Scoring & Timing Solution for Boxing

1. Introduction

This is a professional solution for LED scoreboard display in Boxing stadiums.
Mainly for large-scale Boxing matches which held in professional sports venues.
The system functions conform to WBA 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.
It is an ideal choice for most of smart and professional stadiums.

2017, Lingang University Boxing Competition

1.1 System Architecture

The whole system is composed of several subsystems, including: Match Scoring System, Meet Management System and Video Arbitration System.

Each subsystem can not only work independently, but also work together to share the data.

It is flexible for customers to configure according to the actual application.

- **Match Scoring System**

Match Scoring System named ULTRA SCORE is composed of Ultra Score Software, Wireless Host, etc.

It is mainly operated by the referees to realize the scoring and timing work and real-time scoreboard display.

The system functions conform to WBA rules.

- **Meet Management System**

It is composed of Meet Management Server, On-Venue Results Workstation, Printer, etc.

Linking with Online Registration System and Match Scoring System, it can realize: participants management, match schedule, result management, technical statistics, court arrangement, rank statistics, etc.
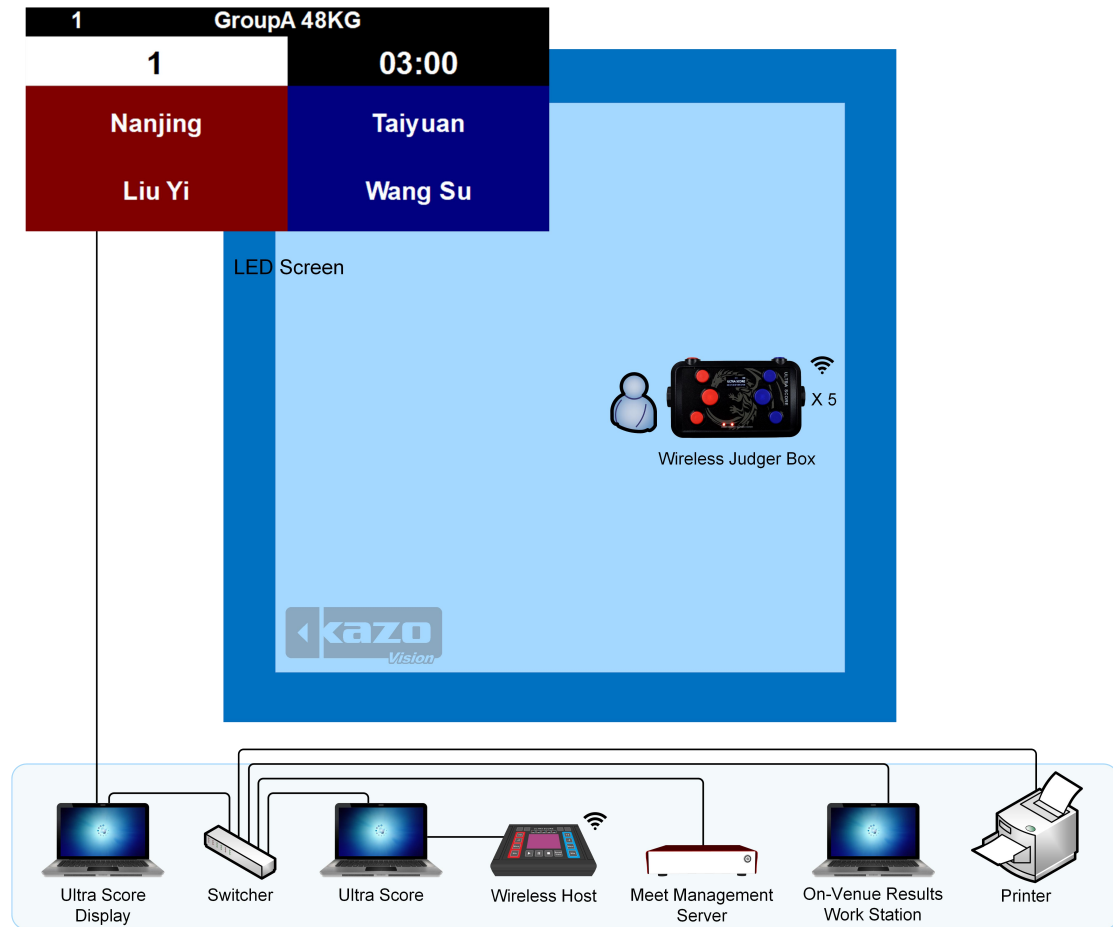
- **Video Arbitration System**

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

It is operated by the referees 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.

