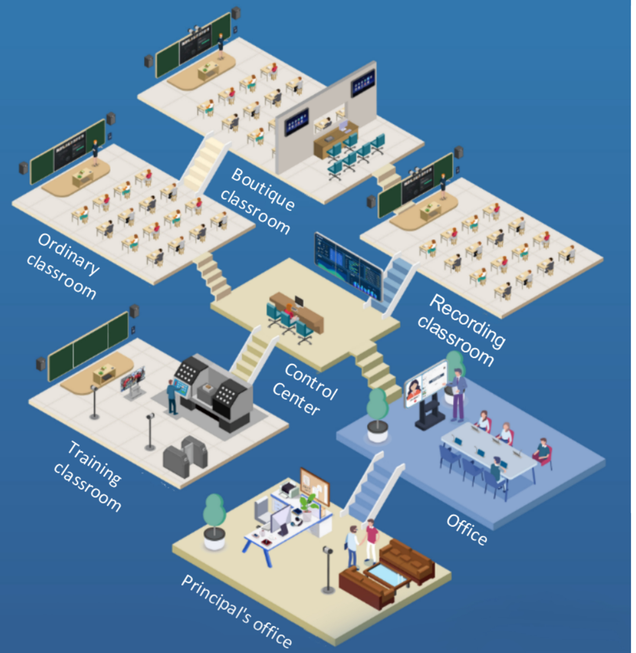
SYSTEM OVERVIEW



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PRODUCT COMPOSITION

Cloud-controlled classroom host


TS-9200S
Cloud-controlled classroom host


TS-9200W
Cloud-controlled classroom host


TS-9200WA
Cloud-controlled classroom host

Cloud-controlled classroom terminal


TS-9202
Cloud-controlled live broadcast terminal


TS-9205
Cloud-controlled classroom terminal


TS-9210/TS-9220
Cloud-controlled classroom terminal


TS-9210P
Cloud-controlled classroom terminal

TS-92900
Educational affairs publicity terminal


TS-92910/TS-92921
Educational affairs publicity screen

peripheral equipments


Control panel


Card reader


IC card


Electric curtains


Light switch


Class patrol camera


Teaching Microphone


Temperature and humidity sensor


Current detection sensor


PM2.5 sensor


Speaker


Intercom panel


Air conditioner

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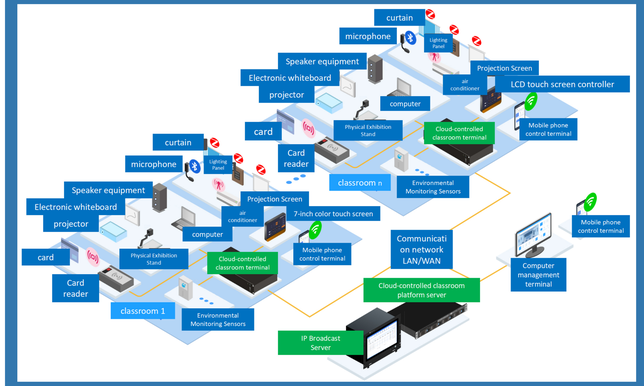








SYSTEM TOPOLOGY DIAGRAM



CLOUD-CONTROLLED CLASSROOM SYSTEM

The cloud-controlled classroom system is a comprehensive management system applied to classrooms, integrating student management, class management, and campus management. It integrates a series of applications such as school academic management, equipment control, audio broadcasting, video push, academic publicity and promotion, resource management, and data statistics, providing effective solutions for the modernization and informatization of campus management.

SYSTEM FUNCTION-EQUIPMENT CONTROL

The cloud-controlled classroom terminal is a multimedia IoT teaching terminal that integrates audio and video matrix, IoT central control, digital amplifier, network decoding and other functional modules. The device has high integration, strong scalability and powerful functions, and is suitable for regular classrooms, multimedia classrooms, and lecture halls.

ONE-CLICK CONTROL

Several scene modes can be set in advance, and all electrical teaching equipment can be controlled with one click, without the need to operate the equipment separately. For example, you can set up classes or exclusive modes, turn on the projector, lower the screen, turn off the lights or draw the curtains with one click.



