Scoring & Timing Solution for Baseball & Softball

1. Introduction

This is a professional solution for LED scoreboard display in baseball competitions.

The system is applicable to international and domestic standard baseball competitions.

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.

Applicable rules of the system:

- 《OFFICIAL BASEBALL RULES 2021 Edition》

1.1 System Architecture

The whole system is composed of several subsystems, including Match Scoring System and Meet Management 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, Scoring & Timing Host, Pitch Clock, BSO Screen, Display for Ball Speed, Ball Speed Sensor, etc.

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

● **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, court arrangement, rank statistics, etc.

1.2 System Structure
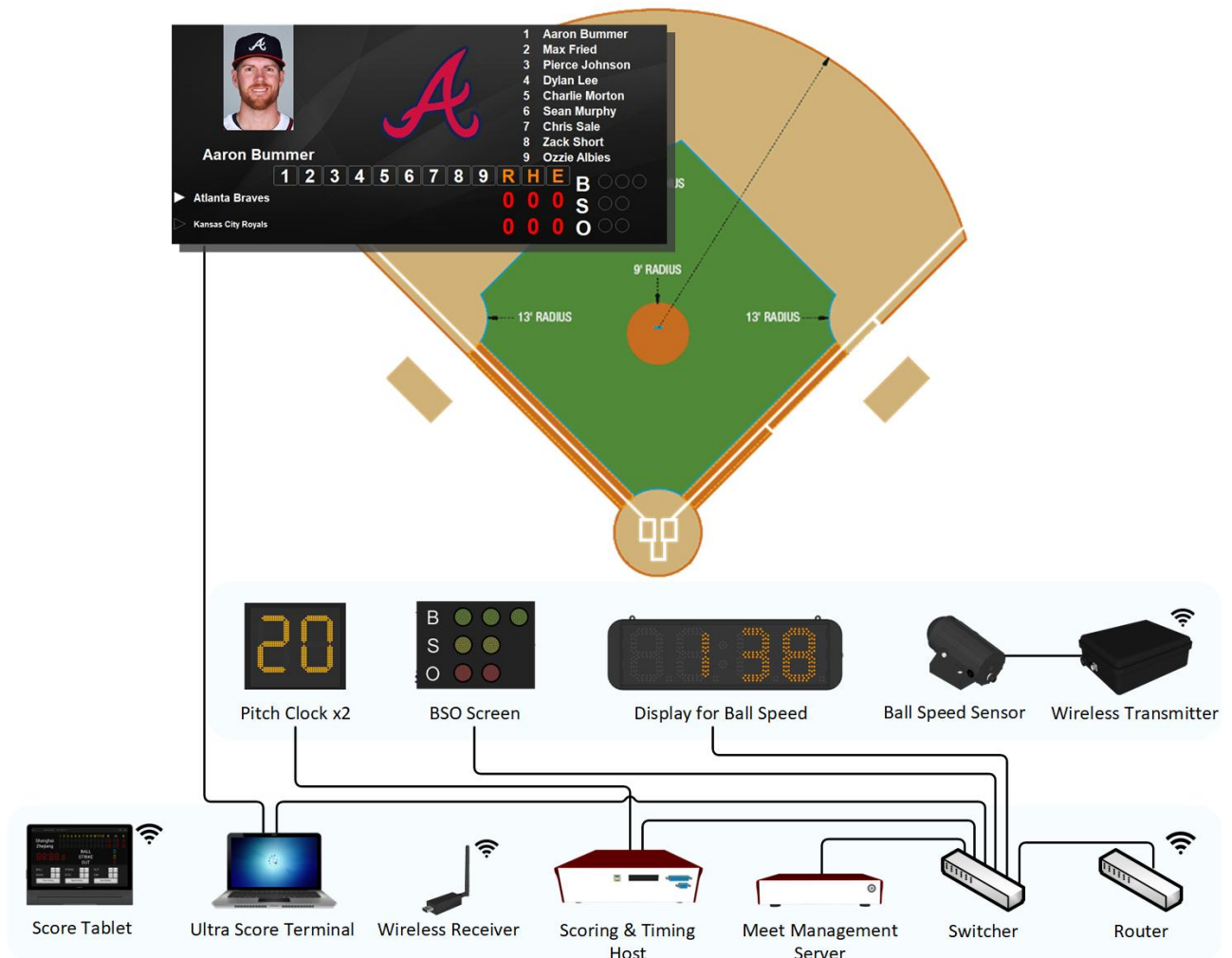
System Description

1) **LAN:** A LAN will be established within the venue to connect the LED display control PC, Scoring & Timing Terminal, Scoring & Timing Host, Meet Management Server, Display for ball speed, and BSO screen to the network.

2) **LED Screens:** 1-2 LED screens will be installed on both sides of the field. A control room will be equipped with 1-2 control PCs to manage the screens which will be connected via network cables or fiber optics and operated by the scoring & timing software.

3) **Scoring & Timing Host:** It is the core scoring & timing device which is installed on the referee table and supports hot backup redundancy.

4) **Pitch Clock:** Installed in the home plate area, connected to the Scoring & Timing Host via RVV5*0.5 cables and used with Ultra Score to display the pitcher's countdown timer.

5) **BSO Screen:** Connected into the scoring & timing system via network cable to display balls, strikes, and outs (BSO).

