

Smart Classroom Solutions

Rocware® has developed a series of solutions for the education industry, covering blended learning, educational recording, broadcasting and seamless sound reinforcement. These solutions incorporate AI audiovisual technology innovation and product research and development capabilities, bringing more convenient operational management and more intelligent educational audiovisual experiences. They allow teachers to teach without burden and students to learn more easily, sparking new vitality in school teaching.

▼ Interactive teaching solution based on public cloud

This solution is specifically designed to meet the requirements of remote interactive teaching. It is based on a public cloud design, which results in lower installation costs. The solution mainly consists of 2 smart cameras and 1 digital microphone. It features a simple wiring setup and does not require additional independent control panels, live streaming, or recording devices. With this setup, an intelligent classroom environment can be easily established to facilitate interactive teaching.



Live Classroom



Interactive Teaching



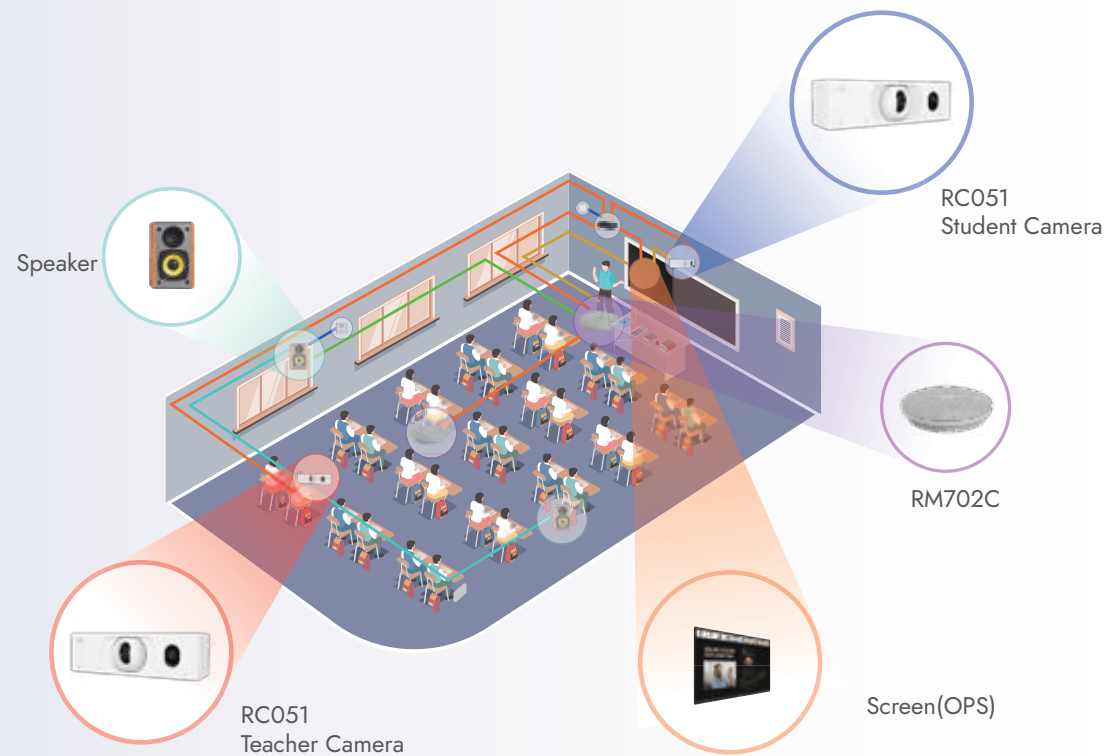
AI Director



Smart Whiteboard



Supervision and Inspection

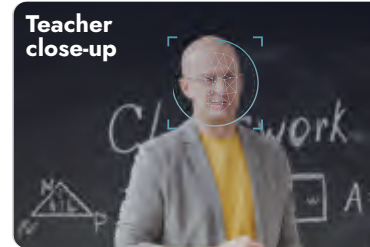


▼ Intelligent Tracking

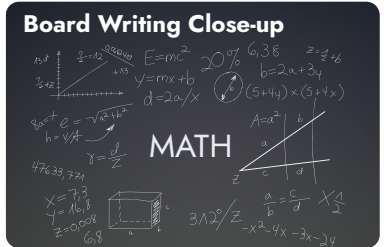
1080P Panoramic



Teacher close-up



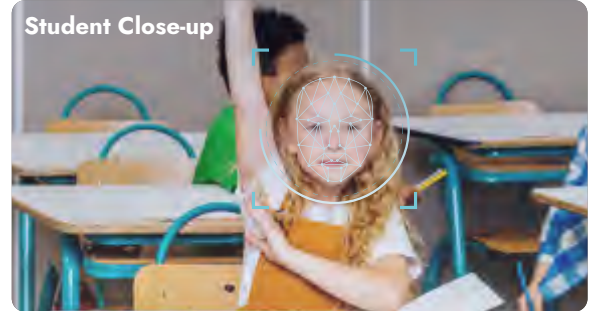
Board Writing Close-up



Student panoramic



Student Close-up



▼ 4K Binocular

1080P Panoramic



4K Close-up



▼ Behavior Analysis



Dual-lens 4K Intelligent Auto Tracking Camera

RC051

- 

Dual Lens
- 

4K UHD
- 

Facial Recognition
- 

AI Behavior Analysis
- 

AI Smart Director



The RC051 is designed for intelligent teaching environments, integrating panoramic and close-up dual lenses for up to 4K UHD output. It captures interactive teaching scenes with built-in AI features like teaching tracking, facial recognition, and behavior analysis, offering a more dynamic intelligent teaching experience.

FEATURES

▼ DUAL-LENS

Featuring a unified design with both panoramic and close-up lenses, the panoramic lens boasts an effective pixel count of 4.93 Megapixels, while the close-up lens reaches an impressive 8.29 Megapixels. This design ensures comprehensive coverage of the entire classroom while delivering high-definition close-up images.

▼ HIGH QUALITY IMAGES

