

FST School Write Up (Purpose and Functions)

1. Purpose of the FST

- a. To provide a precise time for a football snap.
 - i. A “snap” in football is when the center launches the ball between his legs towards either the punter, holder, quarterback, or any other person in the backfield.
 - ii. Hand timing these snaps are very difficult because the average time of a 12-yard snap(a long snap) is about 1 second, and a 7-yard snap(a regular snap) is on average about half a second.
 - iii. The FST will allow the user to have a precise time for the snap using lasers(See Functions 2).
 1. With this time, the athlete will be able to use these times for the following purposes:
 - a. To use these times to measure their improvement over the season and to show the success of training
 - b. For athletes with aspirations to further their career at the college or professional level, these times can be used to compare their performance to standards
 - c. To use these times for record and future comparison in one organization, having a school record or league record
- b. To provide the function of a manual timer
 - i. In the case of not wanting to setup/use the full FST, with the two gates, the FST panel has the functionality of an ordinary stopwatch
 - ii. Although not accurate, it is a simple function that can be used in the case of a quick and estimated time

2. Overall Functions of the FST

- a. To provide a precise time for any distance of a football snap
 - i. The mode on the LCD Display will read “FST”
 - ii. The football is placed in the first timing gate, breaking the laser
 1. When the football is moved and the laser beam is reconnected, the timer is started

- iii. When the football breaks the plane created by the reflective material between the two pylons, the timer is stopped and displayed on the LCD Display on the FST Control Panel
- iv. The time is constantly displayed on the LCD Display
- v. The Status LED is updated while the timer is started and stopped
 - 1. Green- The timer is ready to be started
 - 2. Yellow- The start gate has been activated
 - 3. Red- The end gate has been activated, the timer has been stopped, and the system must be reset to time again
- b. To be used as a manual stopwatch
 - i. On the FST Control Panel there is a start button and stop button
 - 1. The start button will start the timer on the LCD Display
 - 2. The stop button will stop the timer on the LCD Display
 - 3. The Status LED will be updated as the timer is used
 - a. Green- The timer is ready to be started
 - b. Yellow- The timer has been started
 - c. Red- The timer has been stopped, and the system must be reset before the timer can be used again
 - 4. The mode on the LCD Display will read “Manual”
- c. Have the functionality of diagnostics
 - i. The mode on the LCD Display will read “Diagnostics”
 - ii. The Arduino Mega will run checks on the following conditions:
 - 1. If the Start Gate Laser is on
 - 2. If the Start Gate Receiver is receiving
 - 3. If the Stop Gate Laser is on
 - 4. If the Stop Gate Receiver is receiving
 - iii. Will display this information on the LCD Display so that the user can check if there are any breaks in connections and can repair them