

CALIBUR

User Manual

Calibur scoring system

Pocket box hardware version: 1. and 2. generation (1.0, 1.4, 1.4.1, 2.0)

Mobile app version: 3.2.0

Last updated: July 11., 2024¹

Introductory information	3
Calibur hardware devices	4
1. generation pocket box and its accessories	4
The pocket box	4
Parts	4
LED light states	5
Sabre extension kit	5
Prerequisites	5
Setting up hardware	5
Fencing	6
2. generation pocket box and its accessories	6
The pocket box	7
Parts	7
LED light states	8
Replacing the battery	8
Sabre extension kit	9
Calibur mobile app	9
Installation	9
Updates	11
Using Wi-Fi	11
Using a bigger screen	11
Using different languages	11
Recommendations	12
On the first use	13
Scoreboard	15
Connecting	15
Selecting game mode	16
Settings and customisations	16

¹ Seems too old? The latest version is always available here: <https://calibur.ai/manuals/>

Bout result tracking	18
Save results	18
Track results	18
Remote control mode	19
Help	21
Firmware update	21
Troubleshooting	22
Important info	23
Warranty	23
Disclaimer	23
Disposal of Product	23
Compliance	24

Introductory information

Welcome to the Calibur community and the future of fencing!

Calibur is the world's first smart and wireless scoring system for fencing. Its operating principle is based on a completely different physical basis from that of traditional wired scoring machines, and during its development it was optimized for the use of standard fencing equipment and real fencing room conditions, so it is not considered abnormal if it does not work in the same way as wired machines in scenarios that do not occur in a bout.

Therefore, please proceed as follows when testing the system:

- 2 fencers should hit each other (e.g. instead of hitting a lamé laying on the ground).
- Connect both pocket boxes.
- Fencers must use full, standard fencing equipment.
- Place the pocket box in your pocket, with its LED light facing outwards.
- Do not touch the bellguard, blade or tip of the weapon with your hands while hitting.
- Épée, foil: the fencer should not hold the tip of the weapon on the lamé/guard before thrusting; hit quickly, just like in a real bout.²
- Heavy sweating may reduce the scoring accuracy. It's good to at least have a dry piece of the fencing glove handy as a spare.

² Illustration [here](#)

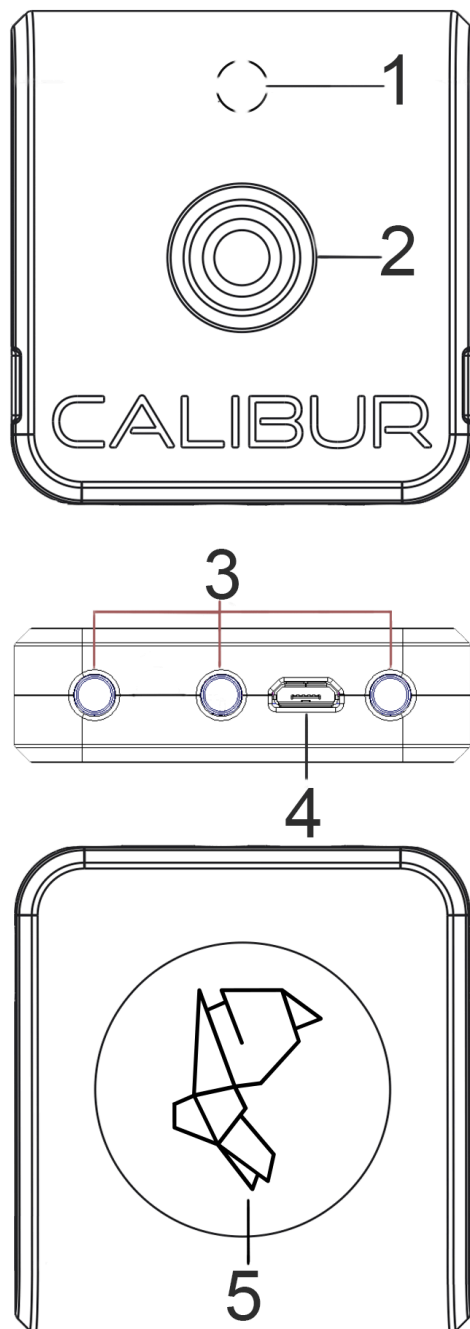
Calibur hardware devices

1. generation pocket box and its accessories

If you only have 2nd generation pocket boxes, go to the "2. generation pocket boxes and its accessories" chapter.

The pocket box

Parts



1. Status indicator LED: for the meaning of its different colors, go to chapter "LED light states".

2. Press button: press once to turn on, press twice to turn off.³

3. Body cord connector: plug in your body cord before fencing. (Banana sockets are marked from left to right as A, B, C.)

4. Micro USB port: plug in to charge; plug in and out to hard reset

5. Sticker with animal figure: look for the icon in the app when connecting the pocket box to it.

³ The pocket box turns itself off automatically if it is not connected to the mobile application for 3 minutes.