6) **Ball Speed Sensor:** Installed near home plate, wirelessly communicating with the referee's PC via a transceiver to measure pitching speed.

7) **Display for Ball Speed：** Installed in the home plate area, connected to the scoring & timing system via network cable to show real-time pitching speed.

8) **Meet Management Server:** It is the core data processing device which is set on the technical table and connected into the scoring & timing system via network cable.

1.3 Product Configuration

Product	Model	Qt.
Baseball Scoring & Timing System		
Ultra Score Software	◆ Standalone Edition ◆ Support: Baseball	1
Score Tablet	KS-GC14-I11	1
Ball Speed Sensor	KS-BSPD-SENSOR	1
Wireless Transmitter	KS-BSPD-WHT	1
Wireless Receiver	KS-BSPD-WHR	1
Display for Ball Speed	KS-BSPD-SCREEN	1
Scoring & Timing Host	KS-MONSTER	1
Pitch Clock	KS-BSPC	2
BSO Screen	KS-BSO-SCREEN13501000	1
Meet Management Server	KS-MMS-MINI	1
PC	/	2
Switch	/	1
Printer	/	1

2. Specification

2.1 Ultra Score Software

Products	Details
Standalone Edition	◆ Installed on one PC. ◆ Supports: Baseball ◆ English version ◆ Including 1 dongle
Standard Network Edition	◆ Terminal + 1 Display ◆ Supports: Baseball ◆ 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.

Scoring & timing display for baseball：

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

2.2 Scoring & Timing Host

Item	Details
Scoring & Timing Host	Model: KS-MONSTER Size: 260 x 280 x 80 (mm) Weight: 3 KG CPU: Intel J3160 RAM: 8GB Hard Disk: 64GB Communication: RJ45×2 Video Output: VGA×1, DP×1 Port: G-Port×8, Shot Clock port×2, Audio×1, USB×2, Serial port×1 Accessories: Pitch timer *1 Support: Baseball Function: ◆ Pitcher timing and system time ◆ It can be externally connected and synchronously control the Pitch Clock. ◆ 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.
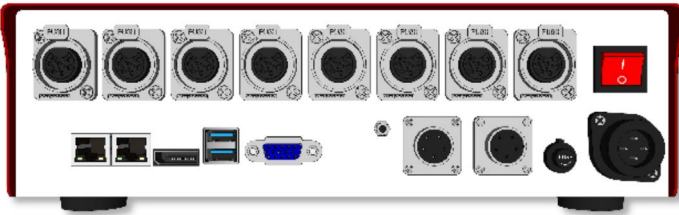
Scoring & Timing Host

