



FIBA
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EQUIPMENT



Scoring & Timing Solution for 3x3 Basketball



1. Introduction

This is a professional solution for LED scoreboard display in basketball stadiums.

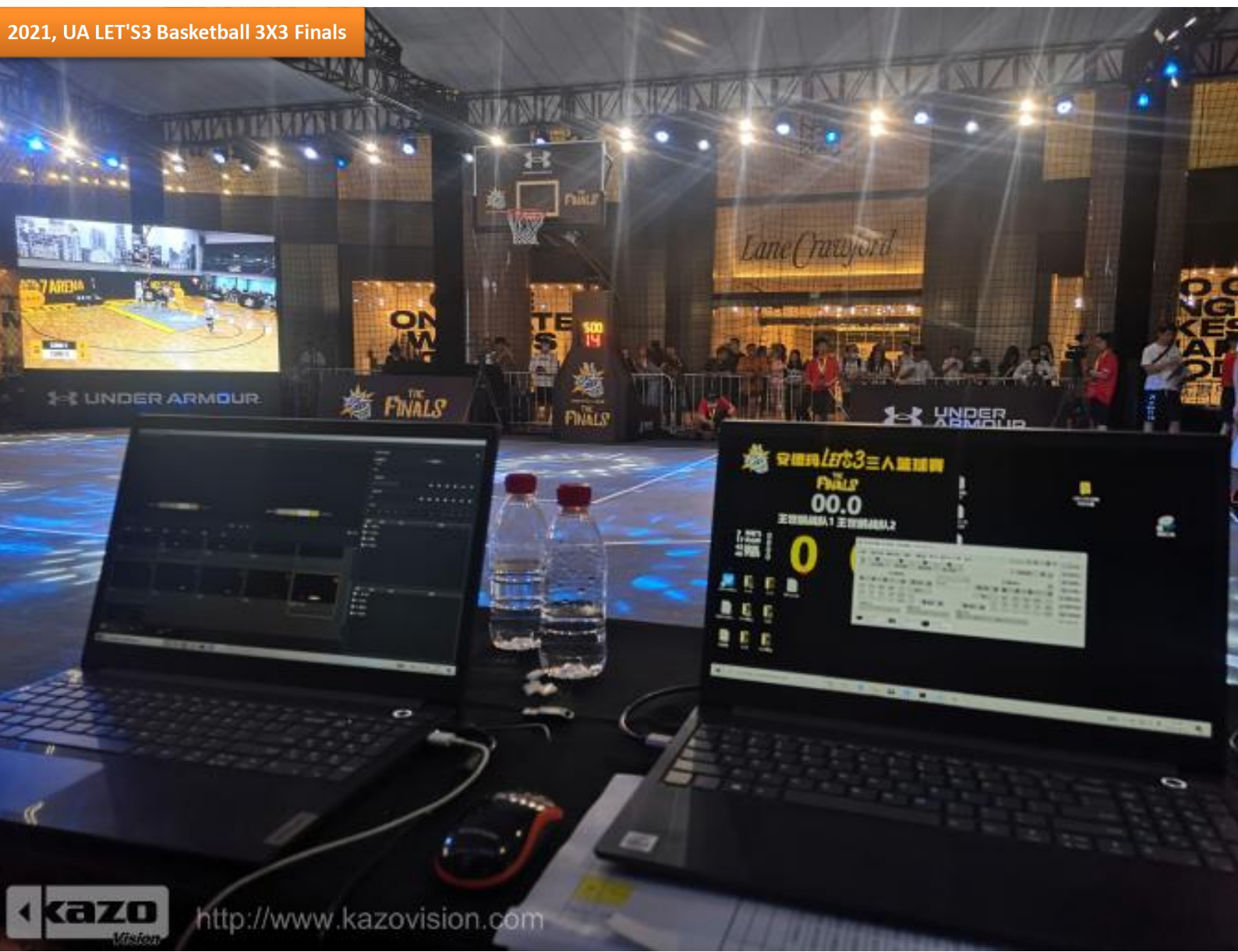
Mainly for large-scale basketball matches which held in professional sports venues.

The system functions conform to FIBA, FIBA 3V3 and NBA 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, Sports Stats System, Video Arbitration System, etc.

It is an ideal choice for most of smart and professional stadiums.

2021, UA LET'S3 Basketball 3X3 Finals



1.1 System Architecture

The whole system is composed of several subsystems, including: Match Scoring System, Meet Management System, Basketball Stats 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, Match Scoring & Timing Host, Referee Scoring & Timing Terminal, Shot Clock, Backboard Light, Possession Display, Foul Display, Electronic Buzzer, Electronic Whistle Timing System, 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 FIBA, CBA, FIBA 3V3 and NBA rules.

● 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: participants management, match schedule, result management, technical statistics, court arrangement, rank statistics, etc.

● Basketball Stats System

Consists of Basketball Stats Workstation.

The system can record the points, shot position, assist, foul, rebound of each player during the basketball game. Linking with Online Registration System and Match Scoring System, the timing and scoring data will be exactly synchronized with them.