LED light states

The different colors of the LED indicate the following states:

- Not weapon-specific:
 - Static **blue**: on, not connected to the mobile app
 - Static **green**: on, connected to the mobile app
 - Static **dark**:
 - Off or
 - Firmware update in progress
 - Static **white**: battery charged
 - Flashing **red**: the battery level is too low. In this case, the device switches off automatically.
- Épée
 - **Dark** for 2 seconds: valid hit given
 - **Dark** for 0.05 seconds: bellguard hit given
- Foil
 - **Dark** for 2 seconds: on-target hit given
 - **White** for 2 seconds: off-target hit given
 - **Dark** for 0.05 seconds: bellguard hit given
- Sabre
 - **Dark** for 2 seconds: hit received

Sabre extension kit

Prerequisites

The sabre extension kit is required for the new sabre mode, which is available from firmware version 12 of the 1st generation pocket box. The kit consists of:

- adapters,
- banana-snap cords,
- magnetic cable heads,
- conductive armbands (hand-washable).

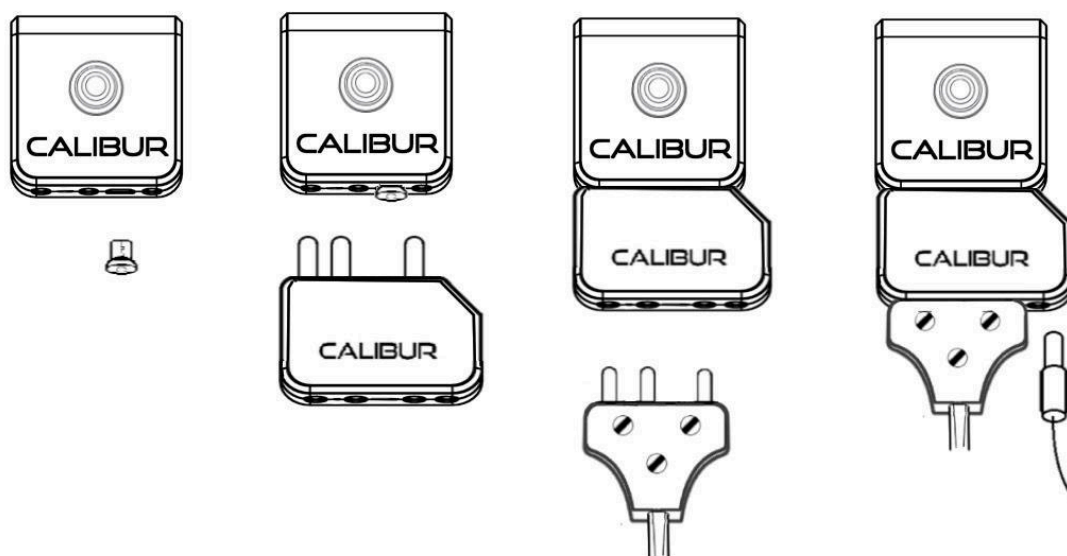
It works only on pocket boxes with hardware version 1.4.1. Check the hardware version in the *Fencer on the left* or *Fencer on the left right* window when connecting your device to the pocket box.

Setting up hardware⁴

- Armband, cable & adapter
 - Put on the conductive armband, preferably to your upper arm where it is tight on your skin but not uncomfortable.

⁴ Check our tutorial video as well: https://www.youtube.com/shorts/Y_F5WbmWXwc

- Wear the armband on either your fencing or unarmed side.
 - Attach the banana-snap cord to it.
- Pocket boxes, adapter & body cord
 - Plug in the magnetic cable head (micro-USB) to your pocket box.
 - Plug the adapter into the pocket box (there's only one way it fits).
 - Plug your body cord into the adapter, so that one socket remains free.
 - Connect the alligator clip of your body cord to your lamé. After dressing up, plug in the banana-snap cable



Testing

While dressing up and connecting your body cords to your sabres, the system can occasionally register a hit. This is not an error and will not occur during fencing. This is because various parts of the fencing uniform and the body cord make contact in ways that never occur during bouts.

Fencing

The system should work just as any sabre scoring system during fencing. However, it can occur during fencing that pocket boxes detect hits to bare skin as valid. To avoid this, you can wear a non-conductive glove on your unarmed hand.

2. generation pocket box and its accessories

If you only have 1st generation pocket boxes, go to the "1. generation pocket boxes and its accessories" chapter.

The pocket box

Parts



1. Push button: for switching on and off.
2. Status indicator LED: see the meaning of the different colors in chapter "LED light states".
3. Body wire connector. (The banana sockets are marked from right to left: A, B, C.)
4. 4. ("D") banana socket: for connecting accessories required for sabre fencing.
5. Unique ID.

6. Battery cover with a colorful animal figure: the figure will appear in the application after establishing the Bluetooth connection.
7. USB-C plug: for charging the battery.

LED light states

The different colors of the LED indicate the following states:

- Not weapon-specific:
 - Static **blue**: on, not connected to the mobile app
 - Static **green**: on, connected to the mobile app
 - Static **dark**:
 - Off or
 - Firmware update in progress
 - Static **white**: battery charged
 - Flashing **red**: the battery level is too low. In this case, the device switches off automatically.
- Épée
 - **Dark** for 2 seconds: valid hit given
 - **Dark** for 0.05 seconds: bellguard hit given
- Foil
 - **Dark** for 2 seconds: on-target hit given
 - **White** for 2 seconds: off-target hit given
 - **Dark** for 0.05 seconds: bellguard hit given
- Sabre
 - **Dark** for 2 seconds: hit received
 - Static **magenta**: B-C pins are not in contact⁵

Replacing the battery

If the battery should fail, [get a new one](#) and follow these steps:

1. Using a screwdriver, remove the screw securing the battery cover.
2. Lift the cover and remove the battery from the frame on the cover.
3. Pull the battery cable out of the socket. The cable head must be firmly squeezed for this, it is worth using strong forceps.
4. Plug the cable of the new battery into the socket.
5. Fit the new battery into the frame on the cover, then replace the cover.
6. Using a screwdriver, screw in the screw that secures the battery cover.

