Solution of Multimedia Digital Classroom (Auto-Record System)

1.1 Combined Push-Pull Sliding Green Boards

Close status; Open status;

Specifications: Outer size 4000*1300mm, adjustable as per the size of the chosen equipment, combined by 4 pcs of sliding boards. The upper and bottom tracks use the latest design of open type double-wheels and double-tracks, when the middle sliding boards are in the closed position, they will be on the same surface as the fixed boards. Adjacent frames use the design of narrow frame and same color, when the boards are in closed position, they look like a whole flat board, it is good for teacher's smooth writing and student's comfortable watching.

Technical parameters:
1. Panel requirement:
1) High quality original panel, entire board without joint, dark green, with protective film, good for teacher writing in order, comfortable view and eyes tiredless.
2) Thickness: ≥0.30 mm.

2. Interlayer: Use extruded polystyrene board, neither too hard nor too soft, thickness ≥14mm, flat and environment protection, elastic, non deformation, whole without joint, Methanol release mg/l≦1.5.

3. Reverse side: whole anti-rust galvanized plate, thickness≥0.20mm; special two-component AB adhesives, high-pressure formation in full automatic production, strong adhesive, corrosion resistance, stroke resistance, waterproof, durable, flat, never apart, all indexes conform the international environmental protection requirement.

4. Outer frame: High precision sanded silvery white aluminum alloy profile, streamlined design, no obvious string light. Individual chalk holder, novel and nice shape.

5. Sliding system:
1) Pulley: main pulley block with super quality bearing steel PU soft plastic pulley, runs without noise, the main pulley block with automatic cleaning function, clean the dust while running, make sure smooth run.

6. Installation requirement: stealth mounted, safe and reliable. 125*52mm, wall thickness 3mm.

Side frame: high precision sanded silver white aluminum alloy, outer diameter 122*35mm, wall thickness 1.3mm

Blackboard frame: high precision sanded silver white + invisible dark green aluminum allay, outer diameter 35*21mm, wall thickness 1.0mm;

Blackboard connection: high precision sanded silver white aluminum alloy, outer diameter 97*70, wall thickness 4mm.

1.2 Fixed blackboard at the back of classroom

★The frame uses 1.0mm thickness of luxury electrophoresis aluminum, Green board is dark green metal lacquered writing board, board thickness 0.27mm, hardness 8H, easy wiping, good magnetic absorption, opaque, protect students eyes. The middle layer with multilayer corrugated paper, good elasticity, comfortable writing; the back board with 0.21mm thick high quality galvanized plate to prevent the black board from out of shape; Strong adhesive, the plate will not come unglued, no bubbles.

★The size of side frame: 30×18 (face size), electrophoresis aluminum, beautiful looking, the hardness of aluminum 14HRC.

★Overall size 1200 height x 4000 length (the size can be custom-made as per the classroom size). The total design is reasonable, durable, elastic, and comfortable in writing.

1.3 LCD Interactive Electronic Touch Machine G90

1. Technology Requirement of Hardware:
1) Display Size: ≥75 inches LED LCD screen.
2) Writing Technology: Infrared induction technology, min. 10-points touch. No need of special pen, writing by fingers or any other opaque object directly on the surface.
3) ★Support HID drive-free technology: Under Windows system, completely compatible to Windows multipoint protocol, point while touch, no interferes on each other.

4) ★Detachable touch screen: The touch frame with detachable button design, disassemble from front, no need to dissemble any screws or protection angles during maintenance.

5) Response speed: 1st point≤8ms,continious writing≤3ms,positioning accuracy≤1mm

6) Display scale: 16:9

7) Resolution: 1920x1080 (full HD)

8) Brightness: ≥450

9) Contrast: 2000:1

10) Visual angle: ≥178°

11) Sound output power: 2*15W

12) Video formats: PAL/SECAM

13) Front interface: 6-path USB (of which PC USB*4, USB touch*1、TV USB*1)，VGA input*1，AUDIO input*1，MIC input*1，HDMI input*1.

14) Input port: 2-path AV (VIDEO+R+L), 1-path RF, 2 HDMI, 1-path VGA/audio

15) Output port: 1-path AV/audio，1-path TV stereo audio output，2-path USB power supply：AC100-240V 50/60 Hz

16) Peripheral interface: 4 USB 2.0 port, 1 audio line input, 1 audio line output, 1 net interface, HDMI output

17) Power supply requirement AC220V±15% 50/60HZ ultra-low power consumption: 80 W.

18) PC configuration requirement

With modularization design of computer, when the computer has malfunctions, the computer can be maintenance by plug type. To guarantee the compatibility, the computer module adopts to standard OPS-C structure, connection through standard 80-core OPS port with other devices. Port: 2-path USB2.0、2-path USB 3.0、1-path RJ45 network port, 1-path HDMI, 1-path LINE output, 1-path MIC input, support wifi.

★Machine appearance: Aluminum alloy front housing, circular arc safe plastic corner, light and thin design, thickness of the whole machine 29.7mm, thickness of computer position 67.7mm (thickest)

★Touch structure: touch screen PCBA part can be maintained by disassemble the infrared filter directly, no need to disassemble the front frame and corner or any other accessories.

Display module: adopt 65 inch LED LCD display, brightness ≥350cd/m2, highest resolution 1920(horizontal)x1080(vertical)

★USB key at the front, dion cover key, dust proof and sweat proof design

★Touch part parameter: infrared sensitive technique, fingers, pens or any other opaque objects can be used sensitively, response time required the 1st point (hit): less than 8ms, continuous (writing): less than 3ms, cursor speed no less than 300 points/s, screen protection by 4mm tempered glass.

★Multi-point touch function: 16-points touch function (min. 10 points) for different operation system and WIN7, It is fully compatible with WIN7 multi-point operation protocol, and can recognize multiple people writing at the same time and many

natural gestures.

