Scoring & Timing Solution for Tennis
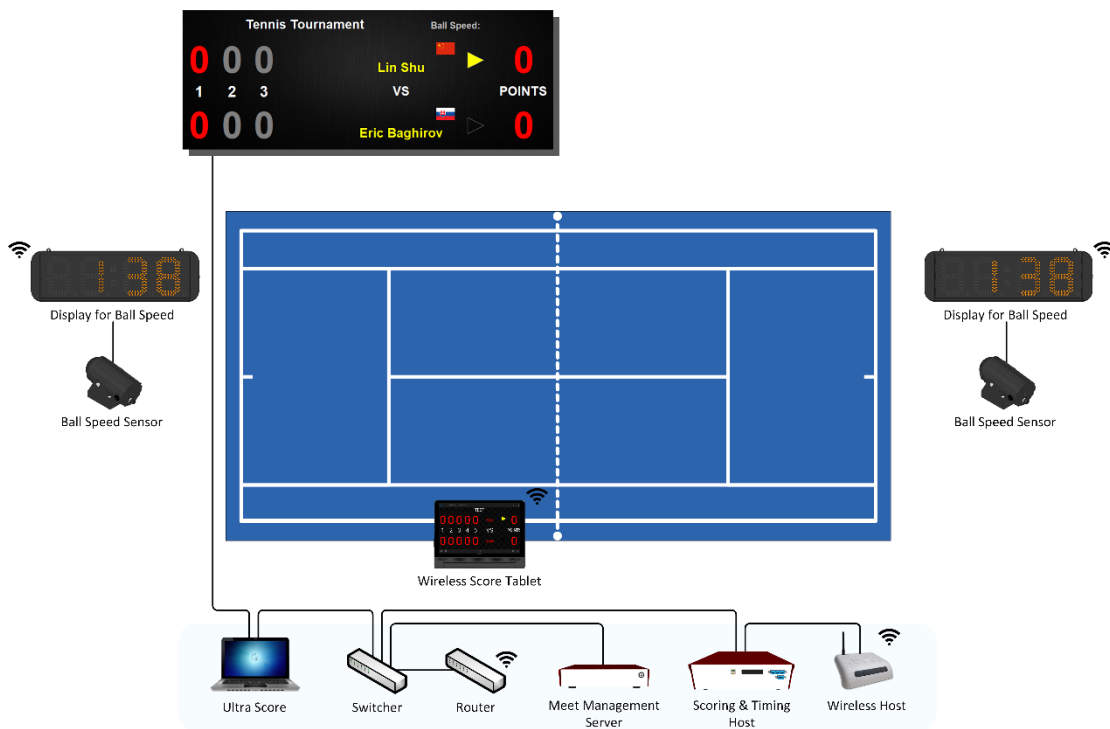
1. Introduction

This is a professional solution for LED scoreboard display in tennis stadiums.
Mainly for large-scale tennis matches which held in professional sports venues.
The system functions conform to ITF rules.
Match arrangement, real-time scoring & timing display, players' & referees' info display, rank statistics export & print, slow motion video record & playback, and advertising display can be realized through the coordination of Match Scoring System, Meet Management System, Video Arbitration System, etc.

1.1 System Structure

1.2 System Description

1)   Full-color LED screen: One or two LED screens are equipped for one court, controlled by one computer to display scoreboard, live video and advertisement.

2)   Ultra Score Software: Installed on the computer for LED control to accomplish the functions of event arrangement, scoring and timing, players and referees' information, and advertisement.

3)   Score tablet: One score tablet is equipped for one court, connected to PC running Ultra score software via WIFI, working as scoring and timing terminal special for referees' operation.

4)   Ball speed sensor: Two ball speed sensors are equipped courtside, connected with referee's PC via wireless host to track the serve speed in real time automatically.

5)   Display for ball speed sensor: Connected with Ball speed sensor by cable to display real time ball speed data.

6)   Wind Speed Sensor: Connected with referee's PC by cable to gather the wind speed data on the court, and to display on the scoreboard.