⁵ Unlike traditional scoring machines, the system cannot detect the hits correctly in this case.

Sabre extension kit

Parts of the sabre extension kit:⁶

- conductive armbands (hand-washable)
- banana-snap cords

If you use 2nd generation Calibur pocket boxes for sabre, assemble the necessary extension set:

- Put on the conductive armband, preferably to your upper arm where it is tight on your skin but not uncomfortable.
 - Wear the armband on either your fencing or unarmed side.
- Attach the banana-snap cord to it.
- Plug the banana plug into the “D” (lowered) banana socket of the pocket box.

Calibur mobile app

Installation

Minimum system requirements:

- Android: 8.0 (Oreo)
 - Amazon Fire tablet equivalent: Fire OS 7
- iOS: 10.0

Download the app from the appropriate source:⁷

	Outside of the People's Republic of China	In the People's Republic of China
Android	Google Play Amazon Appstore	calibur.cn.com
iOS (Apple)	App Store	

As Google Play and Amazon Appstore are banned in the People's Republic of China, Android users in mainland China need to download the Android installation file (APK) from our website and then manually install it. Manual APK download and installation is not necessary on app updates, as the app variant created for mainland China contains a self-update mechanism.

⁶ They are also part of the sabre extension kit of the 1st generation pocket box.

⁷ Make sure you download the app simply called *Calibur* and not *Calibur – legacy sabre mode*. The latter contains the "old" sabre mode with limited functionality, which is compatible with version 1.0 and 1.4 pocket boxes. We have removed this mode from the main application because it does not make sense when using most pocket boxes.

Updates

It's critical to keep the app updated for best results and to use the latest features. A notification appears about updates, when your phone is online.

If you use the Android variant for mainland China downloaded from calibur.cn.com, you can start a self-update process from within the app when receiving this notification.

Enable automatic updates in Google Play or App Store if you have downloaded the app from one of them. For more info on automatic app updates via these stores visit: [Google Play](#),⁸ [App Store](#)⁹.

Using Wi-Fi

It is not necessary to be online during bouting. It is recommended to go online on a regular basis for updates¹⁰ and to upload data for our AI model.¹¹

Using a bigger screen

Although the Calibur app is a mobile application, its iOS variant is compatible with Mac laptops with MacOS 11.0 or later and Apple M1 chip or later. If you have such a laptop, you can directly download the app to it and use the laptop's built-in screen or an external monitor connected to the laptop. If you have a PC, you can "hack" an Android OS onto it with the Android-x86 emulator and run the Calibur app inside that; follow [this step-by-step tutorial](#) to do so.

A phone or laptop can also directly be connected to a bigger screen if it supports HDMI. There are several USB/Lightning-HDMI adapters for this purpose as well.¹² Alternatively, the app can be easily mirrored to a desktop machine connected to a display or even a projector.

To mirror the app from a mobile device to PCs or older MacBooks, there are tons of different tools. We recommend using the LetsView app. It requires the mobile device and the computer to join the same Wi-Fi network.

Using different languages

The application is able to work in different languages, it supports English, Chinese, French and German at the moment. (More languages are coming soon.) The language being used depends on the language setting of the

⁸ <https://support.google.com/googleplay/answer/113412?hl=en4>

⁹ <https://support.apple.com/en-us/HT202180>

¹⁰ More details in this chapter: *Firmware update on the pocket box*

¹¹ The data is anonim and cannot be connected to your identity.

¹² Apple has its own self-made [adapter](#) for connecting iOS devices to a bigger screen.

mobile device. If the app does not support the language of the device, texts are displayed in English.

Recommendations

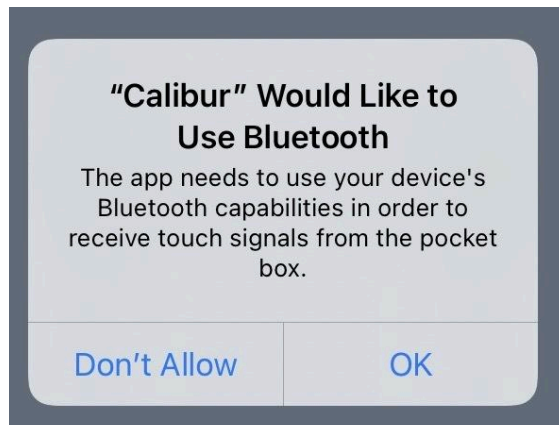
A well maintained device will make the experience better:

1. Keep the number of apps on the phone as low as possible.
2. Turn off auto-synchronization and notifications for other apps.
3. When using an older device, do a factory reset first.
4. Close all other apps during fencing.
5. Disconnect other Bluetooth devices (headset, smartwatch...)
6. Keep the device charged. Don't use battery saver mode: it might make it harder to connect to pocket boxes and might cause connection drops.