★Multi-point touch module: Single point mode and multi-point mode switch function can be provided for different application requirements under different operating systems and WIN7 operating systems.

★Remote maintenance: Touch screen with built-in detection tools, convenience in self finding problems of touching, after sales engineer can provide the best after sales service and support remote detection and update service on touch screen.

Qualification: 3C certification, ISO9001, ISO1001, CE, ROSE inspection report.

1.4 Multimedia Steel Lectern JTS03

1. Dimension: Length/Width/Height, 800mm*600mm*950mm
2. Material: ABS engineering plastics + wood armrest + superior cold-roll steel plate + plastic injection insulation base, thickness of engineering plastic ≥4.0mm, steel part thickness ≥1.0mm.
3. Process technology: injection molding + sheet metal processing. Sheet metal surface is cheated by unoil, rust removal, parkerising, pickling, spraying plastics, robust and durable, with features of ant-corrosion, anti theft, water proof, wear-resisting.

Design features:
1) Green and environment protection
2) Humanization design: size of upper part 800mm*600mm*200mm; size of lower part 750mm*550mm*750mm,size of drawer of display stand 520mm*365mm. The design of total lectern is people first, marginal arc, exquisite workmanship. Console cover with the design of sliding cover left/right, not use slides to reduce failure. Upper stand is with snap joint and without screws, elegant looking. The R20 circular arc design of the lectern reduces the possibility of harm to teachers and students, the tilting shrinkage design is more safe and elegant; the desk top function area with reasonable layout and exquisite   design, easy to use by teachers; Open at both sides of front and back, easy to install and maintain.
3) Ergonomics: arm rest on left and right sides mounted with high grade wood grain width 4.2cm, suitable for use.
4) Widely use: in multimedia classrooms, lecture theatres, network and computer rooms, conference rooms, studios, various types of training rooms, lecture halls in

colleges, universities and schools, etc.

Platform and blackboard are the same brand for later maintenance.

The following information are provided:
1) The letter of authorization of the products manufacturer and the original after-sales service commitment.
2) The manufacturer has ISO9001 quality management system certification, ISO14001 environmental management system certification, and GB/ t28001-2001 occupational health and safety management system certification.
3) It has the 2015 physical test certificate of the digital campus integrated solution delivered by the Central Audio-visual Education Center.
4) Certificate of environmental mark (II) type product certification.

1.5 Single up/down desk and chair

Panel material: Melamine environmental protection plate,
Steel material: Q235 steel tube
Plastic part material: Engineering polypropylene
Desktop size: 640mm, desktop width 450mm, thickness of desktop plate 18mm.
Max height from ground: 780mm, min height from ground: 600mm
Adjustable height: 600-780mm
Desk bucket depth: 330mm
Front panel: Thickness 0.8mm, material Q235 steel plate.
Desk tube size: inner tube 20mmx50mm/steel thickness 1.5mm, material Q235 steel tube; Outer tube 30x70mm/steel tube wall thickness 1.5mm, material Q235 steel tube.
Desk leg bottom size: 420x50mm/steel thickness 1.5mm, material Q235 steel plate.
Adjustment of chair: 450-360mm.
Outer tube size 30x60mm, inner tube 25x50mm
Color: customized.

1.6 Integrated Video Recording and Playing Machine

★Highly integrated multifunctional wireless microphone, multimedia computer, object visualizer, stereo amplifier, intellectual console, sound box and tracking.

Support unified management in cloud video management platform.

★Support the console recording from beginning to end.

Recording main board: (coordinate with special console equipment), hardware framework. ★Industrial grade insert type ARM+DSP framework, integrated plate card, no inserted card on the plate, no outer port (not industrial control plate + gathering card framework)

Operation system: ★Insert type Linux operation system.

★Wall-mounted type integrated machine, direct current supply, power 30W, light and environment protection.

Video input: ★3-path sdi HD video + 1-path VGA input, perfect supporting classrooms with 3 camera position.

Video output; HDMI+VGA.

Audio input: ★Double channel linear input + MIC input double audio input DSP hardware intellectual sound mixing.

Audio output: 1-path Double channel linear output.

Other port: 4-path RS232 serial port, 2-path USB 2.0 port, 1-path RJ45 Gigabit network interface.

★B/S, C/S two architecture interaction, both local and remote can operate simultaneously.

★Web pages are all flash architecture, no need to install any ActiveX plug-in. It is safe and convenient.

★Insert type system and functional software are stored in the on-board flash memory, takeout and damage of the hardware do not affect the system function.

Insert type system and functional software can't be visited, modified, deleted or added by anyone or any program, thus avoid any system damage by maloperation nor any risk by internet virus infection.

Support recording of single picture mode/curriculum resource mode; support big rate/small rate live program; support switch on automatic/semi automatic/manual program directing.

4-path video live preview.

★Support recording file on - demand playback, resource mode automatic three-screen preview, full display of index information.

★Recording resources can be uploaded to resource platform, manual download, copy to movable storage devices

★HDMI High definition anchor audio and video loop out, perfect connection to video conference system.

★Support PTZ control, track by click of mouse, pulley control position.

Support pictures in picture, logo. Subtitle adding.

Video format: H.264 high profile video coding. AAC audio coding, mp4 file format; local 2TB professional monitoring hard disk

★Support timing recording. Upload to resource platform regularly.

★A powerful Intel dual-core processor is built in, the main frequency is abov 3.0G. or Core i5 processor is optional. Memory 4G. 500g SATA hard disk (optional 32G SSD)/graphics card/integrated gigabit card, sound card.