2. Specification for products

2.1Ultra Score Software

Products	Details
Standalone edition	◆ Installed on one PC. ◆ Supports: Basketball, Football, Volleyball, Tennis, Table tennis, Badminton ◆ English version ◆ Including 1 dongle
Standard network edition	◆ Terminal + 1 Display ◆ Supports: Basketball, Football, Volleyball, Tennis, Table tennis, Badminton ◆ English version ◆ Including 1 dongle
Professional network edition	◆ Terminal + 2 Display ◆ Supports: Basketball, Football, Volleyball, Tennis, Table tennis, Badminton ◆ English version ◆ Including 1 dongle

Difference:

Standalone Edition:

Match management, Scoring, and Media display functions, all in one installed on a PC. Referee must do operation on the PC for display directly.

It is suitable for the stadium where has just one screen, which doesn't have strict needs of the scoring and timing accuracy.

Network Standard Edition:

Score terminal and media player functions can be installed on 2 PCs respectively. So that one independent PC can be setup on the courtside special for referee's operation, the other PC running as media player to manage the LED display.

It is suitable for the stadium where has one screen, needs to do the scoring and timing on the courtside.

Network Professional Edition:

Except the function of score terminal, 1-3 media players can be equipped on PCs separately, in order to display different contents on several LED screens.

It is suitable for the stadium where has more than 2 screens where referee need to do scoring on the courtside and LED screens need to display different contents separately. (For example, one LED screen is for scoreboard and another is for advertising or player info).

Scoring and timing display for tennis

Features

(1) Professional scoreboard display: Scoring and timing operation, layout of scoreboard can meet international game rules.

(2) Score functions: All score information such as points, game points, set points and right to serve indicator will be shown on the screen in real-time. And referee's scoring operation during the match can be recorded and output.

(3) Auto enter the Tie-Break mode.

(4) Convenient operation feeling: Referees can do operation on a special score console as well as by using shortcuts on the keyboard.

(5) Powerful media player: Kinds of media formats are supported. It is easy to switch between the scoreboard and video.

(6) Notification: Rolling to display short notice on the screen which allows to set the speed, colors, fonts freely.

(7) Customization: All contents on the scoreboard including fonts, color and layout can be modified to meet clients' needs.

(8) Self-adaptation: With easy configuration，score information can be displayed on kinds of LED and LCD screen by using this system which can adjust the layout to meet any sizes of screen.

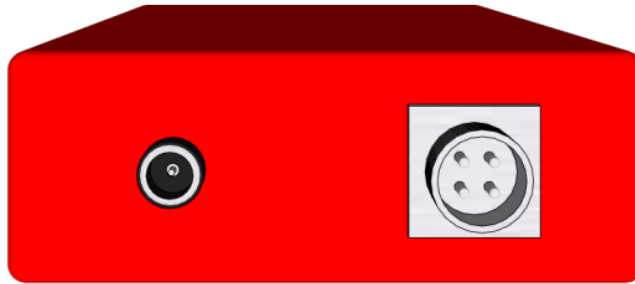(9) Security: Auto backup function will help you recover the match immediately from the computer fault.

2.2 Wireless Score Controller (tablet)

Products	Details
Wireless Score Tablet	Type：KS-GC14-I11 ◆ Including one license of Lightscore App ◆ Screen: 11"inch ◆ Pixel: 1920*1200IPS ◆ Ram: 6GB ◆ Storage: 128GB ◆ Battery: 8000mAh ◆ System: Android ◆ Supports: Table-tennis ◆ Communication: WIFI ◆ Full colored touch screen

