# Recording Controller  TS-0663C

## Automatic recording control built-in software V3.11

## Description

It adopts integrated hardware design, embedded Linux operating system, and highly integrated with built-in ultra-high-definition video collection, recording, live broadcast, director switching, image segmentation and splicing, and local echo output, realizing multiple functions such as video live broadcast, intelligent guidance, ultra-high-definition recording, remote control, image recognition tracking, and multi-party interaction. It is the latest generation of multimedia information recording and dissemination equipment independently developed to meet the needs of the education industry for comprehensive live teaching, interactive learning, and practical training.

## Feature

I. Hardware parameters:

*Adopts domestic main control chip octa-core 64-bit processor and 8GB running memory. Integrated hardware design, embedded Linux operating system, highly integrated audio and video acquisition, encoding, decoding, professional director, live broadcast, on-demand, recording and other system modules, easy to use, easy to maintain and highly secure.

*The host comes with 2TB of storage space, and the recorded content can be stored for up to 2000 lessons. It supports frequent use of the device for more than one year, and supports automatic overwriting of the oldest files when the hard disk memory is full, and loop recording.

*Display module: The host has a built-in 1.8-inch LCD display to display the device operation status, parameter information, hard disk capacity, audio status, resource channel recording status, and file copy progress. The device has 4 physical buttons, with the ability to record, stop, live broadcast and copy recorded files with one button.

*Video input: The host has 1 HDMI input interface, 4K resolution image acquisition and audio acquisition; it has 2 3G-SDI signal input interfaces, and the SDI interface has POC function, supports POC device adaptive recognition, and realizes video transmission, PTZ control and power supply functions in one line.

*Video output: The host has 2 HDMI output interfaces, one of which has 4K resolution and audio output; it has 1 Type-C video interface, supports custom configuration input and output, and supports 1080P resolution.

*Audio interface: The host has 3 3.5mm audio input interfaces and 3 3.5mm audio output interfaces to meet various audio input and output requirements.

*Control interface: The host has 1 RS-232 Phoenix terminal interface and 1 RS-485 Phoenix terminal interface. The RS-232 terminal has 12V power supply, which can be connected to various serial protocol devices and power the device; it has 3 USB interfaces and 2 Type-C interfaces, which can be used to connect U disk or keyboard and mouse, and support video acquisition, file copying, and upgrade functions; it comes with a 4-inch touch panel, which can quickly operate recording, live broadcast and director switching; it comes with a 2.4G remote control, which can control recording and director functions through the remote control.

*Network interface: The host has 4 802.3ab 1000Base-T Gigabit network interfaces, 3 of which have POE function, so that one network cable can realize power supply and network supply; it supports IPv4 address and IPv6 address.

II. Software functions:

*Based on B/S architecture, you can log in to the web terminal to realize director function, live broadcast management, signal management, group management, user management, file management, scheduled recording, central control management and system management.

*Support H.264/H.265 video codec protocol, support AAC audio encoding protocol, ensure high audio fidelity and accurate synchronous recording of audio and video.

*The device can realize simultaneous access and decoding of 6 4K network cameras, and has 4-channel resource screen synthesis to output 4K resolution PGM screen. Support 2-channel SDI video acquisition, one-line simultaneous transmission of video, power supply and control; support 1-channel HDMI input acquisition, support 3840x2160@30fps, with audio input. Support video file upload preview, video files support MP4, AVI, MOV, FLV, TS and MKV formats.

*Support 7-channel video stream recording, the recorded file format supports MP4, AVI, MOV, FLV, TS and MKV formats, and the bit rate supports 256kbps~20Mbps. Support independent recording, each recording can be freely bound to the audio channel, and can be independently recorded and controlled.

*Supports segmented recording of video files, and can customize the segment duration. The segmentation duration of TS file format supports 30~480 minutes, and other file formats provide 30~240 minutes. A single recording can reach 8 hours of uninterrupted recording, and users can end the recording in advance as needed.

*Audio management: Supports mixing setting management, and each audio acquisition and output port supports separate control of volume or mute.

*Supports local video preview and playback function, which can preview and view the current recorded video, provides multiple multiple playback switching, and supports 0.5x, 0.75x, 1.5x, 2x, and 3x video playback speed adjustment playback.

*Supports web-side file preview, built-in VOD on-demand module, users can play, pause, jump, and other operations of video files online through the network.

*Support multiple directing modes: It has an embedded directing console, which can preview 7 channels of images in real time, 1 channel of PGM image preview and 6 channels of resource channel preview; it supports web-based directing, and supports fully automatic directing mode with the built-in automatic directing module; it supports serial port control protocol and standard network API protocol, and can connect to various third-party directing tools for device recording and directing control; it supports built-in peripheral 4-inch control touch panel, and can realize input source image monitoring or directing switching, recording mode switching, start recording and stop by clicking the control screen button.

