom resolution: Limit width 2048 (2048×1152@60Hz) Limit height 2048 (1152×2048@60Hz) □ Support audio **Specifications** □ Input signal level: TMDS/CML □ Impedance: Difference 100ohm □ Power: 20W □ Transmission distance: maximum 100 meters (Category 6 twisted pair)

	Status LEDs □ On: The power supply of the device is normal □ Off: Abnormal power supply of the device *From left to right, the first column of lights indicates HDBaseT-1 on the upper side and HDBaseT-2 on the lower side. Similarly, the second column of lights indicates HDBaseT-3 on the upper side and HDBaseT-4 on the lower side.
SEx_2×HDBaseT_4K30 input board	
Performance parameters	 **HDBaseT_4K30 input** □ Number of input interfaces： 2 channels RJ45 □ Maximum input resolution： 4096×2160@30Hz □ Custom resolution： Limit width 4096 （4096×2160@30Hz) Limit height 4096 （2160×4096@30Hz) □ Support audio **Specifications** □ Input signal level： TMDS/CML □ Impedance： Difference 100ohm □ Power： 10W □ Transmission distance: maximum 100 meters (Category 6 twisted pair) **Status LEDs** □ On: The power supply of the device is normal □ Off: Abnormal power supply of the device *From left to right, the first column of lights indicates HDBaseT_4K-1 on the upper side and HDBaseT_4K-2 on the lower side.
SEx_4×HDBaseT_4K30 input board	
Performance parameters	 **HDBaseT_4K30 input** □ Number of input interfaces： 2 channels RJ45 □ Maximum input resolution： 4096×2160@30Hz □ Custom resolution： Limit width 4096 （4096×2160@30Hz) Limit height 4096 （2160×4096@30Hz) □ Support audio

	Specifications □ Input signal level: TMDS/CML □ Impedance: Difference 100ohm □ Power: 20W □ Transmission distance: maximum 100 meters (Category 6 twisted pair) **Status LEDs** □ On: The power supply of the device is normal □ Off: Abnormal power supply of the device *From left to right, the first column of lights indicates HDBaseT_4K -1 on the upper side and HDBaseT_4K -2 on the lower side. Similarly, the second column of lights indicates HDBaseT_4K -3 on the upper side and HDBaseT_4K -4 on the lower side.
SEx_1×12G-SDI input board	
Performance parameters	 **12G-SDI input** □ Number of input interfaces: 1 channel 12G-SDI □ Maximum input resolution: 4096 × 2160@60Hz □ Video source standards: ST-2082-1 (12G), ST-2081-1 (6G), ST-424 (3G), ST-292 (HD), and SMPTE 259 SD □ Compatible with 6G-SDI, 3G-SDI, HD-SDI, and SD-SDI standards □ Supporting ring out □ Support 1080i/576i/480i de interlacing □ Not supporting setting input resolution **Specifications** □ Input signal level: TMDS/CML □ Impedance: Coaxial 75ohm □ Power consumption: 10W **Status LEDs** □ On: The power supply of the device is normal □ Off: Abnormal power supply of the device
SEx_1×HDMI2.0 input board	
Performance parameters	

	HDMI 2.0 input □ Number of input interfaces: 1 channel HDMI 2.0 □ Maximum input resolution: 4096×2160@60Hz or 7680×1200@60Hz □ Custom resolution: Limit width 8192 (8192×1080@60Hz) Limit height 8192 (1000×8192@60Hz) □ Video input format: RGB444, YCbCr444, YCbCr422 □ Support audio **Specifications** □ Input signal level: TMDS/CML □ Impedance: Difference 100ohm □ Power: 5W **Status LEDs** □ On: The power supply of the device is normal □ Off: Abnormal power supply of the device
SEx_1×DP1.2 input board	
Performance parameters	 **DP 1.2 input** □ Number of input interfaces: 1 channel DP 1.2 □ Maximum input resolution: 4096×2160@60Hz or 7680×1200@60Hz □ Custom resolution: Limit width 8192 (8192×1080@60Hz) Limit height 8192 (1000×8192@60Hz) □ Video input format: RGB444, YCbCr444, YCbCr422 □ Support audio **Specifications** □ Input signal level: TMDS/CML □ Impedance: Difference 100ohm □ Power: 5W **Status LEDs** □ On: The power supply of the device is normal □ Off: Abnormal power supply of the device
SEx_2×HDMI2.0 input board	

