ROCKET DRONES
RACE TIMER

Developed and crafted in Pensacola, our innovative drone timing system is purpose-built to elevate FPV (First Person View) racing, with a special focus on enriching school drone programs and fostering hands-on learning. Designed for precision, it provides an automated solution for tracking lap times, making it an ideal educational tool. Unlike traditional race timing systems that require extra hardware on the drone, our system harnesses the FPV video signal to detect each drone's passage over the start/finish gate, offering a lightweight, hassle-free experience that's perfect for students and educators alike.

This system is perfectly suited for classroom competitions, after-school clubs, and STEM-focused practice sessions, ensuring accurate lap tracking without interrupting the learning process. With real-time data at its heart, it enables students, teachers, and spectators to instantly access precise timing results, transforming FPV racing into an engaging platform for developing technical skills, teamwork, and problem-solving.

1. Create your Race Event on the Portal

Create your race on the Rocket Drones Portal at Launch.RocketDrones.com to simplify importing your race and exporting results. Ensure to download and install the Rocket Drones Race Application before using the Race Timer.

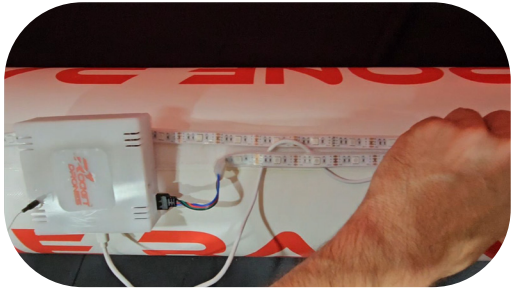
Supplies Needed:

- Rocket Drones Timer
- RGB LEDs Lights
- Power Brick
- USB to USB-C Cord
- Laptop with Timer Application
- USB Dongle
- Bluetooth Speaker paired with laptop (Optional)

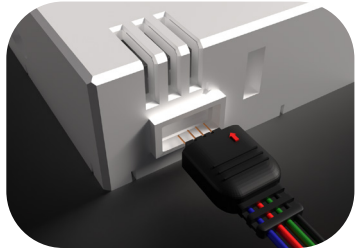
2. Set Up and Connect your Race Timer

Connect the Dongle:
Insert the Rocket Drones USB Dongle into your laptop.

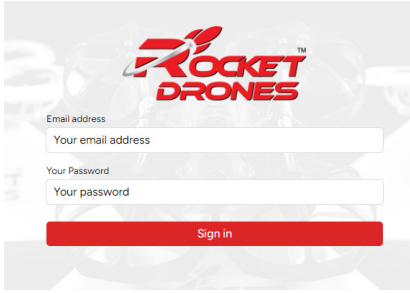
Plug in and Power Up: Connect the Rocket Drones Race Timer to a USB power brick. Place it at the start/finish gate with the RGB lights



There is an arrow indicator on the tip of the RGB connector and on the timer case RGB plug. Align the arrows on the RGBs and the timer case. Ensure timer is placed in the center bottom of the gate. The timer will flash red until its connected to the USB dongle.



Launch the Rocket Drones Race Manager: Double click the Rocket Drones Race Application. The timer will flash green once connected successfully. It will then turn solid red to indicate a closed flight line. A closed flight line simply means the timer is not tracking and the course is closed.



Log In and Check Connection: Log in using your Portal credentials. Visit Launch.RocketDrones.com to reset or change your password.

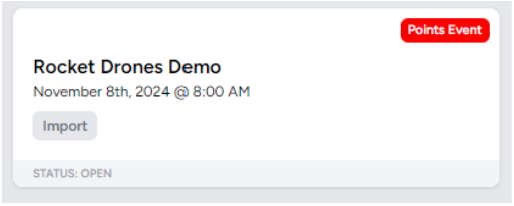
A "Connected" icon should appear in the top right corner if the connection is successful.

Troubleshooting: If the icon doesn't indicate a successful connection, click on it to retry. If timer is solid red and still says "Click to Connect", power cycle the Timer and Dongle, then restart the Race Application.

Power cycling the entire system will resolve all known troubleshooting issues.

3. Import a Race

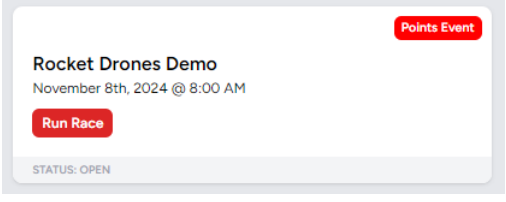
Select an Online Race: Import a previously created race from the Portal into the Race Timer application. This will automatically load all racers, settings, and assignments.



