Features and Benefits

General

- Follows FIE regulations and timings
- Powered by six standard AA batteries
- Batteries can be changed in seconds without any tools
- Rechargeable batteries may be used
- Ultra bright and efficient LED's
- Four line LCD display
- Diagnostic tests for all electric equipment
- Robust ABS box with polymer cover

Foil

- Only registers hits of at least 14ms
- Registering of non-valid hits is optional
- Locks out successive hits after 300ms from initial hit
- Compensates for micro-breaks (<0.2ms) during hit detection
- Constant off target stops sounding after 3 signals
- Training mode shows duration of hit and whether a hit would register as a valid touch
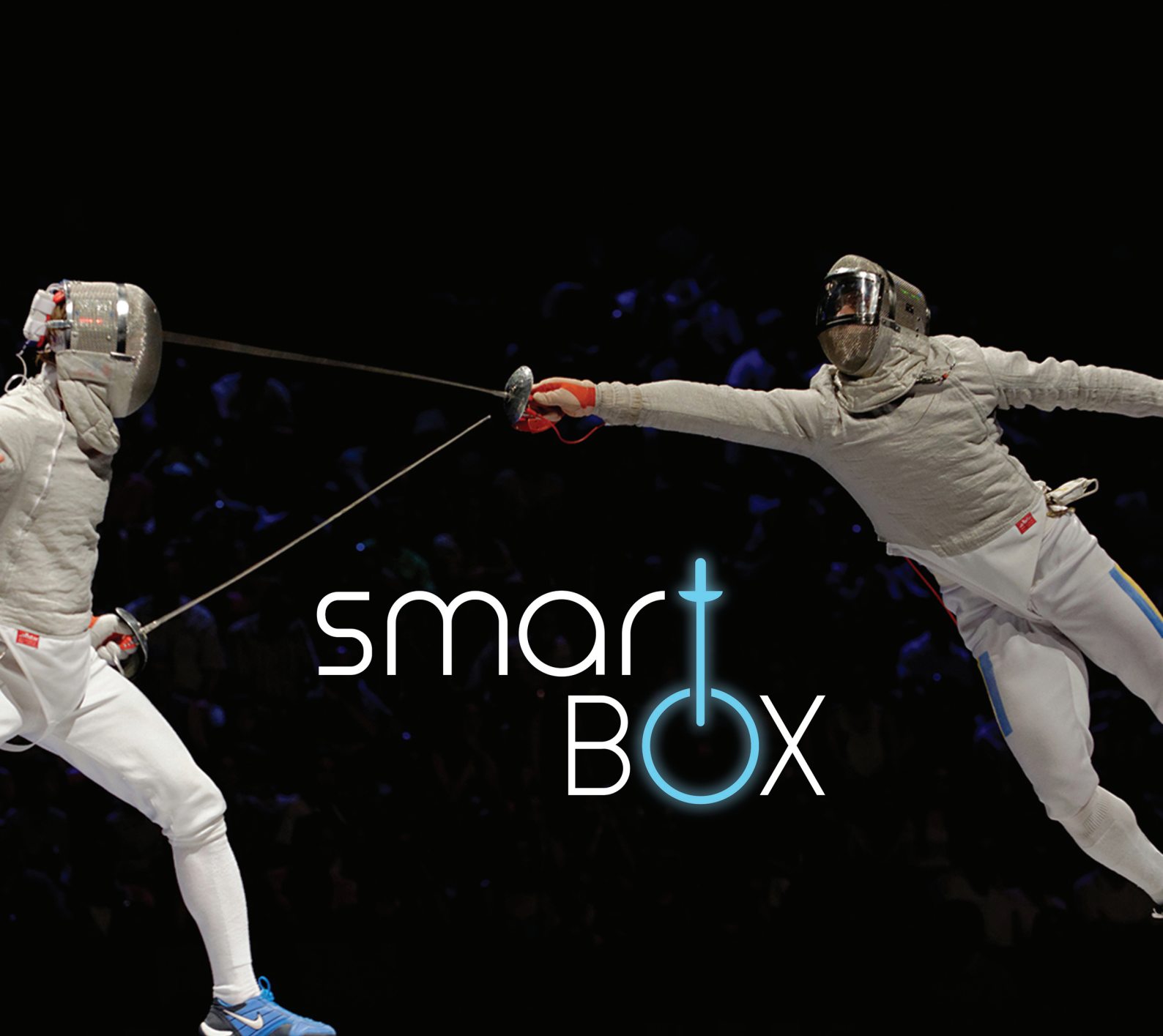
Épée

- Indicates guard short on either wire
- Diagnostic function for testing guard connections
- Ignores hits to opponents guard and tip
- Does not register hits of less than 2ms of contact
- Locks out successive hits after 40ms from first hit
- Automatic scoring (optional)

Sabre

- Does not register hits under 0.1ms
- Locks out successive hits after 120ms from initial hit
- Annuls "whip-over" hits
- White lights indicate faults (can be disabled)
- Can test lamé for dead spots using opponents blade
- Scoring is unaffected by players 'blocking'. See FAQ F2.