Performance parameters	 **HDMI 2.0 input** □ Number of input interfaces: 2 channels HDMI 2.0 □ Maximum input resolution: 4096×2160@60Hz or 7680×1200@60Hz □ Custom resolution: Limit width 8192 (8192×1080@60Hz) Limit height 8192 (1000×8192@60Hz) □ Video input format: RGB444, YCbCr444, YCbCr422 □ Support audio **Specifications** □ Input signal level: TMDS/CML □ Impedance: Difference 100ohm □ Power: 10W **Status LEDs** □ On: The power supply of the device is normal □ Off: Abnormal power supply of the device *From left to right, the first column of lights indicates HDMI2.0-1 on the upper side and HDMI2.0-2 on the lower side.
SEx_2×DP1.2 input board	
Performance parameters	 **DP 1.2 input** □ Number of input interfaces: 2 channels DP 1.2 □ Maximum input resolution: 4096×2160@60Hz or 7680×1200@60Hz □ Custom resolution: Limit width 8192 (8192×1080@60Hz) Limit height 8192 (1000×8192@60Hz) □ Video input format: RGB444, YCbCr444, YCbCr422 □ Support audio **Specifications** □ Input signal level: TMDS/CML □ Impedance: Difference 100ohm □ Power: 10W **Status LEDs**

	□ On: The power supply of the device is normal □ Off: Abnormal power supply of the device *From left to right, the first column of lights indicates DP1.2-1 on the upper side and DP1.2-2 on the lower side.

Output board introduction

SEx_4×DVI output board	
Performance parameters	 **DVI output** □ Number of output interfaces: 4 channels DVI □ Maximum output resolution: 2048×1152@60Hz □ Custom resolution: Limit width 4096 (4096×616@60Hz) Limit height 4096 (480×4096@60Hz) □ Video output format: RGB444, YCbCr444, YCbCr422 □ Support audio **Specifications** □ Input signal level: TMDS/CML □ Impedance: Difference 100ohm □ Power: 5W
SEx_4×HDMI1.3 output board	
Performance parameters	 **HDMI 1.3 output** □ Number of output interfaces: 4 channels HDMI 1.3 □ Maximum output resolution: 2048×1152@60Hz □ Custom resolution: Limit width 4096 (4096×616@60Hz) Limit height 4096 (480×4096@60Hz) □ Video output format: RGB444, YCbCr444, YCbCr422 □ Support audio **Specifications** □ Input signal level: TMDS/CML □ Impedance: Difference 100ohm

	□ Power：5W
SEx_4×HDMI1.3_AUDIO output board	
Performance parameters	 **HDMI 1.3 output** □ Number of output interfaces：4 channels HDMI 1.3, 4 channels 3.5mm audio output □ Maximum output resolution：2048×1152@60Hz □ Custom resolution：Limit width 4096（4096×616@60Hz） Limit height 4096（480×4096@60Hz） □ Video output format：RGB444，YCbCr444，YCbCr422 □ Support audio **Specifications** □ Input signal level：TMDS/CML □ Impedance：Difference 100ohm □ Power：5W
SEx_8×HDMI1.3 output board	
Performance parameters	 **HDMI 1.3 output** □ Number of output interfaces：8 channels HDMI 1.3 □ Maximum output resolution：2048×1152@60Hz □ Custom resolution：Limit width 4096（4096×616@60Hz） Limit height 4096（480×4096@60Hz） □ Video output format：RGB444，YCbCr444，YCbCr422 □ Support audio **Specifications** □ Input signal level：TMDS/CML □ Impedance：Difference 100ohm □ Power：10W
SEx_4×3G-SDI output board	
Performance parameters	

	3G-SDI output □ Number of output interfaces: 4 channels 3G-SDI □ Maximum output resolution: 1920 × 1080@60Hz □ Output video source standards: ST-424 (3G), ST-292 (HD), and SMPTE 259 SD □ Compatible with HD-SDI and SD-SDI standards □ Support 1080i deinterlacing output □ Supporting output timing selection **Specifications** □ Input signal level: TMDS/CML □ Impedance: Coaxial 75ohm □ Power: 5W
SEx_8×3G-SDI output board	
Performance parameters	 **3G-SDI output** □ Number of output interfaces: 8 channels 3G-SDI □ Maximum output resolution: 1920 × 1080@60Hz □ Output video source standards: ST-424 (3G), ST-292 (HD), and SMPTE 259 SD □ Compatible with HD-SDI and SD-SDI standards □ Support 1080i deinterlacing output □ Supporting output timing selection **Specifications** □ Input signal level: TMDS/CML □ Impedance: Coaxial 75ohm □ Power: 10W
SEx_4×HDBaseT_2K output board	
Performance parameters	 **HDBaseT_2K output** □ Number of output interfaces: 4 channels RJ45 □ Maximum output resolution: 2048×1152@60Hz □ Custom resolution: Limit width 4096 (4096×616@60Hz) Limit height 4096 (480×4096@60Hz)

