

# TBS RACE TRACKER

*Wireless, accurate & pocket sized*

Revision 2016-12-30

The TBS RaceTracker is a personal lap timer with companion apps for drone racers. With Universal Video RF sensing technology, it delivers transponder-less millisecond accuracy lap times while ensuring compatibility amongst most video transmitters. It doesn't matter what FPV aircraft you're flying: Race Quad, Tiny Whoop or Wing, the TBS RaceTracker has you covered.

The wide range of calibration features and default presets make sure that no lap time gets missed, ever! The wireless connection to your mobile device provides great range, the bright LED's on the RaceTracker allows your spotter to observe the status from far away. Thanks to a giant, 1S 3000mAh Li-Ion battery, the tracker can run for up to 6 hours and charges off a standard micro USB plug.



## Specifications

<b>Technology:</b>	VTX RF signal analysis - RSSI
<b>Timing frequency:</b>	5200 to 5999 MHz video transmitters
<b>Tracking:</b>	1 drone per race tracker
<b>Resolution:</b>	~5 ms precision
<b>Mobile app support:</b>	TBS Tracker ( <a href="#">Android</a> ), DroneSquad ( <a href="#">Android/iOS</a> )
<b>Communication:</b>	Wireless 2.4GHz based
<b>User interface:</b>	5x RGB LEDs and single power-on button
<b>Port connectors:</b>	Micro-USB charging port Molex 6-pin expansion port
<b>Operating time:</b>	Up to 6 hours
<b>Battery:</b>	3.6V 3000mAh Li-Ion - standard 18650-cell form factor
<b>Dimensions:</b>	96 (H) x 30 (W) x 35 (D) mm
<b>Weight:</b>	96 grams
<b>Kit contents:</b>	1x TBS RACE TRACKER with individual color + animal identifier



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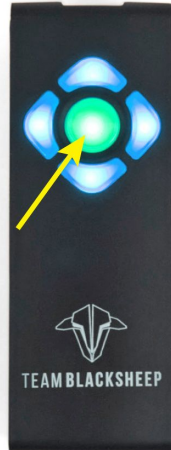
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## Power on

The RACE TRACKER has a built-in battery and to power on the unit, simply hold the center-button for 3 seconds. The other 4 ring LEDs will start to pulsate when it is in operation.



## Drone Squad App (iOS and Android)



**Drone Squad is the official App of the TBS RaceTracker.** Drone Squad connects pilots around the world for fun and competition. In addition to helping you find local meet-ups and run races, Drone Squad will help you get the most out of your TBS RaceTracker:

- Personal training mode with flyover or countdown start so you can practice for the race
- Detailed session history and statistics to track your progress over time
- Easy to use in-app setup for pairing and calibrating the device



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- Legendary Drone Squad customer support to make your experience hassle free

Follow [step-by-step setup instructions and videos here.](#)

New features are added on a regular basis.

- [Android - Download from Google Play store](#)
- [iOS - Download from App Store](#)



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## TBS Tracker app

This is a companion app for the TBS RACE TRACKER. It can track one drone at a time and it does basic lap timing. The app is currently in a unstable ALPHA version and is therefore not available yet. We assume it will be ready somewhere towards the end of November 2016.

- TBS Tracker - TBS' own app for calibration
  - [Android - Download from TBS](#)

The TBS TRACKER app features:

