User Manual

Timekeeper3

Congratulations for the purchase of the timekeeper3. With this product you can obtain the time measurement of your individual (or competition) performance times in a simple and effective way.

In order to know the details about the accuracy of the system, refer to the following document: www.tr3ma.com/Dati/timekeeper3precision_english.pdf

The scope of this document is to define the procedures for the correct usage of the Timekeeper3 product.

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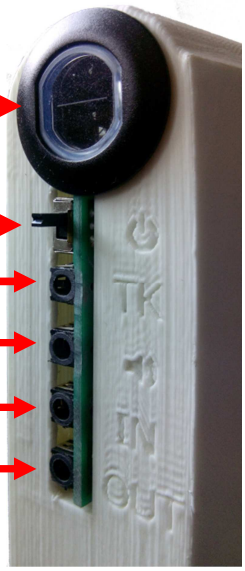
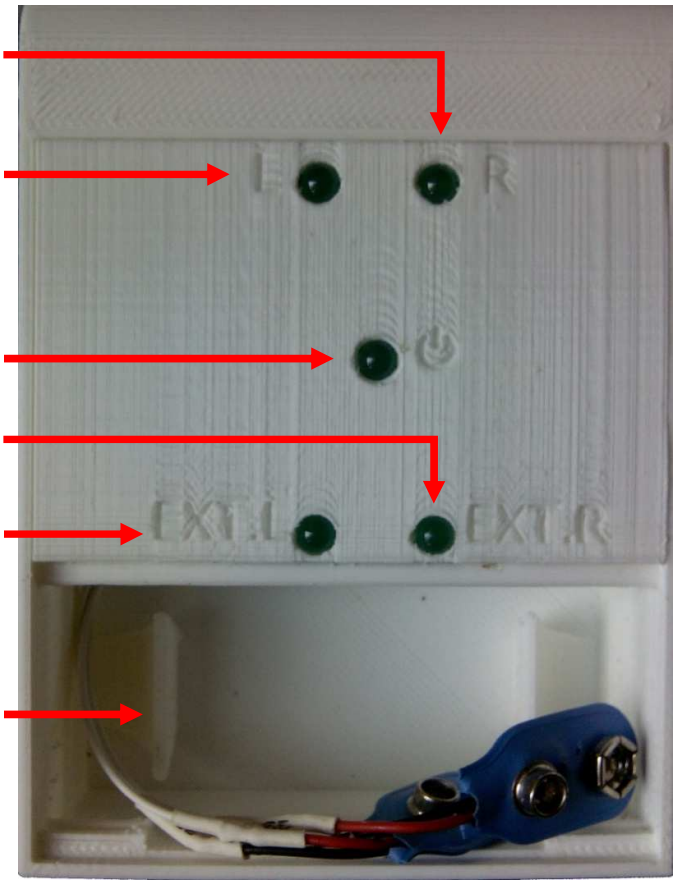
Composition





Safety

SAFETY WARNING: Batteries are not included in the Timekeeper3 hardware device but they are needed in order to let it work. Depending on the kind of batteries, they can explode in particular conditions. For this reason it is mandatory to never expose the Timekeeper to direct sun light or heat sources by protecting it with a cover able to shield it from direct sun light and heat sources but allowing the air flow. Follow the safety notes of the selected batteries.

SAFETY WARNING: The Timekeeper3 uses photocells. These photocells generate red light beam with high intensity. For this reason is mandatory to never place the eyes in front of the light beam to avoid damages to the eyes. Any alignment check or troubleshooting procedure shall be done by means of a paper sheet or with the system in off condition.

Warning

In order for the Timekeeper3 to correctly work, it is mandatory to **insert quantity two 9 volt fully charged batteries** in the dedicated slot of the Timekeeper3 and to connect them with the dedicated connectors, according to the right polarity. If the batteries are correctly inserted, the led identified by the ⏻ symbol shall become green when the power switch identified by the ⏻ symbol (located on a side, close to jack connectors) is switched.