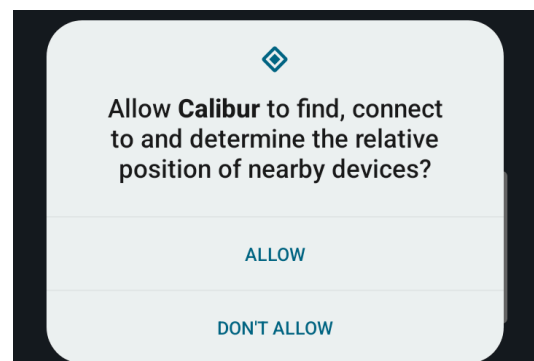
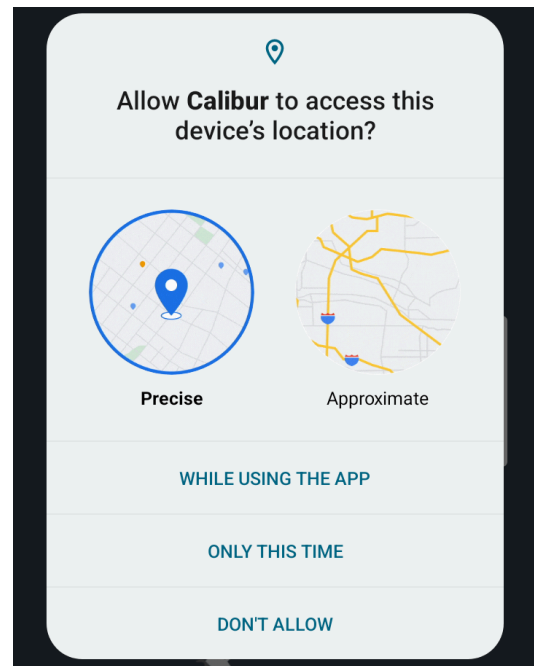
On the first use

1. **Make sure Bluetooth is turned on**
 2. **Enable using Bluetooth services for the app** in the popup asking for permissions.
 - iOS: use Bluetooth permission
 - Android 11 or older: location permission
 - Android 12 or later: location **and** nearby devices permissions
- Press *OK/Allow*, so the app can connect to the pocket boxes.

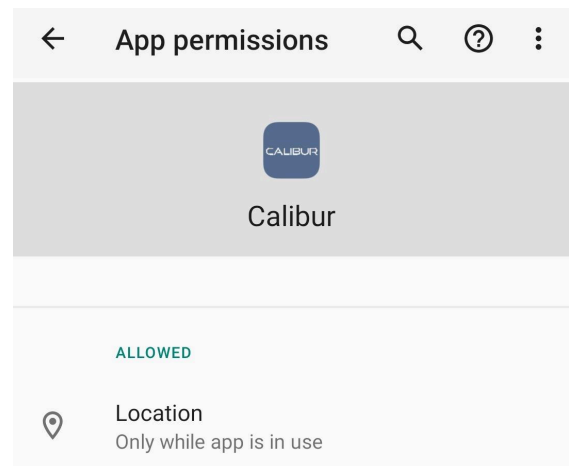
iOS:



Android:



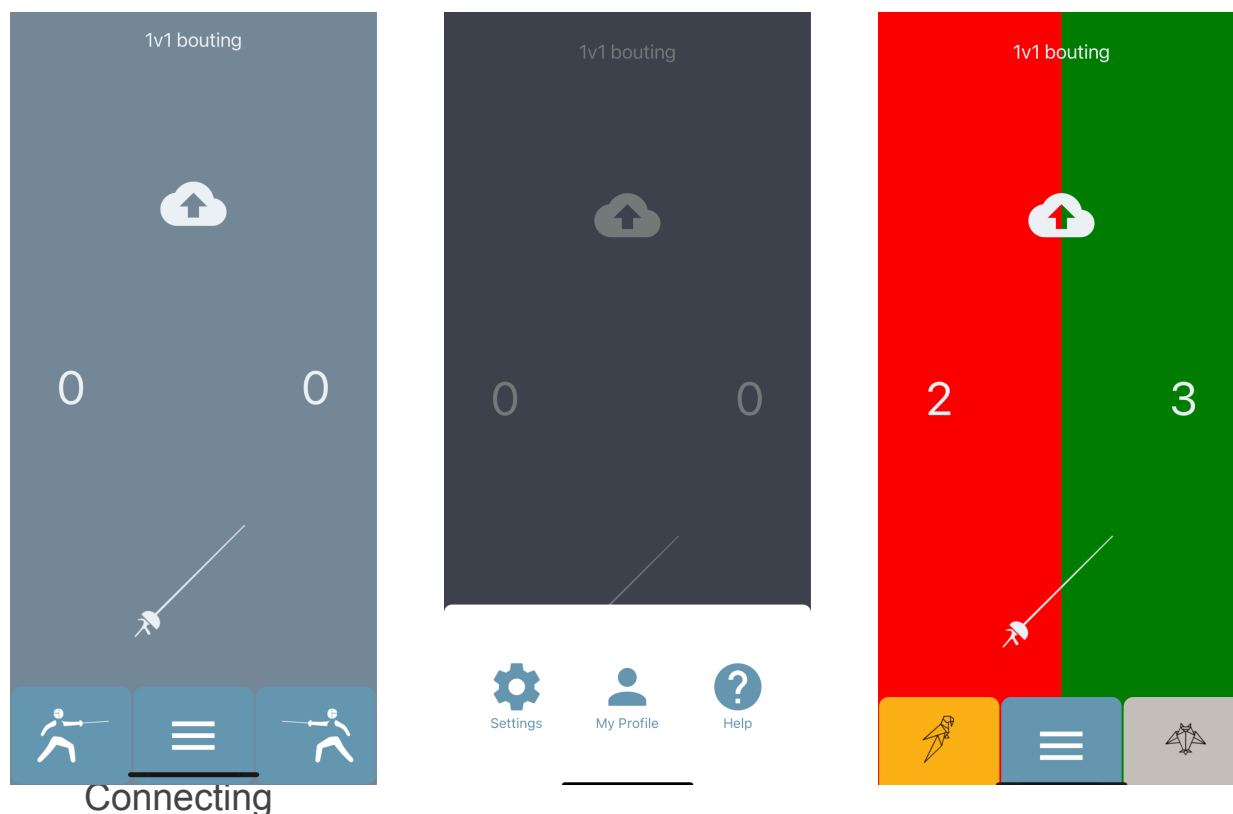
To revoke or grant this permission open the phone's settings¹³







