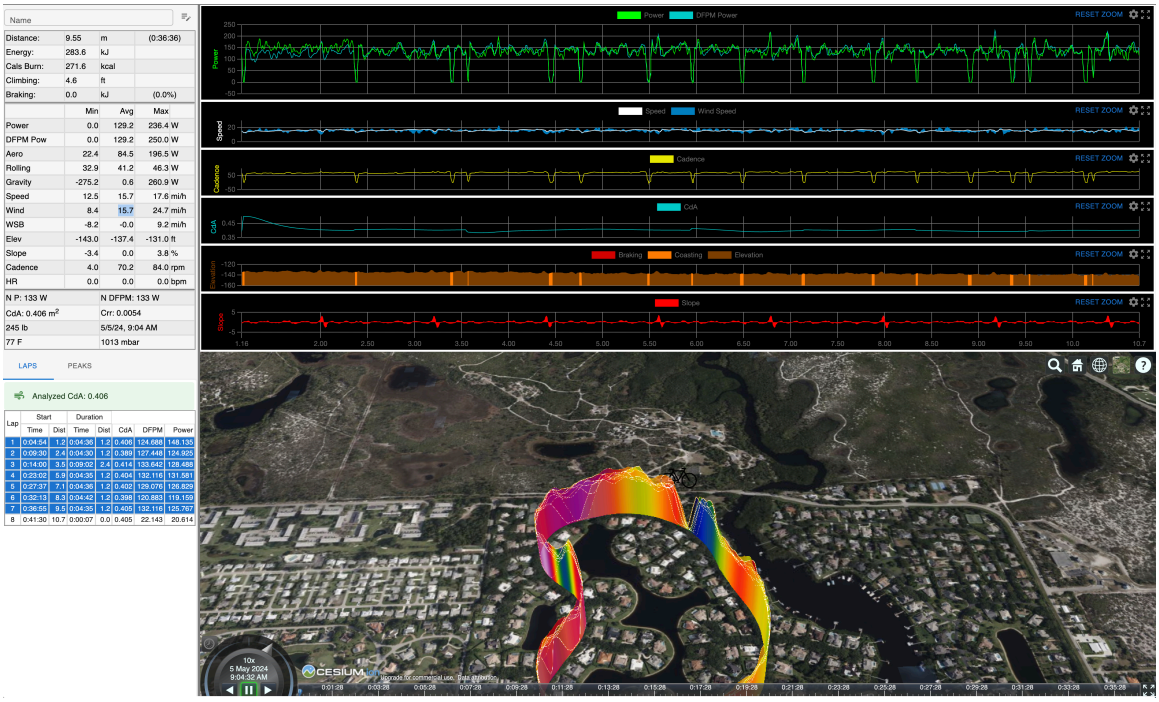
Velocomp Aero Usage Guide

AeroPod® CdA and Power Meter
PowerPod® Power Meter

July 2024



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INTRODUCTION

Velocomp Aero (VA) software is completely new as of May 2024, written with special attention to simplifying installation of the Mac version of software, and also for taking full advantage of the many capabilities of AeroPod.

Though most of the new features of VA relate to AeroPod, VA will also work just fine with PowerPod and Newton ("Device") ride data. If you're a PowerPod or Newton user, we suggest you download and try VA. We think you'll like it!

HOW TO USE THIS GUIDE

VA has been specially designed to have a look and feel similar to Velocomp's Isaac software. If you've been an Isaac user, you should find VA very familiar and easy to use!

Because Isaac and Velocomp Aero are similar, *this guide details* ***only the places where VA is significantly different from Isaac***. For example, in Isaac, to get data stats for a section of the ride, you click on the graph, then drag-drop across the graph. In VA, you click on the graph, **hold down the CONTROL button**, then drag-drop across the graph.

For places where there are differences between Isaac and Velocomp Aero, we will highlight that difference with underlined, large, bold lettering.