CLOUD CONTROLLED CLASSROOM SYSTEM

Smart Blackboard TV-86830EB

* Adopt the integrated design of three splicing planes. The main and secondary screens transition smoothly and are on the same plane, without a separate frame in the middle. The edges of the screen are are covered with metal rounded corners for protection. Support a variety of writing methods such as marker, ordinary chalk, and dustless chalk. It can realize unified screen writing on the entire blackboard, and adopt wall-mounted installation, which is easy to disassemble.
* The display screen in the middle area adopts UHD LED LCD screen, with a display resolution of 3840*2160, a display ratio of 16:9, and anti-glare effect. It can still work normally under the illumination of 110KLUX.
* The left and right sub-boards are made of high anti-reflective material to achieve non-reflective effect, the handwriting can be clearly seen at any angle, and the original handwriting can be maintained.
* With rich color details of display and high color reproduction (color gamut ≥ NTSC 85%), the demonstration picture can be presented delicately.
More than 128 grayscale resolution level of the display ensures the sharpness and layering of the screen display effect.

Size	86 inches
System version	Android 11.0
CPU	Quad core A55
RAM	4GB
Storage	32GB
Response time	6ms
Aspect ratio	16:9
Display size	1895.04mm(L)*1065.96mm(H)
Resolution	3840 (H) *2160 (V)
Refresh rate	60Hz
Chromaticity	1.07B (10bit)
Color gamut NTSC (Typ.)	72%
Contrast	4000:1

Interactive Smart Flat Panel TV-98830E



* Using narrow frame design, UHD LED LCD screen, display resolution 3840*2160, display ratio 16:9, with anti-glare effect; under high illumination (110K Lux) environment, it can still work normally.
* The screen display has rich color details and a high degree of color reproduction (color gamut ≥ NTSC 72%), and the classroom demonstration screen can be presented delicately.
* The grayscale of the screen reaches more than 128, which endows the display screen with sharp effect and strong layering.
* Adopting zero lamination technology, there is almost no sense of suspension when you lift the pen to write, giving you a paper-like writing experience. The surface tempered glass (7H hardness) can effectively protect the screen, reduce the polarization and scattering between the panel and the glass, and the screen display is clearer and more transparent, and the viewing angle is wider.
* It has the function of reducing and filtering blue light, which can be activated by touching the menu button.

Size	98 inches
Screen type	IPS
System version	Android 11.0
CPU	Quad-core A55
RAM	4GB
ROM	32GB
Response time	8ms
Aspect ratio	16:9
Display size	2158.85(H)*1214.35 (V)mm
Resolution	3840(H)*2160(V)
Refresh rate	60Hz
Chroma	1.07B (10bit)
Color Gamut NTSC(Typ.)	72%

Hanging Microphone TS-P110DM

*Stainless steel cylindrical design, built-in unidirectional polar microphone core, up to -38dB sensitivity, to meet ultra-long distance pickup. Ultra-wide frequency response range, high restoration of human vocal, built-in 48V phantom electric amplification processing circuit, long-distance high-quality sound transmission. It is used with a microphone processor.

Model	TS-P110DM
Microphone sensitivity	-38dB
Frequency response	100Hz~19KHz
Interface	Standard Balanced Output Terminals (Male)
Working temperature	-10℃~45℃
Relative humidity	20%~80%, no condensation
Power voltage	DC48V
Dimension	22*204mm
Weight	0.1kg

Education Cloud Platform Server TS-0620E

***No plug-in on demand:** support users directly on-demanding video resources through the browser, no need to install a dedicated plug-in.
***QR code sharing:** support sharing the on-demand video through weibo and WeChat QR code, support watching the video by phone through scanning the QR code.
***Video recommendation:** providing recommended video to users on home page according to on-demand times, liked video or administrator setting.
***Video classification:** administrator can flexibly classify the videos based on the circumstances; user can search and browse the videos by video classification.
***Popular videos:** the newly upload video in system can be set to be displayed on home page, so that users can view the latest video.
***Video search:** video in the system can be searched by title, keyword, and video knowledge point , the searched video can be sorted by the latest release, the highest popularity, most playback sort, so that easy for the users to find the video in need.

CPU	Single Intel Xeon E3-v5 processor (quad core)
Memory	Standard 8G DDR4, maximum support 64GB DDR4
LAN	2 10/100/1000M bps ports
I / O interfaces	Front 2 USB 2.0, rear 2 USB2.0. 1 fast UART16550 serial port. 1 VGA video port.
Hardware monitor	Fault / error / overload and alarm (including disk / RAID / power / fan / temperature / IO performance.
MTBF	50000 / H (MTBF)
Power	300W server power.
Dimensions	Length 660mm × Width 430mm × Height 43.5mm.
Cabinet	1U rack-mounted chassis; adopt high-quality 1.0mm galvanized steel, solid structure, with the excellent ability of anti electromagnetic interference and anti-radiation. Meet EMC design standard.