Armourer

- Real-time graphical display of resistance
- Displays all three wires in spools/bodywires/ground wires.
- Counts the number of breaks to detect intermittent faults
- Tests an épée for guard shorts and wire breaks
- Shows resistance and breaks for both foils and sabres
- Tests all types of body wire including the lame cable

smart BOX

User Manual
v2.5

PLEASE NOTE

*There are buttons either side of the screen. Throughout this guide they will be referred to as **LB** (left button) and **RB** (right button). The sockets along the top of the SmartBox are split in to two sets. They are referred to as either the left player's or right player's connection. Each player's connection is made of 3 separate sockets. They are referred to as S1 to S6 with S1 being the left most socket.*

Contents

1. Weapon Selection

```
     Foil
<<<CHANGE>>>
Test weapons
   to start
```

This menu screen allows you to change the mode. You can select sabre, épée, foil, foil practice or armourer. To start a match simply select the desired weapon and test both players' weapons are working. The SmartBox will beep twice to indicate the match has started.

ÉPÉE /SABRE/FOIL: Only registers hits for that weapon.

```
 Foil Practice
<<<CHANGE>>>
Test weapons
   to start
```

FOIL PRACTICE: Plug a foil via a bodywire in to either player's connection. When the foil tip is pushed it will display the break in milliseconds (ms). Any hit over 13ms will trigger a green light and a long beep. Anything below that will trigger a red light and short beep to show that the hit duration would not be sufficient to register a touch in a match.

```
   Armourer
<<<CHANGE>>>
Connect inner
pins together
```

ARMOURER: Enabled when **S3** is connected to **S4**. This can be achieved by connecting a wire (such as a ground wire or épée bodywire) between both sides. A foil/sabre bodywire can also be used by plugging it in to the left player's side and then touching the lamé clip to **S4**.

2. Match Screen

```
       Foil
   Score: 5 – 12

<<<Menu   -Pts>>>
```

Once the match has started the chosen weapon will be shown at the top of the screen. To change to another weapon simply turn the SmartBox off and on again.

Pressing **LB** opens the options menu. Pressing **RB** enables automatic scoring which will be shown underneath the weapon type. In épée, double hits will add one point to both scores. However, in foil and sabre only a single coloured light on the box will award a point; therefore if both players hit simultaneously, whether on or off target, it will not affect either score (see Scoring FAQs).

 In this event, to *add a point* to a player they must hit the other player's lame with their weapon to get a single light on the SmartBox.

To deduct a point from either player press **RB**, the bottom line of the screen will now display <<< Left   Right>>>. Press either **LB** or **RB** to deduct a point from the relevant player.

3. Options Screen

```
>Diagnostic
 Reset Scores
 Change Option
 Return to match
```

Each row displays a different menu option. The cursor (> symbol) on the left indicates the currently selected option. Press **LB** until the cursor is next to the option you want to select then press **RB** to activate it.

Diagnostic: Displays the diagnostic screen

Reset Scores: Sets scores to zero and returns to match screen

Change Option: This option is different for each weapon

- Sabre: Change lockout time (120ms/170ms)
- Épée: No option
- Foil: Change Off Target setting – Club, FIE, Off

    The 'FIE' setting will only register a hit once the resistance of a player's foil circuit goes above 200 ohms. If a player is registering random off target hits then the sensitivity can be set to 'Club', this changes the resistance setting to 250 ohms. Changing the setting to 'Off' means that off target hits simply do not register at all.

Return to match: Returns to match without making any changes

4. During Match Diagnostic

```
Left :#
Right:####
   # = 10 ohms
<<<Back   Lamé>>>
```

Foil/Sabre: Displays the resistance for each player's circuit in blocks of 10 ohms. High resistance (more than 2 or 3 blocks) indicates there could be a fault. Likewise, if the resistance changes by several blocks when a piece of equipment is moved (foil tip, spool, bodywire etc.) this indicates a fault with that item. A white light on either side indicates a complete break in that players circuit such as when the foil tip is pushed.

```
   Lame Test
    72 ohms
   <500 = GOOD
<<<Back
```

Lamé option: Players can test their opponent's lamé by running the foil tip over the surface of the lamé. The green light will indicate a good connection and a red light will indicate resistance high enough to prevent a valid touch being awarded. If no light comes on then it means that there is no connection through the lamé. Either player may test their opponent's lamé but they cannot be tested at the same time.

