ISAAC^{TM} Software Instruction Manual Version 5.x

AeroPod® CdA and Power Meter
PowerPod® Power Meter
Newton® Power Cycling Computer

May 2020

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INTRODUCTION

Isaac software contains many powerful features that make it even easier to and more fun to work with your AeroPod, PowerPod or Newton ("Device") ride data. Throughout these instructions, you'll learn about the many major enhancements incorporated into Isaac software.

Isaac works both with Macs and PCs. Where there are differences between Mac and Windows versions (such as software installation) we'll provide directions for both.

In these instructions we'll use screen shots from both the Mac and Windows version of the Isaac software application. Don't worry: no matter which version of Isaac software you use, you will see EXACTLY the same words and actions in either version.

Throughout this manual we assume you have basic familiarity your PC or Mac, including operations such as installing software and drivers, creating folders, and selecting and saving files.

This manual is intended to provide detailed information regarding all the commands available with Isaac software. We know the manual is long, but there are a lot of features to cover!

HOW TO USE THIS MANUAL

This manual goes through each command of the Isaac software menu, from left to right. As an example, if you want to learn how to use the "Device/Setup/Set Date and Time…" command,
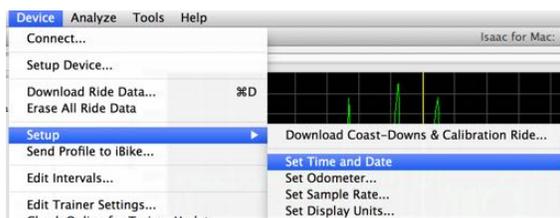
look in the table of contents for "Device menu items: how to use". The "Set Date and Time" command is in this section, somewhere between page 39 and 62 (it's on page 47) ☺

SPECIAL NOTE

Isaac uses the word "Device" to refer to AeroPod, PowerPod and Newton. When you see the word "Device", the command works the same for all products.

LANGUAGES

Isaac software is supported in English, Italian, French, German and Spanish. To set the language, go to View/Language ->
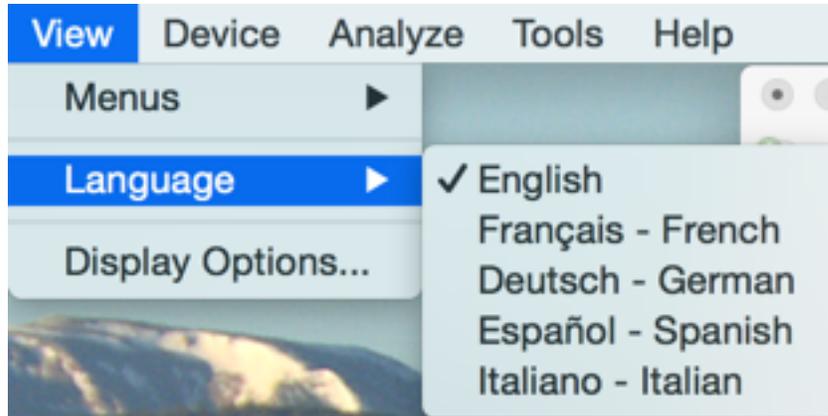
COMPUTER SYSTEM REQUIREMENTS

Macintosh:

Intel Mac
Mac OSX 10.4 or higher
128MB RAM memory

Windows:

Windows 7, 8, 10
128MB RAM memory

Isaac 4.1+ is not compatible with Windows XP or older

Isaac Software Release Notes

Isaac is updated periodically to add new features and to fix bugs. Changes are documented in "Isaac Release Notes"

To obtain the latest release notes for your Isaac software, after installing the software launch the software and go to Help/Release notes:
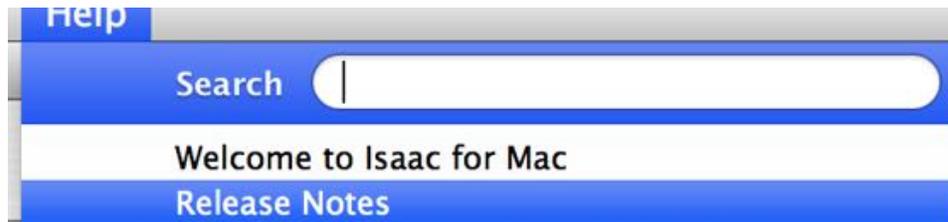
HOW TO INSTALL ISAAC SOFTWARE

Windows (Windows 7, 8 and 10)

DO NOT PLUG IN YOUR USB ADAPTER UNTIL INSTRUCTED TO DO SO.