1.2 System Chart

System Structure Description

1) All PCs and Meet Management Server will be grouped via LAN.

2) Install the Boxing Timing and Scoring software on a computer.

3) Connect the Wireless Host (KS-WH-TK) with the computer via a USB cable.

4) Connect the LCD display with the PC via video cable.

5) One PC on the backstage works as monitor.

1.3 Functions

Event arrangement

- Both import and input the players' information are available.
- Auto draw the players' lots.
- Auto generate, export and print the bracket.
- Auto generate, export and print the order form.

Scoring operation

- Professional wireless scoring controller supports scoring for the player.
- With vibration alerts when getting a point.
- Display real-time score and device connection state.
- Modify the match time according to match category.
- Support extending multi-displays to show the match.

Results treatment

- Quickly print and export the result form.
- Rank statistics, quickly export and print.
- Quickly export and print the event form of referee operation.

System advantages

- With rich experience of tournament and stable system.
- Wireless scoring devices are easy to use without wiring.
- The information will auto save in case of power out and other emergency situations.
- We provide free upgrade service of software.

1.4 Product Configuration (one court of Boxing)

Products	Type	Number
Match Scoring System		
Ultra Score Software	Standalone Edition	1
Wireless Host	KS-WH-M	1
Wireless Referee Controller	KS-TKEP-C	5
Penalty Screen (Single Line)	KS-SCRN-LED960160	2
Meet Management Server	KS-MMS-MINI	1
LCD TV	48 inch LCD	1
Computer	Dell	2
Printer	HP	1
Video Arbitration System		
Video Arbitration Server	KS-PARROT-2C	1
Control Panel	KS-PARROT-CP	1
Camera	/	2
Tripod for Camera	/	2
SDI Cable	15m	2
LCD Monitor	21.5 inch	1

2. Specification for products

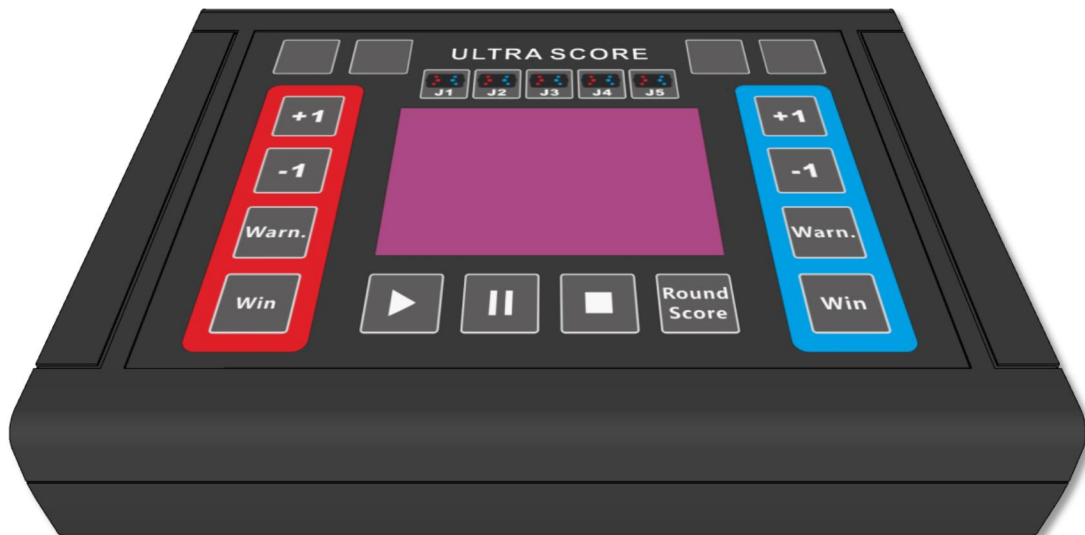**2.1 Ultra Score Software**

Products	Details
Standalone edition	◆ The referee operates the match on the PC for display directly. ◆ Supports: Boxing ◆ English version ◆ Including 1 dongle