It also can generate the professional and detailed statistics report and provide data sharing for website and platform.

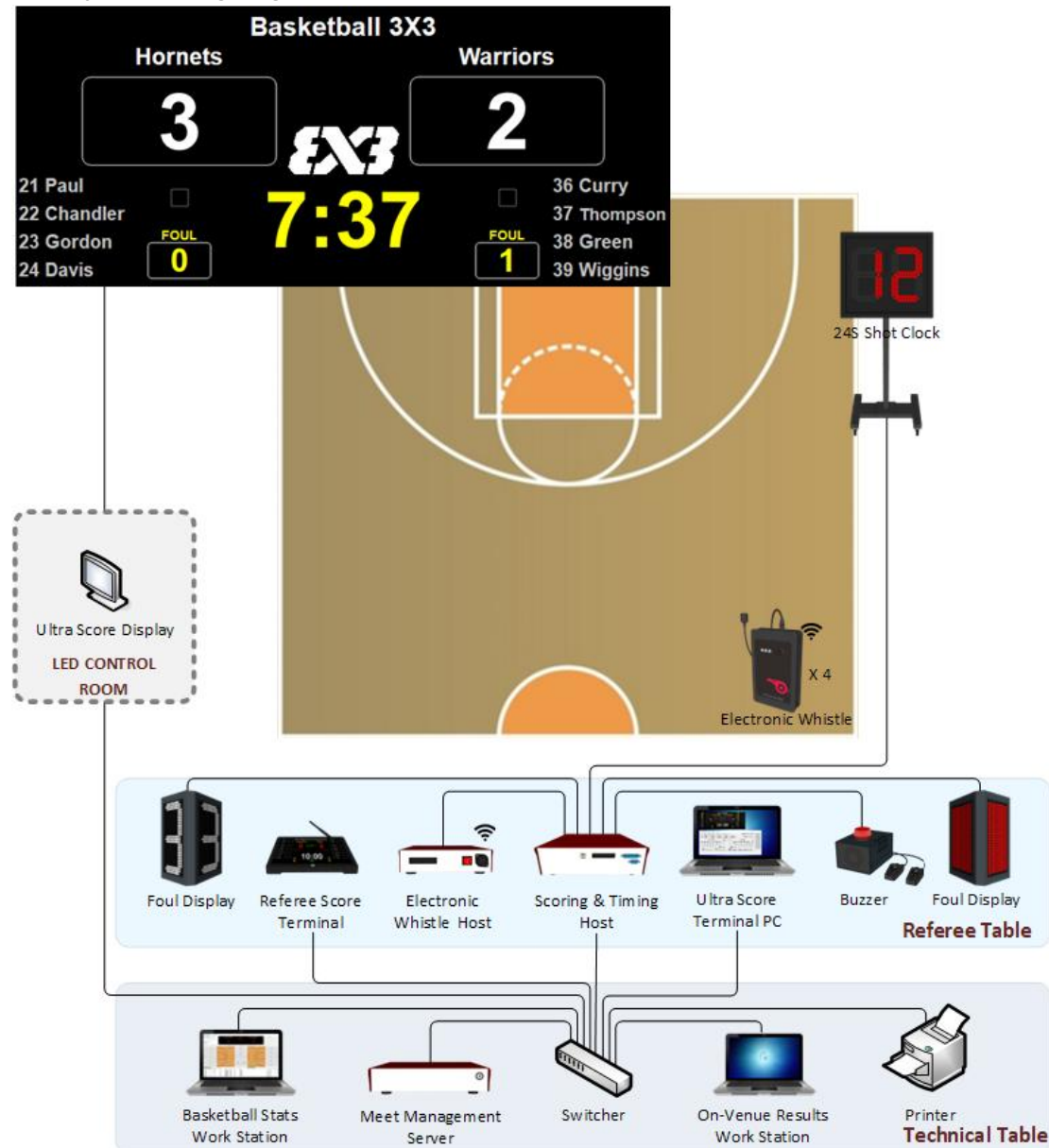
● Video Arbitration System

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 Wiring Diagram



System Description

- 1) **LAN:** A LAN is set up in the stadium. Connect the LED control PC, Ultra Score Terminal PC, Match Scoring & Timing Host, Referee Scoring & Timing Terminal, Basketball Stats Workstation, Meet Management Server, On-Venue Results Workstation and Printer to the LAN.
- 2) **LED Screen:** One LED screen is controlled by separate computers which connect with LED sending cards.
- 3) **Match Scoring & Timing Host:** It is the core scoring & timing equipment which is installed in the Officials Table and has the function of hot backup. Use the special cables to connect the Shot Clock, Foul Display, Possession Display, Electronic Buzzer and Thermal Printer to the host.
- 4) **24S Shot Clock:** Two shot clocks installed on the basketball backboards and connect with Match Scoring & Timing Host with 5-core cables or through wireless communication.
- 5) **Referee Scoring & Timing Terminal:** Installed in the Officials Table for referee's operation of

score and penalty. It can be connected to the LAN through network cable or WIFI.