|	
Model	KS-MONSTER
Dimension	260 x 280 x 80 (mm)
Support	Baseball
Other	Supports hot switching between the main and backup system.
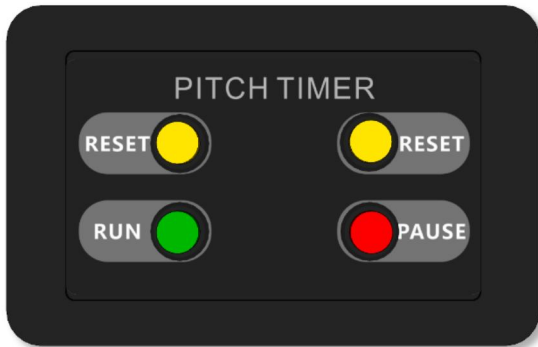
Pitch Timer

Model	KS-B-PT
Dimension	120x80x25(mm)
Communication	Wired
Function	To control pitch clock

2.3 Wireless Score Tablet

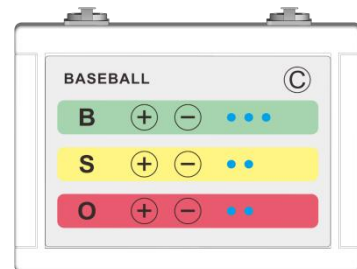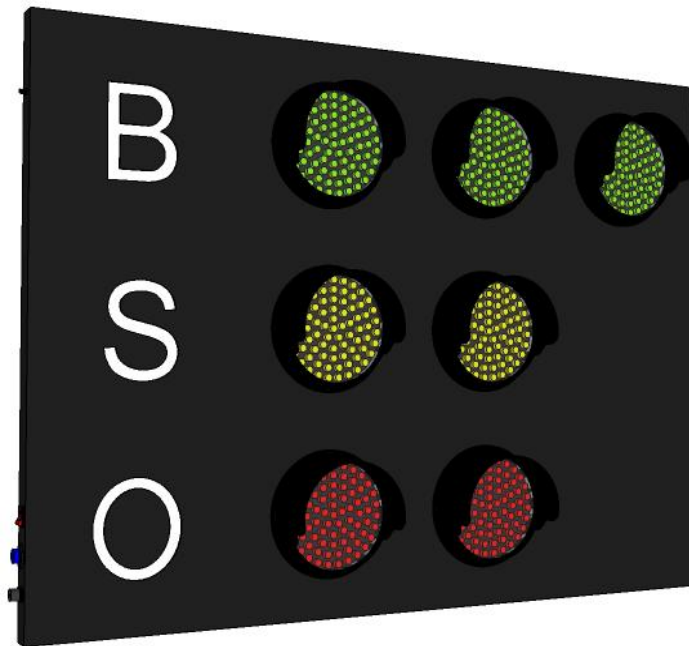| Products	Details
Wireless Score Tablet	Model: KS-GC14-I13 ◆ Including one license of Lightscore App ◆ Screen: 11"inch ◆ Pixel: 1920*1200IPS ◆ Ram: 6GB ◆ Storage: 128GB ◆ Battery: 8000mAh ◆ System: Android ◆ Supports: Baseball ◆ Communication: WIFI ◆ Full colored touch screen
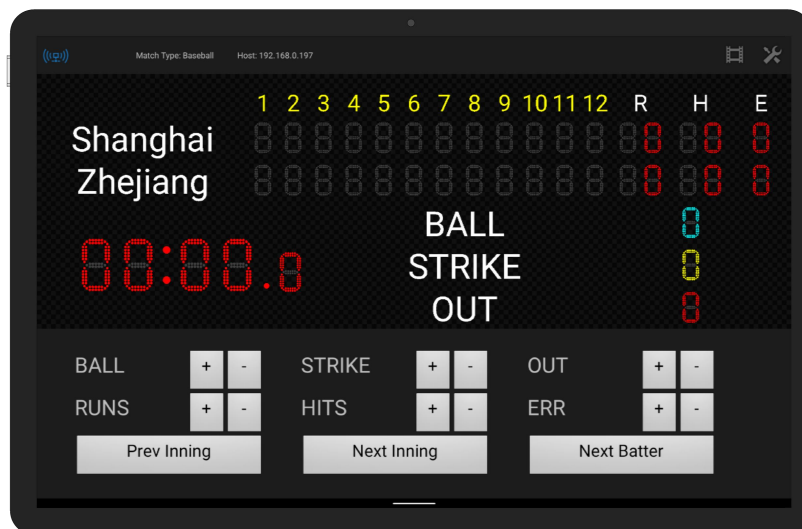
2.4 Pitch Clock