2.3 Wireless Host

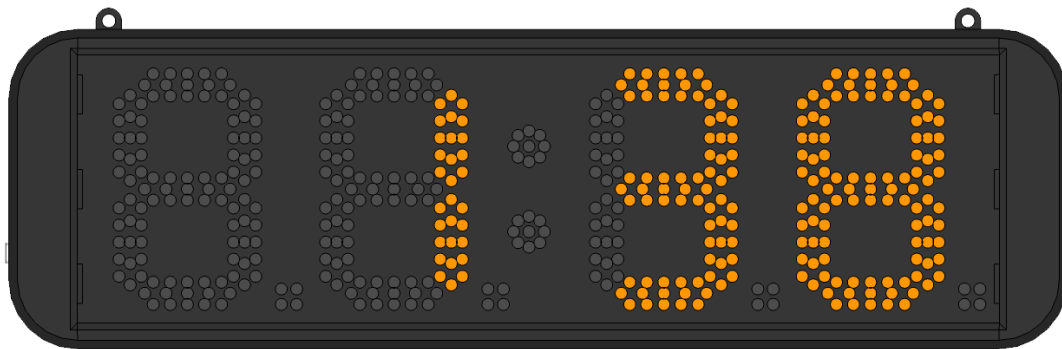| Products	Detail
Wireless Host	Type: KS-BSPD-WH Size: 140x120x30 (mm) Communication: 433MHz Function: ◆ System: Must be used together with Ultra score software. ◆ Communication Setting: allow to customize the communication frequency band. ◆ Communication distance: 20m

2.4 Ball Speed Sensor

Item	Details
Ball speed sensor	Type: KS-BSPD-SENSOR ◆ Speed Range: 5-890MPH ◆ Accuracy: +/-0.1 MPH ◆ Max Distances: 300 feet ◆ Support：Tennis ◆ Compatible with Ultra score software. ◆ Track tennis ball speed on serves and returns from courtside.

2.5 Display for Ball Speed Sensor

Products	Details
Display for Ball Speed Sensor	Type：KS-BSPD-SCREEN Size：620x190x45 mm Color：Yellow Support：Display ball speed Communication Interface：RJ45 network cable

2.6 Meet Management Server

Products	Details
Meet Management Server	Type: KS-MMS-MINI Size: 260x135x35 (mm) Weight: 1.0 KG Input Voltage: 12V DC RAM: 4GB CPU: Intel J3160 Hard Disk: 64G Communication: LAN*1 Port: VGA*1, DP*1，USB*2 Features: ● Multi-court arrangement, auto generate the order form. ● Multi-project arrangement, make the schedule more smoothly. ● Monitor the status of each court in real time, including the current field, rotation and player info. ● Court adjustment, can manually modify the match court and session info. ● Summary and print integrated report.

2.7 Tennis Wireless Scoreboard A

Item	Details
Tennis Wireless Scoreboard A	Type: KS-TSSB-14001100150 **Basic Parameters:** Size: 1400*1100*150mm Cabinet: Aluminium alloy Communication: Wired / Wireless **Module Parameters:** Item: 7 Segment LED Module Height: 210mm Color: Red Brightness: 4000MCD LED Module: P10 / Red **Features:** Display game points, set points, the right to serve and match info.

Kazo Vision
WEB: http://www.kazovision.com   MAIL: sales@kazovision.com

Photo:

2.8 Tennis Wireless Scoreboard B

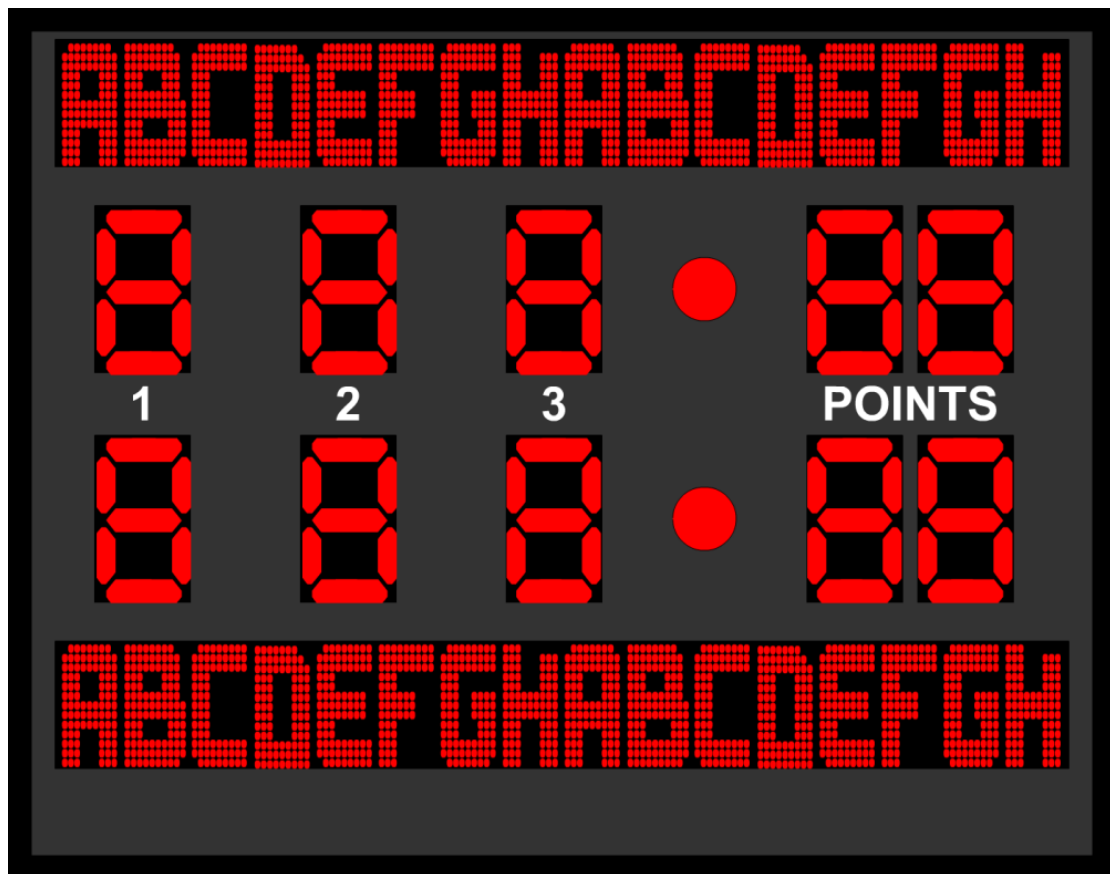| Item	Details
Tennis Wireless Scoreboard B	Type: KS-TSSB-22501000150 **Basic Parameters:** Size: 2250*1000*150mm Cabinet: Aluminium alloy Communication: Wired / Wireless **Module Parameters:** Item: 7 Segment LED Module Height: 210mm Color: Red Brightness: 4000MCD LED Module: P10 / Red **Features:** Display game points, set points, the right to serve and match info.

Kazo Vision
WEB: http://www.kazovision.com   MAIL: sales@kazovision.com

Photo:

2.9 Tennis Wireless Scoreboard C

Item	Details
Tennis Wireless Scoreboard C	Type: KS-TSSB-2135750150
	Basic Parameters:
	Size: 2135*750*150mm
	Cabinet: Aluminium alloy
	Communication: Wired / Wireless
	Module Parameters:
	Item: 7 Segment LED Module
	Height: 210mm
	Color: Red
	Brightness: 4000MCD
	LED Module: P10 / Red
	Features:
	Display game points, set points and the right to serve.

Photo:

Kazo Vision
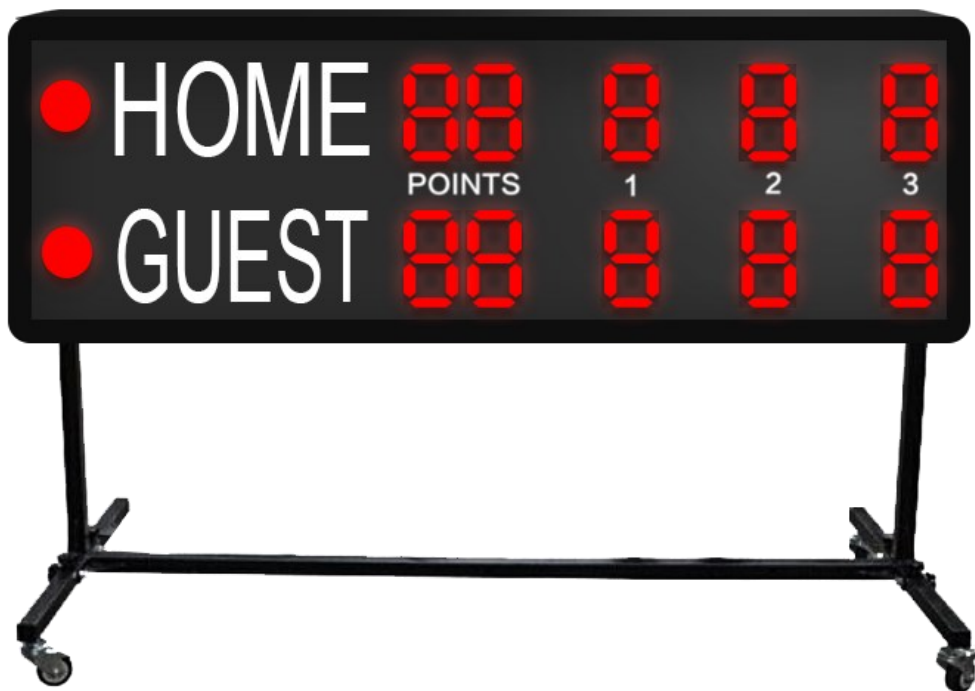WEB: http://www.kazovision.com   MAIL: sales@kazovision.com

2.10 Video Arbitration System

Video Arbitration System named PARROT is composed of video arbitration server, control panel and cameras.

It is operated by the referee during the match. When working with Match Scoring System, referee's score operation will be marked on the frame of video automatically, whilst playback them in slow motion with changes in speed.

It can be used to provide the technical support when dispute happens during the match so as to reduce the misjudging, to ensure fairness and justice of the match.

Application:

Basketball, Volleyball, Football, Tennis, Handball, Boxing, Wrestling, Wushu, Judo, Jujitsu, Karate, Taekwondo, Gymnastics, Swimming, Diving, Ice-hockey, Weightlifting, etc.
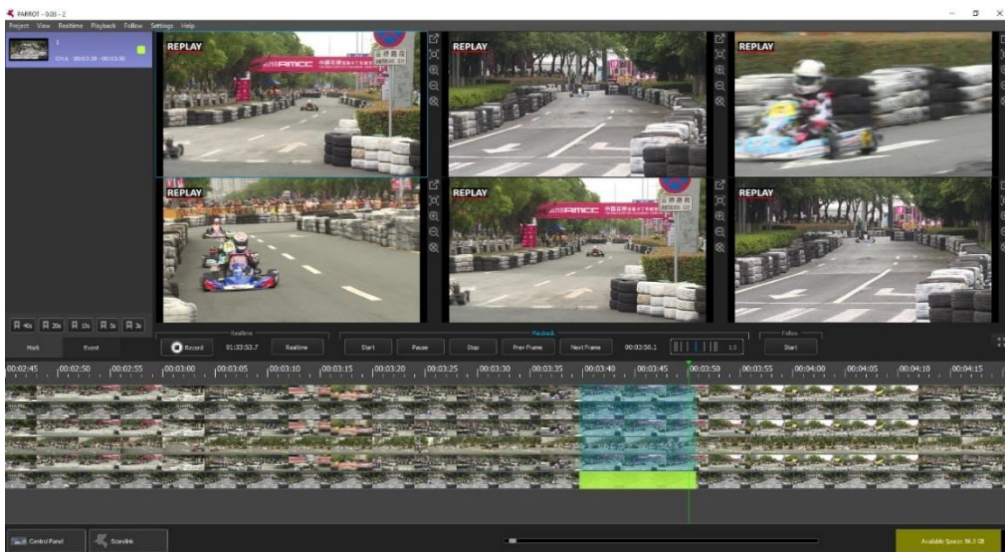

2.10.1 System Description

1) Ultra Score software is installed on the control computer. Connect the control computer and the video arbitration server to the local network.

2) 1-8 sets of HD cameras are installed around the count which connects to video arbitration server via SDI cable.

3) Control panel is connected to video arbitration server via a USB cable which makes referee easy to check the playback process and control the speed of slow motion.

4) Video arbitration server provides an output video signal which can be connected to LED/LCD display for live slow motion replay.