NOTE: IF YOU'RE LOOKING FOR INFORMATION ABOUT A PARTICULAR VA FEATURE OR COMMAND AND YOU DON'T FIND IT IN THIS GUIDE, PLEASE CONSULT THE "DETAILED INSTRUCTIONS FOR ISAAC" AVAILABLE HERE:

https://velocompforum.com/viewtopic.php?f=12&t=5327

COMPUTER SYSTEM REQUIREMENTS

Macintosh:

Intel Mac or M1/M2/M3 Mac
Mac OSX 10.4 or higher

Windows:

Windows 10 or 11

HOW TO INSTALL VELOCOMP AERO (VA) SOFTWARE

Windows (Windows 10 and 11)

VA is not compatible with any version of Windows prior to Windows 10

Velocomp Aero Software for Windows

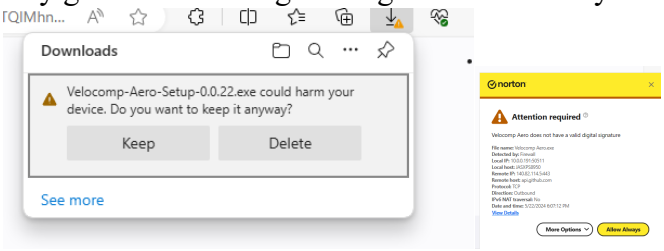
1) Download these two files: "Velocomp-Aero-Setup.exe" file, and "CP210x_ Universal_Windows_Driver.zip" driver, available here:

VA Aero Setup.exe:
https://github.com/velocomp-llc/AeroReleases/releases/latest/download/Velocomp-Aero-Setup.exe

SiLabs drivers for Windows, available here:
http://www.velocompforum.com/viewtopic.php?f=106&t=6030

Place both files on your desktop.

2) Install the VA software by double clicking on the ".exe" file. During installation you may get some warning messages like these: if you do, just keep accepting



3). IF YOU ALREADY HAVE A WORKING VERSION OF ISAAC/WIN ON YOUR WINDOWS 10 OR 11 PC, SKIP TO STEP 5.

4) Unzip the "CP210x_Universal_Windows_Driver". Open its folder. Find and RIGHT-CLICK the file that says "silabser.inf". Select "Install" to begin the install process. If you encounter difficulty with the driver install, go here for corrective instructions: https://velocompforum.com/viewtopic.php?f=93&t=6037

5) Plug in your USB cable to your PC. Connect the other end of the cable to your Device, and **make sure your Device is turned on.**
6) Launch VA software. You should see a familiar home screen, and a green (connected) or cyan (firmware update available) box around the USB Icon.

Your "Velocomp Aero for Windows" software installation is now complete.

Software Installation: Mac OSX

1) Download these two files: “Velocomp-Aero-1.0-universal.dmg” file, and “SiLabsUSBDriverDisk.dmg” file, available here:

Velocomp Aero 1.0 universal.dmg:
https://github.com/velocomp-llc/AeroReleases/releases/latest/download/Velocomp-Aero-universal.dmg

SiLabsUSBDriverDisk.dmg.zip, available here:
http://www.velocompforum.com/viewtopic.php?f=106&t=6031

Place both files on your desktop.

2) Double click on the “.dmg” file. You will see this:

3) Drag-drop the Velocomp Aero icon into the Applications Icon. VA is now installed in your applications folder

4) IF YOU ALREADY HAVE A WORKING VERSION OF ISAAC/MAC ON YOUR MAC, SKIP TO STEP 7.

5) Double click on the “SiLabs…dmg.zip” file, then double click on the .dmg file. Open its folder. You will see this:

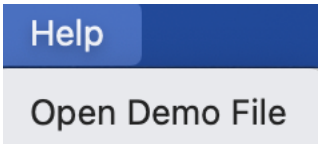
6) Double-click on the “Install CP210x VCP Driver” icon, and follow the installation steps

7) Plug in your USB cable to your Mac. Connect the other end of the cable to your Device, and **make sure your Device is turned on.**
8) Launch VA software. You should see a familiar home screen, and a green (connected) or cyan (firmware update available) box around the USB Icon.