Warning: discharged batteries may allow the partial lighting of the power led even if the use of the system in such condition doesn't guarantee the correct measurement of the time.

During the first use of the timekeeper3 it is mandatory to calibrate the product with the connected smartphone. Each time that you change association Smartphone-Timekeeper it is mandatory to repeat the calibration. The calibration adapts signal level received and sent to Timekeeper3 (Hardware) with levels expected by the Timekeeper3 App (Software).

Warning: It is suggested to enable the Airplane mode before to start the **Timekeeper3** app in order to avoid interferences like facebook notifications, incoming calls, audio events, and other processes that may interfere with the **Timekeeper3** performances. Moreover, power saving apps may kill the Timekeeper3 APP after long usage without the local user interaction.

Calibration procedure

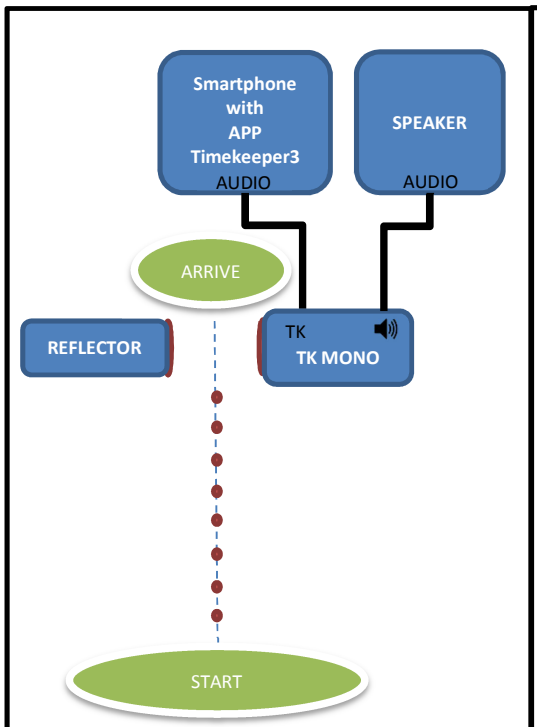
1)**Connect the device** in the expected configuration, according to the purchased version, as it is shown in the following page.

Warning: the maximum distance between each reflector and the Timekeeper3 is about 3.5 meters.

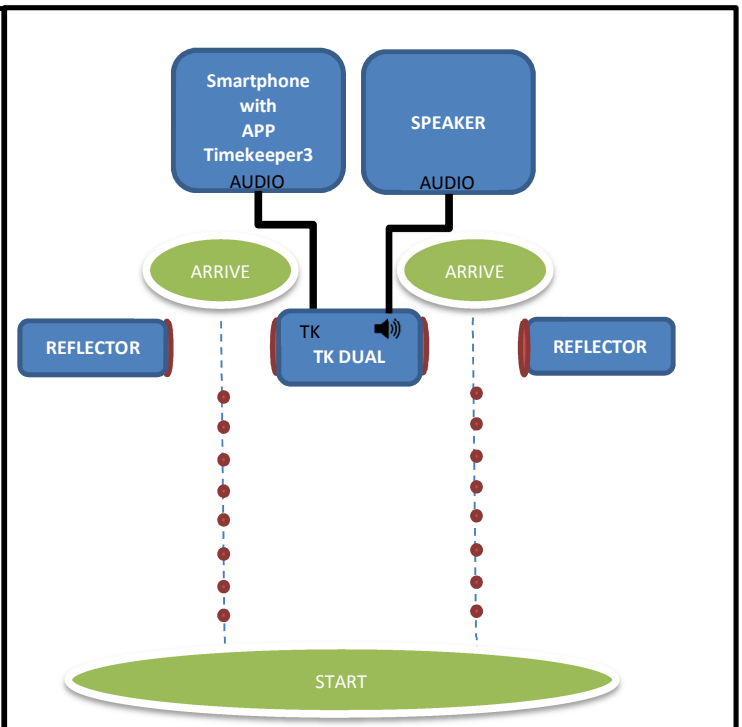
Hint: It could be useful to calibrate the device on a table instead of the real operative location. During the calibration wizard it is requested to remove and restore the reflectors, but it could be more convenient to interrupt the light exchanged between the photocell and the reflector with one hand, paying attention to maintain the interruption of the light beam for the time required by the calibration wizard.