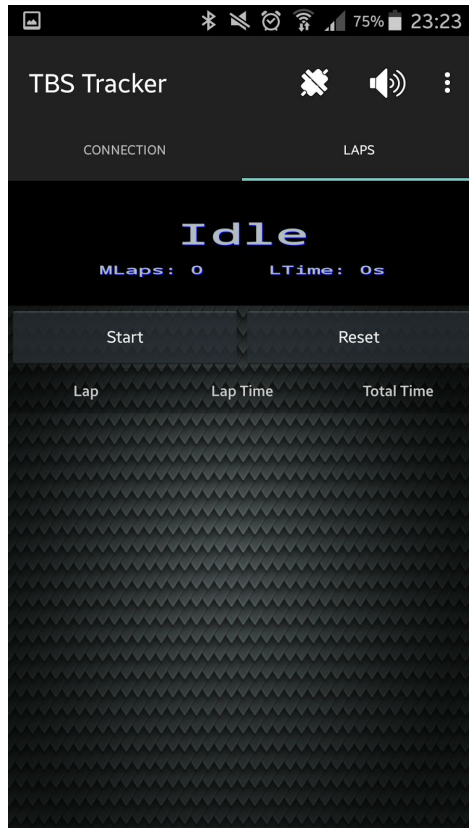
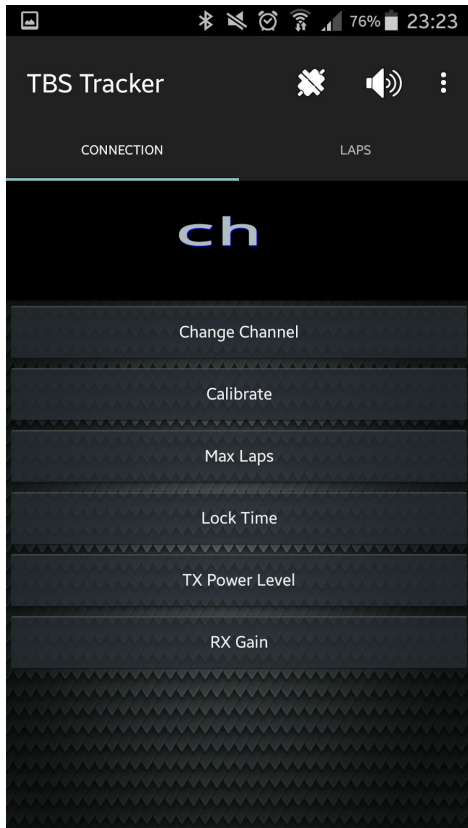
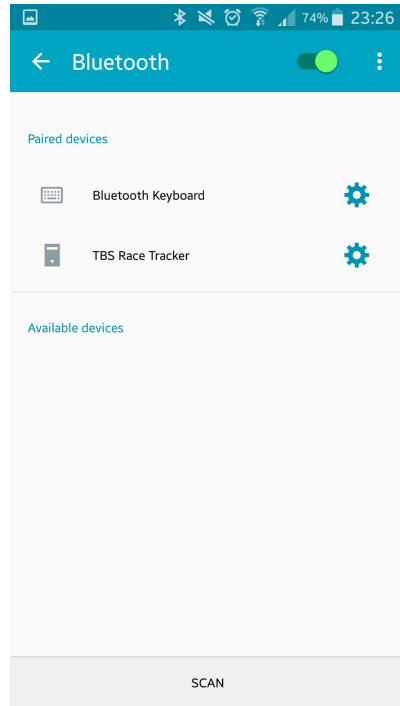
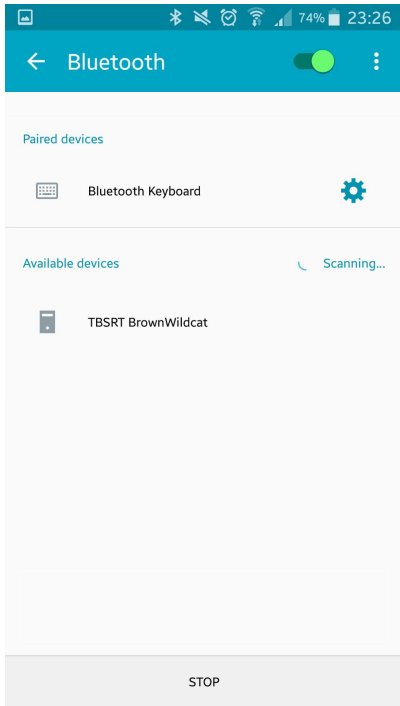
- Recording laps and lap times
- Audible voice feedback
- Changing listening/receiving channel
- Calibrating gate sensitivity
- Max laps
- Max lap time

## Pairing device

The RACE TRACKER communicates wirelessly. Before installing the apps, pair your tracker to a Android device.

1. Turn on Bluetooth in Android and turn on the RACE TRACKER by holding the center button for 3 seconds
2. Wait for a device called "TBSRT XX" to appear where XX is the animal name specific to the device, pair it using the default code "000000"





## Changing receiver channel

The tracker is based on intricate RF analysis (RSSI) to measure lap times when passing a gate. This changes the frequency it will listen to and analyse.