- 6) **Electronic Whistle Timing System:** Installed in the Officials Table to access Match Scoring System. The electronic whistle communicates with the host in real time. The referee on the court wears a high-precision detection whistle to control the timing of the match.
- 7) **Meet Management Server:** It is the core data processing equipment which is installed in the Technical Table and connected to the LAN by network cable.
- 8) **Basketball Stats Software:** Installed in the Technical Table to work independently or connect to the LAN to obtain the match data from Ultra Score System.

2. Specification for Products

2.1 Match Scoring System

Match Scoring System named ULTRA SCORE is composed of Ultra Score Software, Match Scoring & Timing Host, Referee Scoring & Timing Terminal, Shot Clock, Backboard Light, Possession Display, Foul Display, Electronic Buzzer, Electronic Whistle Timing System, etc.

It is mainly operated by the referees to realize:

- 1) Auto synchronize between the Main and Backup system. Hot switching backup system.
- 2) Manage all devices from one host: Possession Arrow, Foul Display, Buzzer. Adjust the brightness of each device separately.
- 3) Timing in high precision. Standalone handhelds for match timer and shot clock timer. Both can be adjusted in 1/10 seconds.
- 4) Modify the team score and player individual score.
- 5) Team foul and player individual foul control, player substitution, etc.
- 6) Wired or wireless connection to the shot clock. Variants styles of shot clock can be use.
- 7) Real-time data output, which can be used for TV broadcast.

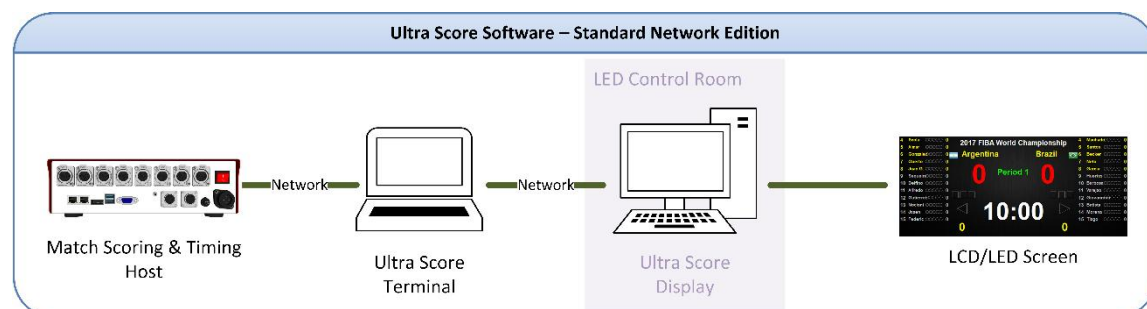
Products	Details
Standard network edition	<ul style="list-style-type: none">◆ Terminal + 1 Display◆ Supports: Basketball, Football, Volleyball, Tennis, Table tennis, Badminton◆ Including 1 dongle
Professional network edition	<ul style="list-style-type: none">◆ Terminal + Referee + 2 Display◆ Supports: Basketball, Football, Volleyball, Tennis, Table tennis, Badminton◆ Including 1 dongle

2.1.1 Difference:

Standard Network 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.

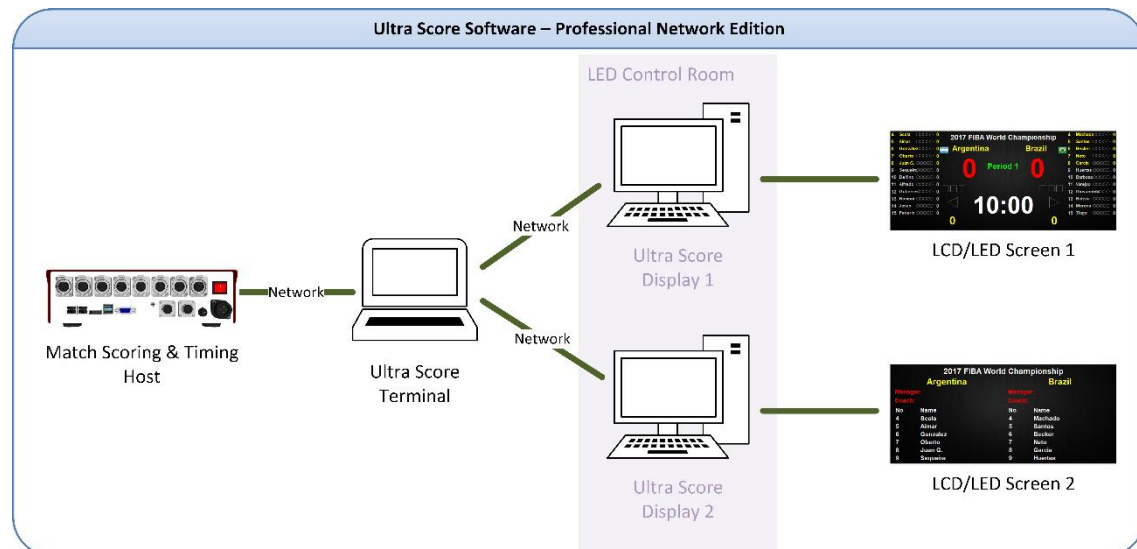
- It is suitable for the stadium where has one screen, needs to do the scoring and timing on the courtside.