★Built-in multi-function wireless microphone can speak by a hand type or head type microphone, automatically select different frequency points, meet the need of 100 classrooms in use without interference. multifunction wireless microphone with laser pen, PPT up/down page function key and the signal switch control key of PC and display can remote control the up/down page in running PPT, or remote control the signal control switch of PC and display.

★Built-in 2*20W stereo digital amplifier, with DSP digital chips, BLP digital feedback repeating techniques, intellectual testing and sampling, automatically test and adjust the volume gain, automatically source noise frequency point and Complete the sound suppression feedback. With power output and frequency output port.

★Built-in alarm system against theft, the system will alert you if someone switches off the projector.

★Built-in time delay power function, when press the "power" key, the equipment can be closed, don't need to wait the bulb cooling down, the system will delay 50 minutes for outage.

Built-in object display stand: shot size: A4(210mm*297mm)/scanning speed: 1s/resolution ratio: 5 mil/image color: 24 bit/picture format: JPEG,TIF,PNG,GIF,BMP/video format: AVI format/port: USB2.0, no need external power/light source: natural light + LED lamp(usage time 3000 hours)/picture control: adjustment of brightness, sensitometry, acutance, color and gain control, character recognition: OCR recognition function/can write or postil on the presentation notes on the projection screen or electronic whiteboard.

There are audio input for laptop and VGA input, equipment side with audio and amplifier output port. With VGA input and projector VGA input, RJ45 network port, USB port and power input/output socket.

★For equipment maintenance, no need to disassemble the equipment, only need to open the front panel and replace the accessories in the equipment. Configure wireless keyboard and mouse.

★The product passed the certification of ISO9001 ISO14001, CCC, CE, FCC, ROSH. Benefits: high integration, save space, convenient for transport and installation.

1.7 Insert Type Video Recording Playing System

1) Insert Type Framework
The Integrated Recording Machine adopts insert type framework, it is light and slim, portable, save space; with Linux system, to avoid the problem of Windows vulnerable to computer viruses, the system is more safe and stable; low energy consumption, fast

cooling, avoid the problem of unnecessary damage of the parts due to high temperature, make it stable running; insert type adapts to various environment, e.g. dust, humidity, outdoors, reduce equipment failure rate, increase equipment life time, save cost of manual maintenance.

2) 6-path concurrent video processing

The HD video recording system adopts HD shot technology in whole process, can conduct the 6-path concurrent signal 1080P50f/60f, guarantee high quality of collected input signals. Furthermore, to make sure the effect of live recording, according to the environmental situation of recording, can support mixed input of SDI video signal, far-end video signal, HDMI HD video signal, make sure of the best effect of video recording.

3) Remote B/S broadcasting instruction and local broadcasting instruction

The recording system support 2 modes of broadcasting instructions - remote B/S broadcasting instruction and local broadcasting instruction, the remote B/S broadcasting instruction can let users to use the function of professional broadcasting instruction from remote which is accessible by network, without plug-in requirement, it is easy to use. The system supports the mode of local broadcasting instruction, you only need a mouse and display screen to get local broadcasting instruction, no delay, high fluency. Both broadcasting modes supports the operation of 6-path video preview, Single and multi-stream live output, video switch, audio adjustment, recording mode, special effect, movie head and end, caption, logo, camera control, it is easy to use and flexible.

4) Various Recording Modes

Support single and multi stream recording modes, single stream mode supports the models of single-picture and multi-pictures, and switches in various display modes. Multi-stream recording mode support 1-pat movie video and 5-path video 1080P/30ffps individual decoding, and save as independent 6-path video, the video has no picture covered on each other, thus save complete materials for future editing.

5) Multi-point Interactive Education

The Integrated Recording and Broadcasting Machine has the function of remote education, the built-in 4-point MCU multi-point interactive function, can open the function of 4-point interactive education simultaneously; function of video conference end, support SIP protocol, can directly interconnect to multi-point interactive platform MCS and conference TV end, apply to simultaneous class education in big scale in the district or city.

6) Easy operation, One-key Conduct

Teacher can use the key on the control panel, operate by one-key, start and stop video recording. Also can set up automatic or manual recording on the network web page. If automatic recording, only need to press "start". Press stop after class, the video of the whole class is finished. All other operation systems run automatically, simple and easy,

very convenient.

1.8 Integrated Image Tracking Machine

Single board card embedded architecture, integrate teacher tracking, students positioning, writing positioning, broadcasting switch, the system releases intellectual analysis on the various scenes of teacher area, student area and writing area, etc., and control the camera equipment to make video in fully automatic intelligent personification, the teacher and students don't need to wear any tracking devices, there are no manual interference during the whole process of recording.
1) Video input port: SDI*4.
2) Video output port: DP*1\HDMI*1
3) Cloud platform control port: RS-232*4 reuse cloud platform control port (PTZ), can set up the cloud platform control code.
4) Communication port: console*1
5) Network port: Gigabit network interface
6) USB: port*4
7) Audio port: LINEIN*1

1.9 Image Tracking System

1) Teacher Image Behavior Analysis
When the system detects the teacher moving much in the classroom, priorly adopts dynamic camera mode with mid-shot and full view; when the teacher sits or stays in the classroom, priorly adopts static mode, with mid-shot and close shot. In the situation of multimedia classroom, interactive teaching machine is necessary, so before adopting the image recognition technology to track the teacher's behavior, we must consider the interference of these image sources, to avoid mis-recognition, the simulation of real teaching scene was fully carried out, after various simulation test on tracking scenes, in the software setting, shielding area is allowed in the setting, to avoid the interference of animations, shadows and fluttering curtain on the tracking effect.

2) Students Image Behavior Analysis
In traditional tracking, it is not allowed that someone passes the corridor of the classroom, but in actual situation of class, a passing class teacher will surely affect the normal tracking on students, thus rubbish shots will appear. Considering actual teaching scene, it is allowed to manually set the image recognition mask area during software debugging, thus set the effective tracking area according to the environment on site and avoid rubbish spots.