1) Download the latest version of Isaac for Windows software here:

https://velocomp.com/isaac-software-installation/

2) Install the Isaac software

3) 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.**

A series of messages will appear telling you that your USB drivers have been installed successfully.

Once your Isaac software is installed (and USB drivers, if necessary), click on the Start button. You'll see the Isaac for Windows icon in your menu:
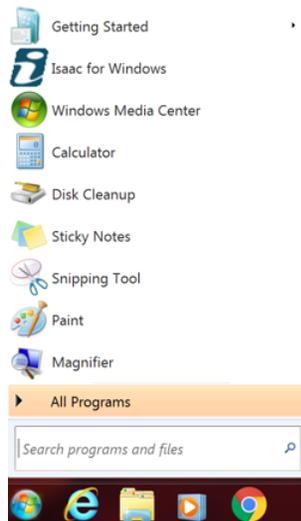
Launch Isaac software.

You can check your version with the "Help/About Isaac for Windows" command:

Your Isaac for Windows software installation is now complete.
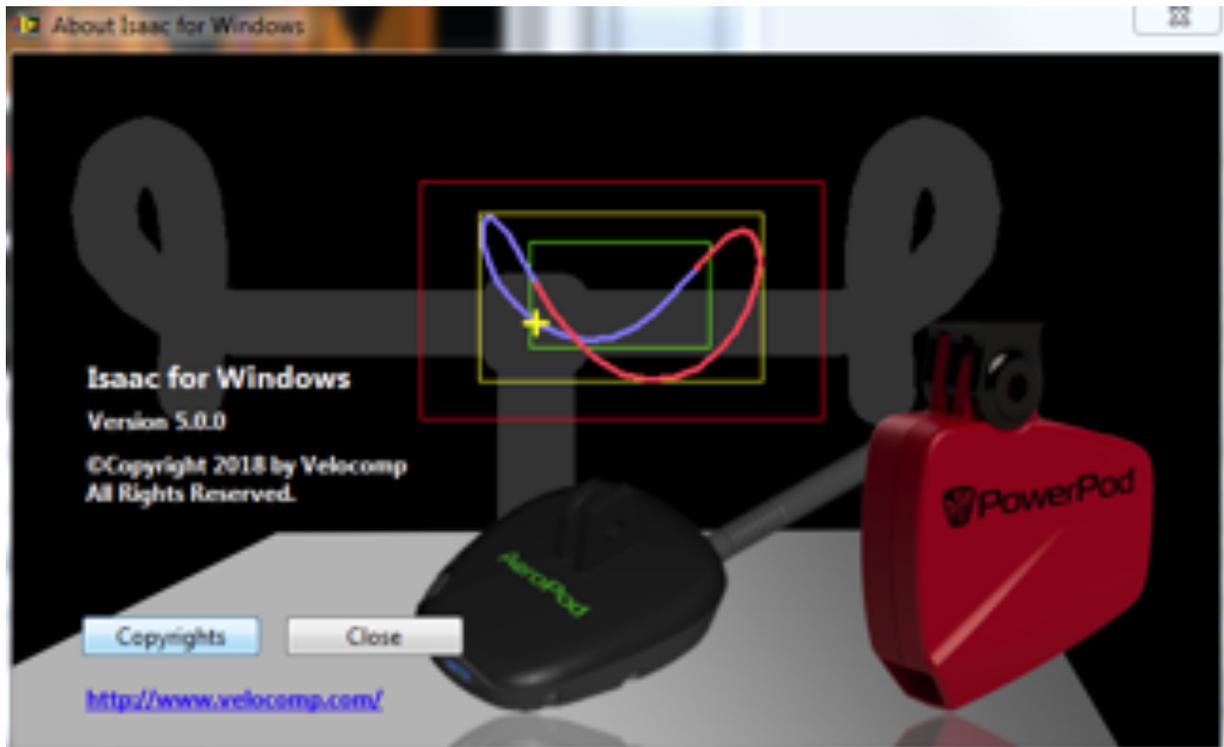
Software Installation: Mac OSX

The latest version of installation instructions for Isaac software for Mac may be found here:

https://velocompforum.com/viewtopic.php?f=35&t=5318

CONNECTING YOUR DEVICE TO YOUR COMPUTER

Connect the USB cable to your Device. Make sure your device is turned on (Newton: characters appear on the LCD screen; AeroPod or PowerPod: status light flashes). Connect the other end of the cable to a USB port in your computer.