Timing and Scoring interface:

2.2 Wireless Host

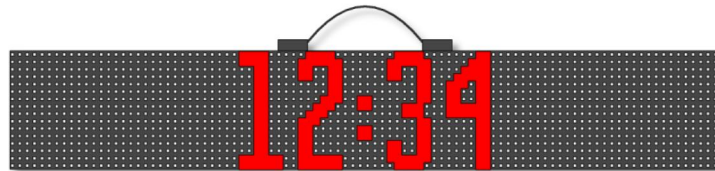| Products	Detail
Wireless Host	Type: KS-WH-M Size: 200x145x60 (mm) Communication: 433MHz Wireless Function: ◆ Must be used together with Boxing Scoring Software. ◆ Add score for the players. ◆ Player warning operation. ◆ Player passive operation. ◆ Match timer control. ◆ Attack timer control.

2.3 Wireless Scoring Controller

Products	Details
Wireless Referee Controller	Type: KS-TKEP-C Size: 160*95*30mm Communication: 433MHz Wireless Function: ◆ Support: Boxing. ◆ Scoring: add points for the player. ◆ Wireless communication distance up to 20m. ◆ With long standby function. ◆ With vibration alerts while scoring.

2.4 Penalty Screen (Single Line)

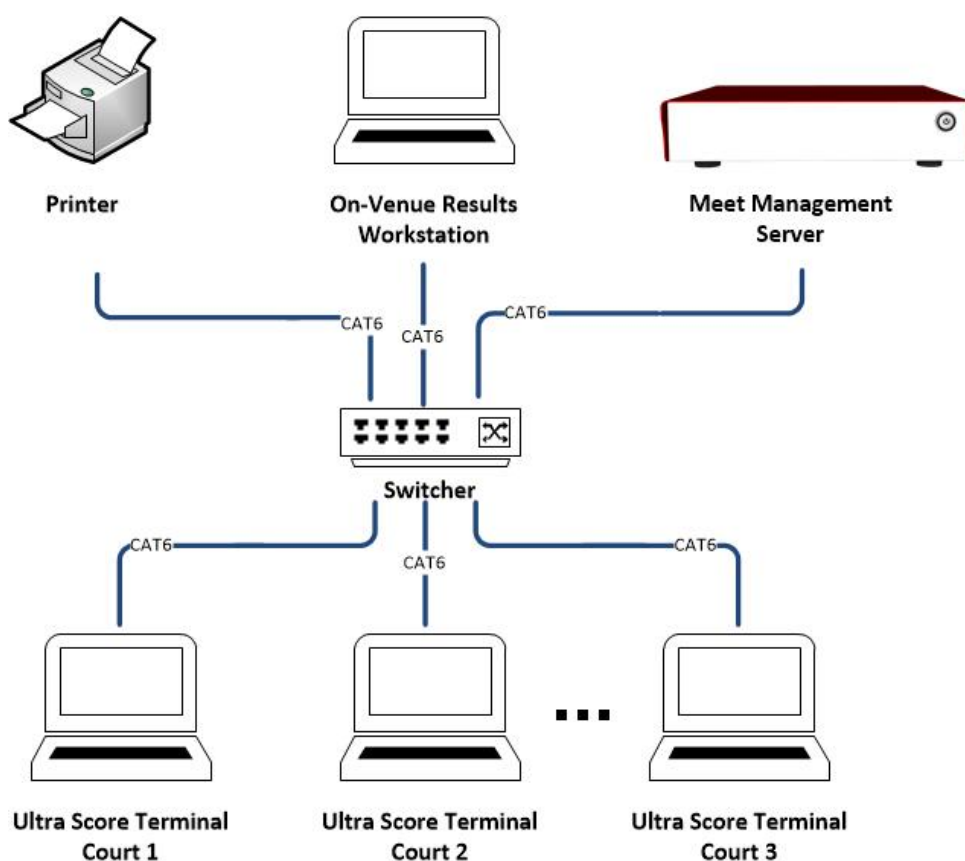| Item	Details
Penalty Screen (Single Line)	Type: KS-SCRN-LED960160 Size: 960*160*100(mm) Material: Aluminum Input: 48V DC Function: ◆ Must be used together with Scoring Software. ◆ Display the match timer.