Note: On Mono Base and Mono Full systems, the photocells to be considered are those identified as LEFT photocells. So on MONO Systems , during the calibration , it is mandatory to press SKIP button on pages dedicated to the calibration of the RIGHT photocells (START/ARRIVE).

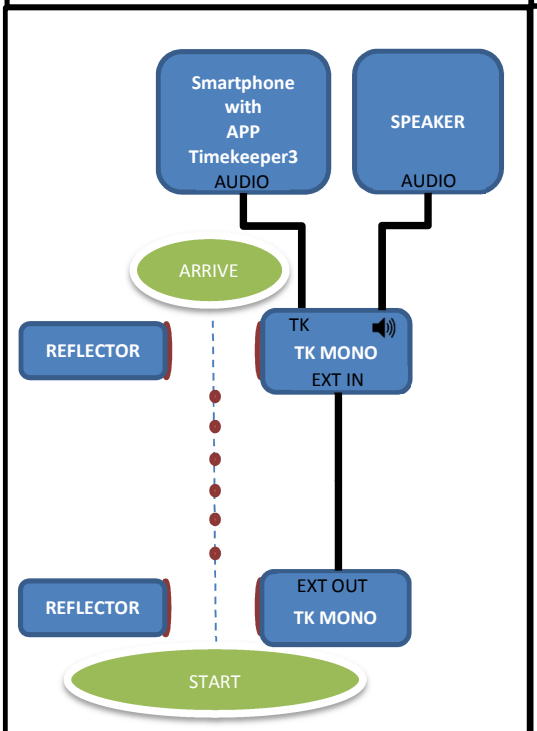
INTERCONNECTION DIAGRAMS FOR EACH SYSTEM



