



# Intelligent interactive recording and broadcasting controller TS-0663P

## Automatic recording control embedded software V3.11



### Description

With integrated hardware design and embedded Linux operating system, the device comes with a 17.3-inch touch screen, highly integrated ultra-high-definition video acquisition, recording, live broadcast, director switching, image segmentation and splicing, local echo output, and realizes multiple functional modules such as video live broadcast, intelligent director, ultra-high-definition recording, remote control, image recognition and tracking, multi-party interaction, etc. This device is a touch-integrated recording and broadcasting device independently developed to meet the needs of the education industry, which can meet the needs of comprehensive live teaching, interactive learning teaching, practical training and other scenarios.

### Features

#### 1. Hardware parameters:

- \*It uses domestic main control chip, integrated hardware design, embedded Linux operating system, highly integrated audio and video acquisition, encoding, decoding, professional directing, live broadcast, on-demand, recording and other system modules, easy to use, easy to maintain and highly secure. The controller comes with 1TB of storage space, and the recorded content can be stored for up to 1,000 class hours. It supports frequent use of the device for more than one year, and supports automatic deletion of old files when the hard disk memory is full, and loop recording.
- \*Display module: The controller comes with a 17.3-inch capacitive touch screen with a resolution of 1920\*1080. It adopts a tempered glass design with a surface hardness of 7H. The touch screen has a light transmittance of 85%. The director can control the broadcast and view the preview director screen through the touch screen.
- \*The screen must meet the requirement of no blue light hazard and comply with the definition of no blue light hazard for lamps and lamp systems in IEC 62471:2006, which is no blue light hazard (LB) to the retina within 10000s (about 2.8h). The limit value LB is  $\leq 100 \text{ W} \cdot \text{m}^{-2} \cdot \text{sr}^{-1}$ .
- \*Supports three-in-one buttons for power on, power off and energy saving: long press to support power on and off control; tap to enter the system lock screen function.
- \*Video input: Supports 1 HDMI input interface, supports 3840x2160@30fps resolution image acquisition and HDMI audio acquisition, which can be used to connect to a computer or camera; supports 2 3G-SDI signal input interfaces, and the SDI interface has PoC function, supports PoC device adaptive identification, and realizes video transmission, PTZ control and power supply functions in one line.
- \*Video output: supports 2 HDMI output interfaces, one of which supports 3840x2160@30fps resolution and audio output, which can be used to connect to an external display system.
- \*Audio interface: The controller supports 3-way audio input interface and 3-way audio output interface to meet various audio input and output requirements; the controller has its own speaker, which can directly play the local preview video audio.
- \*Control interface: The controller has 1 RS-232 Phoenix terminal interface and 1 RS-485 Phoenix terminal interface, which can be used for seamless signaling connection with other control systems; it has its own 12V power supply, which can connect to various serial port protocol devices and power the device; the controller has 3 USB interfaces and 2 Type-C interfaces, which can be used to connect U disk or keyboard and mouse functions.
- \*Network interface: The controller has four 802.3ab 1000Base-T Gigabit network interfaces, three of which support POE function, enabling one network cable to provide power and network supply; supports IPv4 addresses and IPv6 addresses.

