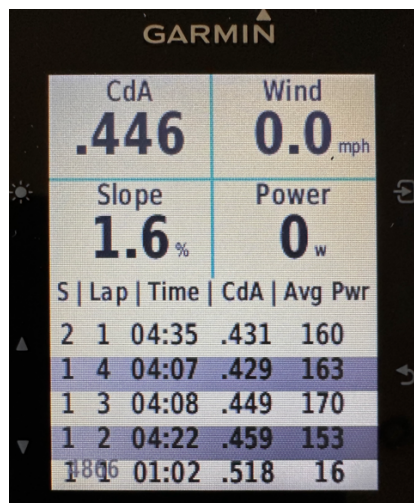


Installing and using AeroPod 2.0 Connect IQ app with AeroPod® and PowerPod® App Version 1.0.1

July 2023



AeroPod

AeroPod 2.0

Sandcake

Data Field

35

Download

Introduction

AeroPod® transmits live CdA, Wind speed, hill slope, Time Advantage, and power data by ANT+. PowerPod® transmits live wind speed, hill slope and power data by ANT+.

The AeroPod 2.0 ConnectIQ app installs on compatible Garmin ConnectIQ bike computers, allowing wind/slope/CdA/power data to be displayed on-screen.

When used with an AeroPod set to profile 3, the AeroPod 2.0 Connect IQ app displays AeroPod “live” power, CdA, wind speed and slope data.

When used with an AeroPod set to profile 4, live data is displayed, and additionally, whenever lap button is touched, the app displays stats from each completed aero test: Test Sequence, test number, lap time, lap CdA, and lap average power.

When used with a PowerPod, the AeroPod 2.0 Connect IQ app displays PowerPod live power, wind speed and slope data. **NOTE TO POWERPOD USERS: THE CDA NUMBER YOU SEE IN THE APP DOES NOT CHANGE.**

These instructions tell you how to set up and use AeroPod 2.0 to display these special data fields on your Garmin, and how to use an AeroPod **set to PROFILE 4** for precision CdA measurements.

For information regarding attaching AeroPod/PowerPod to your bike, and pairing AeroPod/PowerPod to your ANT+ sensors, please consult the **Installation Instructions**, included with your AeroPod or PowerPod.

Step 1. Make sure your Garmin bike computer is Connect-IQ compatible

Many, but not all, recent-vintage Garmin bike computers can be used with the AeroPod 2.0 app.

Garmin's website shows all Garmin products that work with the AeroPod 2.0 app. Here is the link; once you open it, click on the "Compatible Devices" tab:

[AeroPod 2.0 compatible Garmin devices](#)

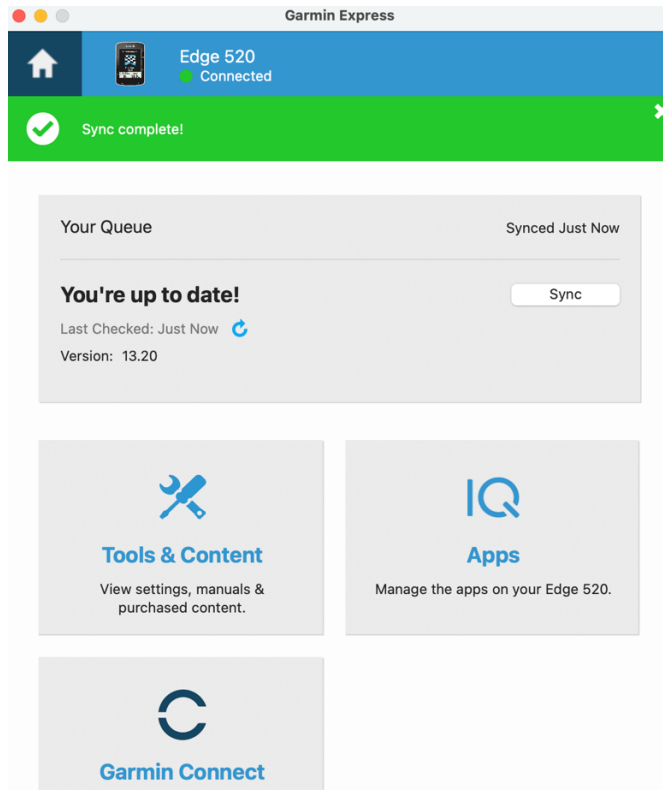
Step 2. Install the AeroPod 2.0 app on your Compatible Garmin device