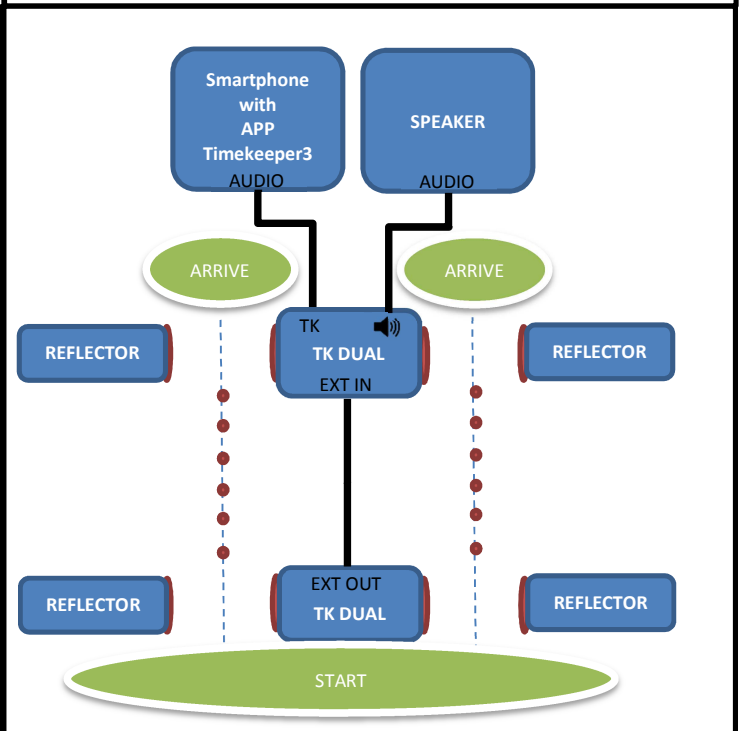
Timekeeper3 Mono Base System



Timekeeper3 Dual Base System



Timekeeper3 Mono Full System

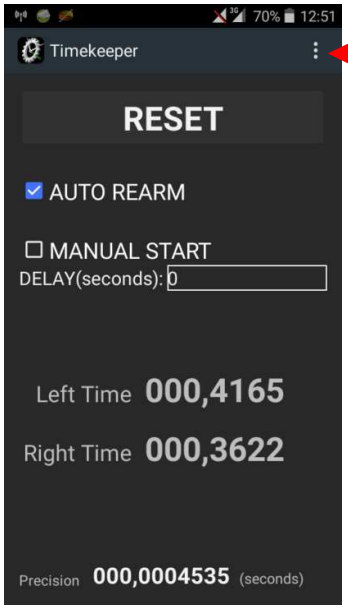


Timekeeper3 Dual Full System

2) Verify that the **reflectors** are correctly positioned in front of each photocell. In order to ensure that this operation has been correctly performed, move a hand between each photocell and the relative reflector and check that the corresponding L/R led (according to the purchased Timekeeper3 version) blinks while the hand moves, simulating the passage of the athlete. Remote photocells (if available and installed at the beginning of the path), shall show their state on the EXT L and EXT R leds of the timekeeper3 connected to the smartphone. If remote photocells are available but they are not working as expected, verify that the cable is correctly connected and that the batteries are available and fully charged on each used Timekeeper3.

3) **Install**, from android store, **the app Timekeeper3** on the smartphone (it is also possible to use this direct link: https://play.google.com/store/apps/details?id=com.tr3ma.timekeeper)

4) **Open Timekeeper3 app**, press OK on the welcome screen, go to options menu (some smartphones have dedicated hardware button for options, other smartphones uses a dedicated icon like the one pointed by the red arrow in the following image) and select **Calibration.**



5) Press NEXT to start the calibration wizard and, on **RESTORE DEFAULT** page, press RESTORE DEFAULT button to set all the thresholds to the default values.

Note: On (eventual) further calibrations procedures, if you are sure that you need to calibrate just one of the photocells for specific tasks, it is optionally possible to maintain some of the previous calibration parameters. In that specific case it is required to press SKIP button on the page relative to the parameter to maintain.

6) On **PREPARE THE DEVICES** page it is requested the connection of devices as specified on steps 1 and 2 of this procedure. Press NEXT button when you are ready for the next step.

7) On **LEFT START – 1° STEP** page it is requested to remove left reflector located on the START location. If your system does not include the START photocell, press SKIP button. If this START photocell is available, proceed by removing the reflector (or interrupt the light beam by means of a hand) and press NEXT button.

8) On **RIGHT START – 1° STEP** page it is requested to restore the previously removed reflector and to remove the right reflector located on the START location. Verify the correct positioning of reflectors by means of the LEDs located on Timekeeper3 (Hardware). If your system does not include the START photocell, press SKIP button. If this START photocell is available, proceed by removing the reflector (or interrupt the light beam by means of a hand) and press NEXT button.

9) On **LEFT ARRIVE – 1° STEP** page it is requested to restore the reflector removed on previous step and to remove the left reflector located on the ARRIVE. Verify the correct positioning of reflectors by means of the LEDs located on Timekeeper3 (Hardware). If your system does not include this photocell, press SKIP button otherwise proceed by removing the reflector (or interrupt the light beam by means of a hand) and press NEXT button.

10) On **RIGHT ARRIVE – 1° STEP** page it is requested to restore the reflector removed in previous step and to remove the right reflector located on the ARRIVE. Verify the correct positioning of reflectors by means of the LEDs located on Timekeeper3 (Hardware). If your system does not include this photocell, press SKIP button otherwise proceed by removing the reflector (or interrupt the light beam by means of a hand) and press NEXT button.

11) On **LEFT START – 2° STEP** page it is requested to restore the reflector removed on previous step and to remove the left reflector located on the START. Verify the correct positioning of reflectors by means of the LEDs located on Timekeeper3 (Hardware). If your system does not include this photocell, press SKIP button otherwise proceed by removing the reflector (or interrupt the light beam by means of a hand) and press NEXT button.