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2.5 Meet Management System

It is composed of Meet Management Server, On-Venue Results Workstation, Printer, etc.

Linking with Online Registration System, Match Scoring System and Basketball Stats System, it can realize:

1) **Participants Management:** Information management of players, teams and referees. Both import and input registration form are available. And auto generate the order form.
2) **Match Schedule:** Auto draw the players' lots. Multi-project arrangement make the schedule more smoothly. Auto generate the bracket, order form and round form.
3) **Result Management:** Receive or record the results. Determine the players' rank, admission or elimination at each stage. Print the results announcement and send to the LED display system, TV broadcasting system and comprehensive meet manage system.
4) **Technical Statistics Arrangement:** Combine with the basketball stats software, it can summarize the info of teams' score, teams' timeout, teams' foul, players' substitution, players' foul, players' comprehensive results, and generate the integrated report.

2.5.1   System Diagram

2.5.2   Meet Management Server

Products	Details
Meet Management Server	Type：KS-MMS-MINI Size: 260x135x35 (mm) Weight: 1.0 KG 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.

2.6 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.
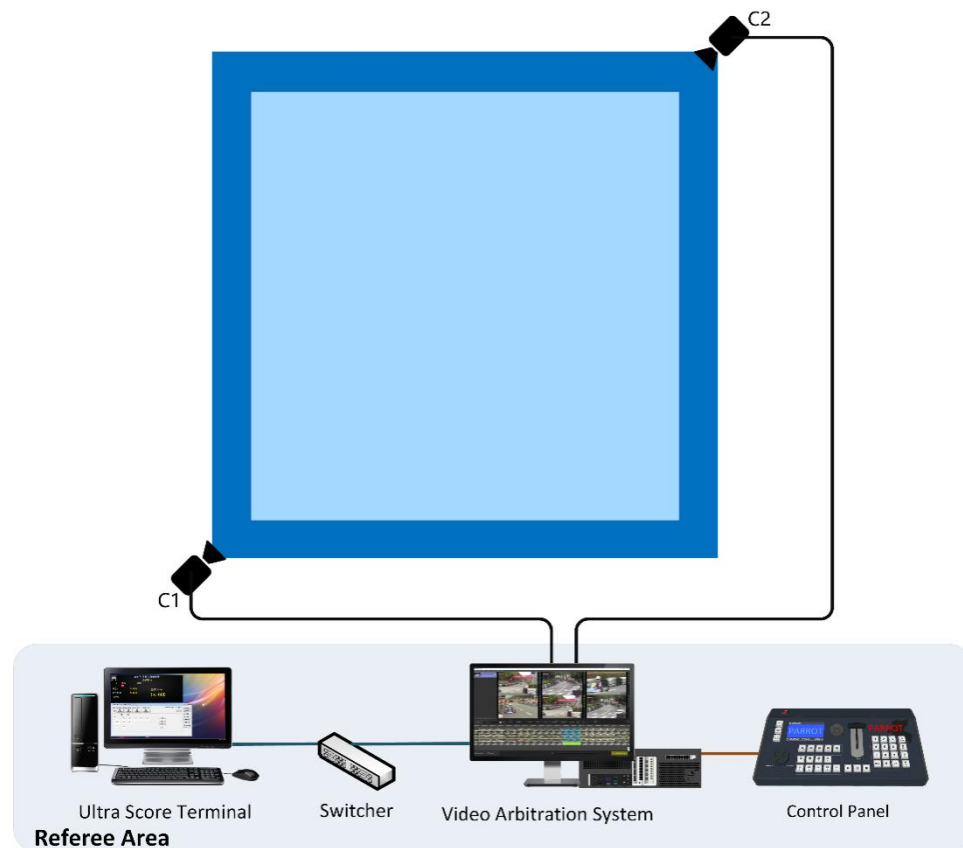
It can be used to provide the technical support when dispute happens during the match so as to reduce the misjudging, to ensure fairness and justice of the match.