1. Connect your Garmin device to your computer through your USB cable.
2. Use the link below to find the most recent version of the AeroPod 2.0 app, or search for "AeroPod" in the ConnectIQ web page, and select "AeroPod 2.0".
3. You will need to sign-in to your Garmin account in order to gain access to the app.

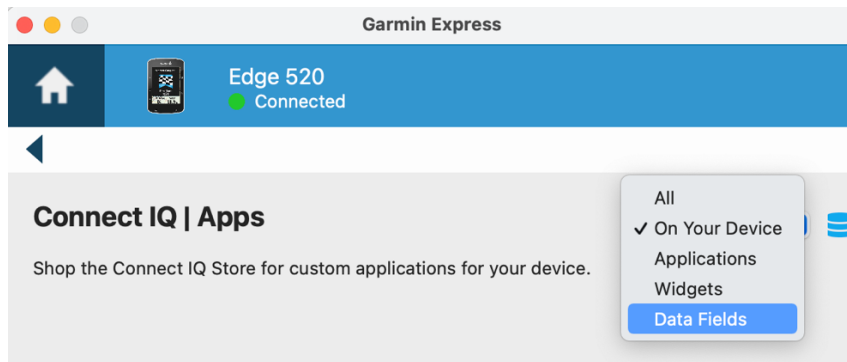
[AeroPod 2.0 app](#)

4. On the Garmin page click the "Download" link to begin installation of the app

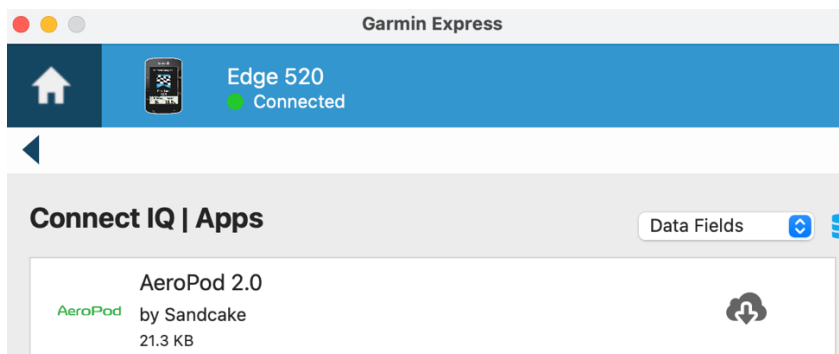
The screenshot displays the Garmin ConnectIQ app installation interface. It begins with a modal titled "ADD TO DEVICE" with a close button (X). Below the title is the instruction "Choose a Device" and a dropdown menu showing "Edge 520 (S/N: 43V531050)". A link "Don't see your device?" is provided. Below this is a bar with "Cancel" and "Confirm Device" buttons, followed by a right-pointing arrow. The next section is titled "PERMISSIONS" with a close button (X) and the text "This app requires access to:". It lists three permissions: "Send/receive data via ANT radio to/from third-party sensors", "Record additional information into activity files", and "Sensor data (i.e., ANT+, heart rate, compass)". Below the permissions is a bar with "Cancel" and "Allow" buttons, followed by a right-pointing arrow. The final prompt asks "Do you want to allow this page to open 'Garmin Express'?" with "Cancel" and "Allow" buttons at the bottom, followed by a right-pointing arrow.



