User Manual: Electronic Timing Lights

**A low-cost alternative to existing timing light systems, to support growth in competitive archery.**

The electronic timing light system comprises of any number of display units and a single controller in the form of an Android app.

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# Display Unit

## On-Unit Controls

The panel of switches in the lower right side of the display unit’s face houses 4 switches and the buzzer.

Diagram

Description automatically generated

Switch 1 is a three-way switch to control the volume of the buzzer:

* Quiet: move the switch up
* Loud: move the switch down
* Mute: place the switch in the neutral, central position (not pointing left)

Switch 2 controls the brightness of the LEDs on the unit, where moving the switch up will cause the LEDs to be dimmer than when the switch is in the opposite direction.

Switch 3 controls the display unit’s behaviour within a medal matchplay situation, where two units are required to act in a near-synchronous alternating pattern. In this environment, one unit will need to be set as the “left” unit, and the other as the “right” unit, such that each unit only acts on the data it is intended to receive.

Switch 4 turns the display unit on/off.

## Charging

The display units may be charged with the supplied chargers, or any charger intended to charge 12v 12Ah lead-crystal batteries. **Do not charge the display units while in use.**

# Android Application

The controller app provides the user interface for controlling the display units. To ensure the user is always aware of what the display units are doing without line of sight, the app has a section which mimics the appearance of a display unit and is kept up to date with the system state.

Both the Target and Matchplay screens contain an emergency stop slider which, when the symbol is dragged from the left to the right, will immediately cancel the active countdown and halt shooting.

## Graphical user interface, application, Teams Description automatically generatedGraphical user interface, application, Teams Description automatically generatedTarget

1. Ensure the dongle is connected to the Android device, the device supports OTG connection, the device’s version is Android 8.0 or higher, and you’ve granted the dongle permissions.
2. Upon launching the app, the default time values are that for use in a World Archery 1440 or 720 round. To begin counting down, press “Start.”
3. To cancel shooting, press “Score.”
4. To halt shooting in an emergency, slide the warning symbol on the “Emergency Stop” button to the right.

### Equipment Failure

Graphical user interface, application, Teams

Description automatically generatedTo run an equipment failure phase, press the “Equipment Failure” button, where the user will be prompted to input the number of arrows to shoot, and how much time should be allocated per shot. This will allow for one custom end to be shot, without interfering with settings. The warning time value is what the value is set to be for target competition.

## Matchplay

NOTE: Matchplay functionality is currently incomplete, and should not be used in any official capacity.

1. Ensure the dongle is connected to the Android device, the device supports OTG connection, the device’s version is Android 8.0 or higher, and you’ve granted the dongle permissions.
2. Select “Matchplay” from the upper navigation bar.
3. Depending on which unit should start counting down first, press “Start Left” or “Start Right” to begin a countdown.
4. After the last arrow has been shot, the “Swap” button turns into a “Score” button, which will stop the shooting and cancel any scheduled countdowns.
5. To halt shooting in an emergency, slide the warning symbol on the “Emergency Stop” button to the right.

## Settings

The following values may be configured within the settings menu, and the values will be stored persistently when the save button is pressed. Any changes made without pressing the save button will be reverted.

### A screenshot of a phone Description automatically generated with medium confidenceTarget

* Maximum time (seconds) – the total number of seconds per end of shooting
* Warning time – the traffic light should turn orange when this many seconds or fewer are remaining
* Auto toggle detail between ends – when shooting with detail enabled (A/B, C/D), automatically switch to the other detail value once an end of shooting has been completed

### Matchplay

* Seconds per end - the number of seconds per end of shooting
* Warning time - the traffic light should turn orange when this many seconds or fewer are remaining
* Number of ends per archer – how many times the countdown should run, per display unit/archer

### Equipment Failure

* Seconds per arrow – the number of seconds per arrow to pre-fill into the equipment failure dialog (currently unused).