Products	Details
Pitch Clock	Model: KS-BSPC Size: 710x610x60 (mm) Single side Weight: 10KG Power: 60W* Material: Aluminium Communication：Wired Function: ◆ Be used together with Baseball scoring software to display the pitching countdown.

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2.5 BSO Screen

Products	Details
BSO Screen	Model: KS-BSO-SCREEN13501000 Size of Scoreboard: 1350x1000x150(mm) Size of Scoreboard Controller: 195x145x60(mm) Material: Aluminium Communication: Internet Waterproof Grade: Outdoor Waterproof Display Color: Red, Yellow, Green Communication Mode: Wired Control: It can be controlled by software or independently through the console. Function: ◆ Display Ball, Strike and Out.

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2.6 Ball Speed Measurement System
2.6.1 Wireless Transmitter/Receiver

| Products	Detail
Wireless Transmitter/Receiver	Wireless Transmitter Model: KS-BSPD-WHT Dimensions: 230×185×85 (mm) Material: PVC Power Input: 220V Waterproof Rating: Outdoor Waterproof Wireless Receiver Model: KS-BSPD-WHR Dimensions: 52×24×16 (mm) Interface: USB 2.0 Modulation: LoRa Frequency Band: 410–525 MHz Transmission Distance: 5 KM Functions: - Must be used with Ultra score software. - Wirelessly receives ball speed sensor data.

Wireless Transmitter   **Wireless Receiver**

2.6.2 Ball Speed Sensor

Item	Details
Ball Speed Sensor	Model: KS-BSPD-SENSOR Speed Range: 5-890MPH Accuracy: +/-0.1 MPH Max Distances: 300 feet Support：Baseball Function: ◆ The sensor is compatible with Ultra score software. ◆ Track baseball ball speed on serves and returns from courtside game after game.