3) Advanced Comprehensive Anti-shake Technology
Having owned "wide scene image anti-shake technology", while supporting innovative "narrow scene anti-shake technology".

①Wide scene image anti-shake technology: allow to neglect the teacher's moving within a setting scope, keep camera fixed, guarantee the image smooth and stable, avoid the image bouncing or moving.

②Narrow scene anti-shake technology: in the narrow scene of 1.8~2.4m, under the moving speed of 0~3m/s, tracking people precisely, no shaking, no missing. In the meanwhile of tracking the teacher precisely, completely avoid the problem of shaking spots due to large body movements; it is a breakthrough in this field to solve the problem existing many years.

4) Adapts to Teacher's height

Adjustment according to different teacher's height, the teacher's camera is on the proper position all the time, ensures reasonable composition. The tracking process is continuous, stable, smooth, the image output is stable.

5) Teacher's Recognition

To complete the construction of curriculum information, the system automatically performs face recognition of the teacher, recognizes the teacher's name and identification and feedback the recognized information on the basic data.

6) Tracking switching strategy customization

The image positioning system can intelligently adjust the camera strategy during the class according to the special scenic conditions and user's need, fulfill the whole teaching process, maximize to reach the effect of manual shooting.

1.10 Resource Management Platform

1. On-line Share

1) Quick classification on the resource by hot, latest, hits.
2) The resources can be navigated according to school, subject, grade, lecturer, key video, micro-course.
3) Possible setting of navigation by various classifications for display of resource.
4) Overall searching, fuzzy query or group query according to key words of school, subject, title, lecturer, etc.
5) Users can learn through various mobile terminals by login the platform whenever and wherever possible; break the limit of time and space.

2. Image Behavior Analysis

During course recording, besides obtaining the course video resource, data of S-T teaching behavior line graphs and pie graphs are created, proportion of course time of teacher and students during the class, proportion of teacher writing and PPT, it is convenient for a teacher to make reference to the above mentioned objective data and make a horizontal self-comparison, learn from excellent teachers, providing powerful resources for teaching and research later on.

3. Play on three-split screens

On the basis of playing normal single video course, the system provides 3-split courseware for online learning, which consists of teacher video, students video and teaching file video. Because the 3-split courseware is that the teacher video conforms to the PowerPoint presentation, the teaching effect is very close to live class.

4. Virtual Slices, Fabrication of Micro-course

Provide the function of editing and virtual slice of the online video online courseware, divide excellent course resources into 3-5 minutes video according to knowledge points or titles. Knowledge points video are organized by subjects, grades and progress, provide students convenient and targeted programs while using network video resources for study.

Also you can use the professional micro-course recording tools to make small video and send it to the platform for study.

5. Streaming Live Broadcast

The system can broadcast the video, audio and computer screen from the scene, users do not need to install any plug-ins and watch the live video broadcast from browser or Wechat platform. During the broadcasting, users can interact online like QQ mode, and ask questions about different things, comment or online scoring. After broadcasting, the live content can be saved to the teacher's personal space automatically, it is convenient for the teacher to manage and post.

6. Application of network teaching and research

With the popularity of network technology, school developed from pure classroom teaching to multimedia teaching activities combined with network class. Teacher and students can use the resource management platform to live broadcast and request the broadcasting on network, demonstration on teaching, remote learning, remote interactive teaching, etc. view, emulate and learn anytime and anywhere, no limit of space and time, set up a platform to learn from each other, and share the teaching resources.

Setup of Interactive teaching and research is applied for by users, incl. upload of teaching and research courseware, courseware, setting of members of the teaching and research group and the targeted evaluation programming. Various evaluation programming can be preset.

7. Interactive Teaching by multi-participators

Each recording and broadcasting classrooms can join the multi interaction directly, convenient for the students to accept different teachers class, understand the content of course from different point of view; different excellent courses from different schools complement and common progress; Improve teachers' teaching level through communication.

8. Answer questions and communicate online

In the learning process, you can ask questions in real time, others will answer, it is convenient to learn. You can comment on the courseware, for the study of later students.

9. Mobile teaching

The resource management platform supports cross-platform access, you can visit and learn from the browser on the mobile devices of mobile phones and tablet computers, etc.

10. Personal Space

After login or the background administrator releases the log in account and the password, the user can enter his own personal space. The personal space provides the functional modes of personal homepage, curriculum management, classroom management, statistic data, etc. Personal homepage contains my network disk mode, my question/answer mode, and personal data management mode, my network disk contains personal uploaded resources, public resources, etc. In the meantime, upload and download of courseware videos is supported; my question/answer mode appears all personal questions and answers in platform. Personal data are editable in the personal resources management mode, you can upload personal icon locally or take a photo from camera. Different participants have their suitable operation interface. As a student, you can save the curriculum you like, ask questions during your studying or help others answer questions, easy to revise your personal information. During studying, the system will record the student's studying process and progress, helps to continue the last study in coming login. As a teacher, you can upload the superior teaching resources, post curriculum, see the questions your students ask, and answer the questions online interactively.

11. Tour class online and headmaster evaluate

After finish the construction of the recording classroom, it is managed and controlled by the cloud recording platform built in the management control center and the resource management platform. The management control center controls the front recording classroom by monitoring, recording, live broadcasting through the server and resource management platform.

The administrator logs in the cloud recording platform through webpage. The left side appears all the front recording classroom in the cloud recording system, the middle appears all the classrooms in preview pictures, the right side appears the control options for the designated classroom, the bottom appears all the cameras pictures in the designated classroom.