2.10.2 Functions

1) **Nonstop video recording in the background:** 1-8 channels of HD video are recorded simultaneously in the background, nonstop for 10 hours. Video retrieval and playback is unaffected.

2) **Synch-playback of multi-channel video:** Supports playback mode of single channel video in full screen and multi-angle video in 6 windows.

3) **Speed change in slow motion:** supports 20 frame/s video playback and capturing motion in a grid of 0.05s. The function of frame freeze, fast playback, 1/2 slow playback, 1/4 slow playback and dragging progress bar is available.

4) **Video event query:** video stream can be divided into several video events, storing in the event list, which can be renamed for retrieve easily.

5) **Video segment marker:** Important or controversial moments can be marked in video stream which will be replayed quickly when clicking the marked records.

6) **Professional playback control panel:** configuring T-bar, slow moving wheel, speed preset function keys to make the process more convenient.

7) **Video signal output:** provides 2 video output signals, one of which is for preview, the other of which can be connected to LED/LCD display for live slow motion replay.

Working with Ultra Score System to realize:

1) **Auto generate video event:** Video events will be generated automatically for quick query according to the match data that has been preset in Ultra Score.

2) Real-time match timer will be superimposed on the video.

3) **Referee's operation record:** Referee's every scoring and timing operation can be recorded into the video, showed below the frame when that moment happened.

4) **Player's point record:** Player's point can be recorded into the video, showed below the frame when that moment happened.

5) **Open developer API:** Just connect your own scoring system onto this Video Arbitration System, so you may record all kinds of events together with the videos.

2.10.3 Video Arbitration Server (up to 8 channels record and replay)

Detailed parameter

Item	Details	Item	Details
Product	Video Arbitration Server	Type	KS-PARROT-2C/4C/6C/8C
Input Voltage	AC 100~240V	Power	35W
Size	483x430x90mm (2U)	CPU	Intel I7
RAM	2 channels: 8GB 4/6/8 channels：16GB	Hard Disk	2/4 channels：800GB 6/8 channels：2T
Input	SDI×2/4/6/8	Communication Port	LAN×2
Output	DP×2	Other Port	USB×4
Packing List	Host*1, Power cable*1, User manual*1		
Functions			

1. Nonstop video recording in the background for 10 hours. Video retrieval and playback is unaffected.
2. Support 50 frame/s video playback and capturing motion in a grid of 0.02s.
3. Support playback the video of the specified channel frame by frame, or at a set speed continuously.
4. Important or controversial moments can be marked manually or auto create video marks by linkage with Ultra Score System.
5. Zoom the playback screen of any channel to accurately observe the details.
6. Provide 2 video output signals, one of which is for preview, the other of which can be connected to LED/LCD display for live slow motion replay.
7. Working with Ultra Score System can realize real-time match data displaying on the video.
8. Automatically synchronize with the match and tag the video, so as to provide convenience to find the match sessions or sets.
9. Each single operation of the referees will be recorded together with the videos.
10. Unique "Follow" mode, automatically replay the most recent screen with a 5-second delay to help the referee make decisions quickly.

11. Open external control interface which can be controlled by 3rd-part system.

2.11 Control Panel

Detailed parameters

Item	Details	Item	Details
Product	Control Panel	Type	KS-PARROT-CP
Input Voltage	AC 100~240V	Net weight	1KG
Size	365 x 200 x 98 (mm)	Power	15W
Communication Port	USB×1, RS232×1	Display	Color LCD (4.3Inch)
Packing List	Host* 1, Power Cable*1, USB Cable*1, User Manual*1		
Functions			

1. Support one touch replay, deferred replay, in/out replay.
2. Preset speed button.
3. T-Bar for dynamic slow motion.
4. Professional dynamic jog wheel.
5. Key to mark the last 10s/20s of the video content.
6. Flexible select the marked video and playback.

2.12 HD Camera

Detailed parameters

Product Type	KS-PARROT-CAMERA
Video output	3G-SDI
Effective pixels	3.0 million
Max Resolution	1920*1080
Max Frame rate	60FPS
Sensor	CMOS
Focal length	4.2MM
Size	62.5*50*50MM