2.7 Display for Ball Speed Sensor

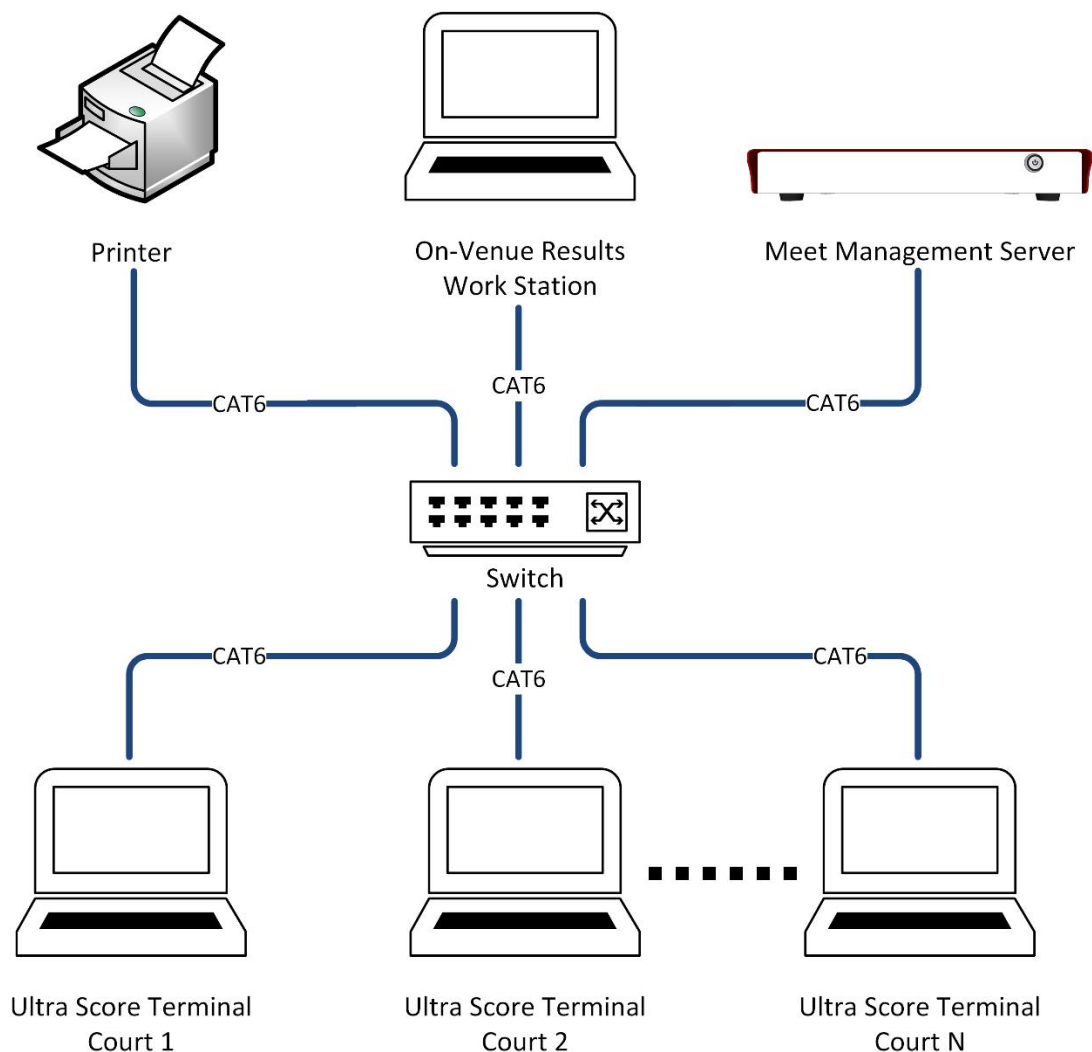| Products	Details
Display for Ball Speed Sensor	Model: KS-BSPD-SCREEN Size: 620x190x45 mm Color: Yellow Support: Display ball speed Communication Interface: RJ45 network cable
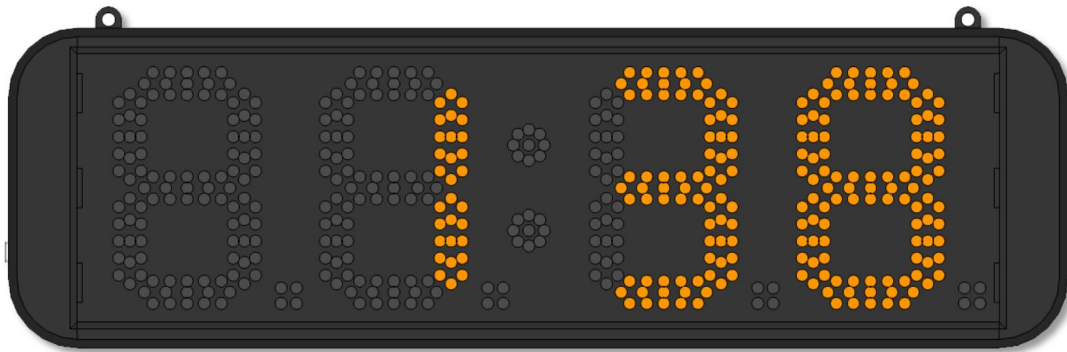
2.8 Meet Management System

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.

2.7.1 System Diagram

2.7.2   Meet Management Server

Products	Details
Meet Management Server	Model: KS-MMS-MINI Size: 260*135*35 (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.