The resource management platform with convenient and concise development concept, combines the most cutting-edge media streaming and control streaming control technology, set up area type control terminal, reach the target of simple

operation and strong function.

By the resource management platform, the school leaders can intuitively and conveniently watch the situation of the class, the administrator can conveniently and promptly do the operation of camera focusing, recording and broadcasting for the recording classroom which is under control.

1.11 HDTV camera

HDTV camera adopts 1/2.8 inch, 214 million effective pixels high quality HDCMOS sensor, can get max 1920x1080 high resolution superior pictures, the output frame rate max 30fps, reduce effectively the image noise at low light, simultaneously apply 2D and 3D de-noising algorithm, reduce image noise drastically, even under super LoLux, can keep the images clean and clear, image signal-to-noise ratio reaches 55dB.
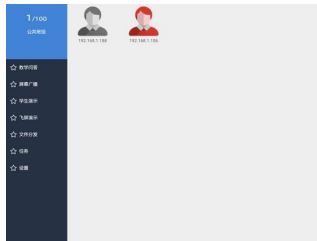
1) Focal length: f=4.7mm-94.0mm
2) Aperture: F1.6-F3.5
3) Optical zoom: 20 times
4) Digital zoom: 12 times
5) Field angle: 55.4°-2.9°
6) Minimum illumination: 0.5Lux(colorful)，0.1Lux(black and white)
7) Shutter speed: 1/1~1/10,000 s
8) Horizontal extent: -170°~+170°
9) Vertical scope: -30°~+90°
10) Horizontal rotation speed: 0.1°~160°/s
11) Vertical rotation speed: 0.1°~120°/s

Image sensor: 1/3 super CMOS pixels: PAL:648(H)*512(V)；NTSC:510(H)*492(V)

1.12 Auxiliary positioning camera HKD-60224

Definition: 600TVL
Minimal illumination: 0 LUX/F1.2
Signal system: PAL/NTSC
Simultaneous system: internal synchronization
Shutter speed: 1/50 (1/60) ~1/100, 000 sec
Video output: BNG1.0VP-P/75Ω
Power supply: DC12V
Camera lens: 2.8MM

1.13 Multi-screen interactive intelligent teaching software XS-V3.36

★Software environment requires in a local intranet environment, no need to connect to the outside network, it can be implemented with general router and WiFi hotspots.

★The software needs support of many languages, which is easy for teacher's use, the languages needed minimally: Chinese, English, Traditional Chinese, Spanish, Russian, French, Uighur, etc.

Can use the mobile devices to control electronic whiteboard, integrated machine, computers remotely, use the functions of moving, single/double click, or so key. You can also open the file and edit it remotely.

★Without connection and network, the teacher can use his laptop or mobile phone to record micro-course in office or at home, he can record micro-course anytime and anywhere.

★Micro-course recording content includes courseware content, original handwriting, teacher's speech video and audio. The courseware needs to support media documents as video, pictures and pdf, etc.

★Micro-course needs standard streaming media format, e.g. pm4, flv, etc. which is convenient to transmit and watch in network. After the micro-course is recorded, you can see it by one key, in order to make sure the result of the micro-course recording.

The teacher can make a standard video file for the class teaching content by one key, incl. handwriting on blackboard, images of big screen, class live situation, teacher's voices, etc. It is convenient for the students to go over, or for those students who did not attend the class to study.

★The teacher can make notes on the big screen directly, which needs the video to support dynamic notes.

★The teacher can open PPT document from the mobile device onto the big screen directly, no need to copy the file to the big screen computer, and play it by full screen, or he can close the full screen display or close the PPT file from the mobile device terminal.

★The teacher can slide the PPT up and down through gestures, can also control the slide up and down by pressing the button.

Mobile devices should have a thumbnail display of all the current PPT pages, the big screen doesn't have thumbnail display, the teacher can quickly turn the large-screen PPT to the designated page by selecting the thumbnail page.

The PPT page can cooperate with the brush function and explain at any time. While playing PPT, no need to exit from PPT, you can play video/audit files in the mean time, convenient for the teacher in lecturing.

The PPT page can be used as a screenshot to explain the key points in the drawing board, and can be saved as class notes.

If the PPT page has a small text, it can cooperate with the magnifying glass function to achieve multi-level magnification, which is convenient for students to watch at the back.

The function of mobile booth is required. Teachers can take photos of textbooks, test papers and other physical objects through mobile devices and upload them to the large screen for explanation. In addition, they need to support the control of zooming, rotation, movement, cutting, marking, erasure and other operations through gestures at the mobile end.

You can share the process of students doing exercises and experimental situations at any time through the camera of mobile device. During the process of sharing, students can choose whether to record or not.

You can display all the teaching documents on the mobile devices, incl. ppt, word, pdf, photos, audio, video, etc., you can also control the display from the mobile device, incl. full screen, fast forward, fast back, stop, etc.

★In the same software interface, interactive teaching, screen broadcasting, teaching q&a, real-time statistical analysis, student demonstration and document distribution are realized simultaneously.

★Need to support the electronic whiteboard function, with pencil, fluorescent pen, laser pen, magic pen, brush, pattern brush and other modes of writing.

Need to provide triangle, square, circle, ellipse, polygon, parallel lines, arrow lines, dotted lines and other graphic drawing tools.

Please insert pictures, PPT, word and other documents for explanation, and directly save them as pictures, PDF and other documents.

Support gesture roaming, gesture erasure, gesture zoom and other functions.

The mobile device interface can be wirelessly projected to the large screen, all mobile device operations can be displayed on the large screen.

The files on mobile devices can be uploaded to the designated folder on computer, or downloaded to the designated folder on mobile devices.

The mouse pointer size and shape can be set optionally and the mouse shape can be customized to solve the problem that students often cannot see the mouse pointer clearly in the back row.