#### 2. Software functions:

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



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- \*The recording and broadcasting controller has a built-in encryption algorithm to ensure that genuine machines need to be activated before they have permission to use them, and supports the use of authorization dates.
- \*Support H.264/H.265 video codec protocols, support AAC, PCM, G.711A, G.711U, ADPCM audio encoding protocols, to ensure high audio restoration and accurate synchronous recording of audio and video.
- \*Supports simultaneous access and decoding of 6-channel 3840x2160@30fps IPC network cameras, supports up to 6-channel screen synthesis output, and can realize simultaneous online preview of 6 screens; supports 2-channel SDI video capture, and transmits video, power and control on one line at the same time; supports 1-channel HDMI input capture, supports 3840x2160@30fps, with audio input.
- \*5Supports 7-channel video stream recording, 1-channel PGM screen recording and 6-channel resource channel screen recording. The recorded file formats support MP4, AVI, MOV, FLV, TS and MKV and other formats.
- \*Support simple user mode and advanced mode settings; User settings: support one-click setting of four levels: ultra-high definition, high definition, standard definition, and smooth; Advanced settings: customizable resolution, bit rate, and frame rate; bit rate supports 256kbps~20Mbps, supports dynamic encoding and static encoding selection, supports custom resolution, different resolution ratio settings, including 9:16, 16:9, 32:9 and other settings, resolution supports 3840x2160@30fps; supports 25/30/60 frame rate settings, and also supports 15/20 low frame rate settings.
- \*Supports segmented recording of video files, and the segment duration can be customized. The segmentation duration of TS file format supports 30 to 480 minutes, and the duration of other file formats provides 30 to 240 minutes. A single recording can be up to 8 hours of uninterrupted recording, and users can end the recording early as needed.
- \*Audio management: supports mixing setting management, each audio acquisition and output port supports independent control of volume or mute; supports independent setting of external sound reinforcement speakers; supports AAC, PCM, G.711A, G.711U, ADPCM formats, and audio sampling rates support 48K, 44.1K, and 8K.
- \*Supports local video preview and playback function, can preview and view the currently recorded video, provides multiple playback switching, supports 0.5x, 0.75x, 1.5x, 2x, 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.
- \*Supports multiple directing methods: support embedded director console, real-time preview of 7-channel images, 1-channel PGM image recording and 6-channel resource channel image recording, the embedded end supports mouse/touch control; supports web-based remote directing, and can be used with the built-in automatic directing module for fully automatic directing; supports serial port control protocol and standard network API protocol, and can be connected to various third-party directing tools for device recording and directing control.
- \*Supports screen layout: Support screen layout, support 7 screen layouts including three-screen, four-screen and dialogue screen to meet personalized needs; support 2 custom screen layouts, 4-way layer custom overlay, free setting of overlay position.
- \*Supports switching special effects: including 12 screen switching effects such as gradient, erase, push, expand, and fly in.
- \*Supports subtitle settings: users can customize the size of subtitles, and the font color provides red, green, blue, white, and black options. The subtitle position can be dragged at will with the mouse, and the subtitle solid color background can be selected and slogan background images can be uploaded.
- \*Supports adding title: The title can select the resource channel screen or custom uploaded picture display, and the uploaded picture format supports jpg, jpeg, png, and bmp.
- \*Live broadcast management: Supports live broadcast function, supports live broadcast to 50 users at the same time in the local area network; supports standard RTMP streaming protocol, supports pushing three RTMP streams at the same time, connects to third-party live broadcast platforms for online live broadcast, facilitates expansion of the number of live broadcasts, and supports customized start and end time of streaming.
- \*File upload: supports automatic upload of backup files, can cooperate with third-party FTP file servers, and courseware can be automatically pushed to the file server; file upload and download can automatically adjust the bandwidth to prevent network congestion.
- \*U disk recording: Supports real-time recording with U disk, which allows you to take the recording away when the recording stops; supports U disk read and write rate detection, and can set different bit rates for recording according to the U disk rate.
- \*Abnormal repair: Supports file repair of abnormal videos caused by abnormal power outages, and supports video file repair in video formats such as MP4, AVI, MOV, FLV, TS and MKV.
- \*Scheduled recording: After the scheduled recording schedule is edited, the recording will be automatically performed at the scheduled time, and the file name will be automatically generated with information such as venue, speaker and topic.
- \*Supports one-key reset function to avoid the system being unusable due to file damage, IP address loss, and administrator password loss; support one-key upgrade function, when the system has new function iterations, the function upgrade can be achieved by importing firmware.
- \*Supports software central control: fill in the central control instructions in the recording and broadcasting management interface, and you can perform central control operations through the interface, and connect 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 control the devices, making it convenient to manage multiple recording and broadcasting devices.
- \*Supports docking with speech transcription server to realize speech transcription function, transcribe speech into text and automatically generate subtitle files.
- \*Supports docking with the internal education resource platform to realize resource on-demand and shared application functions; supports selection of viewing content by platform, academic stage, subject, version and textbook, automatic caching and high-definition video playback; supports on-demand, drag and drop, playback, jump and other video content playback operations.