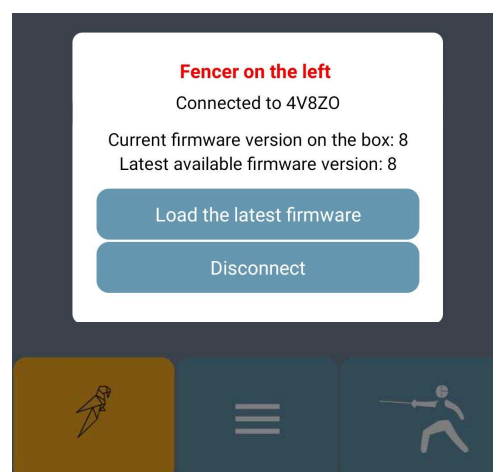
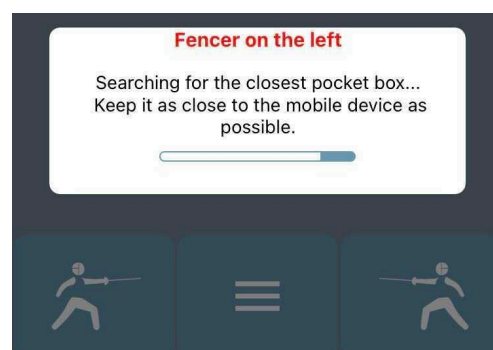
¹³ iOS: support.apple.com/en-us/HT210578,
Android: support.google.com/accounts/answer/6179507

Scoreboard

The main screen (use the ≡ icon to navigate)



- Tap to select weapon¹⁴:

¹⁵
- Turn on the pocket box and put it next to the mobile device
 - LED: Blue
- Turn on Bluetooth
- Tap the  icon to automatically connect to the closest pocket box
 - LED: Green
 - The ID sticker's figure appears in place of the  icon
- Tap the  icon and repeat
- Try hits on different areas:
check the LED on the pocket box
- Tap the corners of the Scoreboard to increase/decrease the counters, tap a counter to reset to 0



¹⁴ Épée, foil or sabre. It always shows the currently selected weapon, and switches to the next one on tapping.

¹⁵To use the sabre mode, please read the "Sabre extension kit" chapter(s) first.

Selecting game mode

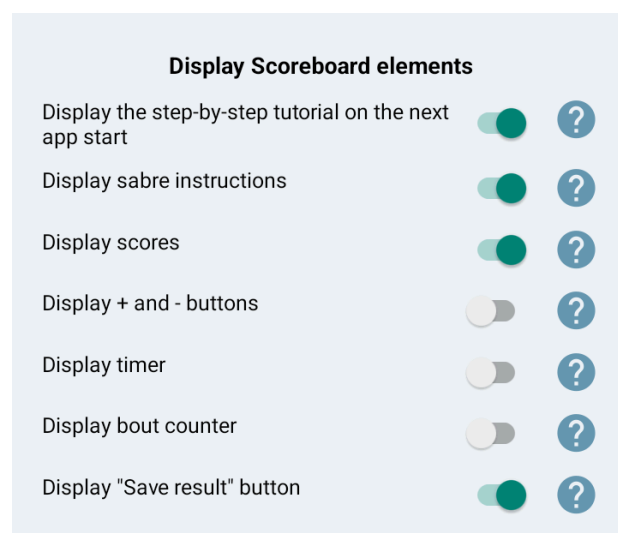
- Tap the mode selector button in the top of the Scoreboard. (Its text label is the name of the current mode. Default: *1v1 bouting*)
- A popup appears with 3 options, tap one of them:
 - *1v1 bouting*: a simple fencing¹⁶ bout.
 - *Target practicing (experimental)*: Enable to differently indicate 2 target areas (like a dart board) when target practicing for épée.¹⁷ Put a piece of metal tape¹⁸ into the middle of your target. Connect one pocket box to your weapon and the other one to the metal tape with a banana plug-crocodile clip cable¹⁹ via the C pin. Hits on the metal tape will be indicated as valid ones (red/green) and the others as invalid ones (white). Épée and foil only.
 - *Reaction time game mode (duel)*
Enable to practice executing a fencing action as quickly as possible. Connect both pocket boxes on the Scoreboard, press "Start game" in the popup appearing, wait for the blue light that is displayed at a random time in a few seconds, then hit as soon as you can. The app will measure and display the time elapsed between the blue light and the hit. In its current form, this game mode enables 2 fencers to compete in speed.²⁰ Épée and foil only.