*Support screen layout: it supports picture-in-picture, three-screen, four-screen and dialogue screen, and supports 7 screen layouts including 2 custom screen layouts to meet personalized needs; it supports custom screen layout, 4-channel layer custom overlay, and free setting of overlay position.

*Support switching special effects: including gradient, upward fly-in, downward fly-in, blinds, box state expansion, and other 12 screen switching special effects.

*Support subtitle settings: users can customize the size of subtitles, and the font color provides red, green, blue, white, and black options. The mouse can be used to drag the subtitle position at will. It supports the selection of pure letter backgrounds and the upload of slogan background images.

*Support adding opening and ending credits: the opening and ending credits can be displayed on the resource channel screen or customized uploaded pictures. The uploaded picture format supports jpg, jpeg, png, and bmp. Support adding watermark logos: users can customize the uploaded logo images and support red, green, blue, and white transparent color selection.

*Live broadcast management: Support web live broadcast function, support live broadcast for 50 users at the same time in the local area network, have standard RTMP push streaming function, support 3-way push streaming at the same time, connect to third-party live broadcast platforms for online live broadcast, conveniently expand the number of live broadcasts, and support customized start and end push streaming time.

*File upload: The host supports cooperating with third-party FTP file servers to automatically upload backup files. Support the use of FTP server tools to quickly build a file server, and the courseware is automatically pushed to the file server. File upload and download can automatically adjust the bandwidth to prevent network congestion.

*Factory settings: The host supports software/hardware reset function. Users can easily restore the device to factory settings through physical buttons or remote commands to avoid file damage, IP address loss, and administrator password loss that cause the system to be unusable.

*User management: The host supports group management of B/S users. Each user can be assigned an account and password. Users can watch live and on-demand files after authentication and authorization, and the user group management function allows corresponding users to access corresponding courseware.

*Scheduled recording: After the scheduled recording schedule is edited, it will automatically record at the scheduled time, and automatically generate a file name with information such as venue, speaker, and theme. Web signal management supports the function of recording small resources separately.

*Supports one-button reset function to avoid file damage, IP address loss, and administrator password loss that cause the system to be unusable.

*Abnormal repair: Video files damaged by power supply abnormalities can be repaired. The repaired file formats include MP4, AVI, MOV, FLV, and MKV video packaging formats.

*Equipped with software central control, fill in the central control instructions in the recording and broadcasting management interface, you can perform central control operations through the interface, and connect to other devices for one-click control; support recording and broadcasting Android APP docking and control; support docking with private cloud platform servers. After successful docking, the cloud platform can uniformly manage the equipment, which is convenient for managing multiple recording and broadcasting devices.

*Support one-click upgrade function. When the system has new function iterations, the function upgrade can be achieved by importing firmware.

*Support docking with the public service platform for educational resources to realize resource on-demand and shared application functions; support viewing content by platform, school stage, subject, version and textbook, automatic caching and high-definition video playback; support on-demand, drag and drop, playback, jump and other video content playback operations.

*Support docking with the voice transcription server to realize the voice transcription function, transcribe the voice into text and automatically generate subtitle files.

*Virtual matting: Supports two matting modes: blue-green screen and virtual blue-green screen; supports custom combination of foreground and background images; supports hiding foreground characters; supports custom size cropping and custom position superposition of foreground images;

III. Interactive functions:

*Built-in video interactive function, which can realize the interaction of 4 recording and broadcasting hosts, and supports two interactive modes: discussion and mute: In discussion mode, the lecture room can choose to speak or mute the microphone at will; in mute mode, the lecture room cannot speak, but can watch the live broadcast of the lecturer.

*Support address book function: In discussion mode, users can enter the device name or IP address in the top search box to find the corresponding contacts that have been added, or they can add contacts by creating a new user on the right side of the search box. The added contacts can be dialed, edited, deleted, etc. through the buttons on the right.

*Support classroom convening function: In the interactive interface, the lecture room can directly convene the classroom terminals that have participated in the classroom interaction with one click, without additional configuration, which is convenient and fast.

*Support permission control function: In interactive mode, the lecture room can set the opening and closing of the terminal screen and sound of the lecture room, and can set the screen layout of the interactive screen.

*Support dual-screen dual-display function: In audio and video interactive mode, the screen of the main venue and the branch venue can be output. When the main venue opens auxiliary stream sharing, both the main venue and the branch venue output the computer courseware content of the main venue; when the main venue does not open auxiliary stream sharing, the main venue outputs the computer courseware content of the main venue, and the branch venue outputs the computer courseware content of the branch venue.

*Support docking with the multimedia control unit (MCU) to realize the interaction of 50 recording and broadcasting hosts. Support multiple screen layouts, up to 16 channels of screens can be displayed at the same time, and interactive character screen polling can be performed automatically.