### 3. Interactive Function

- \*Built-in video interactive function, which enables interaction between 4 recording and broadcasting controllers: in discussion mode, the lecturers can choose to speak or mute their microphones at will; in mute mode, the lecturers 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 search for the corresponding contacts that have been added, or they can add contacts by clicking on the right side of the search box. The added contacts can be dialed, edited, deleted, etc. by the buttons on the right side.
- \*Support classroom convening function: In the interactive interface, the main classroom can directly convene the classroom terminals that have participated in the classroom interaction with one click, without the need for additional configuration, which is convenient and fast.
- \*Support permission control function: In interactive mode, the lecturer in the main classroom can set the opening and closing of the terminal screen and sound in the listening classroom, and can set the layout of the interactive screen.
- \*Support dual-screen dual display function: In interactive mode, the lecturer and the audience interact with each other. When the lecturer turns on auxiliary stream sharing, the HDMI interface outputs the lecturer's computer courseware content; when the lecturer does not turn on auxiliary stream sharing, the HDMI interface outputs the lecturer's computer courseware content, and the HDMI interface outputs the audience's computer courseware content.
- \*It supports docking with the special delivery classroom interactive platform, and can realize the interaction of 50 recording and broadcasting controllers. It supports multiple screen layouts, and can display up to 16 channels of screen at the same time, and can automatically poll the screen.
- \*Dial-up call: supports dial-up function, and audio and video interactive function can be realized by entering the interactive terminal IP.
- \*Supports customized interactive frame rate and bit rate functions to ensure smooth interactive audio and video under various network conditions.

### 4. AI tracking function:

- \*Built-in tracking strategy algorithms, no need to configure additional tracking controller. 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 teacher tracking screen according to actual needs.
- \*Supports setting tracking lock release time. When the locked teacher leaves the screen tracking area, the person lock will be automatically released after the tracking lock release time is reached, and the system will return to the default state, waiting for the next person to enter the screen to start re-locking and tracking.
- \*Supports setting tracking shielding areas, such as actively shielding teacher observation areas, window curtains, classroom doors, large-screen LCD TVs 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 locking the tracking object and multiple people appearing in the shooting screen, switching to a panoramic screen.
- \*Teacher tracking supports height adaptation function. After setting the close-up size, the system automatically identifies the teacher's height and centers the character in the picture.

### 5. Analysis of teaching behavior:

- \*The controller supports AI intelligent analysis technology for student behavior: it can comprehensively capture and accurately count all kinds of student behaviors in the learning process, and generate detailed data analysis reports by analyzing key actions such as concentrating on listening (looking up), reading and thinking (lowering the head), interactive participation (raising hands), answering questions (standing) and attention shifting (turning the head).
- \*The controller supports student expression analysis function: covering anger, disgust, fear, happiness, neutrality, sadness, surprise and other emotional analysis.
- \*The controller supports the analysis of students' classroom performance: including students' classroom participation, head-up rate, head-down rate, concentration, distraction stage and classroom activity.
- \*The controller supports teacher behavior analysis: covering teachers' teaching methods, student guidance, writing on the blackboard, teacher-student interaction, and teacher inspections.
- \*The controller supports AI to record classroom interactions in real time, analyze the communication time between teachers and students, automatically perform ST analysis, and analyze the teaching mode of each class; such as: teaching type, practice type, dialogue type, and mixed type; finally draw ST diagram and Rt-Ch diagram; draw teaching conclusions and teaching suggestions, and provide teaching decision-making suggestions for teachers or education leaders.



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### Specification

Storage	1TB
Power supply	DC 24V/5A
Power consumption	80W
Screen size	17.3 inches
Video protocol	H.264, H.265
Video bitrate	256Kbps~20Mbps
Video output format	Supports MP4, AVI, MOV, FLV, TS, MKV and other formats
Audio protocol	AAC, G.711A, G.711U, PCM, ADPCM
Live broadcast protocol	Support RTSP, RTMP, TS and UDP real-time protocol streaming
Network protocol	Support TCP, UDP, RTMP, RTSP, FTP, DHCP, HTTP protocols
Interactive mode	Capacitive touch interaction/mouse
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	4 802.3ab 1000Base-T Gigabit network interfaces, 3 of which support POE power supply
USB interface	2 USB 2.0 ports, 1 USB 3.0 port, supports connecting to mouse/U disk/director switch
Control interface	1 RS-232 interface, 1 RS-485 interface, with 12V power supply
Audio input interface	3-way 3.5mm audio input interface, 1-way HDMI with audio input
Audio output interface	3-way 3.5mm audio output interface, 1-way HDMI with audio output
Video input interface	1 HDMI video interface, 2 3G-SDI video interfaces (support POC power supply)
Video output interface	2-way HDMI video interface
Operating temperature	-10°C-45°C (ambient temperature under good ventilation conditions)
Relative humidity of working environment	20%~80% relative humidity, no condensation
Dimensions (L x D x H)	401.8*257.3*38.8mm
Weight	2.25Kg