Your “Velocomp Aero for Mac” software installation is now complete

Using Velocomp Aero Software

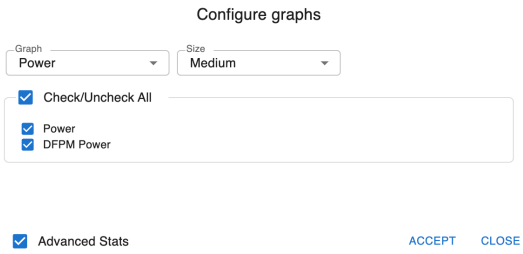
Open your VA software. A demo ride file has been pre-loaded into your software, available here:



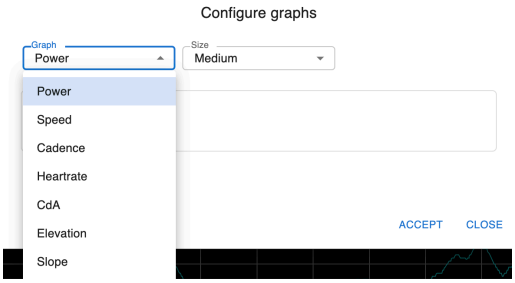
For these instructions we will use the demo ride file as a reference:

How to change/adjust graphs

Click the gear  icon at the top right of any graph. You'll see a window like this:



To change what is displayed in the graph you select, click the "Graph" button, and select the parameter you want to graph. You can also select the size of the graph



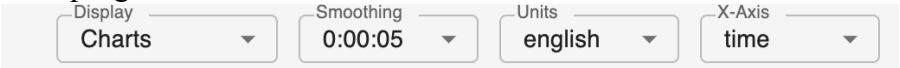
Click "Accept" and the screen will refresh. Try clicking some of the buttons to see what happens.

New to Velocomp Aero: If you have an AeroPod, VA can display both your heart rate (HR) and CdA data as separate graphs.

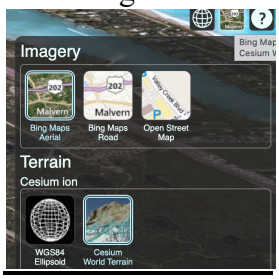
For each graph you will see above it an itemized list of the graph's contents. To view your selected graph with some of its data missing, click on the item name you would like to hide. A line will appear though the item's name and its graph will be hidden. To restore the "missing" data, click on the item's name again.

Viewing graphs with maps:

1) You can display charts alone, or charts with maps (requires GPS data); view your ride according to time or distance; adjust the filtering time of the data displayed; or change from English to Metric units, by using the drop down "Display" item at the top right of the main window.



2) After selecting a display option with maps, you can change map appearance. In the upper right corner of the window, click on the globe  icon, then select it or the  icon to switch between 2D or 3D view, and click on the icon just to the right of the above icon to select map type.

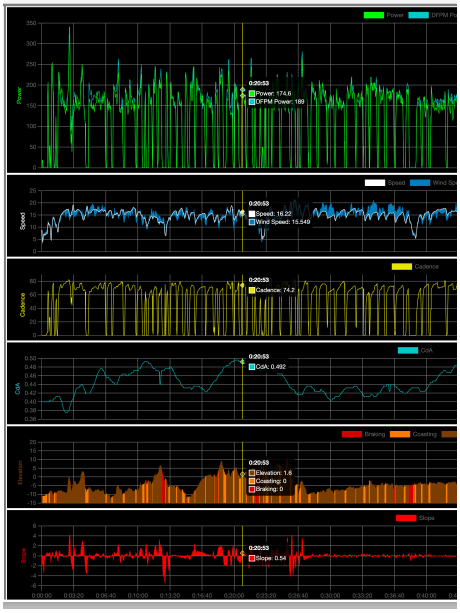


Advanced Stats

To see the most detailed level of ride information, right-click on the Stats box (top left portion of the main window) and select “Advanced Stats”.