12) On **RIGHT START – 2° STEP** page it is requested to restore the reflector removed on previous step and to remove the right reflector located on the START. Verify the correct positioning of reflectors by means of the LEDs located on Timekeeper3 (Hardware). If your system does not include this photocell, press SKIP button otherwise proceed by removing the reflector (or interrupt the light beam by means of a hand) and press NEXT button.

13) On **LEFT ARRIVE – 2° STEP** page it is requested to restore the reflector removed on previous step and to remove the left reflector located on the ARRIVE. Verify the correct positioning of reflectors by means of the LEDs located on Timekeeper3 (Hardware). If you do not want to calibrate this photocell, press SKIP button otherwise proceed by removing the reflector (or interrupt the light beam by means of a hand) and press NEXT button.

14) On **RIGHT ARRIVE – 2° STEP** page it is requested to restore the reflector removed on previous step and to remove the right reflector located on the ARRIVE. Verify the correct positioning of reflectors by means of the LEDs located on Timekeeper3 (Hardware). If your system does not include this photocell, press SKIP button otherwise proceed by removing the reflector (or interrupt the light beam by means of a hand) and press NEXT button.

15) On **MANUAL START SOUND** page it is requested to restore the reflector removed on previous step. Verify the correct positioning of reflectors by means of the LEDs located on Timekeeper3 (Hardware). Press NEXT button. The system will produce a tone with variable amplitude, in order to equalize the generated signal with reference to signals generated by photocells.

16) The **CALIBRATION COMPLETED** page identifies the end of the calibration procedure. Press CLOSE button to return on the main page.

Other Options

On Options menu of the Timekeeper3 APP, there are also other functions (apart the previously described CALIBRATION):

SHOW PARAMETER: It shows the parameters generated during the calibration process. These parameters can be used while contacting the Customer Support.

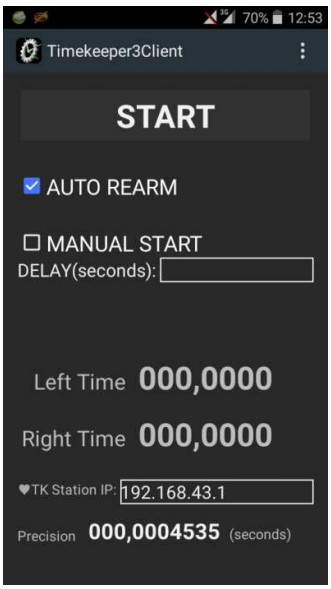
TEST PERFORMANCES: It evaluates the processing performances of your smartphone in that exact moment. The result may identify that other processes are using the resources of your smartphone. An excessive use of the resources may compromise the correct work of the Timekeeper3 App causing wrong time measurement, or just to decrease the precision.

CHECK PHOTOCELL STATUS: It shows the actual status of the photocells. This status shall be coherent with the status of the Timekeeper3 device's LEDs.

SHOW TK IP ADDRESS: It shows the IP address of the smartphone and it is useful in case of problems during the remote control of the Timekeeper3. The remote control is done by means of the Timekeeper3Client App.

Use Modality

The Timekeeper3 App allows the use of the system in some **modalities**:



- **MANUAL START**: In this modality the START is manually activated by the user (with custom and optional delay), an audio tone is played on the output audio connector of the timekeeper3 in order to identify the START. On the ARRIVE the chronometer is stopped allowing the time measurement. By pressing the RESET and START button it will be possible to start a new run. In order to activate this modality it is required to check the MANUAL START checkbox.
  During the use in "MANUAL START" modality it is possible to set a delay between the START button activation and the generation of the sound on the speakers. This delay time shall be setted in the DELAY textbox and it shall be a integer number of seconds.