Recording Controller TS-0650C

* Integrated hardware device, embedded Linux OS, highly integrated system module such as image recognition tracking, automatic navigation, live, VOD, acquisition, and recording, easy to use and maintain, with high security.
* Based on the B/S architecture, you can log in to the web to realize functions such as live broadcast management, signal management, group management, user management, file management, scheduled recording, central control management, and system management.
* Audio adopts AAC high-definition encoding method, and the audio and video are accurately and synchronously recorded.
* Video adopts H.264 encoding method with adjustable bit rate; support video encoding from 256kbps to 12Mbps, and support resolutions such as 1920x1080(HDMI can support 3840x2160 resolution).
* Using self-developed tracking algorithms to detect the vertical movement tracking of face, and ignore other activities of the students; the accuracy rate reaches more than 90% to intelligently present classroom focus.

Video protocol	H.264
Code stream	256Kbps~12Mbps
Video output format	MP4/MOV/MKV/FLV/AVI/VTS
Audio protocol	AAC
Live broadcast protocol	Support TS, RTSP, RTP and RTMP real-time protocol streams
Network protocol	Support TCP, UDP, RTMP, RTSP, FTP, DHCP, HTTP protocol
Video input interface	4-channel SDI high-definition video interfaceS, 3-channel HDMI high-definition video interfaces
Video output interface	3-channel HDMI high-definition video interfaces
Input resolution	3840x2160P30P25p、1920x1080P60P50P30P25P25p
Output resolution	3840x2160P30Ps、1920x1080P60P50P30P25Pp、1280x720P60P50P30P25Pps、720X576P60P50P30P25Pps
Audio input interface	2-channel Phoenix terminal interfaces. 1-channel HDMI audio interface
Audio output interface	1-channel Phoenix terminal interface. 1-channel 3.5mm audio interface. 1-channel HDMI audio interface

Camera TS-0663JS/TS-0663XS

*Equipped with 4K Sensor and 4K lens to achieve high-definition electronic PTZ effect.
*Built-in leading image recognition and tracking algorithms, it can achieve smooth and natural tracking effects without any auxiliary positioning camera or tracking host. Different cameras are assembled before production to achieve teacher tracking.
*Fully automatic focus distortion-free lens, wide-angle field of view up to 42°. Supports EPTZ, allowing you to see more clearly.
*Network or USB director output, no need for recording or terminal and other director equipment, can realize the director stream output of teacher's computer and student computer.
*The new CMOS image sensor with ultra-high signal-to-noise ratio can effectively reduce image noise in low-light conditions. It also applies 2D and 3D noise reduction algorithms to significantly reduce image noise. Even in ultra-low-light conditions, the picture remains clean and clear, with an image signal-to-noise ratio of over 55dB.
*Supports PoE one-line function, integrating power, video, audio and control into one.

Model	TS-0663JS	TS-0663XS
Sensor type	1/2.7 inches, CMOS, effective 8.31 MP	
Scanning method	Line by Line	
Lens mount type	M12	
Lenses	Focal length: f=7.2mm; horizontal field of view: 44°	Focal length: f=2.8mm; horizontal field of view: 95°
Auto focus	Teacher computer supports	
Minimum illumination	0.5 Lux @ (F1.8, AGC ON)	
Electronic shutter	1/30s ~ 1/10000s	
White Balance	Auto, Indoor, Outdoor, One-touch, Manual, Specified color temperature	
Digital noise reduction	2D, 3D digital noise reduction	
BLC	support	
EPTZ	support	
Digital zoom	8x	

Microphone Processor TS-P110

* Using automatic sound field detection algorithm, the system can automatically configure audio parameters according to the acoustic environment, which is very convenient for users.
* Built-in high-performance DSP processor, it supports automix, adaptive feedback suppression, auto gain, auto equalization, environmental noise reduction and other functions.
* With 1 microphone input, it supports standard 48V phantom power supply.
* With 1 LINE IN input, it supports signal detection function. When it is detected that there is audio input in LINE IN, the microphone will be automatically muted to prevent the front speaker from performing secondary sound reinforcement to the microphone.
* With 2 LINE OUT outputs, 2 sets of external amplifiers can be connected for sound reinforcement in large classrooms or lecture halls.
* With 1 SPK signal detection terminal, when the SPK has audio input, the microphone is automatically muted to prevent the front speaker from performing secondary sound reinforcement to the microphone.
* With 1 RS-485 communication interface, it is used to connect the control panel for parameter setting and control.