Professional Network 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).



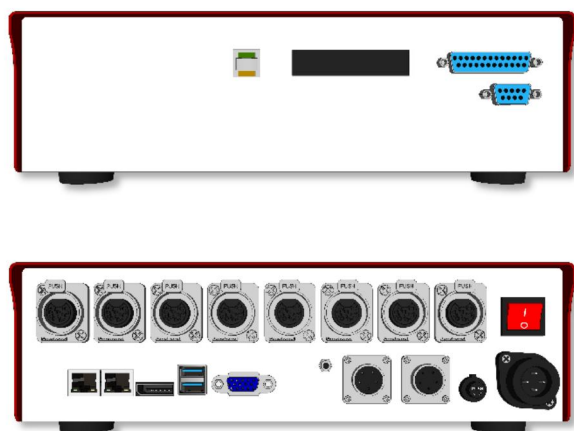
Features:

- (1) Professional scoreboard display: Scoring and timing operation, layout of scoreboard can meet international game rules.
- (2) Match management: Information of match, team, team members and coaches can be saved in advance. And referee's scoring operation during the match can be recorded and output.
- (3) Scoring functions: Include operation and display of teams' and players' points, fouls and substitutions.
- (4) Timing functions: Include operation and display of game time, pause, break time, count down time and system time.
- (5) Convenient operation feeling: Referees can do operation on a special score console as well as by using shortcuts on the keyboard.
- (6) Powerful media player: Kinds of media formats are supported. It is easy to switch between scoreboard and video.
- (7) Notification: Rolling to display short notice on the screen which allows to set the speed, colors, fonts freely.
- (8) Customization: All contents on the scoreboard including fonts, color and layout can be modified to meet clients' needs.
- (9) 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.
- (10) Security: Auto backup function will help you recover the match immediately from the computer fault.

Display Effects



2.1.2 Match Scoring & Timing Host



Match Scoring & Timing Host

Model	KS-MONSTER
Size	260 x 280 x 80 (mm)
Support	Basketball, Volleyball, Football, Futsal, Handball, Water-polo, Ice-hockey
Other	Supports hot switching between the main and backup system.



Match Timer Handheld

Model	KS-G-MT
Size	120x80x25(mm)
Communication	Wired
Function	Match timer start, pause, adjustment and buzzer control.



Shot Clock Handheld

Model	KS-G-ST
Size	120x80x25(mm)
Communication	Wired
Function	Shot Clock Timer start, pause, adjustment, close and reset.

Item	Details	Item	Details
Product	Match Scoring & Timing Host	Model	KS-MONSTER
Size	260 x 280 x 80 (mm)	Net Weight	3 KG
Material	Iron	Power	60W
CPU	Intel J3160	RAM	8GB
Communication	RJ45×2	Hard Disk	64GB
Video Output	VGA×1, DP×1	Input Voltage	AC 100~240V
Working Temp	0-60℃	Relative Humidity	5%-95%, non-condensing
Language	English	Timing Accuracy	<=10ms
Port	G-Port×8, Shot Clock port×2, Audio×1, USB×2, Serial port×1		
Accessories	Match Timer Handheld *1, Shot Clock Handheld *1		
Supporting Games	Basketball, Volleyball, Football, Futsal, Handball, Water-polo, Ice-hockey, etc.		
Supporting Rules	FIBA, FIBA 3X3		
Functions	<ol style="list-style-type: none"> 1. Timer functions: Timing in minute, second, tenth of a second, 14S & 24S and timing in count up and count down, start, pause, reset, correct are available. 2. Scoring functions: Modify the score of the team and player. 3. Penalty functions: Team foul control, Player foul control, Player penalty time control, Substitution control, yellow/red card control, etc. 4. Supports match rule setup. 5. Synchronous control of 24s Shot Clock, Possession Display, Foul Display and Electronic Buzzer. 6. Adjust the brightness of 24s Shot Clock, Possession Display and Foul Display. 7. Provides buzzer sound output, which can be connected to the venue's public address system or speakers. 8. Supports hot switching of the main and backup servers. In case of the main server fails, just manually switch to the backup server to ensure the data intact. And in case of power failure, the previous screen will be restored after restarting. 9. Supports the post-match celebration mode. 10. Supports real-time data output, which can be used for live broadcast. 11. Monitoring the status of scoring devices, providing convenient fault diagnosis (with a separate monitor). 12. Anti-loose port ensures the safety of match data. 		