Visit Launch.RocketDrones.com to set up your race event and to add students if you have not already done so. See our Portal guide for more information.

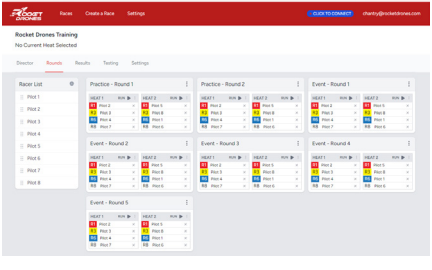
4. Run a Race

Start the Race: Click the "Run Race" button to start. This will display the race rounds and heats.

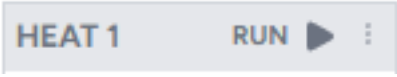


5. Running Rounds

The race rounds will show the auto assignment of the pilots into individual heats and rounds. Each heat should be run in order. Heat assignments can be adjusted as needed by dragging and dropping racers. Racers can be removed from heats by clicking the “x”.



Once your heats and rounds are confirmed, **click "Run"** to start the heat on the Directors Page.

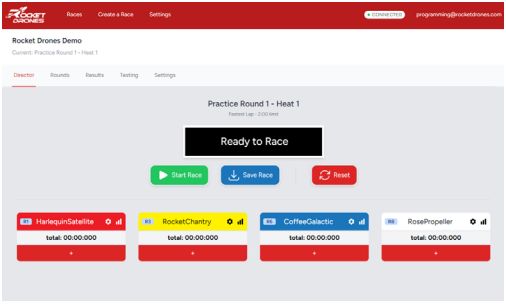


Please note that under default race type settings the first two rounds are practice rounds. These allow racers to warm up and troubleshoot or calibrate the timer. Timer Calibration can be found in Race Marshalling section.

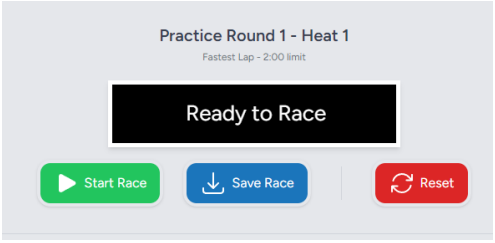
All heats in each round must be completed and saved before moving on to the next round.

6. Race Director

The Race Director for each heat will display each racer and their assigned FPV channel. Individual heats are ran from this screen.



Start Race: Once all racers are ready, use "Start Race" to initiate an audible countdown. Utilize the included bluetooth speaker to increase the volume. The lights on the start/finish gate will flash yellow and then solid green at the start of the race.

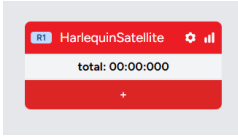


Stop: Pauses the clock and data collection without ending the heat. Paused heats should be reset and restarted to maintain fair competition.

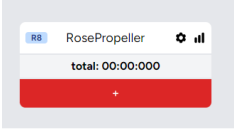
Save Race: Saves race data locally.

Reset: Clears current race data and resets the timer.

During your practice rounds, if the timer is not functioning, you can still run the race event with visual observers for each pilot's lap times. Click the "+" icon to manually capture a lap.



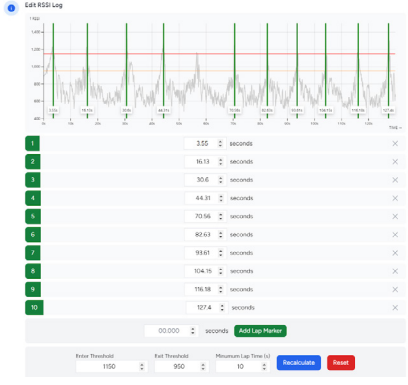
If the timer is capturing inconsistent lap time, click the gear icon next to a racer's name to adjust entry and exit thresholds, if needed for accurate lap detection. See Race Marshalling for more details.



To calibrate the Race Timer, racers must complete a practice lap and use the recalculate function to obtain accurate Entry and Exit thresholds for your timer and race environment. Adjust minimum lap time after this practice lap as well to ensure accurate timing.