Amplifier rated power	4*30W
Amplifier impedance	8Ω
Device interface	1 control industrial terminal; 1 LINE IN; 1 MIC IN; 1 SPK IN; 2 LINE OUT; 4 SPK OUT
MIC IN sensitivity	40mV
MIC IN frequency response (+1dB/-3dB)	80Hz~7KHz
LINE IN frequency response (+1dB/-3dB)	80Hz~19KHz
LINE OUT output level	775mV
LINE OUT output impedance	470Ω
THD	≤1%
SNR	≥73dB
Working temperature	-10℃~45 ℃
Relative humidity	20%~80%, no condensation
Power voltage	~220V 50Hz

LED Classroom Light TL-PL901

* Create a high-quality lighting environment, protect eyesight and improve teaching quality.
* No stroboscopic hazard, comfortable for the eyes.
* The light does not shine directly into the eyes and does not distract students.
* Color rendering index up to 90, strong color reproduction ability, closest to natural light, proper protection for students' eyesight.
* No blue light hazard, no noise pollution, no UV radiation.
* High uniformity of light perception, soft and comfortable lighting, making it easy for students to concentrate and improve learning efficiency.
* Through professional lighting design, the illuminance and uniformity are higher than the national standard.
* Environment friendly. Saving more than 50% of electricity under the same illumination; no harmful substances such as mercury and lead.
* The average service lifespan is over 50,000 hours, with low light decay and low maintenance costs.

Model	TL-PL901
Input voltage/power	AC220-240V 50/60Hz/36W
Number of LEDs/light sources	216PCS
Beam angle	C0/C180 27.8 C90/C270103.1
Color temperature	4000-5300K
Installation method	Hoisting installation
Protection class	IP20
Product size	1221*90*57mm
Package size	1260*340*140mm
Net weight/gross weight	1.6KG/5.8KG (3PCS/box)

Practical training and teaching mobile controller TS-06515CAR



* The entire device adopts an integrated and modular design, providing convenient functional component expansion and installation experience, which greatly simplifies the use and maintenance process.
* The column is made of high-strength aluminum alloy structure, with T-shaped slots on the front and rear sides, allowing users to easily install other equipment. The surface coating of the column has been professionally treated, which greatly enhances its scratch resistance and makes it more durable.
* The top of the column is equipped with a tripod head support plate, which provides a convenient and fast installation platform that can accommodate various panoramic cameras. Whether it is a fixed or angle-adjustable camera, it can be easily installed to ensure all-round surveillance coverage.

Vehicle height	1.689 m
Cross arm expansion size	1.2 m
Total lifting height of cross arm	0.5 m
Cross arm foldable and shrinkable size	0.65/0.55 m
Wishbone load-bearing	0.5-2 kg
Battery capacity	500 Wh
Charging power	DC 20V/5A, charging time is about 4-5 hours
Power display	LCD display, real-time display of battery capacity
Size (W*D*H)	502*502*1889 mm
Weight	37kg (including mobile power supply, excluding camera, display screen and speaker equipment)

Receiver TS-06515WR



* Adopt integrated design hardware equipment, embedded Linux operating system, equipped with quad-core ARM Cortex-A53, with a main frequency of up to 1.5GHz.
* Support 4K.H.264/H.265 video decoding and 4K VPP video decoding output, providing an unparalleled high-definition visual experience.
* 3. With 1 HDMI 2.0 output interface, support up to 32-bit true color (RGB/YCbCr), support up to 60Hz refresh rate, and support multiple audio formats, including stereo, multi-channel, DTS, Dolby and other audio encoding formats.
* With a 3.5mm audio output interface, support the transmission of audio signals through the HDMI interface, providing a more flexible and diverse audio connection method.
Built-in 5G channel wireless module, support one-click networking, with strong anti-interference ability, and can transmit signal sources through the wireless network to achieve ultra-low delay transmission and ultra-high-definition live broadcast images. Support a maximum distance of up to 100 meters and is compatible with various usage scenarios.