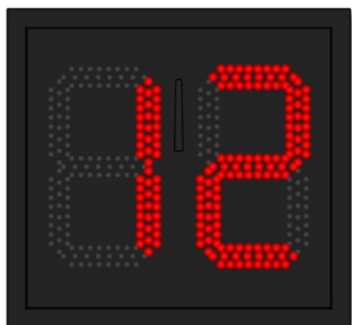
2.1.3 Referee Timing & Scoring Terminal



Detailed parameters

Item	Details	Item	Details
Product	Referee Timing & Scoring Terminal	Model	KS-GC18
Size	281 x 173 x 39 (mm)	Material	PVC+Metal
Touch LCD	11.6 inch	Resolution	1920*1080
OS	WIN 10	Battery	No Built-in Battery
Communication	LAN / WLAN	Hard Disk	SSD 180GB
Video Output	HDMI*1	RAM	8GB
Functions	<ol style="list-style-type: none"> 1. Timer: Includes minute, second, deci-second, 14S and 24S timing function. And also have count up, count down, start/pause/reset/correct timing functions. 2. Scoring function: Modify the score of the team and player. 3. Penalty function: Team foul control, Player individual foul control, Player Penalty control, Substitution control, Player yellow/red card control, etc. 		

2.1.4 Basketball Shot clock



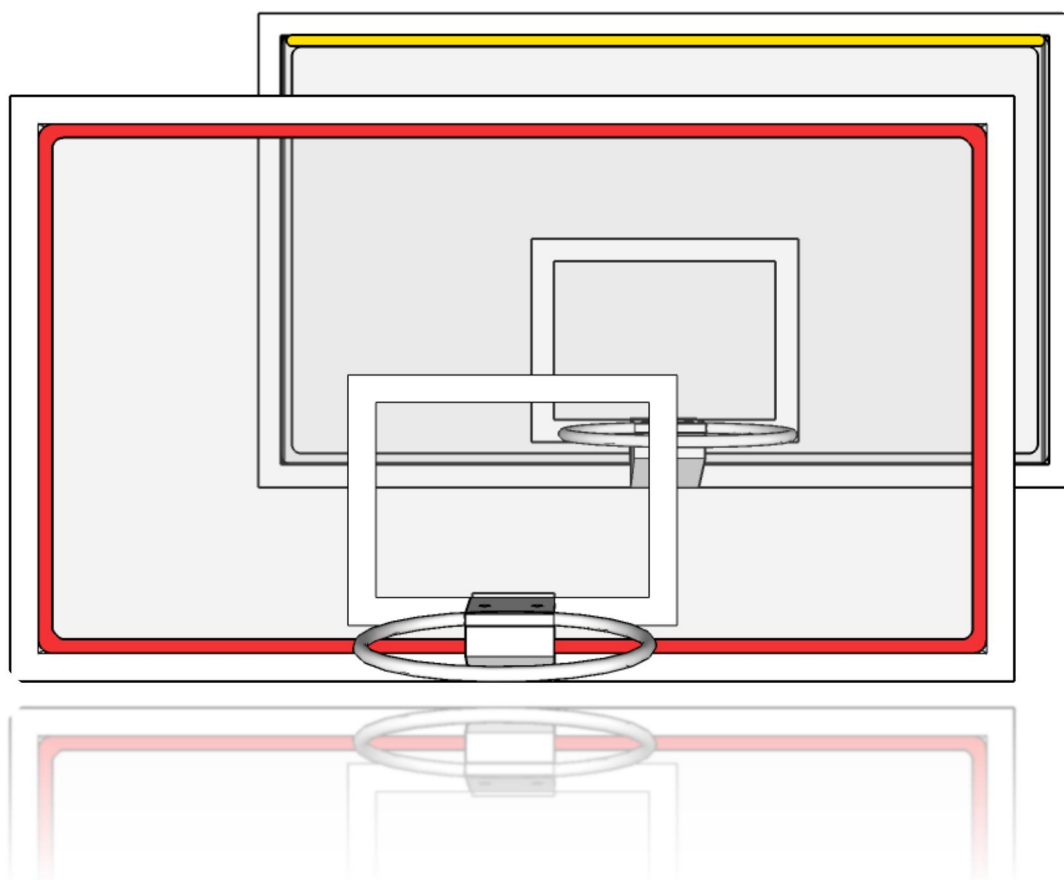
Basketball 24s Shot Clock

Model:	KS-BASH-C/X
Size:	390x310x50 (mm)
Display	Single Side

Detailed parameters

Item	Details
Product	Single-sided Shot Clock
Model	KS-BASH-C/X
Size	390x310x50mm
Input Voltage	AC 100V~240V
Power	20W
Material	Aluminum
Weight	5KG
Communication	Wired + Wireless (433MHz)
Implementation of Standards	International Sports Competition Rules
Packing List	Display*2, Communication Cable 50M*2, Stands*2, User Manual*1
Best Sight	Best Visual Distance: 5M---100M Best Viewing Angle: 0°---90°
Functions	
<ol style="list-style-type: none">1. Shot Clock: Decisecond display in last 5 second2. Synchronously display the 24S countdown with the Scoreboard3. Synchronously display the 14S countdown with the Scoreboard	

2.1.5 Backboard Light



Detailed parameters

Item	Details	Item	Details
Product	Basketball Backboard Light	Display Color	Red / Yellow
Model	KS-BALT-C	Net Weight	2kg
Size	1700x950x25 (mm)	Implementation of Standards	International Sports Competition Rules
Input Voltage	DC - 12V	Material	Aluminum
Communication	Wired	Others	Must be used with 24S Shot Clock
Functions	<ol style="list-style-type: none">1. Lighting up in red when the game clock signal sounds for the end of a period.2. Lighting up in yellow when shot clock signal sounds.		