The RC051 includes both teacher and student units. The teacher's panoramic camera uses a 1/2.7-inch HD CMOS sensor, while the close-up camera features a 1/2.7-inch 4K high-quality CMOS sensor for high quality images. The teacher's panoramic camera has a 43° field of view, and the close-up camera has a 25° field of view. The student's panoramic camera provides a 110° field of view, with the close-up camera offering a 43° field of view for clear shots.

▼ MINI PTZ

The camera is equipped with a mini PTZ that can horizontally rotate ±40°, expanding the shooting range significantly. It also supports EPTZ, ensuring clear images. The seamless integration of PTZ and EPTZ allows for more precise framing, capturing all the important details in the class.

▼ INTELLIGENT TRACKING

The teacher's camera includes advanced algorithms for head, facial, and body recognition and tracking. It can track and capture the teacher without any additional positioning camera or device, ensuring no missed interactive details during teaching.

▼ AI SMART DIRECTOR

The camera features built-in AI director algorithms, recognizing real teaching scenarios and automatically switching between teacher panoramic, close-up, and board close-up views, as well as student panoramic and close-up views. It also supports external directing consoles, outputting multi-camera streams via network or USB interfaces to meet the needs of external directing scenarios.

▼ AI BEHAVIOR ANALYSIS

Equipped with AI algorithms for facial recognition and behavior analysis, the camera automatically detects the number of students, simplifying school attendance management. These intelligent functions streamline teaching administration, improving efficiency and enhancing the educational experience.

▼ MULTIPLE OUTPUT INTERFACES

Supporting various video output interfaces like PoE and USB 3.0, it easily connects to recording and broadcasting hosts, large-screen OPS, and other devices, expanding application scenarios effectively.

Remark: 1. This feature is optional.

SPECIFICATIONS

▼ CAMERA SPEC OF CLOSE-UP CAMERA

Sensor	1/2.7", CMOS, Effective pixel:8.29 Megapixels
Scanning Mode	Progressive
Type of Lens Mount	M12
Student Close-up Lens	f=7.37mm, Horizontal FOV: 43°
Teacher Close-up Lens	f=13.1mm, Horizontal FOV: 25°
Digital Zoom	2X
Minimum Illumination	0.5Lux
Shutter	1/30s ~ 1/10000s
White Balance	Auto, Indoor, Outdoor, One Push, Manual, VAR
Digital Noise Reduction	2D&3D Digital Noise Reduction
Backlight Compensation	Support
Pan Angle	±40°
Tilt Angle	+5° ~ -30°
Maximum Rotation Speed	Student Camera: Pan Speed 60°/s,Tilt Speed 30°/s Teacher Camera: Pan Speed 30°/s,Tilt Speed 30°/s
Image Flip	Support
Image Freeze	Support
Preset Position	255
Preset Accuracy	0.5°