1. Configure the drone to the right video channel given by to you by the event organizer or defined yourself
2. Open the TBS Tracker app, connect to your TBS RACE TRACKER
3. Tap "Change channel" and define the same band and channel as used on your drone

## Calibration

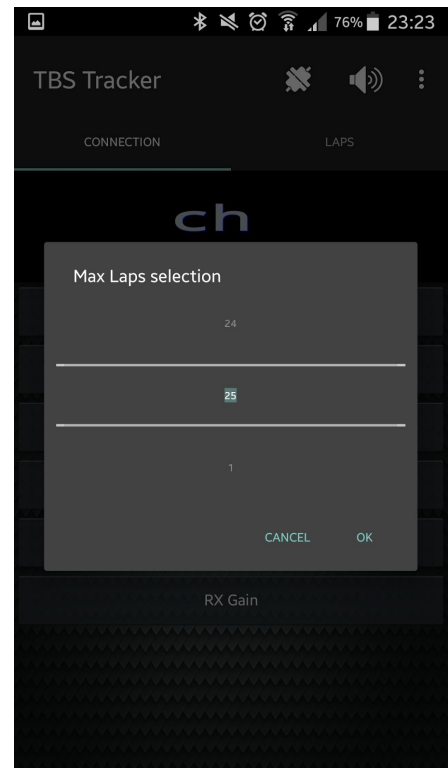
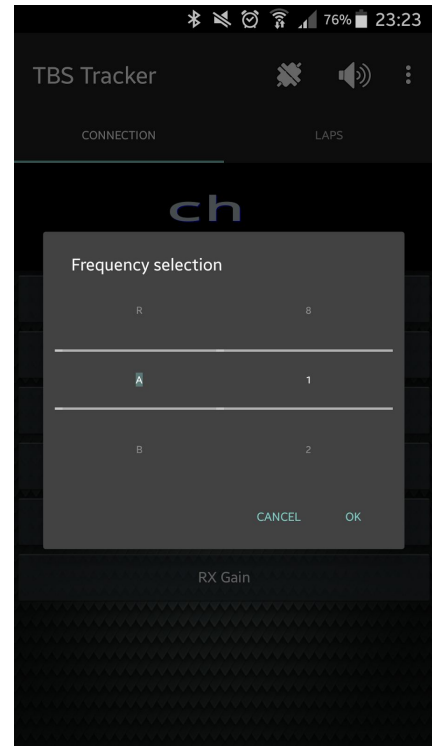
Calibration determines the gate size, if you calibrate with the drone 2m away from the tracker, then the gate size is about 2m. Our gates are 4m tall.

1. Measure the size extreme ends of your gate and place the drone the same distance away from the tracker
2. Open the TBS Tracker app, connect to your TBS RACE TRACKER
3. Tap "Calibration" in the menu and wait for it to finish to store a reference value

## Max laps

This dictates how many laps to record before automatically stop the lap tracking.

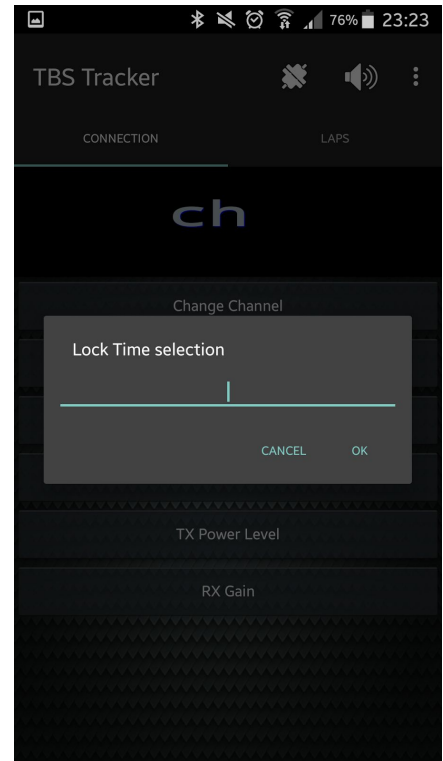
1. Open the TBS Tracker app, connect to your TBS RACE TRACKER
2. Tap "Max laps" and define the number of laps to record, 1 to 25 laps