*Dial-up call: Support dial-up function, and audio and video interactive function can be realized by entering the interactive terminal IP.

*Support custom interactive frame rate, bit rate function, dynamic or static encoding to ensure the smoothness of interactive audio and video under various network conditions.

IV. AI tracking function:

*Built-in 1 tracking strategy algorithms, no additional configuration of tracking analysis host is required. Supports free switching of tracking strategies to meet the needs of different tracking scenarios.

*Supports free setting of teacher image tracking screen mode, and sets the size of the selected teacher tracking screen according to actual needs.

*Supports setting the tracking lock release time. After the locked teacher leaves the screen tracking area, the person lock is automatically released after the tracking lock release time arrives, and returns to the default state, waiting for the next person to enter the screen to start re-locking tracking.

*Supports setting tracking shielding areas, such as actively shielding the teacher observation area, window curtains, classroom door, large-screen LCD TV and other places that are easy to interfere with the tracking effect. The system will not perform image analysis and tracking operations on the shielded areas to avoid these places interfering with the overall tracking effect.

*Student tracking supports multiple people appearing in the shooting screen after locking the tracking object, and switching to a panoramic screen.

*Teacher tracking supports height adaptive function. After setting the close-up size screen, the system automatically recognizes the teacher's height to achieve the center of the character screen.

*Supports the function of tracking the teacher throughout the whole process, always keeping the person in the center of the camera, so as to achieve a stable mode of tracking without switching.

V. Teaching behavior analysis:

*The host supports student behavior analysis: without relying on an additional analysis host, it can analyze, capture and count the various behaviors of students in the learning process, and generate a refined data analysis report by analyzing key actions such as listening attentively (looking up), reading and thinking (looking down), interactive participation (raising hands), answering questions (standing) and attention transfer (turning heads).

*The host supports the function of analyzing student expressions: covering anger, disgust, fear, happiness, neutrality, sadness, and surprise.

*The host supports the analysis of student classroom performance: including student classroom participation, head-up rate, head-down rate, concentration, scattered stage and classroom activity.

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*The host supports teacher behavior analysis: without relying on an additional analysis host, it can analyze the teacher's teaching method, student guidance, writing on the blackboard, teacher-student interaction and teacher inspection.

*The host supports AI to record classroom interactions in real time, analyze the communication time between teachers and students, automatically perform S-T analysis, and analyze the teaching mode of each class; such as: teaching type, practice type, dialogue type, mixed type; finally draw S-T diagram and Rt-Ch diagram; draw teaching conclusions and teaching suggestions, and provide teaching decision-making suggestions for teachers or education leaders;

## Specification

| | |
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| Storage space | 2TB |
| Power supply | DC 24V/5A |
| Power consumption | 120W |
| Button | 1×switch button, 4×function buttons |
| Software reset function | Support factory reset |
| Software upgrade | Support USB upgrade, web-based network upgrade |
| Indicator light | 3*led, system operation, hard disk failure and recording indicator lights |
| Video protocol | H.264, H.265 |
| Bitstream | 256Kbps~20Mbps |
| Video output format | Support MP4/MOV/MKV/FLV/AVI/TS |
| Audio protocol | AAC |
| Live broadcast protocol | Support RTSP and RTMP real-time protocol streaming |
| Network protocol | Support TCP, UDP, RTMP, RTSP, FTP, DHCP, HTTP protocols |
| Interaction mode | Bluetooth remote control/mouse/ USB touch |
| Input resolution | 3840x2160@30fps、2560*1600@60fps、2560*1440@60fps、2048*1152@60fps、1920*1200@60fps、1920x1080@60/50/30/25fps、1680*1050@60fps、1280*720@60fps |
| Output resolution | 3840x2160@30fps、1920x1080@60/50/30/25fps |
| Network port | 4-channel 802.3ab 1000Base-T Gigabit network interfaces, 3 of which support POE power supply |
| USB interface | 2-channel USB2.0 interfaces, 1-channel USB3.0 interface, support connecting mouse/U disk/director switchboard |
| Control interface | 1-channel RS-232 interface, 1-channel RS-485 interface |
| Audio input interface | 3-channel 3.5mm audio input interfaces, 1-channel HDMI with audio input |
| Audio output interface | 3-channel 3.5mm audio output interfaces, 1-channel HDMI with audio output |
| Video input interface | 1-channel HDMI video interface, 2-channel 3G-SDI video interfaces (support POC power supply) |
| Video output interface | HDMI OUT1: adjustable resolution, up to 4K30 with audio output, fixed PGM screen HDMI OUT2: 1080P60 (fixed) without audio output, fixed director interface output |
| Working temperature | -10℃-55℃ (ambient temperature under well-ventilated conditions) |
| Relative humidity of working environment | 20%~80% relative humidity, no condensation |
| Dimensions (L×D×H) | 484×258×45mm |
| Weight | 3.89 kg |