HOW TO OBTAIN YOUR DEVICE SERIAL NUMBER

NOTE: IN ALL OF THE INSTRUCTIONS THAT FOLLOW, IT IS ASSUMED THAT YOU HAVE SUCCESSFULLY SET UP YOUR ISAAC SOFTWARE, THAT YOU HAVE SUCCESSFULLY ESTABLISHED COMMUNICATIONS BETWEEN YOUR COMPUTER AND DEVICE, THAT YOU HAVE CONNECTED YOUR DEVICE TO YOUR USB CABLE, THAT YOUR USB CABLE IS PLUGGED INTO YOUR COMPUTER, AND THAT YOU HAVE LAUNCHED THE ISAAC SOFTWARE

To obtain your device serial number do the following:

1) Launch the Isaac software
2) In the menu at the top go to:
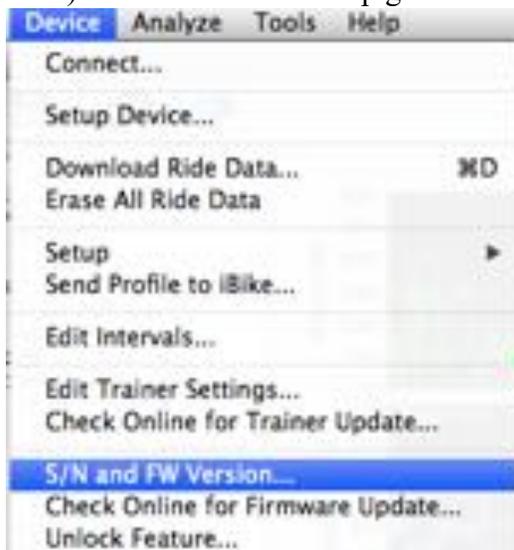
Your serial number and your firmware version will be read from your device's memory. You can copy and paste your serial number to other applications.

USING ISAAC SOFTWARE

VIEWING RIDE FILES

Open your Isaac software. A sample ride file has been pre-loaded into your software so you can become familiar with the operation of Isaac software. Or, you can view the sample ride file at any time from "Help/Open Sample Ride File"

When you open your Isaac software for the first time you will see the following screen that contains a sample ride:
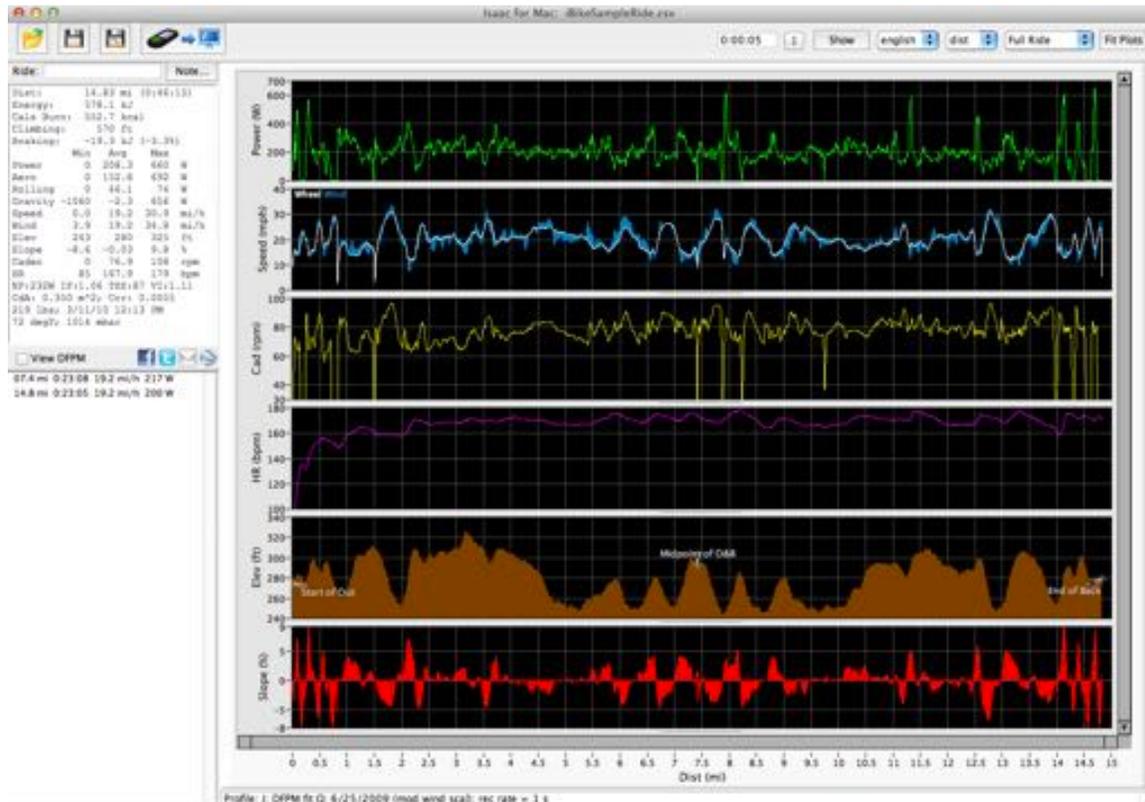
Click the "Show" button at the top right. You'll see this window:
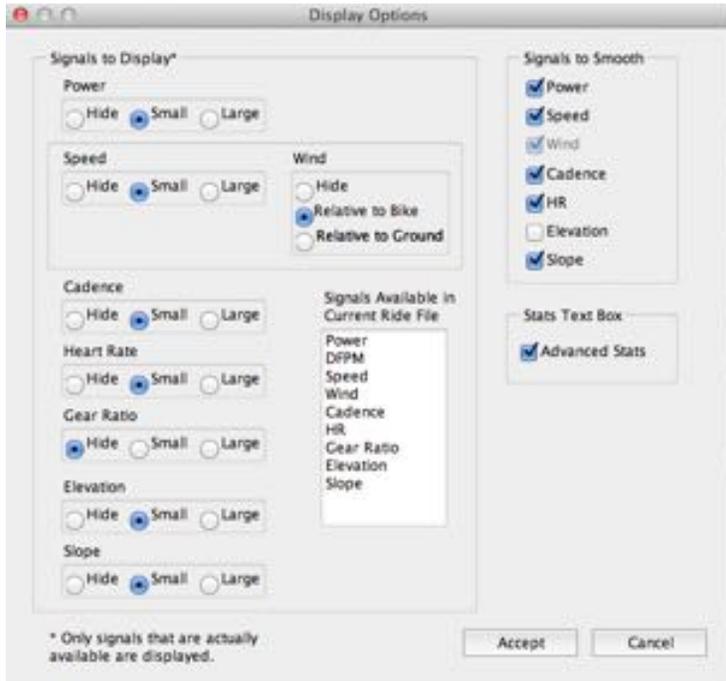
You can show, hide, expand, or shrink power, speed, wind, cadence, heart rate, elevation, and slope data with the radio buttons. Click "Accept" and the screen will refresh. Try clicking some of the buttons to see what happens.