	□ Video output format: RGB444, YCbCr444, YCbCr422 □ Support audio **Specifications** □ Input signal level: TMDS/CML □ Impedance: Difference 100ohm □ Power: 20W □ Transmission distance: maximum 100 meters (Category 6 twisted pair)
SEx_2×HDBaseT_4K30 output board	
Performance parameters	 **HDBaseT_4K output** □ Number of output interfaces: 2 channels RJ45 □ Maximum output resolution: 4096×2160@30Hz □ Custom resolution: Limit width 4096 (4096×2160@30Hz) Limit height 4096 (2160×4096@30Hz) □ Video output format: RGB444, YCbCr444, YCbCr422 □ Downward compatibility with HDBaseT_2K □ Support audio **Specifications** □ Input signal level: TMDS/CML □ Impedance: Difference 100ohm □ Power: 20W □ Transmission distance: maximum 100 meters (Category 6 twisted pair)
SEx_4×HDBaseT_4K30 output board	
Performance parameters	 **HDBaseT_4K output** □ Number of output interfaces: 4 channels RJ45 □ Maximum output resolution: 4096×2160@30Hz □ Custom resolution: Limit width 4096 (4096×2160@30Hz) Limit height 4096 (2160×4096@30Hz) □ Video output format: RGB444, YCbCr444, YCbCr422 □ Downward compatibility with HDBaseT_2K

	□ Support audio **Specifications** □ Input signal level: TMDS/CML □ Impedance: Difference 100ohm □ Power: 20W □ Transmission distance: maximum 100 meters (Category 6 twisted pair)
SEx_1×HDMI2.0 output board	
Performance parameters	 **HDMI 2.0 output** □ Number of output interfaces: 1 channel HDMI 2.0 output, 1 channel 3.5mm audio output □ Maximum output resolution: 4096 × 2160@60Hz Or 7680 × 1200@60Hz □ Custom resolution: Limit width 8192 (8192×1080@60Hz) Limit height 8192 (1000×8192@60Hz) □ Video output formats: RGB444, YCbCr444, YCbCr422 □ Supporting on the go audio □ Support 3.5mm audio output **Specifications** □ Input signal level: TMDS/CML □ Impedance: Difference 100ohm □ Power: 5W
SEx_1×DP1.2 output board	
Performance parameters	 **DP 1.2 output** □ Number of output interfaces: 1 channel DP1.2 output, 1 channel 3.5mm audio output □ Maximum output resolution: 4096 × 2160@60Hz Or 7680 × 1200@60Hz □ Custom resolution: Limit width 8192 (8192×1080@60Hz) Limit height 8192 (1000×8192@60Hz) □ Video output formats: RGB444, YCbCr444, YCbCr422 □ Supporting on the go audio □ Support 3.5mm audio output

	Specifications □ Input signal level: TMDS/CML □ Impedance: Difference 100ohm □ Power: 5W
SEx_2×HDMI2.0 output board	
Performance parameters	 **HDMI 2.0 output** □ Number of output interfaces: 2 channels HDMI 2.0 output, 2 channels 3.5mm audio output □ Maximum output resolution: 4096 × 2160@60Hz Or 7680 × 1200@60Hz □ Custom resolution: Limit width 8192 (8192×1080@60Hz) Limit height 8192 (1000×8192@60Hz) □ Video output formats: RGB444, YCbCr444, YCbCr422 □ Supporting on the go audio □ Support 3.5mm audio output **Specifications** □ Input signal level: TMDS/CML □ Impedance: Difference 100ohm □ Power: 10W *AUDIO-1 audio output is bound to the HDMI2.0-1 output port, while AUDIO-2 audio output is bound to the HDMI2.0-2 output port.
SEx_2×DP1.2 output board	
Performance parameters	 **DP 1.2 output** □ Number of output interfaces: 2 channels DP1.2 output, 2 channels 3.5mm audio output □ Maximum output resolution: 4096 × 2160@60Hz Or 7680 × 1200@60Hz □ Custom resolution: Limit width 8192 (8192×1080@60Hz) Limit height 8192 (1000×8192@60Hz) □ Video output formats: RGB444, YCbCr444, YCbCr422 □ Supporting on the go audio □ Support 3.5mm audio output

	Specifications □ Input signal level: TMDS/CML □ Impedance: Difference 100ohm □ Power: 10W *AUDIO-1 audio output is bound to the DP1.2-1 output port, while AUDIO-2 audio output is bound to the DP1.2-2 output port.