▼ CAMERA SPEC OF PANORAMIC CAMERA

Sensor	1/2.7", CMOS, Effective pixel:4.93 Megapixels
Scanning Mode	Progressive
Type of Lens Mount	M12
Student Panoramic lens	f=2.2mm, Horizontal FOV: 110°
Teacher Panoramic lens	f=7.37mm, Horizontal FOV: 43°
Minimum Illumination	0.5Lux
Shutter	1/30s ~ 1/10000s
White Balance	Auto, Indoor, Outdoor, One Push, Manual, VAR
Digital Noise Reduction	2D&3D Digital Noise Reduction
Backlight Compensation	Support
Tilt Angle	+0° ~ -24°
Image Flip	Support
Image Freeze	Support

▼ I/O INTERFACES

USB Interface	1 x USB 3.0; Type-C
Network Interface	1 x RJ45: 10M / 100M adaptive Ethernet; PoE(802.3af), Support NDI ¹
Audio Interface	1 x LINE In: 3.5mm; 1 x LINE Out: 3.5mm
Power Interface	DC005 (DC 12V)
Reset Button	RESET
Infrared Interface ¹	Support
Indicator Light	POWER , STANDBY

INTERFACE

- 1 — DC 12V
- 2 — LAN
- 3 — USB
- 4 — LINE IN
- 5 — LINE OUT

▼ USB SPEC

Operating System Supported	Windows® 7 (Only support 1080P and below), Windows 8.1 and above version; macOS™ 10.10 and above version; Google™ Chromebook™ Version 29.0.1547.70 and above version; Linux (Need to support UVC)
Hardware Requirements	2.4 GHz Intel® Core 2 DUO processor or higher; 2 GB memory or higher; USB 3.0 or USB 2.0 interface
Color System/Compression	YUY2/MJPEG/H.264
Video Format	Maximum 4K and other different frame rates and resolution video formats
USB Video Communication Protocol	UVC 1.1
USB Audio	The maximum 48K sampling rate, supports UAC1.0
UVC PTZ Control	Support

▼ NETWORK SPEC

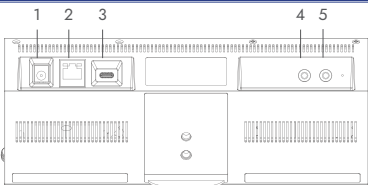
Video Compression	H.265 / H.264 / MJPEG
Video Stream	First Stream, Second Stream, Third Stream, Fourth Stream
First Stream Resolution	3840x2160,1920x1080, 1280X720, etc.
Second Stream Resolution	2880x1620, 1920x1080, 1280X720, etc.
Third Stream Resolution	1920X1080,1280X720,1024x576, etc.
Fourth Stream Resolution	1920x1080, 1280x720,1024x576, etc.
Video Bit Rate	32Kbps ~ 16384Kbps
Bit Rate Type	VBR, CBR
Frame Rate	25/30fps
Audio Compression	AAC/G.711A
Audio Bit Rate	96Kbps, 128Kbps, 256Kbps
Support Protocols	TCP/IP, HTTP, HTTPS, NDI, SRT, RTSP, RTMP, Onvif, DHCP, GB28181, Multicast, etc.

▼ AUDIO

Simulation Audio Input	1 x LINE In
Simulation Audio Output	1 x LINE Out
Digital Audio Interface	1 x USB audio input output 1 x network audio input output, supports 1588-based audio clock synchronization

▼ GENERIC SPEC

Input Voltage	DC 12V / PoE (802.3af)
Input Current	1A (Max)
Operating Temperature	-10°C ~ 40°C
Storage Temperature	-40°C ~ 60°C
Power Consumption	12W (Max)
Dimension (W × D × H)	242 × 86 × 70mm
Net Weight	0.62kg
No Failure Time	30000h



Cloud Video Conferencing Solutions

This solution addresses the problems of multiple devices, complex wiring and high maintenance difficulties in traditional video conferencing scenarios. It can be flexibly adapted to different meeting spaces of enterprises. Whether it's small, medium, or large conference rooms, a "good sound quality and clear video" video conferencing experience can be achieved through simple deployment, unleashing the digital vitality of the enterprise.