Video output	1 HDMI 2.0 interface
Audio output	1 channel 3.5mm audio output interface. HDMI output with audio
Video standard protocol	H.264、H.265
Output resolution	3840x2160@30fps、1920x1080@60fps
Live broadcast agreement	Support TS, HTTP, RTSP and RTMP real-time protocol streams
Software upgrade	Support upgrade through OTG interface, support upgrade through WEB
Network port	1 RJ45 network interface
Power supply	DC12V/1.5A
Power consumption	10W
Operating temperature	-10℃~45℃
Relative humidity	20%~80%, no condensation
Weight	0.46kg
Dimensions (L×D×H)	138x68x28.2mm

Microphone TV-650QM



* Adopt high-sensitivity omnidirectional microphone for omnidirectional pickup, with clear and natural sound.
* Built-in dedicated audio signal processing function effectively prevents voice signal distortion and attenuation.
* Support 48V phantom power supply, balanced output.
* Can cooperate with audio processor to get the best live sound effect.
* Built-in lightning protection; power reverse polarity protection and electrostatic protection.

Pickup range	5-50㎡
Sensitivity level	-34dB ± 3dB
Frequency response	100Hz~16kHz
Directivity	Omnidirectional
SNR	68dB
Dynamic range	84dB(1kHz at Max dB SPL)
MAX SPL	110dB SPL (1kHz, THD 1%)
Output signal amplitude	2.5Vpp
Microphone	Diaphragm condenser microphone
Signal processing circuit	Dedicated audio signal processing circuit
Circuit protection	8kV Air contact ESD, lightning protection, power reverse polarity protection
Connection method	3 leads + (red) - (white) G (black)
Installation method	Ceiling installation

Cloud Controlled Classroom Platform Software V4.86 TS-9200R



* The platform software controls classroom terminals and peripheral equipment to realize functions such as audio broadcasting, video push, live video, teacher attendance, classroom management, classroom inspection, platform resources, power consumption statistics, and environmental monitoring.
* The system adopts B/S architecture and C/S architecture, and supports 8 control terminals including teacher web terminal, admin web terminal, Android APP, Apple APP, control panel, HS, WeChat applet, DingTalk applet, and more, realizing multi-channel interaction, unified and convenient operation, and real-time status synchronization.
* The system supports connecting with high-precision GPS-based timing systems, and can independently perform broadcast system timing services without the Internet, making the system time error less than 1/300,000 of a second per year.
* Provide full-duplex voice data exchange, respond to calls and call requests from various intercom terminals, support call modes such as one-key call, one-key intercom, one-key help, one-key alarm, support auto answering, manual answering, and support custom answering tone.
* Support account management function, you can switch accounts freely to log in, and can switch between 3 accounts at the same time; support automatic logout if no operation is performed for a long time to prevent password loss.
* Support role management function, the administrator assigns roles to users, thereby assigning corresponding permissions, so that users cannot perform functions higher than their own permissions. By default, the system has roles such as administrator, teacher, and common user, which are convenient for users.
* Support account management function, you can view and manage information such as username, gender, login account, login password, phone number, role permissions, valid time, login time, and login times, support importing excel sheet to create users in batches, and provide imported templates; support exporting user information in batches. Users can modify their account and basic information such as username and gender.
* Support data overview function, you can view data information such as the number of all terminals and online status, real-time and scheduled tasks being executed, and ranking of device power consumption.

Temperature and Humidity Sensor TS-9212RH



* LCD display, beautiful appearance.
* The terminal block adopts military-grade spring-type screw-free terminals, which can be connected by pressing and inserting. Even if there is no screwdriver on site, the wire can be connected quickly, and the adjustable wire diameter is 0.3-2.0mm2.
* With high-precision temperature and humidity measurement units, it supports on-site self-calibration, featuring good long-term stability and small drift.
* Adopt dedicated 485 circuit, standard ModBus-RTU communication protocol; communication address and baud rate can be set.
* Power supply: 10~30V DC wide voltage range.
Parameters can be set by buttons, easy to operate.

