

# Hitmate CWES2 SPECIFICATION

## INTRODUCTION

This document describes the 2<sup>nd</sup> generation Completely Wireless Epee System (CWES2). If you have the 1<sup>st</sup> generation CWES, please refer to the CWES User Guide.

## CHANGES FROM CWES TO CWES2

**Improved Plugin battery life.** A larger capacity battery and reduced current consumption, has increased the battery life from 3.5+ hours to 8+ hours, or to put into fencing terms, from 800+ hits to 2000+ hits.

**Improved accuracy.** New software detects the differences between epees with metal or carbon fibre handles. A simple guard hit is required after inserting the Plugin to calibrate the Plugin.

**Reduced cost.** New hardware for the Plugin and Repeater, and a new storage case, has significantly reduced the overall cost of both systems.

## CWES2 FEATURES

**CWES2-2 comprises two Plugins in a plastic storage case<sup>1,2,3</sup>.** This set comprises everything you need to start wireless epee fencing. Please refer to sections in this document, which describe the Plugins in detail. This set includes spare pins for the Plugins, a Quick Start Guide on the reverse and a spare socket for testing the Plugin pins. This set does not include the Repeater and Display Stand, which can be purchased separately at a later date and added to the CWES2 storage case.

**CWES2-3 comprises two Plugins and one Repeater in a plastic storage case<sup>1,2,3</sup>.** This set does not include the Display Stand, which can be purchased separately at a later date and added to the CWES2 storage case.

## PLUGIN SPECIFICATION

**Inserts directly into the epee.** This removes the need for a body wire, which reduces the amount/cost of personal and club kit.

**Plugins communicate directly with each other to determine and display the hit result<sup>4</sup>.** This removes the need for separate display console, which significantly reduces the cost of wireless fencing and allows pistes to be placed closer together.

**Contains red and green LEDs plus a buzzer<sup>4</sup>.** Results are displayed simultaneously on both Plugins for each fencer to view.

**Automatically detects the epee when plugged in.** A basic check of the epee is performed. If any serious problems are detected the Plugin automatically switches off.

**Automatically switches off when removed from the epee.** This maximises the battery life and allows the next epee to be auto detected when inserted.

**Timeout mode.** If there is no hit awarded after 6 minutes, the red and green LEDs flash and the buzzer sounds repeatedly until a hit is awarded. This only happens if the epee had not been removed after a fight and is a reminder to the fencer to remove the Plugin to conserve battery life. It also helps to prevent fencers leaving the venue at the end of a session with the Plugin still inserted.

**Simple plug and play.** A single hit to the opponents guard is required to calibrate the Plugin.

**Detects hits to different target areas<sup>5</sup>.** Body hits result in either the red or green LEDs illuminating and the buzzer sounding. Hits to the opponents guard or conductive piste do not register.

**Meets all FIE timings.** A pair of Plugins are compliant with the FIE Material Rules (October 2024) for epee timings.

**Test/coaching mode.** In normal operation, the LEDs and buzzer operate for 2-3 seconds when a body hit is detected. In test/coaching mode, the LEDs and buzzer only operate for 0.1 second, allowing multiple hits in rapid succession. This is useful when testing your epee for possible faults or when coaching. Body hits result in the green LED flashing and the

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buzzer sounding. Guard hits result in the red LED flashing. To enter test/coaching mode, press the switch again before inserting the Plugin into the epee. To exit this mode, remove the Plugin and it will automatically shut down.

**Long battery life<sup>6</sup>.** The Plugin will last over 8 hours or over 2000 hits on a single charge, whichever comes first. The battery charge status is displayed when the Plugin is switched on. The green LED indicates the battery has between 3 hours and 8 hours remaining use. The red LED indicates the battery has less than 3 hours remaining. These figures are only approximate and should not be relied upon.

**Fast charging<sup>7</sup>.** The Plugin will fully charge in two hours using a standard USB-C cable.

**Compact and lightweight.** The Plugin measures 55mm x 45mm x 15mm (not including the pins) and weighs 41g.

**Robust case.** The case is machined from solid translucent polycarbonate, which is one of the toughest plastics available and can therefore withstand repeated direct hits.

**Spare pins.** Although the pins will eventually wear or break after repeated use, they are easy to replace with a standard cross-head screwdriver. Both sets come with three spare pins.

## REPEATER SPECIFICATION

**Displays the same hit result as the Plugins<sup>1</sup>.** The Repeater contains red and green LEDs plus a buzzer, the same as the Plugin.

**Hand held or floor/desk mounted.** The Repeater can either be hand held or kept in the storage case and mounted on the Display Stand. Being hand held, the referee can move up and down the piste with the fencers, but have clear sight of the result. Mounting the storage case on the Display Stand allows both the referee and spectators to view the result.

**Automatically switches off.** The Repeater will automatically switch off 10 minutes after the last hit. The Repeater can be manually switched off by pressing the red button.

**Long battery life<sup>6</sup>.** The Repeater will last over 8 hours or over 2000 hits on a single charge, whichever comes first. The battery charge status is displayed when the Repeater is switched on. The green LED indicates the battery has between 3 hours and 8 hours remaining use. The red LED indicates the battery has less than 3 hours remaining. These figures are only approximate and should not be relied upon.

**Fast charging<sup>7</sup>.** The Repeater will fully charge in two hours using a standard USB-C cable.

**Note 1:** The Repeater is optional and does not have any role in determining the hit result. Having the Repeater switched off will not effect the operation of the two Plugins.

**Note 2:** The same case is used for CWES2-2 and CWES2-3, allowing a Repeater and Display Stand to be purchased at a later date and added to the CWES2-2.

**Note 3:** The Display Stand can be stored inside the CWES2 case along with the Plugins and Repeater.

**Note 4:** In traditional wired and wireless scoring systems, the display unit determines the timing of hits and awards the result to either the red or green fencer, or to both for double hits. Since CWES can comprise only two Plugins, the role of the display unit is adopted by the red Plugin. For this reason, both Plugins must be switched on and inserted into epees for the correct result to be displayed on both Plugins (and Repeater if it is being used).

**Note 5:** Hits to an unpainted part of the mask will be seen as a guard hit and therefore may not register.

**Note 6:** Battery life is heavily dependent on the number of hits, since a significant amount of power is drawn by the LEDs and buzzer. The more hits there are the shorter the battery life. The Plugins and Repeater will typically last 2000 hits on a single charge based on a hit every 18 seconds, which is the average.

**Note 7:** USB-C cable and power supply are not included.