Control board introduction

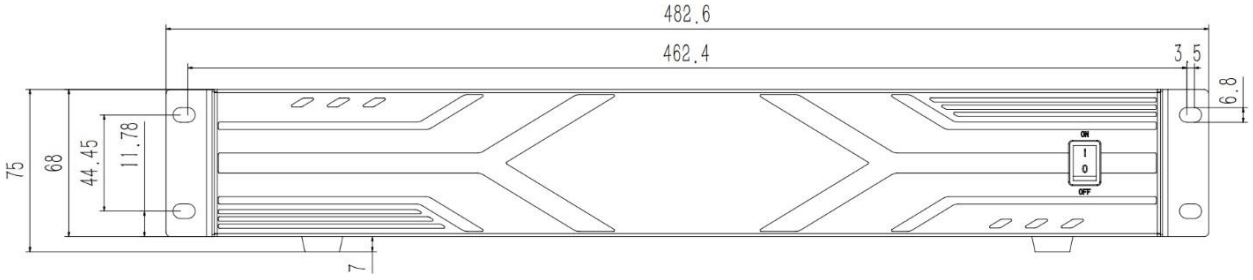
SEx_Control board	
Performance parameters	 **Interface parameters** □ COM-1: RS232 control port, can be connected with the central control system □ COM-2: RS232 control port, can be connected with central control system; can be used as COM-1 loop-out port □ USB: The USB3.0 interface is only used for system upgrades and cannot be used for power supply to other devices □ ETHERNET: Gigabit network port, communication interface, connected with control computer, router or switch, for web control and **Status LEDs:** □ RUN - Fast flashing: the device is starting - Fixed frequency flashing: 1/2S, the system is running normally - No flashing or no light: system failure (after the device is turned on) □ PWR - On: The power supply of the device is normal - Off: Abnormal power supply of the device