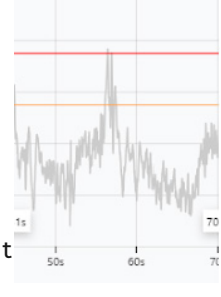
7. Race Marshalling

Race Marshalling: The signal icon next to each racer's name opens the RSSI (Received Signal Strength Indicator) data log, providing a real-time chart of race data. These settings should only be adjusted when the racer's lap times are not being detected.



Manual Threshold Adjustments:

- Entry Threshold: Set between 1100-1250 RSSI (aligns with the peak).
- Exit Threshold: Set between 900-1200 RSSI (slightly lower).



These values may vary by environment but rarely require adjustments.

Minimum Lap Time: Set the minimum expected lap time to avoid false lap counts. Choose a time slightly shorter than the fastest expected lap (e.g., if the fastest lap is 15 seconds, set the minimum lap time at 10 seconds). Depending on course length, flight path and complexity the minimum lap time may need to be adjusted to ensure accurate lap times.

After entering new threshold values or minimum lap times, click “Recalculate” will apply the new threshold settings and minimum lap times to update timing and scoring based on current race data. This will provide new results based on the new threshold settings.

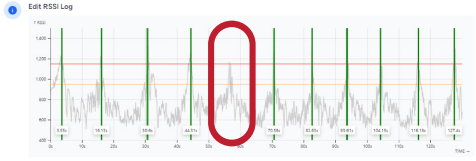
Reset: Revert to original settings if necessary.

Save RSSI Data: Saves any adjustments to thresholds and lap times.

Cancel: Exit without saving changes.

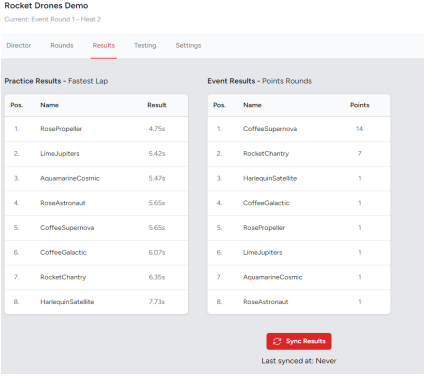
If racers miss a gate, lap markers can be removed by clicking the “x” next to that laptime.

If you notice a lap not recorded in the racer RSSI data, you can manually add a lap marker with a timestamp. This would be indicated by a peak in the RSSI signal without a green lap marker.



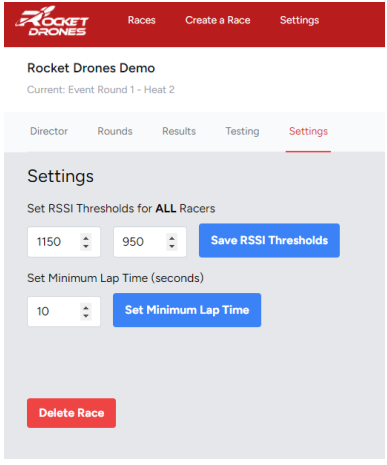
8. Results

The Results tab will display all the current scores for each racer along with their ranking for all heats. Verify race results before syncing and sending to the Rocket Drones Portal.



9. Settings

The Settings page is only to be used for when you want to change RSSI thresholds and minimum lap times for ALL RACERS. Examples shorter track lengths, noisy RF environments, different drones, or the Stage 2 Rocket Drone. See Race Marshalling for more informationand individual racer adjustments. .



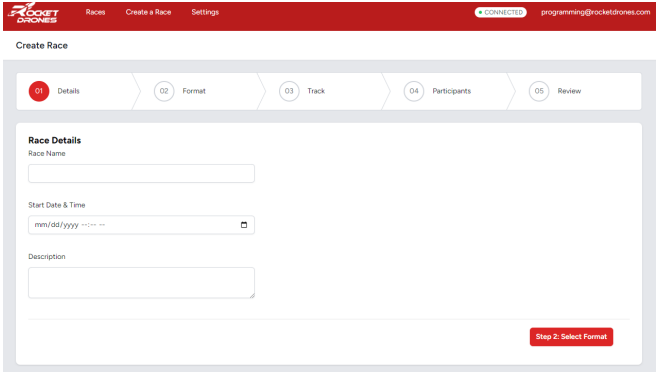
Adjust Thresholds for All Racers: Set standard entry and exit thresholds for all racers in a race.

Delete Race: Permanently delete a race and all associated data if it's no longer needed. This is PERMANENT.

Threshold Adjustments:
•Entry Threshold: Set between 1100-1250 RSSI (aligns with the peak).
•Exit Threshold: Set between 900-1200 RSSI (slightly lower).