- **FULL**: this modality is available only in the **full system** configurations. By pressing the REARM button the system will wait the passage of the athlete on the START photocell and then it will start to measure the time. Upon arrive of the athlete, the photocell located at the end of the path will allow the STOP of the chronometer. By pressing the RESET and REARM button it will be possible to start a new run. In order to enable this modality it is required to uncheck the MANUAL START and AUTO REARM checkbox.

- **FULL with AUTO REARM**: this modality is available only in the **full system** configurations. Once activated, this modality allows the automatic measurement of time upon the passage of the athletes between photocells installed at the beginning of the path and photocells installed at the end of the path. By crossing again the START photocells, the chronometer will reset. By pressing the RESET button it is possible to manually reset the current run. In order to enable this modality it is required to check only the AUTO REARM checkbox.

By crossing each photocell, an audio tone is generated on the speakers. These tones can be also used to check the status of the hardware system.

In the MANUAL START modality, the START is marked by an audible tone that facilitates the athletes in the START moment identification.

Remote Control

The **Timekeeper3** App can be optionally controlled by remote by means of another smartphone where the **Timekeeper3Client** app has been previously installed. The athlete is able to keep the time with a smartphone in its pocket or close to the START location. The communication between the two apps is made through Wifi, so these two smartphones must be equipped with such feature.

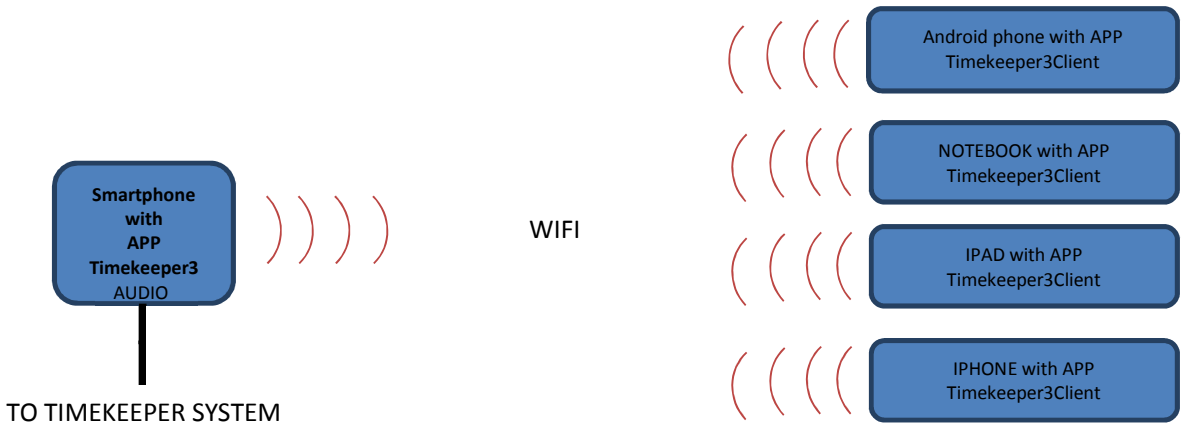
The **Timekeeper3Client** app is available for Android, Apple IOS and Microsoft Windows devices (not for Windows Phone):

https://play.google.com/store/apps/details?id=com.tr3ma.timekeeper3client

https://itunes.apple.com/bf/app/timekeeper3client/id1026173780?mt=8

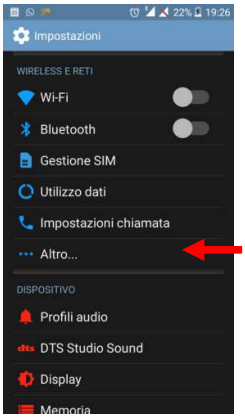
http://www.tr3ma.com/apps/timekeeper3client/timekeeper3client.zip

When launched, the **Timekeeper3** app enables the wifi hot spot and it allows the wifi connection of devices equipped with the **Timekeeper3Client** app as it is shown on the following diagram.