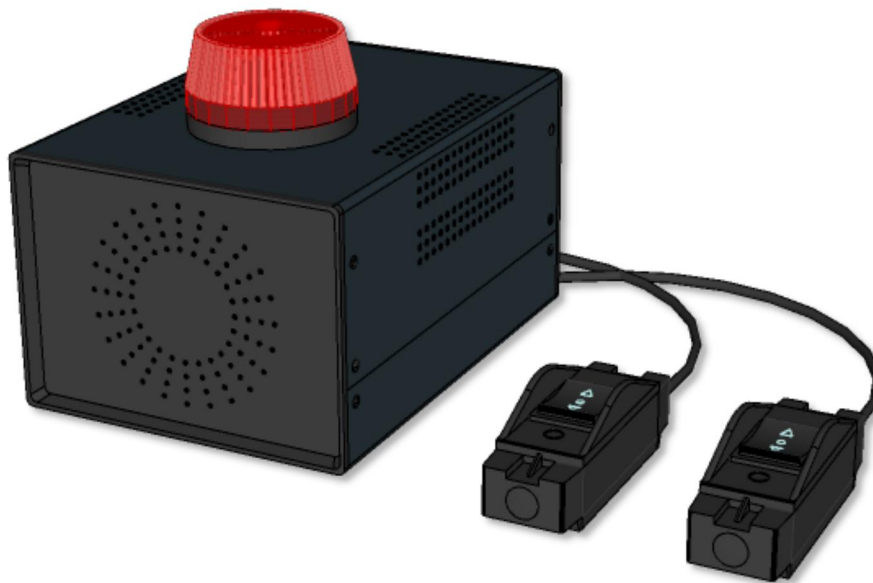
2.1.6 Foul Display



Detailed parameters

Item	Details	Item	Details
Product	Foul Display	Model	KS-BAFL-C
Display	Trihedral display	Material	PVC
Controller Size	195x145x60 (mm)	Weight	5KG
Display Size	320x205 (mm)	Implementation of Standards	International Sports Competition Rules
Input Voltage	12V DC	Port	G-Port*2
Packing List	Controller*1, Display*2, Power Adapter*1, Power Cable*1, User Manual*1		
Best Sight	Best Visual Distance: 3M---100M Best Viewing Angle: 0°---90°		
Functions	<ol style="list-style-type: none"> 1. Display functions conform to FIBA rules. 2. Team fouls 0-9 times can be set freely. 3. The last set of data can be preserved. 4. Not only can be used independently, but also can be connected to the Match Scoring & timing Host for linkage use. 5. Brightness adjustment is available in linkage mode. 6. Controlled by Match Scoring & Timing Host without separate power supply in linkage mode. 7. Anti-loose ports ensure the safety of match data. 8. Supports post-match celebration mode. 		

2.1.7 Electronic Buzzer



Detailed parameters

Item	Details	Item	Details
Product	Electronic Buzzer	Input Voltage	12V DC
Model	KS-BUZR	Power	35W
Size	200x150x150 (mm)	Color	Black
Volume	110dB	Weight	1KG
Implementation of Standards	International Sports Competition Rules		
Packing List	Host*1, Handheld*2, Power Adapter*1, Power Cable*1, User Manual*1		
Functions	<ol style="list-style-type: none">1. With two sound signals.2. Generate a siren sound for match timer timeout or substitution.3. Not only support independently use, but also access to the Match Scoring Host for linkage use.4. Controlled by Match Scoring Host without separate power supply under linkage mode.5. Anti-loose ports ensure the safety of match data.		

2.1.8 Match Timing Display



Detailed parameters

Item	Details	Item	Details
Product	Match Timing Display	Input Voltage	12V DC
Model	KS-SCRN-7SEGMENT	Weight	0.6 KG
Size	620x190x45 (mm)	Material	Aluminum
Implementation of Standards	International Sports Competition Rules		
Packing List	Host*1, Power Adapter*1, Power Cable*1, User Manual*1		
Functions	<ol style="list-style-type: none">1. Can be connected to the match software or the referee console.2. Synchronously display the match time.		