Second-by-second ride data

To see your ride data for any point of the ride, click in the graph at the place you want to review your data. At the point marked by the yellow line you see power, speed, wind, elevation, CdA, slope, HR, cadence data *next to each corresponding graph:*



Analyzing a section of your ride

VA software can analyze data from any section of a ride. For example, suppose you want to get your stats for the hill climb that occurs from mile 3.7 to mile 4.3. Click anywhere on the graph at the 3.7 mile point. Then **HOLD THE CONTROL BUTTON**, and next click and drag to the end section you're analyzing in detail (4.3 miles). The section you're analyzing in detail will expand out to the entire graph, and the stats *for this section only* will be shown on the left:

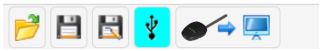
To return to the entire ride, click the 

button at the top right of the graph.

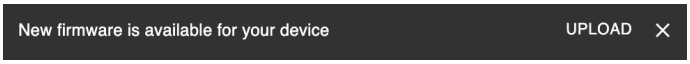
Firmware and Software Updates

Firmware update

When you connect your device to VA, the software will automatically check to see if a firmware update is available for your device. If a FW update is available the USB icon will turn from green to cyan in color,



and a message will appear in the bottom right corner. Click "UPLOAD" to update your firmware.

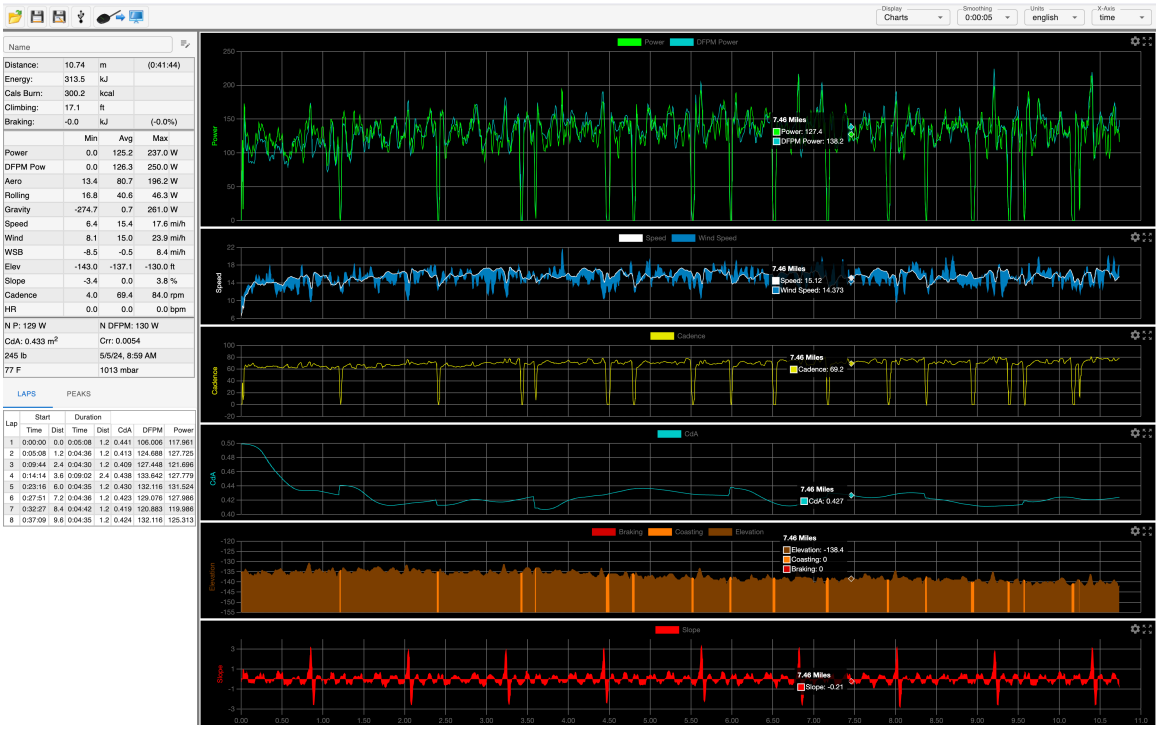


Software update

If a new version of VA becomes available you will receive a notification. The software will automatically upload.