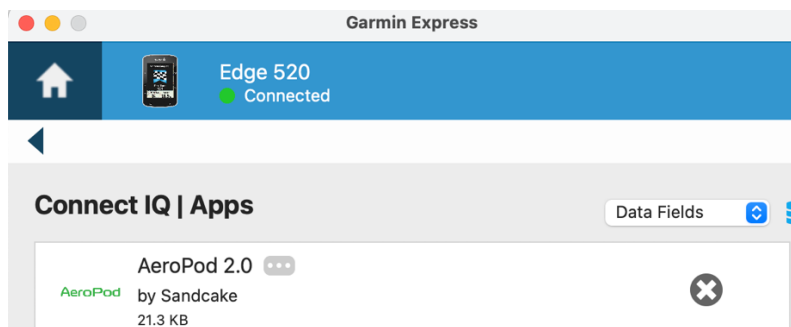
- Click on the “IQ Apps” button, then in the next window select “Data Fields”



- Select AeroPod 2.0 and click the download icon



- The AeroPod 2.0 is now installed on your Garmin.



- IMPORTANT: AFTER INSTALLING THE APP, TURN OFF YOUR GARMIN, DISCONNECT IT FROM YOUR COMPUTER, THEN TURN YOUR GARMIN BACK ON.**

Step 3: Pair AeroPod or PowerPod to your Garmin

- Wake up your bike sensors
- Make sure AeroPod or PowerPod has been paired to your bike sensors
- Wake up your AeroPod/PowerPod

4. Follow the instructions of your Garmin to pair AeroPod/PowerPod to your Garmin

Step 4: Set up Garmin Data Field screen for AeroPod 2.0 display (Edge 520 shown below; your screens may differ)

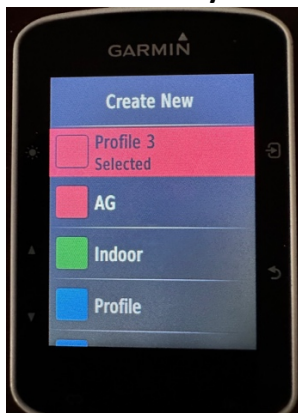
A. Find the Settings screen



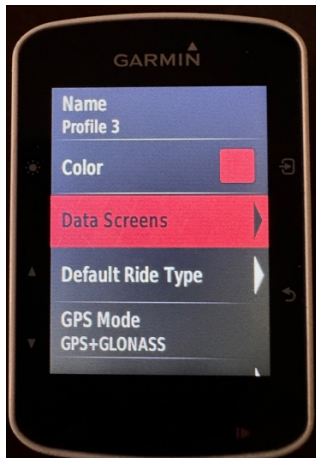
B. Find and Select “Activity Profiles”:



C: Select the Activity Profile where you want to see the CdA screen. In this example, “Profile 3” is the Activity Profile where we will install AeroPod 2.0:



D: Select “Data Screens”

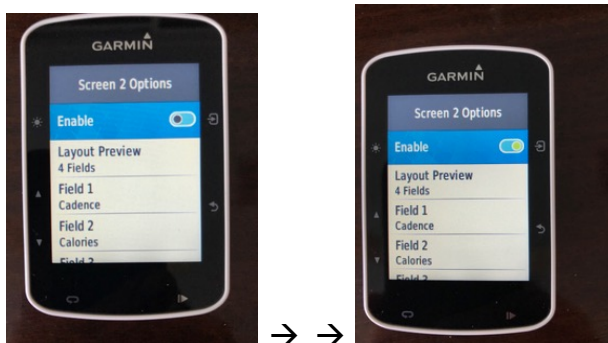


E: Set up a new screen with 1 field

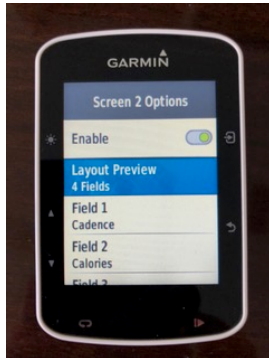
(Note that in this Garmin, only Screen 1 was active. Screen 2 was off and was pre-programmed for 4 fields. Your Garmin may show something different. We will set up AeroPod 2.0 on Screen 2)



Select screen 2, and enable it:

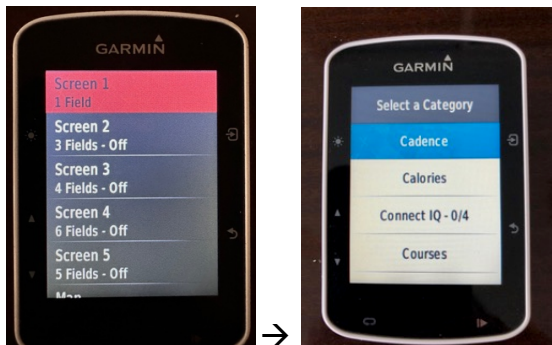


F: Select “Layout Preview”, and change “Layout Preview” from 4 fields to 1 field

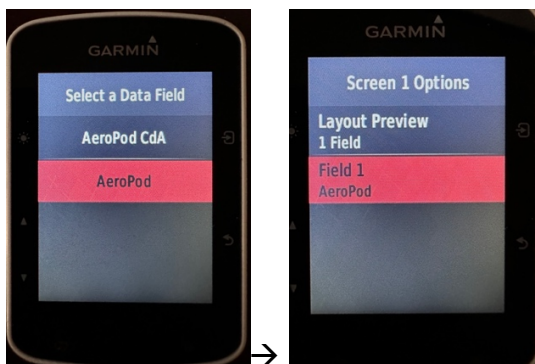


G: Set “Field 1” to “AeroPod”

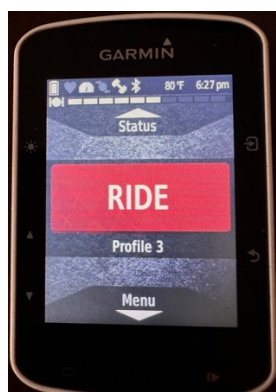
In this device Data Field 1 was pre-set to Cadence; we will change it to the AeroPod 2.0 data field



H. To install the AeroPod 2.0 data field, scroll down to “Connect IQ” and select “AeroPod” (it doesn’t say “AeroPod 2.0”) for Field 1 (NOTE: IF YOU HAVE PREVIOUSLY INSTALLED THE ORIGINAL “AEROPOD CDA” APP, THE ORIGINAL APP WILL SHOW AS “AEROPOD CDA”. IT IS OK TO LEAVE THE ORIGINAL APP INSTALLED ON YOUR GARMIN).



- I. Use the “back” button to return your Garmin to the “Ride” screen. You’re ready to ride with AeroPod 2.0!



USING AEROPOD 2.0 APP FOR CDA MEASUREMENT

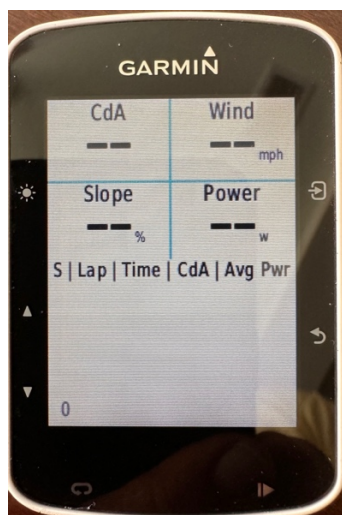
AeroPod uses two separate profiles for CdA measurement:

- Profile 4: CdA Testing on closed loop courses
- Profile 3: Live CdA reporting while training/racing

The AeroPod 2.0 app works both with profiles 4 and 3. AeroPod 2.0 adds features that make it much easier to do precision CdA measurement in profile 4.

Starting up the app

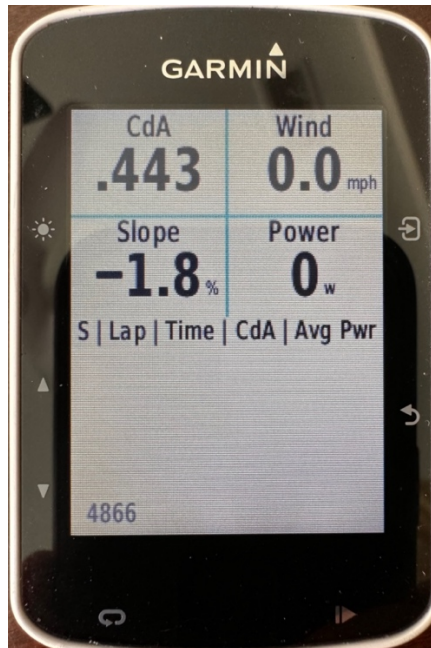
1. Click the “start” button on your AeroPod to start the app. You’ll likely see this screen:



Note that the top fields are shown as --, and that the number in the bottom right corner is “0”. This is the screen that appears when your AeroPod is “off” and is not transmitting ANT+ data to your Garmin

2. Spin the sensors on your bike to awaken them (speed, DFPM, and optional cadence)
3. Awaken your AeroPod by clicking its button. AeroPod light will flash green while finding its sensors, then go solid green, then turn off, once sensors are found.

4. When your Garmin starts receiving AeroPod data, the screen will change, showing CdA/Wind/Slope/Power values in the top field, and the sensor ID of your AeroPod in the bottom left corner (the values you see on your screen will be different from the values shown in this image):



AeroPod: When riding with AeroPod, the AeroPod 2.0 screen shows live AeroPod CdA data: CdA, Wind, Slope, and Power

PowerPod: When riding with PowerPod, the AeroPod 2.0 screen will show live wind, slope and power data. *CdA is not measured; it is an unchanging number which is fixed to the value determined during PowerPod setup.*

Each time the Garmin's lap button is clicked, below the live stats display column headings will be values determined during the just-completed lap. Please see "AeroPod Profile 4 testing" for details.

Using the AeroPod 2.0 app with PowerPod

PowerPod: When riding with PowerPod, the AeroPod 2.0 screen shows live wind, slope and power data. *CdA is an unchanging number which is fixed to the value determined during setup.*

Clicking the "lap" button produces the lap time (the time accumulated between the prior lap click and the just-completed lap click) and Average Power, (the average power measured between the last lap click and the just-completed lap click).

Using the AeroPod 2.0 app with AeroPod

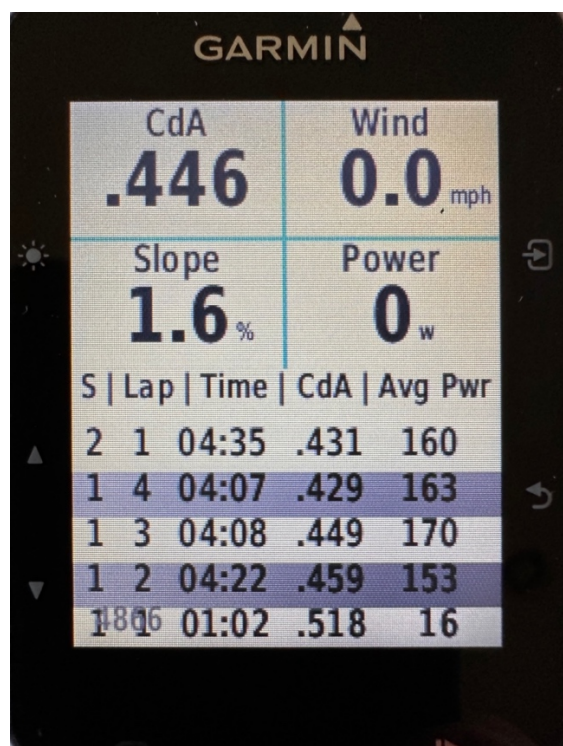
AeroPod: When riding with AeroPod, the top portion of the AeroPod 2.0 screen shows live AeroPod CdA data: CdA, Wind, Slope, and Power

The app shows data when using AeroPod in profile 4 (CdA testing) or profile 3 (CdA training/racing).

Lap Stats

Each time the Garmin's lap button is clicked, stats from the just-completed lap will be shown beneath the column headings of the app screen. THESE STATS ARE OF PARTICULAR IMPORTANCE WHEN DOING CDA TESTING USING PROFILE 4.

In the image below, stats are shown for 4 laps completed for test sequence "1", and one lap of test sequence 2. These data were recorded with AP set to Profile 4:



Here is what the columns mean:

"S" is the session number for repeated laps of the SAME TEST CONFIGURATION (for example, riding with a specific time trial position). We recommend 4-5 repeated laps of each test configuration.