If you uncheck the "Advanced Stats" box you'll see icon summaries of your ride stats in the top left corner of your main window:

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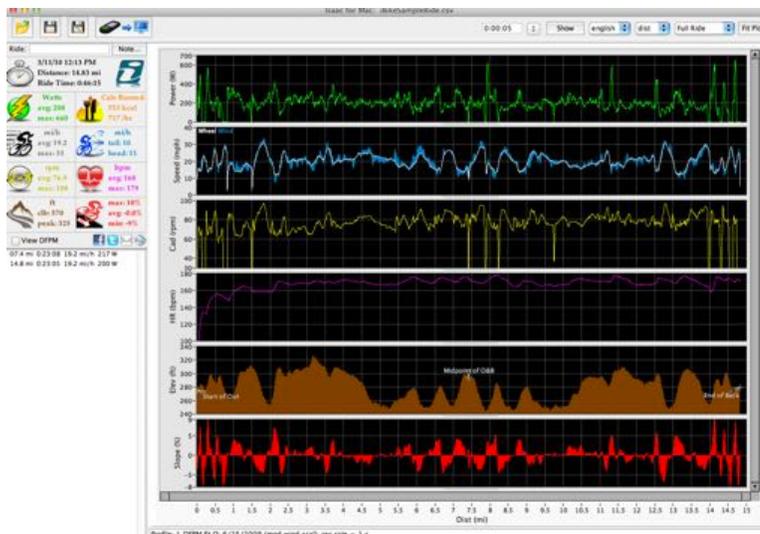
Another way to select between icon stats and advanced stats is to place your cursor over the stats window, then right-click.