Basic auxiliary tools are available, including fluorescent pen, spotlight, magnifier, etc. The color of fluorescent pen, spotlight size and magnifier factor can be adjusted easily through mobile devices.

Mobile device side software can scan qr code to download automatically, and automatically prompt new version upgrade or automatically check upgrade to the latest version.

★IOS, Android and win8/10 should be supported on mobile devices.

The software copyright certificate shall be provided to prove the legal intellectual property of the software;

The software product registration test report shall be provided to prove that the software does not contain virus, background theft, etc.

Need to provide manufacturer authorization and after-sale service commitment.

1.14 Display 19 inches

Product parameter:

1) Product name: LCD

2) 3C product model: VS16259（sales model：VX2039)

3) 3C specifications and models: VS16259（sales model：VX2039）：19VDC， 1.3A 或 19VDC，1.58A (power adapter...)

4) Product name: ViewSonic/VX2039

5) Origin: China

6) ViewSonic model: VX2039-SAW

7) Model: VX2039-SAW

8) Energy Efficiency Grade: Grade one

9) Color: black

10) Screen size: 19.9 inch

11) Panel type: IPS

12) Interface type: VGA D-SUB

13) Resolution: 1440x900

14) Aspect ratio: 16:10

15) Screen type: LED

1.15 Professional Power Amplifier E-2130

Pure after - class two - channel AB class amplifier

1) The power amplifier circuit of Huanniu power supply has stronger sound quality and better transient response.

2) Power soft start anti-shock function, dc output protection function, long-term overload thermal protection, power delay function, power amplifier instantaneous short circuit and overload electronic protection;

3) Using the input/output signal comparison circuit, the input signal is attenuated when the power amplifier is about to enter the clipping state, further reducing the clipping, thus protecting the expensive speaker system.

4) ★Efficient aluminum radiator natural cooling, intelligent control of forced heat dissipation, fan noise small, high heat efficiency;

5) With multiple inputs and outputs, the electrode has three input sensitivity switches to select the input level. Stereo, bridge and connection is convenient. Professional SPEAKON socket can connect the speaker quickly and reliably.

6) ★The built-in double channel is connected with ultra-low sound special channel, and the crossover point of 20hz-300hz can be adjusted;

7) 200w-2000w all are available. Can match any sound box;

Technology parameter:

Frequency response: 20Hz-46KHz

SNR(Signal to Noise Ratio): ≥105dB

Degree of separation: ≥80dB

Harmonic Distortion: ≤0.1% 1KHz

Damping coefficient: ≥300:1

Stereo output power: 300W8Ω*2 500W4Ω*2
Bridge output power: 600W8Ω*1
Size: 2U Mountable in standard 19-inch standard equipment cabinet
Weight: 18.5 kg.

1.16 Front processor DSP-880

Digital front effect processor, widely used in speech conference, KTV, small entertainment and other occasions demand. Professional high performance 24-bit high speed DSP processing effect.

★Innovative full-chip two-stage three-phase ultra-stable switching power supply system
Built in top - performance AD/DA converter

★2M large memory capacity ensures large dynamic audio processing capacity
Microphone volume and tone can be independently adjusted manually or electronically
Super cool blue backlight LCD display all functions

★Three-way audio - video composite signal automatic selection control input

★New 5 1 digital audio electronic output
The frequency point can be modulated with ultra-low tone double interface output
Special system full electronic control, remote control, RS232 computer software control

★The built-in YAMAHA sound function is unique
Line input SNR: >80dB
Line input impedance: > 10KΩ

Microphone input SNR: >75Db
Microphone input impedance: 600Q
THD (total harmonic distortion): <01%
Line maximum input level +16dBu
D/A converter: 24BIT/48KHz△一∑
Microphone input sensitivity: 10mV
A/D converter: 24BIT/48KHz△一∑
Output impedance 500
Display 2x16LCD
Maximum output level: 20dBu
Supply voltage: AC 240V 50/60Hz
Line input frequency response 20Hz-50KHz±0.5dB

1.17 Professional Audio RX-W333C

Product features:
1) Use imported full frequency loudspeaker, sound quality, transparent and brilliant, vocal expression outstanding, medium frequency, thorough, penetrating, luxurious appearance, flexible installation.

2) Spray paint high - density fiberboard box, steel mesh echo absorber cloth sand cover.

3) Apply to all kinds of multimedia classrooms, electric classrooms, ordinary classrooms, multi-function hall.

4) Equipped with the original factory adjustable Angle mounting bracket

5) In order to ensure product compatibility normal use of microphones and amplifier must be the same brand

Main technical parameters:
1) 2-units full frequency speaker, 5-inch bass unit, 3-inch treble unit.
2) Power: 50W-100W
3) Impedance: 8Ω
4) Maximum sound pressure level: 120dB
5) Sensitivity: 98dB(±2dB)
6) Frequency response: 20 Hz -18kHz
7) In order to ensure product compatibility normal use of microphones and amplifier must be the same brand.

1.18 Directional Hoisting Microphone BH-09

Product features:
1) Connect with the same brand power amplifier without battery, professional environmental protection, interference tube and diaphragm design, super heart type, high sensitivity, with excellent pointing characteristics, full sound, long sound pick up distance, strong anti-howling ability.

Main technology parameters:
1) Sensitivity: -38dB+2dB
2) Degree of distortion: ≤0.1%
3) Frequency response: 20Hz-20KHz
4) Working voltage: 5-48VDC
5) Output impedance: 200Ω
6) Pickup angle: minimal 100º
7) SNR(Signal to Noise Ratio): ≥78dB

1.19 Wireless hand microphone BLP-920

The advanced synthetic phase-locked loop and infrared frequency control technology are adopted. Its advantages are high stability, wide frequency response, large dynamic range and arbitrary changing frequency.