DC power supply (default)	10-30V DC
Maximum power consumption	0.4W
Measuring precision	±3%RH (5%~95%RH 25℃); ±0.5℃ (25℃)
Transmitter circuit operating conditions	-20℃~+60℃, 0%RH~80%RH
Communication protocol	Modbus-RTU communication protocol
Output signal	485 signal
Temperature display resolution	0.1℃
Humidity display resolution	0.1%RH
Temperature and humidity refresh time	1S
Long-term stability	Temperature<0.1℃/y; Humidity<1%RH/y
Response time	Temperature<13s (1m/s wind speed); Humidity<4s (1m/s wind speed)
Opening size	60mm
Parameter settings	Modify directly by software settings or keys

Microphone TS-9230MU



* Using digital modulation for transmission, the sound reinforcement is guaranteed to be clear, smooth and noise-free.
* Built-in 3.5mm headphone jack, which can be used with headset or lavalier microphones to free up teachers' hands.
* Support non-inductive access function, automatically binds frequency when turned on, realizing automatic wireless microphone access to the system.
* Support two charging methods, including pedestal microphone charging stand charging and TYPE-C charging.
* Intelligent power consumption management, support intelligent monitoring of microphone usage status for power consumption management. After muting, the microphone will automatically shut down if there is no operation for a period of time to improve battery life.
6. Super long battery life, it can be used continuously for more than 8 hours after one full charge, meeting the requirements of all-day use.

Modulation	PI/4-DQPSK digital modulation method
Pickup cartridge	Capacitive electret
Frequency response	80~16Hz（+1~-3db）
THD+N	<0.3%
Working time	<0.3%
WIFI communication distance	20m
Working distance	30m
Operating voltage	DC 3.7V
Working current	<150mA
Battery capacity	1300mAh
Product weight	0.07kg
Opening size	130*40*18mm

Microphone TS-9230MZ



* With a magnetic charging stand, support three-way charging management, and can charge two handheld microphones and a PPT page turner.
* Support three-way magnetic lock management, realize terminal linkage, and connect the central control to control the magnetic lock.
* Support remote unlocking, infrared handheld microphone status query, and battery status display function.
* With RJ45 composite interface design to realize three-in-one transmission of power supply, communication and audio.
* Support docking with classroom terminals to achieve microphone linkage control.
* Support NFC card swiping, providing switch and lock status feedback function. The green prompt light turns on when the lock is unlocked, and the red prompt light turns on when the lock is closed.
* Support fast charging function. The handheld microphone can be fully charged in 2 hours. Support status feedback function. The red indicator light will turn on during charging and the blue indicator light will turn on when fully charged.

Pickup cartridge	Cardioid directivity
Frequency response	80Hz~16KHz
Input resistance	680Ω
Sensitivity	-41dBs1.5dB（1KHz）
Dynamic Range	>80db
NFC module	Working frequency 13.56MHz, support all ISO14443A protocol cards of M1 card
RJ45 interface	Support three-in-one function, +12V power supply, balanced 520mW output, RS485 communication
Charging power	10W
Charging interface	Contact type
Microphone length	0.07kg
Base dimensions (L x W x H)	144.8*117.7*47.4mm
Weight	0.67kg

Multimedia Terminal TS-9230P1



* Standard 1U rack design, black anodized aluminum brushed panel, and professional mechanical assembly process.
* The device is highly integrated, with built-in audio control, video matrix, IoT central control, power amplifier, network audio decoding and other modules, rich in functions.
* Built-in matrix switching module, supports 4 channel HMDI high-definition input, 2 channel HDMI high-definition output, and can achieve audio and video synchronous output.
* With 1 RJ45 microphone interface, 1 channel seat microphone can be connected to provide clearer and more stable audio input for teaching or conference.
* Built-in digital wireless teaching receiving module, can connect two teaching wireless handheld microphones. Digital wireless audio transmission adopts digital modulation, with automatic frequency scanning and automatic frequency matching functions.
* With 1 channel wireless handheld microphone infrared frequency linking expansion interface,which is used to connect an external infrared frequency linking transmitter to expand the frequency linking range.

Network interface	Standard RJ45
Network rate	100Mbps
Video input interface	4 channel HDMI、HDMI1.4 standard
Video output interface	2 channel HDMI、HDMI1.4 standard
HDCP protocol	2.0
Resolution ratio	3840x2160@30、1920x1080@60
EDID	2
Audio input	1 RCA; 1 channel RJ45, 1 channel 100V analog backup signal; 2 channel U-segment wireless receivers, network broadcast audio source, 4 channel HDMI
Audio output	1 set of RCA; 2 channel HDMI
Rated total power output	120W
Front speaker output	60W MAX/8Ω
Center and rear speaker output	60W MAX/8Ω

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