Epee: When both players guards/weapons are connected together as though parrying it will form a circuit. The green light will be shown if the entire circuit resistance is lower than 100 ohms. If the green LED does not come on it means that one of the player's guards is not properly connected. If this test shows a green light but hits to the guard are still being registered, it is most likely dirt or rust on either the tip or the guard.

```
Touch guards or
blades,green LED
shows if working
<<<Back
```

5. Armourer Mode

```
>Foil/Sabre BdyW
 Epee (weapon)
 Spool/Grnd Wire
 Back to Menu
```

Foil/Sabre BdyW: When there is a break in the circuit the white light is illuminated, otherwise the resistance is shown graphically on the top line. When the circuit is remade it gives you the length, in milliseconds, of the break. This is useful for detecting small intermittent breaks in a foil or bodywire. To test the lame wire, contact the crocodile clip to the foil guard or blade; the green light will illuminate when there is a connection.

Pressing **RB** again will open the lame test screen. The resistance between **S3** and **S4** is displayed in blocks of 50 ohms. When a connection is made between the sockets a green light indicates the resistance is below the FIE limit of 500 ohms and a red light indicates the resistance is above this limit. If dedicated leads are not available simply plug in two bodywires, clip one to the lame and use the other lame clip to probe the lame surface. When a

Epee (weapon): When the tip of a connected epee is pressed the resistance will be shown in blocks of 10 ohms. If there is a guard short it will display which wire (or both) is shorting. If pressing the epee tip does not register, press the tip against **S4** (or the pin of a connected bodywire). If nothing happens then there is no connection from either wire, otherwise the resistance of each wire is displayed on separate lines.

Spool/Grnd Wire: This displays the resistance between the three sockets on the left to the three sockets on the right in 10 ohm blocks. On the bottom line it counts the numbers of breaks in each connection. The breaks total can be reset to zero by pressing **RB**. This can be used to test bodywires, ground wires and spools. Intermittent faults can be located by moving the cables/spools and checking the number of breaks.

6. Armoury Guide

Foil

1. Weight Test

    Connect the foil to either side so the connection arrow is displayed. Pushing the tip will break the circuit and the arrow will disappear. Use the weight to push the tip down, when you release the weight the spring should have enough force to lift the tip which is indicated by the arrow reappearing in the corner of the screen. For a more accurate test use the "Foil/Sabre/BdyWr" test to see the change in resistance.

2. Intermittent Off Target

    For a resistance reading select the "Foil/Sabre/BdyWr" option in armourer mode. Move the foil parts to see what causes an increase in resistance, a complete break will be shown by a white light. It can also be worth checking with the foil practice mode. Nothing should trigger a break except pressing the foil tip. Try moving the blade, barrel, tip, and socket to determine what triggers a break.

3. Nothing happens on hit

    Select the "Foil/Sabre/BdyWr" option in armourer mode. Disconnect the tip completely by removing the grub screws. If the white light is not shown then there is a short along the blade somewhere. Check along the length of the blade, flexing as you go to check for any visible sign of contact between the wire and blade. Next loosen the handle and check it is not pinching the wire. Retighten the handle. Try pushing the plastic cup inside the barrel with something non-conductive. If this affects the resistance or causes a white light then the wire is broken or has not been pulled through fully.

7. Frequently Asked Questions

Scoring

1. How do you enable automatic scoring?

> After the match has started it will say Score>>> on the bottom right of the screen. Pressing **RB** will enable scoring from then onwards. Pressing **RB** will now deduct a point once the player is selected. (see Q3 below).

2. How do you disable automatic scoring?

> In Epee mode press **LB** to open the menu screen and press **RB** until 'Disable Scores' is selected. Press RB and the scores will no longer be displayed. For foil and sabre press **LB** to bring up the match menu, press **LB** to select 'Reset Match' then press **RB** to reset the match.

3. How do you remove points from the scores?

> Simply press **RB** during a match. This will then show left and right at the bottom of the screen. Select the player you wish to deduct the point from. (I.e. **LB** removes a point from the left player)

4. In foil and sabre how can you award a point if both players hit, resulting in two lights?

> Wait until the lights have gone out and then instruct the player who has been awarded a point to score on the opponent's lamé with their weapon, this single light will automatically add a point to their score.

Sabre Mode

1. What do the white lights mean?

> A white light will illuminate when there is a break in one of the two wires going to the sabre. The side the light is on indicates which player has the equipment fault. If both lights are on then there are faults with both players equipment.

2. When in the weapon selection menu, what do the arrows in the top corners mean?

> These arrows indicate when a player is connected. Both arrows should be shown when the players are connected. If a player is connected but the arrow on their side is not shown then there is a fault on their side.

Epee Mode

1. What do the arrows in the top corners mean?

> The arrow will point to the player with a guard short. If you have a guard short then you will be unable to score if there is any contact between both players épées i.e. when your opponent parries you cannot score. Use the épée armoury test to determine which wire is making contact with the guard.