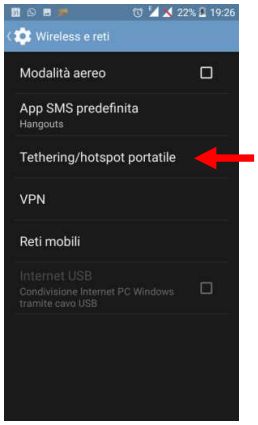
Follow the following procedure in order to connect one or more “Client” (Timekeeper3Client app) to the “server” (Timekeeper3 app).

Note: The procedure may be lightly different depending on the version of your android operative system. In that case refer to you smartphone user manual.

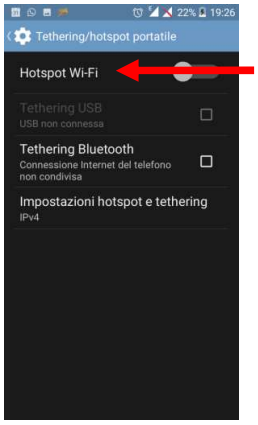


1) From the android smartphone where the Timekeeper3 app is installed, open operative system settings menu.

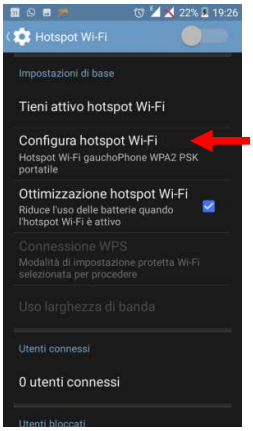
2) Select **OTHER**



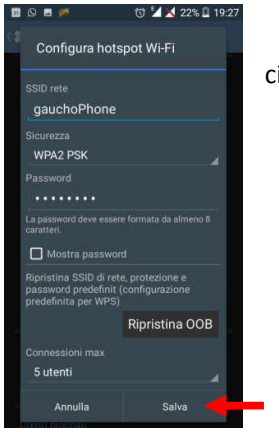
3) Select **Tethering/portable hotspot**



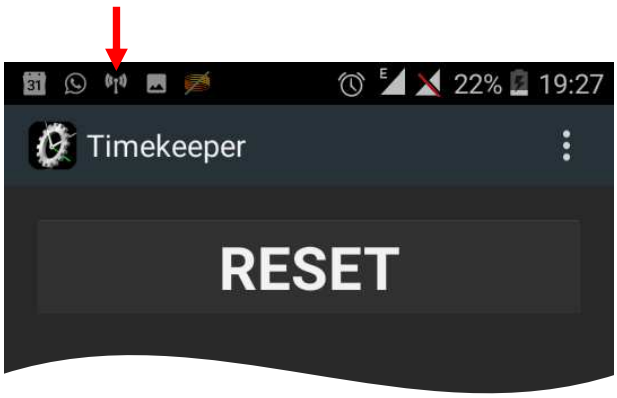
4) Press on WI-FI HOTSPOT, as it is pointed by the red arrow in the image on the left.



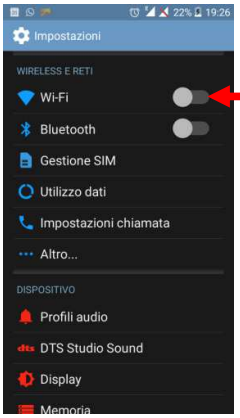
5) Select **CONFIGURE WI-FI HOTSPOT**



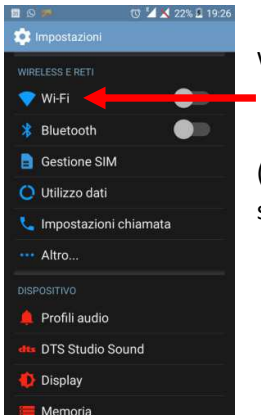
6) Fill at least the fields with the name of the network (SSID), the kind of ciphering (WPA2PSK) and the password and then press **SAVE** button.



7) Launch Timekeeper3 app. On the top side, on many android devices, you should see the automatic start of your **wifi hot spot**, as it is shown on the image on your left (red arrow).