“L” is the lap number of the session. So, for example, the fourth lap of the first session 1 is S =1 and Lap = 4 (← next to image)

“Time” is the amount of elapsed time used to complete the lap test.

“CdA” is the measured CdA for the lap.

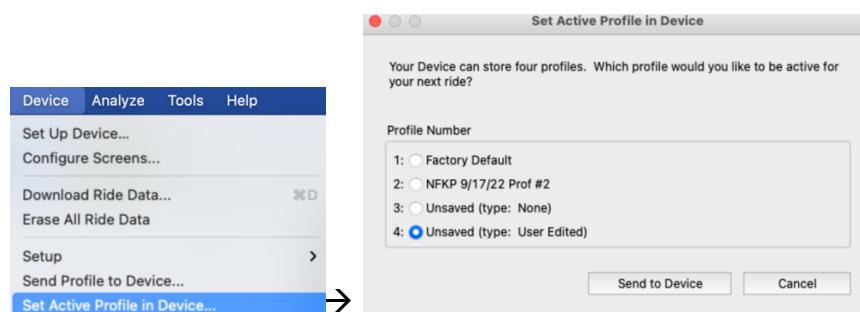
“Avg Pwr” is the Average Power measured for the lap.

Next to the screen image above, the arrow ← points to Sequence 1, Lap 4, which shows a lap time of 4’:07”, a measured CdA of .429, with an average power of 163W held for lap 4.

How to measure CdA with AeroPod Profile 4

NOTE: CdA measurement does NOT function with PowerPod

If you are wanting to get the most accurate CdA measurements of your riding position or gear, you must use AeroPod, set to profile 4 using Isaac:



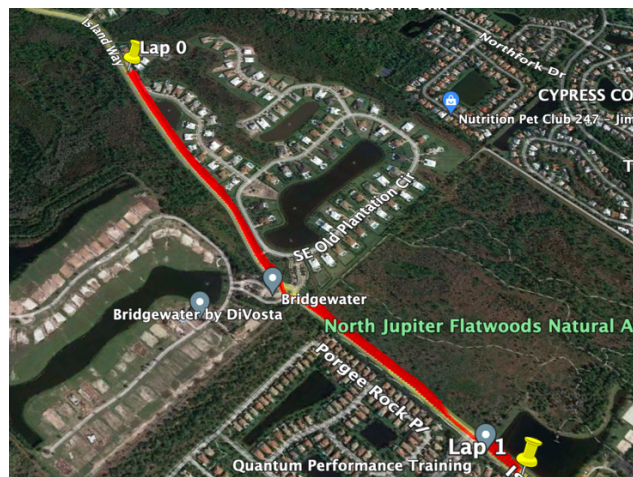
WHEN DOING CDA TESTING, MAKE SURE YOU ARE RIDING WITH AEROPOD SET TO PROFILE 4.

You will do 4-5 closed loop laps for each CdA configuration you want to measure.

A closed loop can be a large loop, or an out-and-back loop of 1-2 miles total length



Large closed loop (start/end "+" mark).



out and back loop (start/end lap 0, turn around at 1)

The closed loop should be 1-2 miles long. If you're riding in a small closed loop, such as a velodrome, do multiple velodrome circuit laps until your total distance traveled for each test is about 1 mile.

A repetition of 4-5 separate closed loop lap measurements is called a "test session". Each test session provides 4-5 separate measurements of your CdA, which later can be analyzed to obtain an accurate and consistent measurement of the CdA of your test configuration.

Starting a test session

To start a test session, click the "Start/Stop" button of your Garmin. When you start your Garmin you don't have to be at the exact start point of your closed-course loop; simply ride to the starting point of your testing closed loop.

Starting a CdA test measurement

Once you're at the starting position of your closed course loop, click the "Lap" button to start. After a few seconds you'll see Lap 1 data appear from the ride to your start point; ignore the "ride to start point" lap 1 data, as it has no meaning.

In the Garmin screen shot above, prior to beginning the first test session, the rider takes 1:02 to ride from the car to the starting point of the closed loop course. Lap 1 CdA is the starting value stored in AeroPod while riding to the start point, and does not represent any measured CdA result.