Smart Gallery

▼ AI-Powered Video Conferencing for Enhanced Efficiency

Rocware's cutting-edge products leverage advanced AI technologies, including smart framing and 3A (Automatic Gain Control, Noise Cancellation, Echo Cancellation) audio processing technology.

AI-powered framing brings remote meetings closer to face-to-face interactions, such as Group framing, speaker framing, presenter tracking, and smart gallery. This technology captures every move of participants with precision.

Equipped with array microphone pickup technology and AI 3A audio algorithms, our solutions effectively eliminate various noises, echoes, and reverberations in rooms, providing crystal-clear full-duplex audio for users and helping participants stay focused on meeting content.



Our AI- and cloud-driven communication environment significantly boosts productivity and efficiency, enabling businesses to swiftly adapt to evolving demands and achieve their goals with unparalleled precision and speed.



▼ BYOM solution with All-in-One design

Experience seamless video communications with our unique all-in-one design, such as videobar, panorama Camera, Presentation PTZ Camera, offering exceptional audio-visual effects through simple deployment. Our wired BYOM solution creates a high-quality, user-friendly meeting environment, perfect for the hybrid office trend centered around personal computers.



▼ Simple to implement, use, and manage

Design Principles of Our meeting room solutions: Deploy easy-to-use meeting systems with fewer components and simpler connections. Combined with a device management platform for centralized control, our approach significantly reduces system construction costs and daily operation and maintenance costs while improving the daily availability rate of the system.

Comprehensive coverage of conference room spaces



Huddle Room

2~3 People

- Highly Integrated 3-in-1 design, plug-and-play
- 120° DFOV, 4K resolution with HDMI out
- Group Framing, Speaker Framing, Smart Gallery
- 6-meter pickup range and full-range speaker
- AI-Powered AEC, ANC, AFC
- BYOM via a single USB-C cable
- PD charging and network connection via USB-C

Huddle Room

2~3 People

- Highly Integrated 3-in-1 design, plug-and-play
- 360° Panoramic View for equitable meetings
- Quad-Lens stitching
- 4K resolution with HDMI out
- Speaker Framing, Smart Gallery, with Dynamic speaker view
- 3-meter pickup range and full-range speaker
- BYOM via a single USB-C cable, with integrated PD charging

Small Room

3-7 People

- Highly Integrated 3-in-1 Design, Simple to set-up and easy to use
- 20MP Sensor, 120° DFOV lens with mechanical PTZ
- Group Framing, Speaker Framing, Smart Gallery
- 6-meter pickup range and full-range speaker
- Optional BYOM kit
- Optional Lenovo ThinkSmart Kit Certified by Teams and Zoom



Medium Meeting Room

7~15 People

- Highly Integrated 3-in-1 Design, simple connectivity for quick setup
- 4K Dual-lens, Close-up Lens with 12x optical zoom and mechanical PTZ
- Group Framing, Speaker Framing, Presenter Tracking, Smart Gallery
- 8-meter pickup range and stereo speaker
- Optional BYOM kit
- Optional Lenovo ThinkSmart Kit Certified by Teams and Zoom

Medium Meeting Room

7~15 People

- Modular design for Lightning-fast deployment
- 72° HFOV lens with 12x optical zoom and mechanical PTZ
- Group Framing, Presenter Tracking
- Wireless speakerphone with 10-meter pickup range and Master-tuned 2-way speaker
- AI-Powered AEC, ANC, AGC
- Optional Lenovo ThinkSmart Kit Certified by Teams and Zoom

Large Meeting Room

15-25 People

- Modular design for Lightning-fast deployment
- 80° HFOV lens with 12x optical zoom and mechanical PTZ
- Group Framing, Presenter Tracking, Zone Tracking
- Up to 6 Array Microphones Cascading
- Independent high-gain Stereo speaker
- Optional Lenovo ThinkSmart Kit Certified by Teams and Zoom