CdA Display and Analysis

A lot of work has been done in the CdA area of Velocomp Aero, so if you're an AeroPod user please take a bit of time to review this section. You'll be glad you did!



New to Velocomp Aero: CdA graph

In the image above you'll see your CdA data, displayed to the nearest 0.001, as a graph in cyan color. To the left of the graph you'll see stats for each of the individual laps.

Using Velocomp Aero to analyze profile 4 CdA lap test results ("Analyzed CdA")

During your outdoor testing you may have noticed on the AeroPod2.0 ConnectIQ app that CdA test numbers from individual lap tests can vary somewhat. This variance is normal (CdA is a very sensitive measurement); in fact, this natural variance is the reason that multiple lap tests are conducted. Multiple lap tests allow the variance to be minimized, allowing for high accuracy and consistent measurement of CdA.

The new Velocomp Aero app reads the raw sensor data from your AeroPod tests, then automatically analyzes your selected laps *together* to give you a high-accuracy, high-consistency measurement of CdA based on the results of *all* of your individual lap tests.

QUICK SUMMARY OF "ANALYZED CDA" INSTRUCTIONS

1) Open in Velocomp Aero (VA) the profile 4 ride file you want to analyze
2) In the Lap box to the left of the main graph, select the full laps from your multiple tests (they will then be highlighted in blue)
3) Above the lap stats you'll see the "Analyzed CdA" value for the laps selected. Click the APPLY button to apply the corrections to the file.

DETAILED "ANALYZED CDA" INSTRUCTIONS WITH EXAMPLE

We will use the demo ride file to illustrate in detail how the VA "Analyzed CdA" process works:

1) Download/open in VA the ride file with the test you want to analyze; we are using the "Demo" ride file in this example
2) To the left of the graph you will see the laps of your test ride. In demo ride example there were 8 total closed-loop laps, with the Garmin "lap" button being pressed at the end of each closed-loop lap;

Lap	Start		Duration				
	Time	Dist	Time	Dist	CdA	DFPM	Power
1	0:00:00	0.0	0:05:08	1.2	0.441	106.006	117.961
2	0:05:08	1.2	0:04:36	1.2	0.413	124.688	127.725
3	0:09:44	2.4	0:04:30	1.2	0.409	127.448	121.696
4	0:14:14	3.6	0:09:02	2.4	0.438	133.642	127.779
5	0:23:16	6.0	0:04:35	1.2	0.430	132.116	131.524
6	0:27:51	7.2	0:04:36	1.2	0.423	129.076	127.986
7	0:32:27	8.4	0:04:42	1.2	0.419	120.883	119.986
8	0:37:09	9.6	0:04:35	1.2	0.424	132.116	125.313

3) Above the lap stat box is another box with the overall results from the tests. *Note that the average wind speed for the entire test (blue: 15.0 mph) is lower than the average bike speed for the test (15.4 mph). Also note that the uncorrected CdA value of these test results is CdA = 0.433*

	Min	Avg	Max	
Power	0.0	125.2	237.0	W
DFPM Pow	0.0	126.3	250.0	W
Aero	13.4	80.7	196.2	W
Rolling	16.8	40.6	46.3	W
Gravity	-274.7	0.7	261.0	W
Speed	6.4	15.4	17.6	mi/h
Wind	8.1	15.0	23.9	mi/h
WSB	-8.5	-0.5	8.4	mi/h
Elev	-143.0	-137.1	-130.0	ft
Slope	-3.4	0.0	3.8	%
Cadence	4.0	69.4	84.0	rpm
HR	0.0	0.0	0.0	bpm