Doing a session (4-5 laps) of a CdA test configuration

Ride your complete closed-loop route, making sure that you hold the same ride configuration during each test. Repeat your test riding style the same way for each lap; for example, if you stop at the end of a lap test, stop at the end of every lap test.

When you have completed the loop and returned to the EXACT start point of your test loop, click the lap button. After a few seconds your just-completed lap data will appear: session number, lap number, lap time, lap CdA, and lap average power. If you rode your bike to the starting point of your test loop, your first CdA test measurement will be shown as Lap 2.

If you're riding a closed loop where you can continue testing without stopping, continue riding another loop, making sure that you don't change ANYTHING about your ride position or equipment.

Once you reach the end of your next closed loop, click the lap button again; after a few seconds your data for the just-completed Lap 3 will appear.

Do 4-5 loops for each configuration you're testing, making sure you don't change ANYTHING during or between test loops.

When you are finished gathering data for your test configuration (for example, you've completed 5 laps riding in your usual TT ride position), click the Garmin "Start/Stop" button. This ends the testing for your first test configuration session (S = 1).

Make a note (message or voice memo) of what your test configuration was for Session 1.

Testing multiple CdA configurations on the same day

If you're doing CdA testing you'll likely want to compare aerodynamics of different configurations: for example, different aero helmets. You can do this easily with your AeroPod and the AeroPod 2.0 app.

After you've completed your first Session (say, aero helmet #1), make whatever change you want to make for your next session (say, aero helmet #2). Go to the SAME starting point where you did your S = 1 rides, and click the lap button. Ride around the same course, making sure to hold the same ride position during your test, and click the lap button when you cross the starting point. The first lap of your second session will soon appear (S = 2, Lap = 1).

Continue your second-session lap testing until you have completed 4-5 laps.

When you have completed the second session click the start/stop button of your Garmin and click the "save" button to store your ride data on your Garmin.

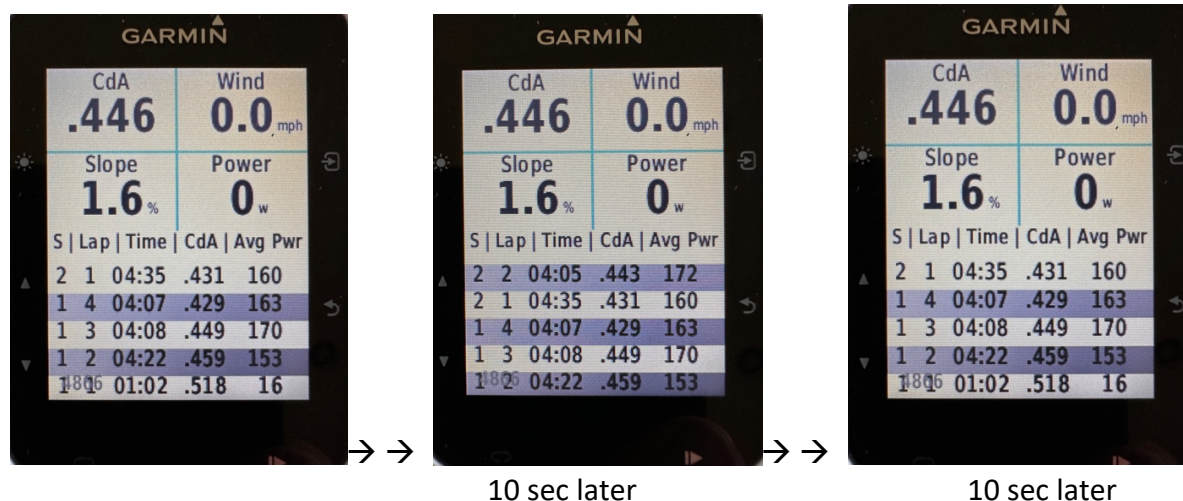
TIP: AFTER YOU FINISH RIDING YOUR TEST CONFIGURATION LAPS, MAKE NOTE OF THE TEST CONFIGURATION. FOR EXAMPLE, "S = 1 IS AERO HELMET 1"; "S = 2 IS AERO HELMET 2". You will want this information when you study your data later-on.

