International Research Journal of Engineering and Technology (IRJET) e-ISSN: 2395-0056
Volume: 05 Issue: 07 | July 2018 www.irjet.net p-ISSN: 2395-0072

A Survey on Electronic multipurpose scoreboard

Mr.Dipukumar R More[1], Smt. V.S. Jahagirdar[2]

[1]M.tech (Electronics Design & Tech), National Institute of Electronics and Information Technology (NIELIT), Aurangabad, Maharasthra, India
[2]Senior Technical Officer, National Institute of Electronics and Information Technology (NIELIT), Aurangabad, Maharasthra, India

---

Abstract -*This paper discusses implemented various sports and games scoreboard and timer (Game clock, short clock).The scoreboard of any sport shows the status of the on going match or game by displaying the significant data like timer and scores of teams. Scoreboard is used for various features. Scoreboards are specially used for displaying scores of a game played between two teams. Some games can be a timer based or an untimer. Players and viewers rely on the numerical figures that are shown on the scoreboard especially the scores of each team and the game clock to determine which team is winning. The scoreboard displaying data in form of seven 7-segment LEDs to implement a remotely controlled programmable clock and scoring board. In some scoreboard controlled clock ans scoreboard status wired as well wireless. This survey paper discusses about merits of various methods, technology and communication system used for scoreboard. This paper will also discuss the future scope for multi-sport scoreboard that is cost efficient, portable, and easy to use.*

***Key Words*: Timer (Main Game clock and Short Clock), MCU, Communication Wired and wireless.**

1. INTRODUCTION

Commonly the scoreboard is located near the committee to be able to update the scores via a computer connect e connected to the gadget. In this manner, the scores are updated using a program that sends the input from the laptop to the scoreboard. Digital scoreboard applies technology to the scoreboard because in the old timer, the scores are written on board which can be erased or even edited that may result to cheating. Traditional scoreboard uses a board with the team name placed at the top and the corresponding score below its name. The game time is only declared verbally by the announcer same with the shot clock. In the current playing games, players need to know the left time of each period match in main timer and team score etc. Electronic timer with the advantages of its convenient operation, compact size and visualization has been widely used in games like basketball, kabbadi, kho-kho these games are timed whereas volleyball, badminton these are untimed games.

NBA timing and score system was designed by a chip called 8031 of MCS-51.This system design consists of timer counting, score counting, keyboards for controlling and display sub-systems (Luo-Sheng, 2004) [1].

A new timer and score equipment for basketball match was designed and made by Chinese Basketball Association, used in 2004 CBA for league match played for NBA in Beijing, which was helpful for the present timer and scoring equipment specially in sport purpose and have great room for development and application (Zhang et al.,2006)[2].

The control system for basketball scoreboard was designed based on single-chip microcomputer with 16*16 matrix LED, which could be long-term operation and so on (Wei-Yu et al., 2008)[3].

The design of scoreboard system of timer and score system was based on 89C51, which had the functions of the total timer in countdown, with its features of score modular design, simple structure and easy to prepare (Han et al., 2009)[4]. T

he device was based on P89V51RB2 single-chip microcomputer, which can display the time left in timer and the score, the real time and score can be amended (Rong-Jian et al., 2010)[5].

The countdown timer circuit was designed which uses STC89C52 single-chip microcomputer, which can countdown 999 numbers, accurate to seconds. (Ze-Shi, 2011) [6].

There also one reset button must be which will set all the status or values to their initial as define at the start of the match (Sandra Ilijin, 2015) [10].

Although timer of scoreboard systems are convenient to use, there are some demirits during the use of them, some are inconvenient for players as small in size and the position of placement and some are difficult to install and repair as well low efficiency and reliability. So, these are Survey details will discuss the various details about scoreboard system design used to achieve the goal and results by authors.

2. SURVEY DETAILS

2.1 Scoreboard

Fig. 1 shows the necessary data to be displayed by the scoreboard like game clock, shot clock, team fouls, period or

quarter and time outs as arranged in the said figure. The topmost display is the game clock which shows the remaining time per quarter [7].

Figure 1. Scoreboard Display.

Srivatsa Raghunath, 2014. Fig. 2 shows the complete system block diagram. a main controller system, a communication system, and the wireless LED-based scoreboard. It uses Infrared (IR) light-based communication which has capability of communication distance between the remote and the display is less than 20 feet and alignment access for beam of IR rays [8].

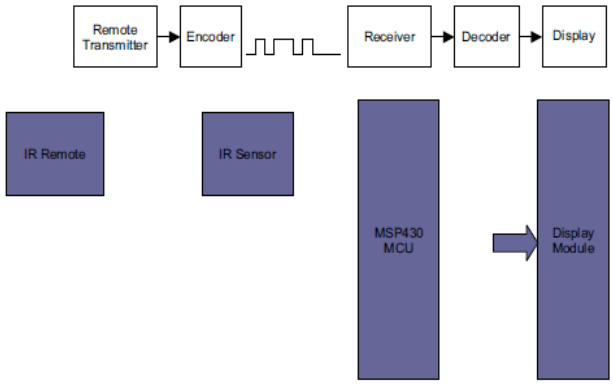

Figure 2. Complete system block diagram.

2.2 Result of above scoreboard system designed

Srivatsa Raghunath 2014.The LEDs are controlled by two 8-bit SISO or SIPO shift register. This used technique is one of the basic techniques. A standard TV remote is used as IR transmitter. The TSOP1738 device is used as a receiver for infrared remote control systems. Which is having very poor result[8].