Application:

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

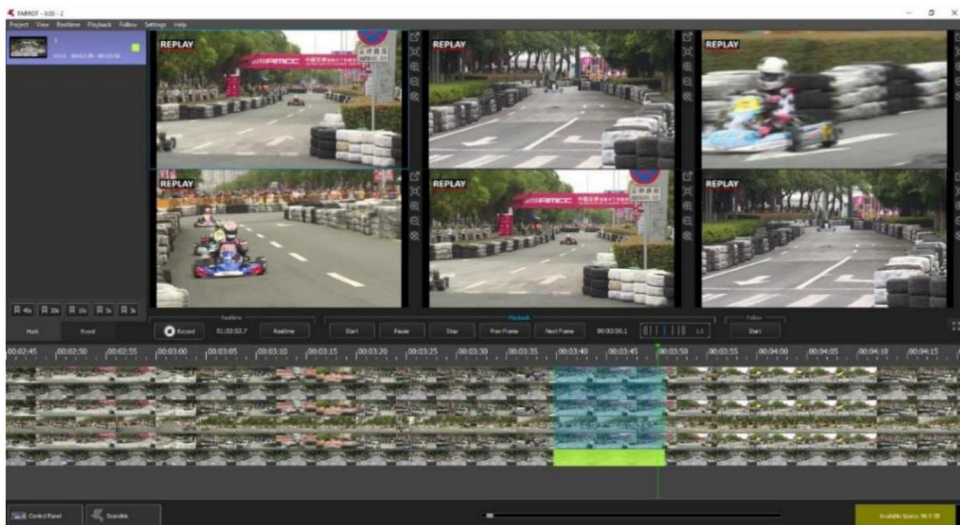## 2.6.1   System Diagram

2.6.2   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.

2.6.3　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:

● **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.

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

● **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.

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

● **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.

2.6.4   Video Arbitration Server

Products	Details
Video Arbitration Server	Type: KS-PARROT-2C/4C/6C/8C
	Video Input: 2/4/6/8 channels input synchronously;
	Input port: SDI;
	Output port: DP*2;
	Video Format: 1080P;
	Recording capacity: ≥ 10 hours;
	Multi-screen monitoring: supported;
	Weight: 8kg.

Software interface

Device Specification

Type	KS-PARROT-2C/4C/6C/8C
Size	485x480×90(mm)
Net Weight	8 KG
Color	Black
Cabinet	Iron
Interface	
Input	SDI*2/4/6/8
Output	DP*2
Environmental	
Operating Temp	-5℃～45℃
Storage Temp	-40℃～80℃
Relative Humidity	5%～95%, non-condensing
Input Voltage	AC 100V~240V
Functions	

- **Nonstop video recording in the background:** 2/4/6/8 channels of HD video are recorded simultaneously in the background, nonstop for 10 hours. Video retrieval and playback is unaffected.

- **Synch-playback of multi-channel video:** Supports playback mode of single channel video in full screen and multi-angle video in 2/4/6/8 windows.

- **Speed change in slow motion:** support 50 frame/s video playback and capture motion in a grid of 0.02s.

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

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

- **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.

2.6.5   Control Panel

Products	Details
Control Panel	Type: KS-PARROT-CP Function: ◆ Support one touch replay, deferred replay, in/out replay. ◆ Preset speed button. ◆ T-Bar for dynamic slow motion. ◆ Professional dynamic jog wheel. ◆ Key to mark the last 10s/20s of the video content. ◆ Flexible select the marked video and playback.

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Device Specification

Type	KS-PARROT-CP
Size	365 x 200 x 98 (mm)
Net Weight	1 KG
Cabinet	Iron
Display	Color LCD(4.3Inch)
Sound	None
Communication	
USB	≤5m
RS232	≤10m
Environmental	
Operating Temp	-5~45℃
Relative Humidity	5~95 %, non-condensing
Storage Temp	-40~80°C
Input Voltage	AC 100V-240V
Total Power	15W

2.6.6   HD Camera

Products	Details
HD Camera	Type: KS-PARROT-CAMERA

Device Specification

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

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