Viewing Session and Lap data on your Garmin

The bottom window of the Garmin data screen shows lap data as you complete each lap test.

The just-completed lap test appears at the top of the window, just beneath the Slope and Power numbers.

As you do more and more test laps, eventually the bottom window will fill; when this happens the Garmin will continue to record and display lap data, *showing most recent to oldest lap results, and scrolling automatically from most recent to oldest laps*. Each window-scroll is shown for about 10 seconds.



Ending a test-day

When you have completed all your testing for the day, simply click the Stop button of your Garmin and save your data.

All of your session and lap data will be preserved in your Garmin, and the data will also be copied over to your .FIT file.

You may turn off your Garmin if you wish.

Viewing your Test data after the ride

When you're back at your computer you'll likely want to record your test data, perhaps in an excel spreadsheet.

Here is one way to preserve some of the data in an excel format. Note that comments are made about some of the laps:

2/22/23 FW 9.02		tires fully inflated prior to ride		
	Garmin LAP CdA	speed	app watts	comments
lap 1	0.518			16 ride to start point
lap 2	0.459		16	153
lap 3	0.449		16.3	170
lap 4	0.429		17.2	163
lap 2/1	0.431		17	175
lap 2/2	0.443		17.6	172 skewed by full stop at end of previous lap
lap 2/3	x			ride home

NOTE: YOUR ON-SCREEN TEST DATA WILL REMAINS VISIBLE ON YOUR GARMIN ONLY FOR THE REMAINDER OF THE DAY ON WHICH YOU DID YOUR TESTING. TO VIEW YOUR DATA, TURN ON YOUR GARMIN AND START A NEW RIDE. YOUR DATA WILL APPEAR AND THE LAP DATA WILL SCROLL SO THAT YOU CAN EVENTUALLY SEE ALL YOUR LAP DATA.

IMPORTANT: AT THE END OF EACH NIGHT, IN THE EARLY MORNING HOURS OF THE NEXT DAY, YOUR GARMIN ON-SCREEN LAP DATA WILL BE ERASED. MAKE SURE TO TRANSFER YOUR DATA, PERHAPS BY TAKING PHOTOS OF YOUR GARMIN SCREEN, SO THAT YOU DON'T LOSE YOUR DATA!

Post-ride analysis of your test data

For the example above, a total of 6 laps, in two different sessions, were completed. The rider did 3 laps of testing on a closed course loop, without stopping between laps 2 and 4.

At the end of lap 4 the rider came to a halt, clicked the Stop button on the Garmin, clicked the Start button to start a new session, and then resumed riding for another 2 laps.

Lap 1 was a very short, non-closed-loop ride to the starting point; *its CdA number is meaningless*. HOWEVER: note that the CdA value was 0.518, considerably higher than the correct value measured later-on. The value of CdA from the prior lap is used for the starting point of each subsequent lap. So, when there are major differences between starting CdA and "correct" CdA, it can take several laps for the data to settle.

Lap 2 shows the first completed full lap: CdA = 0.459. This value is lower than the starting value, but still high because of the too-high starting point of lap 1.

Lap 4 shows a CdA of 0.431. This is the third lap of the first test session. The more laps are done for a given test configuration, the more stable the measured CdA will be.

After the end of lap 4 the rider came to a rest, clicked the stop button on the Garmin to end test session $S = 1$, then click the Garmin start button, to begin session 2, $S = 2$

The first lap, $S = 2$ and $L = 1$, produced a CdA result nearly identical to $S = 1$ and $L = 4$. However, the second lap of $S = 2$ was corrupted to some extent by the start/stop at the end of the first session.

2 laps were done with $S = 2$, then the rider rode back to home.

NOTE: THE PURPOSE OF THESE SESSIONS WAS TO TEST THE OPERATION OF THE AEROPOD 2.0 APP, NOT TO DO PRECISE MEASUREMENTS OF CDA. AT LEAST 4 COMPLETE LAPS SHOULD HAVE BEEN COMPLETED FOR EACH SESSION!