Settings and customisations

Display Scoreboard elements

Disable unnecessary elements to see the lights on a bigger surface

- *Display the step-by-step tutorial on the next app start*
Enable for text bubbles on Scoreboard
- *Display scores*
- *Display + and minus buttons*



¹⁶ Check our tutorial video too: https://www.youtube.com/watch?v=CG_5p_pvnOo

¹⁷ You use the app for smart target practice with foil too, but then you don't need to turn on this switch, because in foil, 2 target areas (on and off-target) are indicated in different ways by default. You just need to put the crocodile clip of the foil body cord to the metal tape instead of a lamé.

¹⁸ Available in DIY stores, e.g. [Conrad](#)

¹⁹ It can be replaced with a foil-sabre body cord: in this case, the plug A of the 3-pronged end of the body wire goes into the banana socket C of the pocket box.

²⁰ Single mode is coming soon.

- *Display timer*
- *Display bout counter*

Register hits

- *Indication length*
The duration of light and sound on hits
- *Automatic touch count*
Disable for manual score count only
- *Register only valid hits as valid*
Disable to register all hits
- *Foil: register on-target hits for bellguard*
Disable to not register on-target hits on bellguard²¹

Other

- *Pocket box scanning length*
Scanning duration for pocket boxes when connecting
- *Touch labeling*
For troubleshooting only
- *Reset settings to default*

Register hits

Indication length: 2 second(s)

Automatic touch count

Register only valid hits as valid

Foil: register on-target hits for bellguard

Other

Pocket box scanning length: 3 second(s)

Touch labeling:

No label

Reset settings to default


²¹ The default value is on, because when fencers get really sweaty, the algorithm tends to detect bellguard when hitting the lamé. This will be fixed later on.

Bout result tracking²²

Warning: these features are based on web services that are:

- Banned from the People's Republic of China. Therefore they are not present in the Android app variant which can be downloaded from calibur.cn.com, and if you try to use them in the iOS variant in mainland China, you might receive a *Server unavailable* error.
- Incompatible with the Fire OS, so they are not present in the Android app variant which can be downloaded from Amazon Appstore either.

Save results

- Sign in to your account or create one in the *My Profile* screen
- Press the  icon on the *Scoreboard* and set your opponent's username

Track results

Hi Marika!

Bouts Boxes Profile

Others' requests to save bouts

Refresh Select all Approve selected Delete selected

Selected: 0/3

Rows per page: 5 << Page 1/1 >>

Other fencer	My result	Other result	Wea...	Date
Delete d user	10	3	épée	Jul 13 2022
Delete d user	5	2	épée	Jul 13 2022
Gyurik a	1	2	épée	Jun 30 2022

Sign out

Hi Marika!

Bouts Boxes Profile

My bouts

Refresh Select all Delete selected Export all to CSV

Selected: 2/5

Rows per page: 5 << Page 1/1 >>

Other fencer	My result	Other result	Wea...	Date
Pista	5	2	épée	Jul 06 2022
Sanya	4	5	sabre	Jul 04 2022
Gyurik a	10	6	sabre	Jun 17 2022

Sign out

- Go to *My Profile* (sign in if needed)
- Go to the *Bouts* submenu
- Select an option from the dropdown menu:

²² Video: <https://fb.watch/fWFFa6KeEp/>

- *Others' requests to save bouts*: bout results that were saved by other users with you as the opponent
- *My Bouts*: results you saved, or other users saved but you confirmed
- Tap the rows or use the *(De)select all* button to select bouts
 - *Delete selected*
 - *Approve selected* (confirm and move from *Requests* to *My bouts*)
- *Export to CSV*: save all data to a spreadsheet for analysis

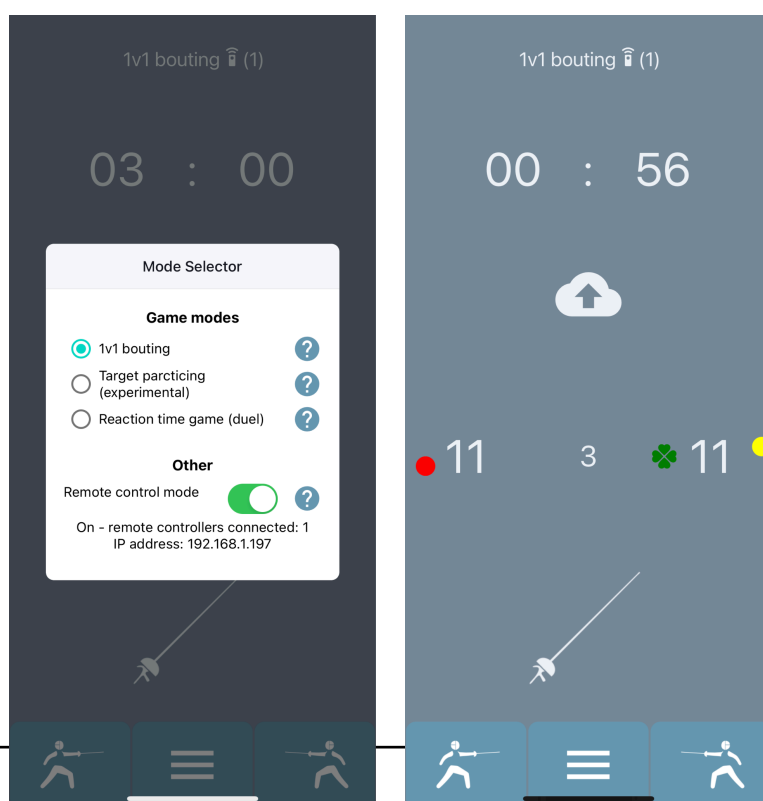
Remote control mode

To let referees control the *Calibur* scoring app from the other side of the piste, another app, *Calibur Remote Controller* is needed too. It's supposed to run on another phone and can wirelessly trigger the following actions in the scoring app:

- Start/stop the timer,
- Change the current value of the timer,
- Set yellow/red cards,
- Change touch counter,
- Change bout counter,
- Set priority manually or randomly.