2.1.9 Electronic Whistle Timing System



Detailed parameters

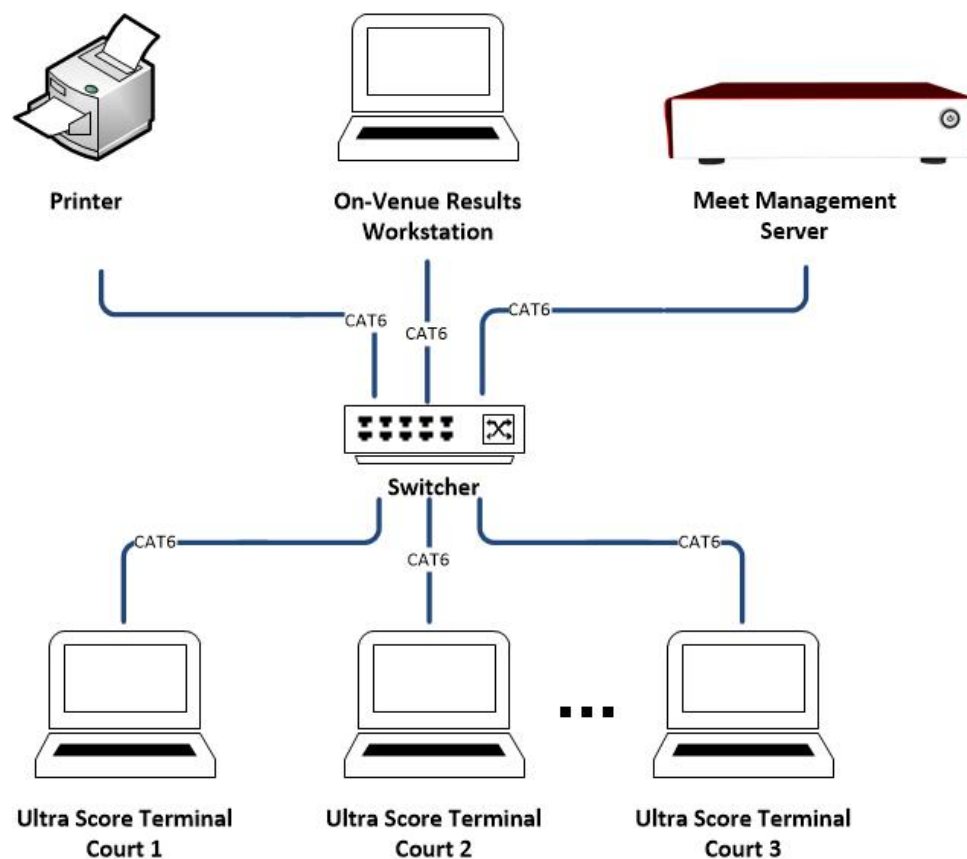
Item	Details	Item	Details
Product	Electronic Whistle Timing System	Communication	Wireless 433MHz
Model	KS-BAWS	Material	Aluminum
Host Power Supply	12V DC	Electronic Whistle Power Supply	Lithium Battery; USB Charging
Size	Host: 280×200×50 (mm) Electronic Whistle: 85×53×15(mm)		
Packing List	Host*1, Connection cable*1, Electronic Whistle*4, Headset*4, USB cable*4, USB hub*1, Antenna*2, User Manual*1		
Functions	<ol style="list-style-type: none">1. Start and pause match time.2. Communicate with four referees' whistle via wireless receiver, and with high precision detection of referee whistle to control match time.3. Work continuously for more than 8 hours.		

2.2 Meet Management System

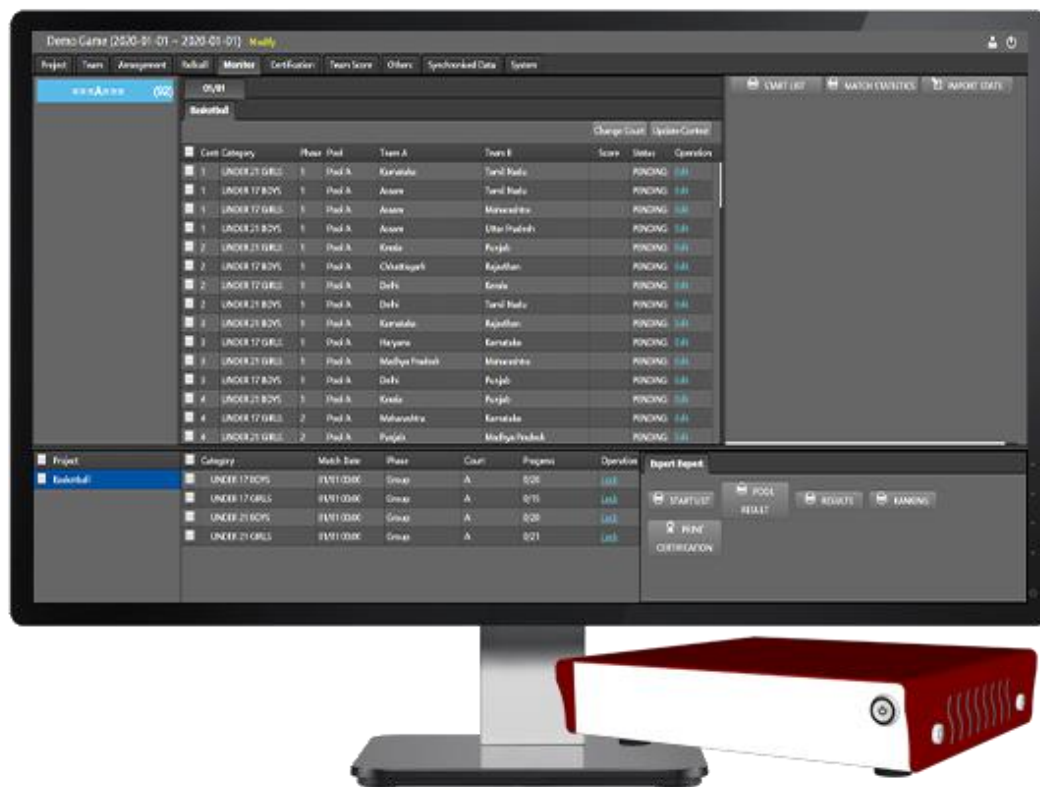
It is composed of Meet Management Server, On-Venue Results Workstation, Printer, etc. Linking with Online Registration System, Match Scoring System and Basketball Stats System, it can realize:

- 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.

2.2.1 System Diagram



2.2.2 Meet Management Server



Item	Details	Item	Details
Product	Meet Management Server	Input Voltage	12V DC
Model	KS-MMS-MINI	Weight	1.0 KG
Size	170x150x35 (mm)	Port	VGA*1, DP*1, USB*2
RAM	4GB	CPU	Intel J3160
Hard Disk	64G	Communication	LAN*1
Functions			

1. Easy to create a match, and import the match entry information.
2. Schedule the match with variants of game systems. Including elimination, round-robin, etc.
3. Provide the match information to the scoring software on each venue/court.
4. Gather the real time score and statistics information from the scoring software. Monitor the progress of the match.
5. Generate standard reports for the match, including start-list, results, combined results, ranking, etc.
6. Print certifications with adjustable print templates.
7. Print the team score report.
8. Open interface with ODF compatible data feed.

2.3 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, Handball, Boxing, Wrestling, Wushu, Judo, Jujitsu, Karate, Taekwondo, Gymnastics, Swimming, Diving, Ice-hockey, Weightlifting, etc.



2.3.1 System Diagram



2.3.2 System Description

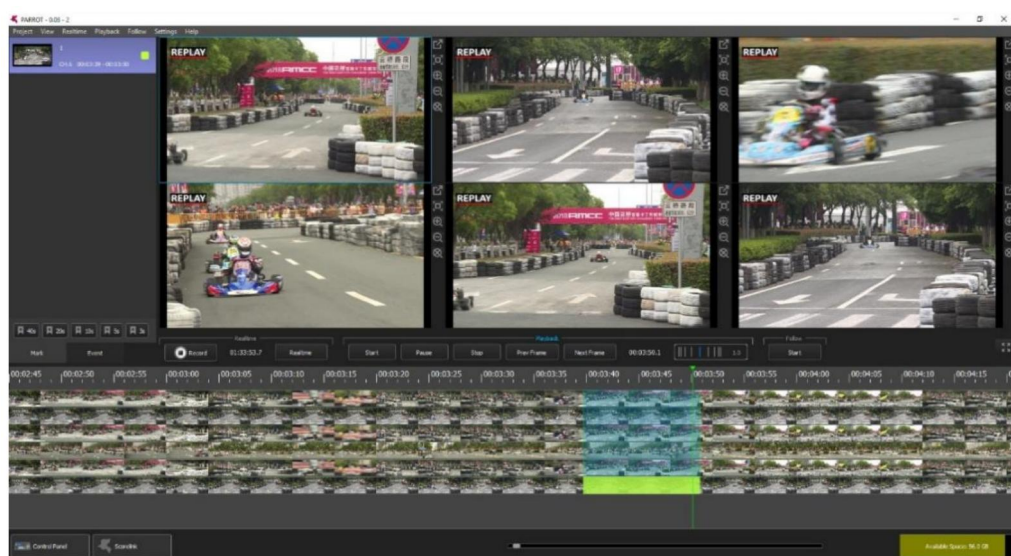
- 1) Ultra Score software is installed on the control computer. Connect the control computer and the video arbitration server to the local network.
- 2) 1-8 sets of HD cameras are installed around the court which connects to video arbitration server via SDI cable.
- 3) Control panel is connected to video 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.

2.3.3 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:

- 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.



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



Detailed parameter

Item	Details	Item	Details
Product	Video Arbitration Server	Model	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	<ol style="list-style-type: none"> 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.

2.3.5 Control Panel



Detailed parameters

Item	Details	Item	Details
Product	Control Panel	Model	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	<ol style="list-style-type: none"> 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. 		

2.3.6 HD Camera



Detailed parameters

Product Model	KS-PARROT-CAMERA
Video output	3G-SDI
Effective pixels	3.0 million
Resolution	1080p/30fps, 1080p/25fps
Sensor	CMOS
Focal length	4.2MM
Size	62.5*50*50MM

2.4 Basketball Stats System

Consists of Basketball Stats Workstation.

Record the points, shot position, assistant, foul, rebound of each player during the basketball game. Linking with Online Registration System and Match Scoring System, the timing and scoring data will be exactly synchronized with them.

It can generate the professional and detailed statistics report and provide data sharing for website and platform.