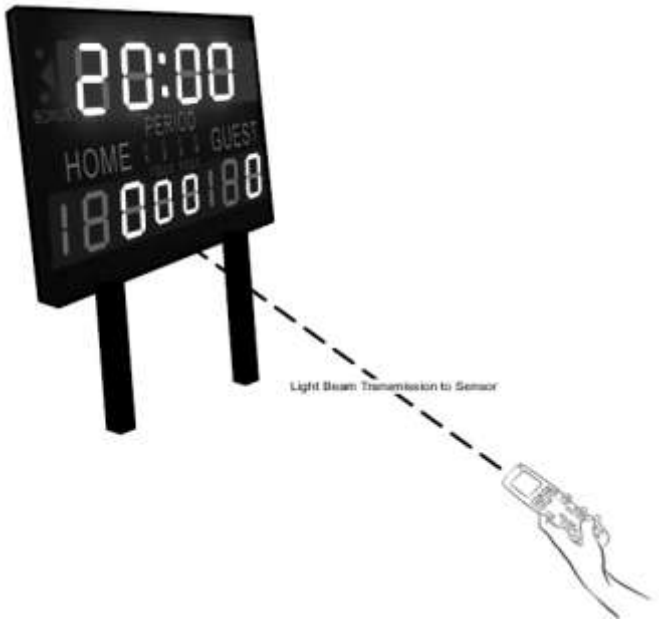

Figure 3. IR based Wireless Scoreboard Control.

Mervyn Siegfred R 2012. The device included in its hardware are the following: (1) a simple wireless communication module to pair up or establish a connection; and (2) the touch screen provides an effortless way of using the GUI software; (3) The device is powered by the USB port of a computer. The design software has the following functions: (1) it can be configured to be used with different official rules of basketball; (2) Easy to understand design of user interface; (3) easy to edit of human errors; (4) it provides the required data to be transmitted through Zigbee; and (5) There is buttons for specific task to perform and genrate appropriate data bytes to be sent[7].

Figure 4. Conceptual Diagram.

Comparison Between Various Scoreboard and Wireless Communication Techniques Used For Implementation

	Srivatsa Raghunath [8]	**Mervyn Siegfred R[7]**	**Andrew Vogel [9]**
Data transmission method	Infrared (IR)	Zigbee	Wired
Micro-controller	MSP 430	Arduino AT MEGA 2560	Motorola 68HC11
Used For	Multi-sport	Basketball only	Multi-sport
Operating Range	20 feet	50 Meter	Up to 5 feet

3. CONCLUSIONS AND POSSIBLE FUTURE WORK

In this survey paper we discussed the minimum required display data for scoreboard of both teams that are competing team score, team fouls, remaining timeout these are for each team, and main game clock timer as well shot clock and every quarter are being shown by today's scoreboard designs but as of right now a low cost method for keeping score of the tournaments are currently not available; Existing Systems are costly as the functions of scoreboard increases with increase in cost.

There is very need for multi-sport scoreboard that is cost efficient, portable, and easy to use power efficient and indoor outdoor purpose. The display values on the scoreboard are transmitted wireless as well as wired for long distance about 100 meter to 200 meter.

ACKNOWLEDGEMENT

Smt. V.S Jahagirdar (Senior Technical Officer, NIELIT, Aurangabad, India) thanks for supportive all actions.

REFERENCES

[1] Luo-Sheng, C., 2004. Implementation of NBA timing and score system by computer on a chip [J]. Appl. Sci. Technol., 31(11): 26-28.

[2] Zhang, L., C. Liu, H. Xiao *et al*., 2006. Design and application of timing and scoring equipment in basketball match [J]. Bull. Sport Sci. Technol., 14(10): 3-5.

[3] Wei-Yu, Z., T. Fang-Hong and H. Zhou-Liang, 2008. The control system in basketball scoreboard made by 89C51 SCM [J]. World Sci. Tech. R&D, 30(4): 461-465.

[4] Han, L., C. Zhang, L. Wang, Z. Sun and R. Zhang, 2009. Design of the time and score of basketball competition based on single chip computer [J]. Modern Electron. Technol., 2009(8): 129-130.

[5] Rong-Jian, Z., B. Qiu-chan and Y. Gen-wang, 2010. Design of timing and score device for basketball game [J]. Comput. Stud., 2010(5): 25-27.

[6] Ze-Shi, W, 2011. Design of countdown system based on SCM and showed by high-power digital tube [J]. Sci. Technol. Inform., 2011(11): 108-109.

[7] Mervyn Siegfred R. Barroquillo Edward John Simoun B. Binalla Romnick C. Chua,2012 Portable Touch Screen PC-Based Basketball Scoreboard Synchronizer via Zigbee. Mapua Institute of Technology.

[8] Srivatsa Raghunath, 2014,Hardware Design Considerations for a Wireless LED Based Display Design Application. Report Texas Instruments SLVA655–June 2014

[9] Andrew Vogel,James Barley,Amy Hall,Timothy Hillner,2003.PC to Scoreboard Integration Team Scoreboard, Messiah College.

[10] Sandra Ilijin, Predrag Petković ,Implementation of Control Logic

in the Scoreboard of Tennis. Serbian Journal of electrical Engg.Vol. 12, No. 2, June 2015, 219-236