## Lock time

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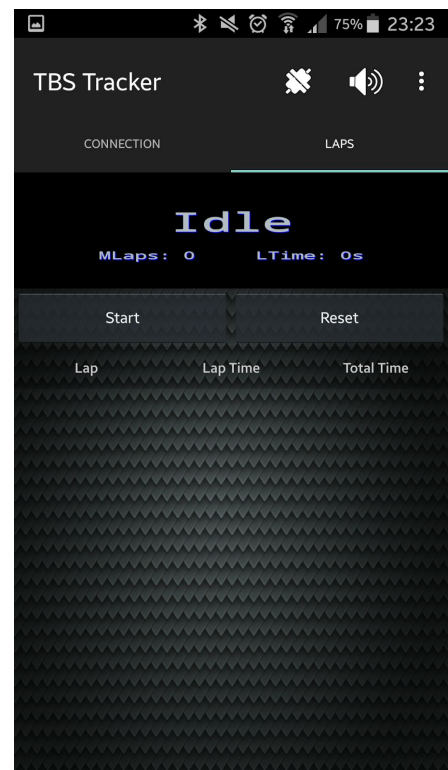
1. Open the TBS Tracker app, connect to your TBS RACE TRACKER
2. Tap "Lock time" and define the lock time



## Lap recording

Once setup and ready, recording the laps is done automatically once started.

1. Open the TBS Tracker app, connect to your TBS RACE TRACKER
2. Hit the "Laps" tab and tap "Start" to begin recording laps and lap times
3. After the set amount of laps has passed, the tracker stops automatically





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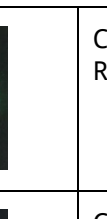
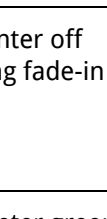
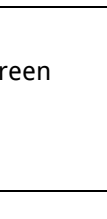
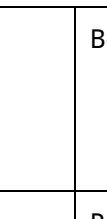




## Gate setup

Position the RACE TRACKER as close to the [start and finish gate](#) as possible. The tracker is not weatherproof, so protect accordingly. The tracking happens in a bubble around the tracker, so make sure that the tracker is placed centrally.




## LED Status

The 5 large light-channels indicate the status of the RACE TRACKER. These are easy to spot from a distance.

	Center off Ring fade-in green	Booting up
	Center green Ring pulsating blue	Powered on and in disconnected/pairing mode
	Center green Ring solid blue	Powered on and connected/active
	Center green Ring colored with drone color	Waiting for race to start
	Center green Ring off	Race in progress
	Center green Ring colored with drone color	Race in progress, lap triggered
	Red pulsating center Blue ring	Charging and powered on
	Red rapid pulsating center Ring off	Charging, powered off
	Green center Ring off	Charging done, powered off



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	Red pulsating center Blue ring No USB connected	Low battery
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## Expansion port

On the side of the unit is a 6-pin Molex connector for future accessories and features.



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## Charging

The RACE TRACKER can be charged using a micro-USB cable. The connector is located at the top end of the unit. This port has only charging capabilities, no data or other purpose.

The charging speed is up to 1A, and will take about 3 hours to fully charge a RACE TRACKER. The center LED stops flashing when charging is completed. For the fastest charging speed, make sure that the tracker is powered off. The tracker can also be charged while in operation.



When the tracker is charging, the center LED will rapidly pulsate and when the charging is done it will turn solid green.



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## FAQs

- My RaceTracker never completes charging, no matter how long I leave it plugged in.

**A few early RaceTrackers have a bug in the firmware that never registers as fully charged and therefore never shows the correct LED display. The battery is fine, and fully charges after three hours of charging. This will be fixed in an update soon.**

- My RaceTracker came with a spare antenna, what is it?

**A small percentage of wireless antennas are giving some users problems. If you notice issues with your wireless range, you can swap the antenna that's inside the unit with the one that came loose in the box.**

- I just received my RaceTracker, and it does not turn on.

**It just needs a charge! The RaceTracker uses an 26650 battery that is highly reliable and can withstand thousands of charges, but needs to be shipped completely empty. The LEDs will come on after a few seconds of receiving a charge.**





Manual written and designed by [ivc.no](http://ivc.no) in cooperation with TBS.