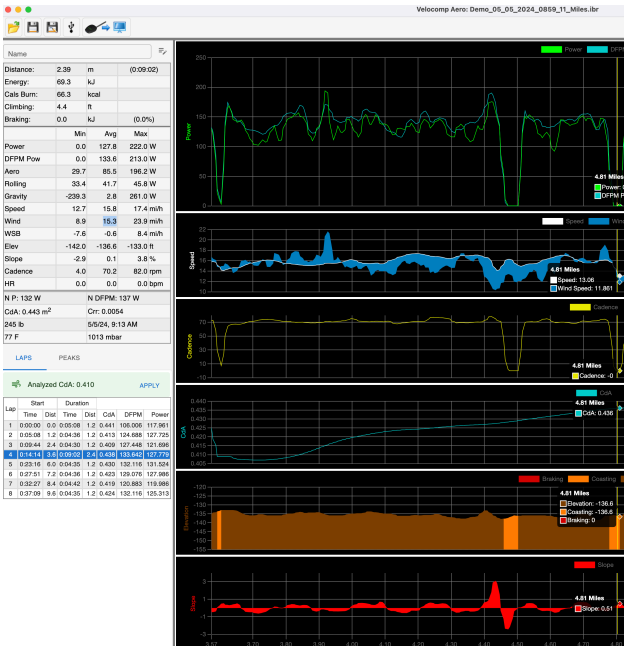
N P: 129 W	N DFPM: 130 W
CdA: 0.433 m^2	Crr: 0.0054
245 lb	5/5/24, 8:59 AM
77 F	1013 mbar

→

	Min	Avg	Max	
Power	0.0	125.2	237.0	W
DFPM Pow	0.0	126.3	250.0	W
Aero	13.4	80.7	196.2	W
Rolling	16.8	40.6	46.3	W
Gravity	-274.7	0.7	261.0	W
Speed	6.4	15.4	17.6	mi/h
Wind	8.1	15.0	23.9	mi/h
WSB	-8.5	-0.5	8.4	mi/h
Elev	-143.0	-137.1	-130.0	ft
Slope	-3.4	0.0	3.8	%
Cadence	4.0	69.4	84.0	rpm
HR	0.0	0.0	0.0	bpm

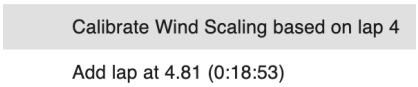
N P: 129 W	N DFPM: 130 W
CdA: 0.433 m^2	Crr: 0.0054
245 lb	5/5/24, 8:59 AM
77 F	1013 mbar

4) Because this was a closed loop profile 4 test, a “perfect” calibration of the AeroPod wind sensor would show an average wind speed of 15.4 mph (equal to the bike speed), higher than the measured 15.0 mph. Thus, and because the wind as reported is lower than bike speed, this causes the reported, uncorrected CdA to be higher than “perfect”.
5) Note that laps 1-3, and 5-8 each have a distance of 1.2 miles (lap 4 has a length of 2.4 miles, or two complete laps).
6) (We can “fix” lap 4 by manually adding a lap marker at mile 4.8, where the next lap began. To do this, click on lap 4, then click in the graph at mile 4.8, where the lap marker is to be inserted



With the split point correctly located, move the cursor over to the highlighted lap 4 stat,

and right click on it; you'll see a "context menu" appear, with the option to add a lap marker at the cursor.

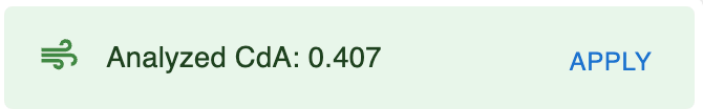


Click on the lap marker, and the new lap will be created starting at mile 4.81

7) Click on lap 1, the first closed lap of 1.2 miles length. It will be highlighted in blue:

Lap	Start		Duration				
	Time	Dist	Time	Dist	CdA	DFPM	Power
1	0:00:00	0.0	0:05:08	1.2	0.441	106.006	117.961
2	0:05:08	1.2	0:04:36	1.2	0.413	124.688	127.725
3	0:09:44	2.4	0:04:30	1.2	0.409	127.448	121.696
4	0:14:14	3.6	0:09:02	2.4	0.438	133.642	127.779
5	0:23:16	6.0	0:04:35	1.2	0.430	132.116	131.524
6	0:27:51	7.2	0:04:36	1.2	0.423	129.076	127.986
7	0:32:27	8.4	0:04:42	1.2	0.419	120.883	119.986
8	0:37:09	9.6	0:04:35	1.2	0.424	132.116	125.313

8) *Hold down the "shift" button on your keyboard, then click on lap 8*, the final closed-loop lap of the test. Laps 1-8 will be highlighted:



Lap	Start		Duration				
	Time	Dist	Time	Dist	CdA	DFPM	Power
1	0:00:00	0.0	0:05:08	1.2	0.441	106.006	117.961
2	0:05:08	1.2	0:04:36	1.2	0.413	124.688	127.725
3	0:09:44	2.4	0:04:30	1.2	0.409	127.448	121.696
4	0:14:14	3.6	0:09:02	2.4	0.438	133.642	127.779
5	0:23:16	6.0	0:04:35	1.2	0.430	132.116	131.524
6	0:27:51	7.2	0:04:36	1.2	0.423	129.076	127.986
7	0:32:27	8.4	0:04:42	1.2	0.419	120.883	119.986
8	0:37:09	9.6	0:04:35	1.2	0.424	132.116	125.313

9) Notice that, above the lap stats box, a message appears saying "Analyzed CdA:

0.407 APPLY". **0.407 is the total Analyzed CdA result for all 8 lap tests**. What is corrected when the APPLY button is clicked? *Wind speed is corrected so that average wind speed is the same as average bike speed*. Note that CdA drops down from its uncorrected value of 0.433 to its final, corrected value of 0.407

Analyzed CdA: 0.407

Lap	Start		Duration				
	Time	Dist	Time	Dist	CdA	DFPM	Power
1	0:00:00	0.0	0:05:08	1.2	0.499	106.006	121.720
2	0:05:08	1.2	0:04:36	1.2	0.406	124.688	147.311
3	0:09:44	2.4	0:04:30	1.2	0.389	127.448	124.751
4	0:14:14	3.6	0:09:02	2.4	0.414	133.642	128.440
5	0:23:16	6.0	0:04:35	1.2	0.404	132.116	131.575
6	0:27:51	7.2	0:04:36	1.2	0.402	129.076	126.828
7	0:32:27	8.4	0:04:42	1.2	0.399	120.883	119.159
8	0:37:09	9.6	0:04:35	1.2	0.403	132.116	125.767

CdA→

	Min	Avg	Max	
Power	0.0	128.1	236.4	W
DFPM Pow	0.0	126.3	250.0	W
Aero	14.2	81.9	196.4	W
Rolling	16.8	40.6	46.3	W
Gravity	-275.2	0.7	260.9	W
Speed	6.4	15.4	17.6	mi/h
Wind	8.3	15.5	24.7	mi/h
WSB	-8.3	-0.0	9.2	mi/h
Elev	-143.0	-137.1	-130.0	ft
Slope	-3.4	0.0	3.8	%
Cadence	4.0	69.4	84.0	rpm
HR	0.0	0.0	0.0	bpm

N P: 132 W	N DFPM: 130 W
CdA: 0.407 m^2	Crr: 0.0054
245 lb	5/5/24, 8:59 AM
77 F	1013 mbar

OTHER RESOURCES

VELOCOMP FORUM

There are tens of thousands of AeroPod, PowerPod and Newton owners, and here's a great place to meet some of them and get your questions answered:

www.velocompforum.com

Sign on as a member so you can learn more about Velocomp Aero software, and make sure to contribute your knowledge too!

Or, go to our Facebook page: https://www.facebook.com/RideVelocomp/

TECHNICAL SUPPORT

If you have questions regarding the operation of your Velocomp Aero software that can't be answered from the help documents and links, please email us at:

technicalsupport@velocomp.com

We will get back to you quickly.