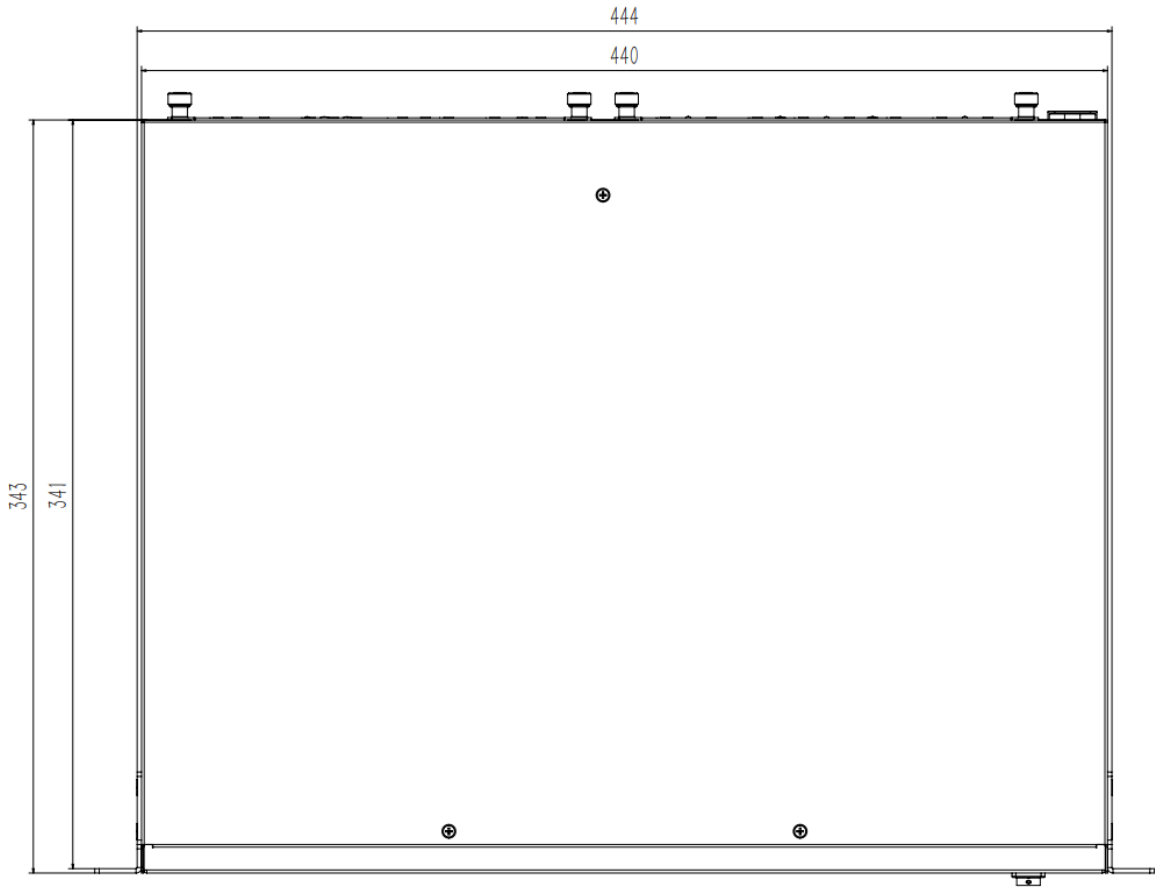
Machine Specifications

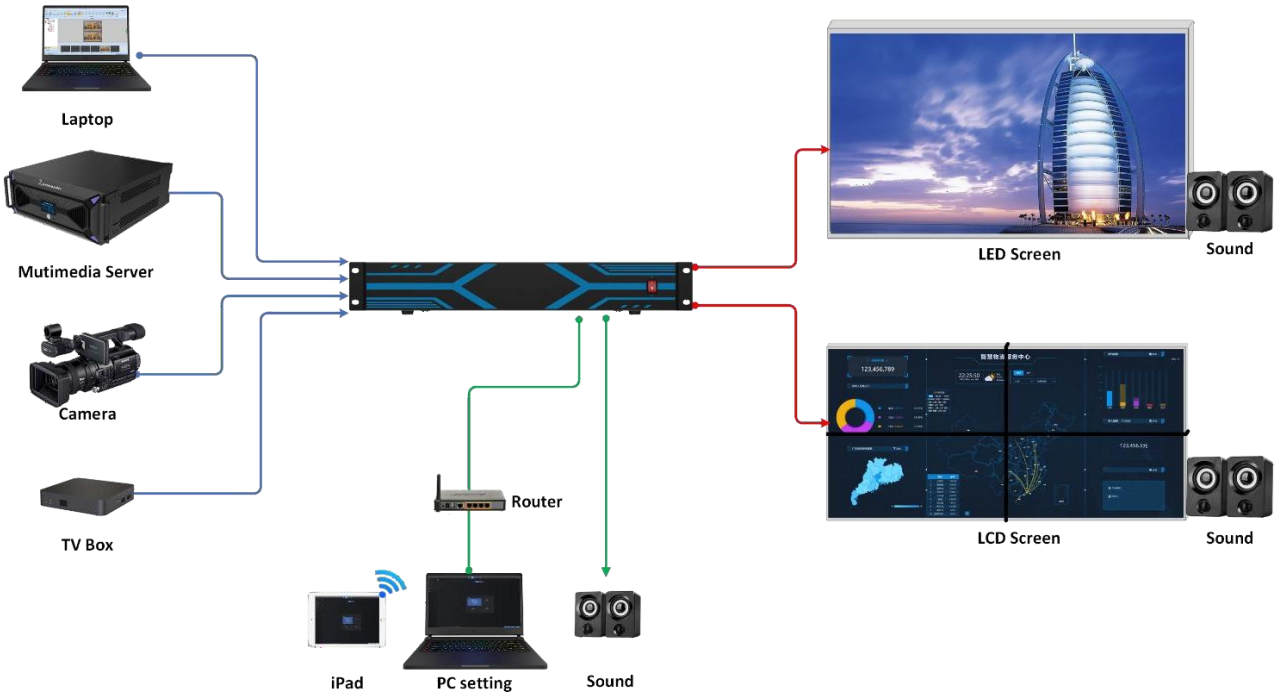
Model	SE1
Chassis Specifications	1.5U
The maximum supported input cards	2 pcs
The maximum support input	16 pcs
The maximum number of supported output cards installed	2 pcs

Maximum support output channels	16 pcs
Maximum number of layers	16
Input power	110-240V~，47-63Hz，1A
Overall power consumption	80W
Working environment	0~45□，0%RH～80%RH，no condensing
Storage environment	-20□~65□，0%RH～95%RH，no condensing
Dimensions	482.6mm×358.7mm×139.5mm（L×W×H）
Net weight	5KG
Gross weight	6KG

Dimensions





Unit: mm. Linear and angular dimensional tolerances not noted conform to GB/T1804-M.

Application Scenario