With a frequency of 600 ~ 900MHz, it can transmit efficiently, which greatly reduces interference, can accept weak signal, and has mute control function.

The ultra-high speed microprocessor analyses the signal quality, controls the static noise and effectively prevents the impact, makes the sound quality more perfect.

Efficient multi-channel, multi-system sharing, LCD display screen.

Adjust the receiver sensitivity according to different environment to achieve the best effect.

★Single host 300 channel selection.

★The effective signal distance can reach more than 100 meters.

Drift rate: ±40K

S/N：<100dB

Distortion: <0.5%A

Weighting: 1KHz

Frequency response range: 50HKz~18KHz±3dB

Rf output power: 10mw

Microphone head: Cardioid, hypercardiac orientation

1.20 Power sequence BS-210

LED indicator light is used to accurately display the working status of each circuit and the relay of 30A is used in each circuit to ensure long-term stability and reliability. With a liquid crystal voltmeter, the front is connected to the power supply for the convenience of on-site power supply. In system connection, turn on or off all kinds of sound equipment in order to protect the system from impact and protect the equipment.

1.21 Double lift desks and chairs SJ08

Panel material: Melamine environmental protection plate

Steel frame material: Q235 steel tube

Plastic part material: Engineering polypropylene

Desktop material: length 1200mm/width 450mm/plate thickness 1.8mm

Max height above ground: 600-780mm

Desk bucket depth: 330mm

Desktop strengthened tube: square tube size: 25mm*25mm, steel tube wall thickness: 1.2mm

Front panel: length 1140mm, width 120mm, material thickness 1.2mm, material Q235

steel panel

Desk leg size: inner tube: 20mmx50mm/steel tube wall thickness: 1.2mm/material: Q235 steel tube.

Outer tube size: 30mmx70mm/ steel tube wall thickness: 1.2mm/material: Q235 steel tube

Desk leg corner size: length 420mm/width 50mm/material thickness 1.2mm/material Q235 steel material. Chair up/down adjustable height: 450-360mm

Outer tube size: 30x60mm/Inner tube size: 25x50mm

1.22. Intelligent Electronic Capacitive Class Information Board BD21.5-B08

Class information board system is a device mounted at the classroom entry, acting as digital display platform of class culture for the teachers and students. Movable and centralized management on displaying of cultural information of the intellectual class, it also equipped with an attendance system, by which teachers and students can sign in through mobile device or swiping card. Teachers can check the daily attendance record and obtain the information of students in classroom and their safety. Parents also know their children's information of arrival at school and leaving from school.

   a) Product features

1)- Structure design:

1) Flat surface structure, ergonomic design, slim and beautiful, streamline modeling, sophisticated technology

2) Integrated ultra thin design of display, touch control and computer, thickness is only 43mm;

2)- Using effect:

1) Using the latest innovative touch control projected capacitive plate, perfect 10-point touch, support handwriting or multi-point gesture;

2) Touch speed is less than 3ms, high precision, simple use and easy maintenance;

3) Anti-light interference, make sure the precision of operation (normal use under direct glare);

3)- Wide extension: flexible configuration for various accessories of customer need.

4)- High safety: aluminum alloy + steel plate structure, blind edge, anti-wear and anti-corrosion paint process, integrated explosion protection design;

5)- Stable performance: advanced design philosophy, strict production process; stable and reliable product quality, low failure rate;

6)- Easy installation: on/off by one key with power on, free of site installation and debugging;

7)- Support timing switch function, realize unattended function.

    b) Product size

1) Specification: 21.5 inch.

2) Display scale; 16:9

3) Display area: 478*270

4) Resolution: 1920*1080P

5) Overall dimensions: 527*426*28mm

3- System design:

1) HDMI output/input: inner computer HDMI output (Android only 3288 support output);

2) Touch function: latest projected capacitive plate, 10-point touch, support multi-point gesture.

3) Display: PC full HD HDMI signal 1080P;

4) PC video decoding: 1080P full HD MPEG, H.264, etc.

5) Structure design: Aluminum alloy frame, steel plate housing, good heat release;

6) System module: PC, display and touch are integrated, one key switch.

4- Parameters of LCD screen:

1) Type of screen: LED backlight LCD panel A gauge;

2) Optimum resolution: 1920*1080P ，1920*1200，1280*1024；

3) Brightness: 250 cd/m2;

4) Contrast: ≥ 1000：1;

5) Response time: 1.3/3.7 ms;

6) Refresh rate: 60Hz;

7) Total number of colors: 16.7M （8-bit 2(LVDS) channel low pressure differential signal）;

8) Visual angle: 89/89/89/89 (Typ.)(CR≥10) (left/right/up/down);

9) Usage time: >30000 h.

5- Parameter of touch screen

1) Touch technology: projection capacitive technology (capacitive touch screen);

2) Response time: <5ms/3, touch points: standard 10 points, zoom in and out multi-point function;

3) Valid identification: >1.5mm;

4) Scanning frequency: 200Hz;

5) Scanning precision: 4096×4096;

6) Communication mode: full speed USB 2.0, 3.0;

7) Number of theoretical clicks: min. 50 mil.

8) Working current/voltage: 180Ma/DC+5V±5%;

9) Anti-light interference: normal use under the change of sunlight, incandescent light and daylight;

10) Touch data output mode: coordinate output;

11) Surface hardness: thermal tempering, Mohs grade 7 explosion-proof glass;
Operating system compatibility: Windows 7/ Windows 8/CE/Mac/Android/Linux /XP
12) Software: upgradable;
13) Drive: no drive, plug and play.