To use the remote controller:

1. In the *Calibur* app, go to Settings and turn on displaying all features you want to control remotely.²³
2. Install *Calibur Remote Controller* to another phone.

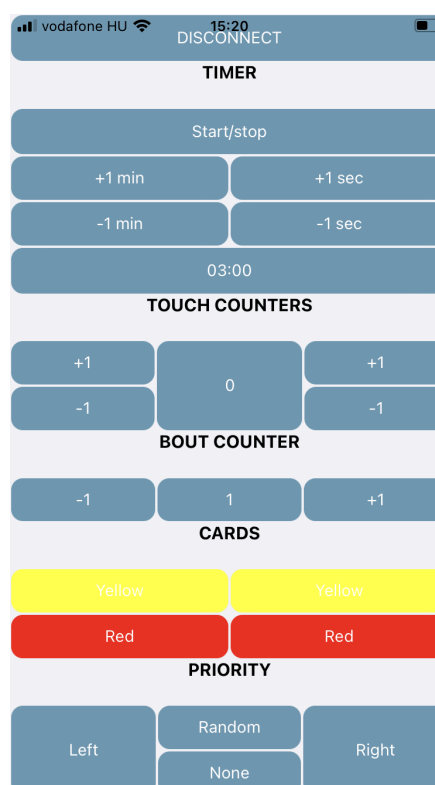
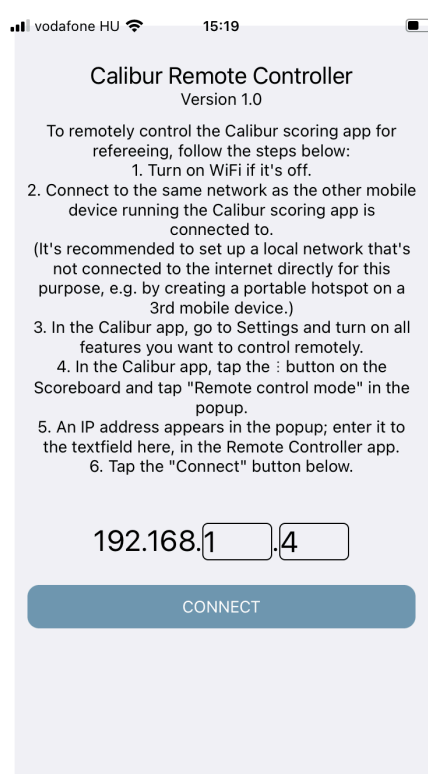


	Minimum system requirements	Outside of the People's Republic of China	In the People's Republic of China
Android	5.0	Google Play Amazon Appstore	calibur.cn.com

²³ Relevant switches: *Display scores*, *Display timer*, *Display bout counter*

iOS	12.4	App Store
-----	------	---------------------------

3. Connect both mobile devices to the same Wi-Fi network.²⁴
4. On the Scoreboard, tap the mode selector button (at the top of the screen, with a label of 1v1 bouting, Target practicing (experimental) or Reaction time game (duel)).
A popup appears. Turn on the Remote control mode switch in the bottom.
5. An IP address appears in the popup; enter it to the textfield in the Remote Controller app and press Connect.



²⁴ To avoid any latency caused by heavy data traffic, it's worth using a local network only for remote control. The easiest way is setting up a portable hotspot on a third mobile device.

Help

Useful infos,
current software version,
troubleshooting wizard
and this manual.

In case of any technical issue, please
follow the steps of the troubleshooting
wizard. If the tips there don't help,
contact us via the form²⁵
in the end of the wizard.