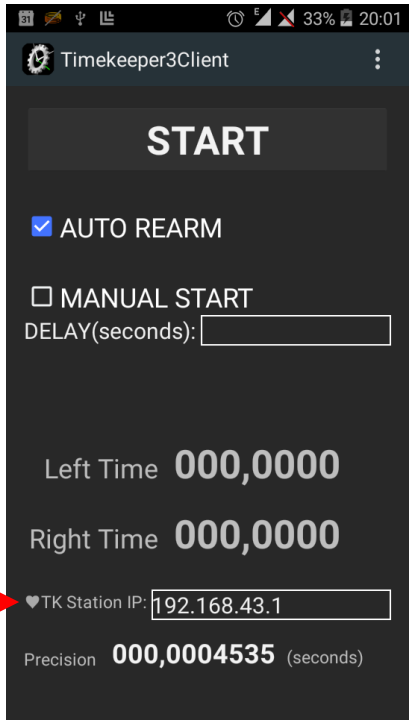


8) On the IOS/Android/Windows smartphone where the Timekeeper3Client app is installed, open the system settings menu and enable the wifi networks search. On Android you usually need to move the selector pointed by the red arrow on the image on your left.



9) Open the list of found wifi networks. On Android you usually need to press where pointed by the red arrow in the image on your left.

10) From the list, select the network (SSID) created by the other smartphone (the one equipped with Timekeeper3 app), when requested insert the previously setted password (on step 6) and complete the connection.



11) Open the Timekeeper3Client app and verify that the hearth symbol located on the bottom side has some kind of animation (on different operative systems the hearth may change size, color, or it can be just a rectangular led that changes color). The animation indicates the proper data flow from Timekeeper3 app to Timekeeper3Client app. Simultaneously it shall be possible to see, on the Timekeeper3Client app, the same data shown on timekeeper3 app (same times, same selected checkboxes).

If times are not correctly replicated between the two apps (Timekeeper3 and Timekeeper3Client) and if it is not possible to activate remote commands, repeat the procedure. If the problem persists, identify the step of the procedure where the problem comes out and report it to the Customer Support. Always report to the Customer Support also your operative systems versions, manufacturer and model of used devices.

Troubleshooting

PROBLEM	SOLUTION
THE CENTRAL POWER LED IS ALWAYS OFF	Replace the batteries and activate the power switch. If the problem persists contact the Customer Service.
The L LED (OR R LED) IS ALWAYS OFF (OR IT IS ALWAYS ON)	Place the reflector within few centimeters from the photocell, move the hand between the photocell and the reflector and verify that the led powers on and off while moving the hand. If this does not occour, check if the batteries are fully charged and if the Timekeeper3 hardware is powered on. If the problem persists check the photocell light generation, by placing a piece of paper in front of the photocell. If the red light isn't generated, contact the Customer Service.
THE EXT L LED (OR THE EXT R LED) IS ALWAYS OFF (OR IT IS ALWAYS ON)	This led is activated by the photocells located on the START and then connected to the EXT connector as it is shown on the interconnection diagrams of this document. If you don't have such photocells on the START location, it is correct that these LEDs are always OFF. If the remote photocell doesn't work as expected (see previously described problems on this table on order to check this), solve the problem on the remote photocells and then check if this problem persists. Check again the connections according to the interconnection diagrams shown on this document. If the START photocells correctly answer to the athlete passage (L and R leds of the START photocells), then the EXT L and EXT R leds of the timekeeper3 located on the ARRIVE shall power on and off together with the L and R leds of the timekeeper3 located on the START. If the problem persists, check the cable between the 2 timekeeper3 (the 3 conductors of the cable shall be connected). If the problem persists, contact the Customer Service.
THE TIMEKEEPER3 APP DOES NOT BEGIN MEASURING THE TIME AFTER THE START TONE EXECUTION (MANUAL START MODALITY).	Perform a new calibration with the procedure found on this document. If the problem persists, check if there are other problems listed in this table, and eventually follow the suggested procedure. If the problem persists contact the Customer Service and supply them the details about your smartphone and your operative system.