6- Class board system BD21.5-B08

1)- Android system

1) System version: Android 5.1;
2) CPU type; 8-core RK3368，Quad core ARMCortex-A9 up to 1.8GHz;
3) CPU：ARM Mail 400 MP4;
4) System memory: 2G DDR3
5) Memory capacity: 8GB
6) USB2.0: 2 series
7) Audio earphone output: 1 series
8) LAN（RJ45）: 1 series
9) WiFi: available
10) TF CARD: 1 series
11) OTG: 1 series

7- Card reader
1. Support protocol: ISO14443TYPEA;
2. Distance of card reading: 0-50mm;
3. Support card type: readable MIFARE series cards which are conform to ISO14443TYPEA standard;
4. Port to computer: RS232/TTL;
5. ★Support to ready 3rd party One-Card, can be integrated with 3rd party card if provided by the physical card no.
6. Communication rate: 9600bps;
7. Operating system: Windows 98、Me、2K、XP、2003、Vista and Linux、Unix、Android
8. Antenna: integrated antenna;

9. Working frequency: 13.56MHz;

10. Working voltage DC5V—24V (custom made as needed)

11. Lower power module, voltage 3.3V;

12. Communication rate of card and card reader;

13. Working temperature: -20℃～60℃;

14. Relative humidity: 30%～95%;

15. Overall dimension (Length x width x height)(mm) 50*32*3;

16. Weight: 20/40g

8- HD 2 million camera

1. Aperture: 2.8;

2. Dimension: 60mm × 8mm × 5.2mm;

3. Port: USB2.0;

4. Focal distance: 2.9mm/;

5. Field angle: 50°

6. TV distortion: <-1%;

7. Sensitive area size: 1/5-inch;

8. Pixel size: 1.75μm×1.75μm

9. Image size: 1616(H)×1232(V) [pixel]
10. Max image: 15FPS UXGA 36MHZ/30FPS 720pMHZ
11. Pixel: HD 2 million;
12. Microphone: optional;
13. Max resolution: 1600*1200;
14. Object distance: 15CM-130CM

9- Software parameters:
1. The system has 6 intellectual auto-playing modes and 17 functional modules incl.: normal mode, class mode, interval mode, welcome mode, test mode. Through intellectual auto carousel, maximize every function, precisely push the information, management and diffusion with high efficiency.

1) Normal mode: applicable scene is for the period before the class begins, information modules incl.: introduction of the class, class album, campus info, videos of studying field, class homework, class honors, announcement and notice, class culture.

2) Class mode: applicable scene is for the period of class, displaying the info of the teacher in teaching. School leaders and parents can know the teacher in teaching, Functional module: name of teacher, course, title and features.

3) Interval mode: applicable scene is for the period of break, the purpose of efficient information dissemination and learning can be achieved through accurate content delivery. The main features are to let students predict the course arrangement in advance, understand the situation of classes today and edify students' moral education quality and education through fragmented time, so as to realize the integration of class culture and campus culture. Functional modules include today's students on duty, praise column, class honors, class dynamics and class schedule.

4) Class selection mode: The system realizes modern teaching affairs management through course management, teaching plan, classroom management, online course selection, intelligent class scheduling, automatic class allocation, class schedule inquiry, student and teacher attendance, class roll call and teacher evaluation. The display side shows the class and attendance record, the teacher information of the class and the class schedule.

5) Welcome mode: The application scenario of the welcome mode is mainly to display the welcome message. The manager can release welcome words through the set control system, selectively release for grades, classes and models, and set time and background for release demonstration.

6) Test mode: The application scenario mainly shows the basic information of the test in the test period. The main features of the examination mode are to let students know about the current role of the examination subjects, examination time and some matters needing attention. Functional modules include: classroom name, examination subjects, examination time, examination notes. The administrator can publish the name, number, examination time, notes in the examination room, etc. through the set control system, and the time and

background can be set for release and display.

7) Student sign-in: the students check in by One-Card, the teachers and parents know the information of their arrival at school and leaving from school and their safety situation. At the same time, the one-card and access control are linked in real time, which can be used for card swiping.

8) Backstage management system:

Basic data management: year/class/grade/teachers

Users' management: administrator + head teacher + subject teacher + parents

Class selection management system: teaching plan management, student selection of class, arrangement of course schedule, curriculum application, curriculum management, checking class attendance, teacher's evaluation, reduce the pressure and management burden for teachers.

Content release management (important): Edit the new module, update and publish the class content.

Student attendance management: Record attendance record and data statistics.

Class board device management: You can set the time switch, automatically start the system software, and record the status of equipment.

9) Release information on mobile phone: Content information release and content management can be carried out through the mobile phone, so that teachers can efficiently carry out teaching management.

Teaching module: Create courses, students select courses, attendance management, class schedule application, class members.

Management module (important): class image, class activities, class demeanor, class honors, class album, electronic bulletin board, lost and found, notice announcement, praise column, test mode, welcome mode, device management, duty student info.

My module: role switching and account management.

Auxiliary material for information:

In order to ensure the stability, security and durability of the whole system, all cables, including the connection wire between the wall-mounted all-in-one machine system and the LCD TV (power line HDMI), are all made of disposable mechanism, with no connection between them.

All auxiliary materials are national standard.

Normal mode; Class mode; Interval mode;

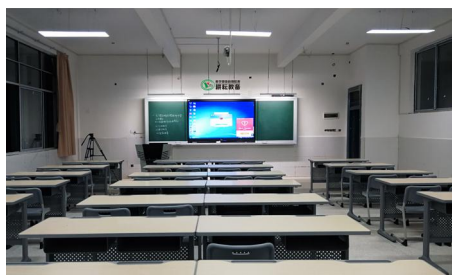Class selection mode; Welcome mode; Test mode;

Sign-in:

Backstage management system; Connecting to mobile phone;

Example photo of multimedia classroom:

Solution of Multimedia Digital Classroom (Auto-Record System)

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