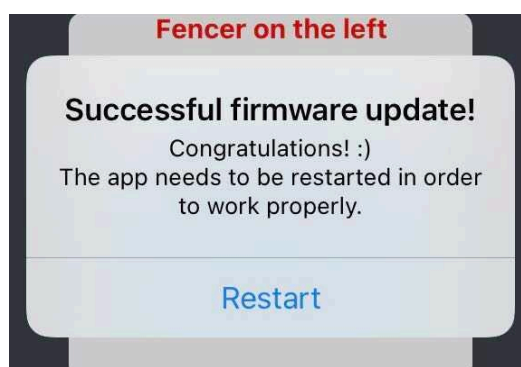
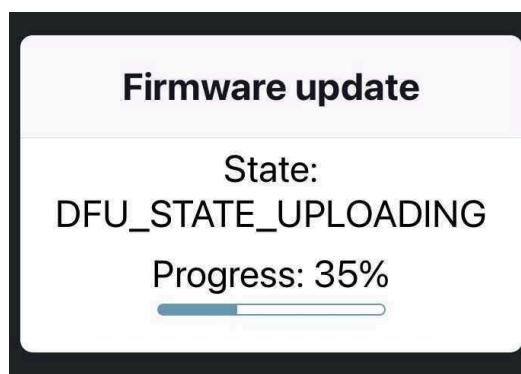
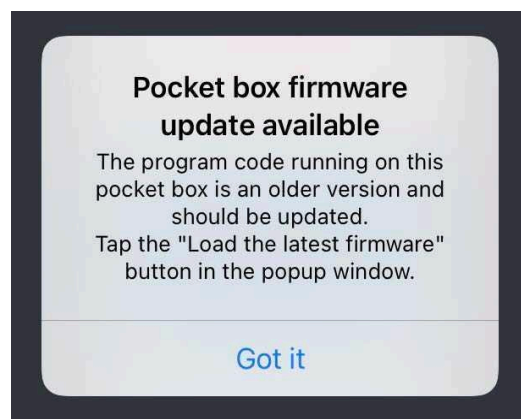
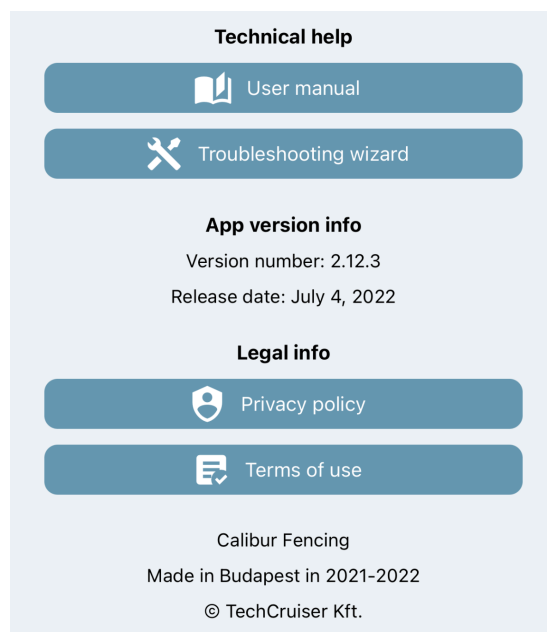
Firmware update²⁶

On the pocket box via Bluetooth

- Connect to the internet
- When a firmware update is released this pop-up appears
- Press *Firmware update* in the pocket box menu
- Wait for the download to finish
- Firmware will be updated automatically (1-2 mins)
- Press *Restart*

²⁵ The form is not available in the People's Republic of China.
From there, please write an email to support@caliburfencing.com instead.

²⁶ Video: <https://youtu.be/Vm2S6thhHTw>



Troubleshooting

Please always use the in-app interactive troubleshooting wizard first, which includes all known error sources and guides you step-by-step through the resolution process. (*Help* menu, *Troubleshooting Wizard* button.) If the tips displayed by the wizard do not help, you can ask the Calibur team for more help via the form at the end of the process.

Important: in case of any error, first make sure you are using the latest version of both the mobile app and the firmware!

The form in the end of the *Troubleshooting Wizard* might not work when using it in the People's Republic of China. In this case, send an email to support@caliburfencing.com for support. Please describe the problem in as much detail as possible in the email and provide the following information:

- The identifier of the affected pocket boxes
- Exact model name of mobile device used for scoring (e.g. Lenovo TB-X306F)
- Version of the operating system on the mobile device used for scoring (e.g. Android 11.0)

Important info

Warranty

The warranty is valid for 12 months from the date of purchase. It includes free repair for any defects in materials or assembly. If you encounter a major fault or defective system, you need to stop using the system. Get in touch with us immediately to ensure that you will be eligible for a warranty claim.

Please, get in touch on our Whatsapp, Facebook page or send an email to support@caliburfencing.com for support.

Disclaimer

Calibur products were designed for fencing under normal circumstances. If fencers use the system under non-standard or unsafe fencing conditions (not wearing a glove or proper mask, etc.) we cannot guarantee the reliability of the system. We also cannot take responsibility for damage that results from improper use of the system, or use of the system in a way outside of its intended purpose.

Disposal of Product

In case your Calibur products need to be disposed of, please note that waste electronics have to be recycled separately from unsorted municipal waste.

Waste electrical and electronic equipment must not be disposed of as unsorted municipal waste and in particular does not belong in the household waste. Rather, these devices should be collected separately and disposed of via the local collection and return systems.

By separating and recycling your system at the time of disposal you will help to conserve natural resources and ensure that the system is recycled in a manner that protects human health and the environment.

Battery hazard notice:

- Batteries may leak or explode if misused
- Do not try to open the pocket box and the inner battery.
- Do not short-circuit the connectors
- Do not dispose of batteries in a fire, they may leak or explode.

Compliance



EMF

This product complies with all applicable standards and regulations regarding exposure to electromagnetic fields.

CE

The Calibur pocket box meets the minimum requirements for safety and electromagnetic compatibility of electronic devices, and conforms with the relevant European Union directives and recommendations

FCC

The wireless module built into the Calibur pocket boxes has the following FCC ID: X8WBT832.

This module has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications.

However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna. Increase the separation between equipment and receiver.
- Consult the dealer or an experienced radio/TV technician for help.

Pacemaker Notice: This product contains strong magnets and utilizes wireless technology. Consult with a medical professional before using.

Keep out of reach of children.