10. Create a Offline Race

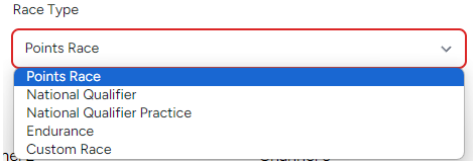
If you do not wish to load your students into the Portal and log flights hours or no internet connection, you can still use the timer to run a offline race. Syncing of results and student data are not available for offline races.



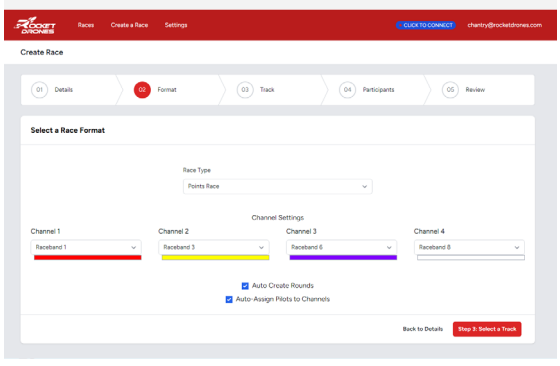
Race Details: Enter basic information for your offline race. Select a time and date and add a quick description.

Select a race type.

- **Points Race-** Best 3 out of 5 rounds. Pilots have 2 minutes to complete as many laps without missing gates.
- **National Qualifier-** Rocket Drones League Only. Fastest 3 consecutive laps. (New Track Released Annually)
- **National Qualifier Practice-** League Practice
- **Endurance-** Team Endurance Racing
- **Custom-** Fully Custom Format



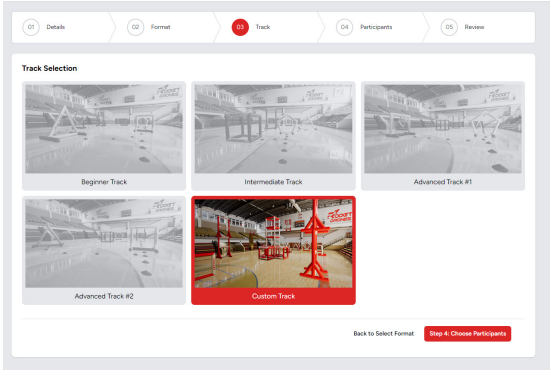
For more information see the Rules and Regulations for League Compeition



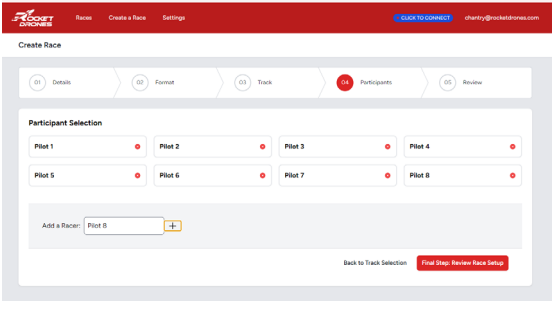
Channel Settings: Adjust FPV channel assignments for each drone to be used during heats.

Auto Features: Auto Create Rounds and Auto-Assign Pilots to Channels allows for easy management of rounds and heats.

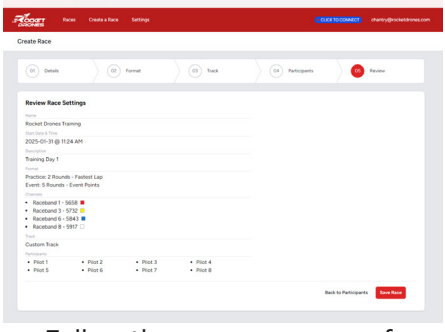
Track: Choose a track design or let students create a custom track.



Participants: Add racer names to the list.
Imported Racer List is only available for races scheduled in the Rocket Drones Portal.

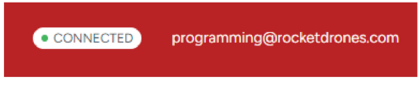


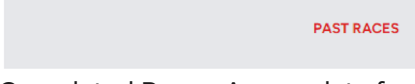
Review: Confirm settings and save the race.



Run Race: Follow the same process as for an online race, excluding syncing race results.

11. View Past Races





Review Completed Races: Access data from previous races, both online and offline, directly in the app for reference or analysis. Online races and results are available on the Portal as well.