Other features available from the main window:

1) You can change units, view your ride according to time or distance, adjust the filtering time of the data displayed, or expand the scale of your ride by using the drop down menus at the top right of the main window.
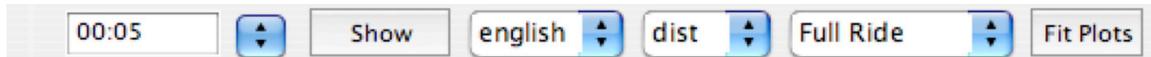
2) Going from left to right, the first 3 icons "open", "save", and "save as" ride files. Next is a USB symbol; when your device is connected to Isaac, a green box surrounds the USB symbol. To its right is the "download" button. Finally to view PowerStroke data, click the PStroke button.
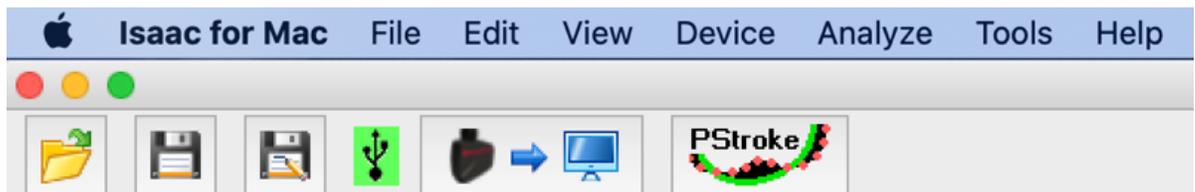
3) Just beneath the open, save, and download ride buttons is a line that extends across the window and separates the buttons from the graph below:
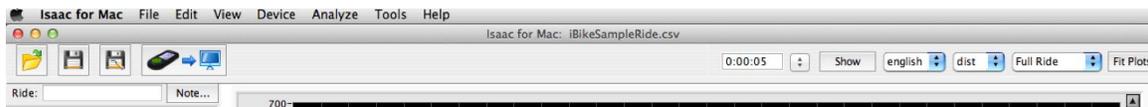
If you click on the line below the buttons the buttons will disappear:
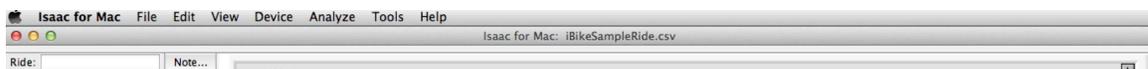
To make the buttons reappear *click again* on the line at the top of the window:
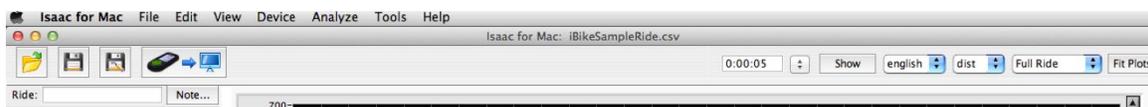
4) In the left portion of the window are your ride stats. You'll notice that this ride is given the name "iBike sample ride". If you want to call it something else simply type it in the box and then click the "Save As" icon. At the right of the ride name

is a button for Note…you can add a notation here and save it, or click on the button to read the note you created previously.

5) There are a great deal of data in the left portion of the screen that describes your ride stats.

NOTE: To see the most detailed level of information, check the "Advanced Stats" box in the Stats Text Box portion of the Display Options window.

ICON LINKS

To the left of the graphs are icons that give you quick links to popular activities, such as Facebook, Twitter, ride file email, and Google Earth (requires GE app to be installed on your computer).

Click the email icon to easily send your .ibr ride file to anyone you want!

NOTE: Google Earth icon will be "greyed out" if GPS data is not present in your ride file.

Most of the data is self-explanatory. You can see minimum, average, and max values for most of the key parameters of your ride.

Calories burned provides a very accurate measurement of your body's caloric effort. If you're trying to lose weight, this is a great number to track.

Climbing shows the total amount of vertical covered during the ride.

An exclusive feature of your Device is its ability to quantify the magnitude of power you expend to overcome various forces. In the example above total average power is 208.3 watts—any power meter can tell you that. However, your Device also tells you where your power went. In this example, 152.8W went to "aero"—fighting the wind. About 46.1W was consumed by rolling resistance. And gravity (hills) was about -2.3W (very close to zero)—meaning that, on average, the course was flat.

The next time you have a ride file with some hills, click-drag across one of your hills. You'll find that the "gravity" watts will be substantial, and that aero watts will be relatively minor. Also, you'll see the average slope of the hill in the ride stats window.

A unique (and fun) stat you'll see in Isaac software is "Braking". Isaac software can detect when you were braking during your ride.

Now, when you apply your bike's brakes you slow down and dissipate energy. From where did that dissipated energy come? From you! So, braking energy is wasted energy…

In this example ride the cyclist wasted 19.3KJ of energy because of applying the brakes; Isaac software computes that this is 3.3% of the total energy burned on the ride. The bigger the braking number, the more energy you're wasting on the brakes!

7) If you don't want to have this level of detailed information, uncheck the "Advanced Stats" box in the "Display Options" window that appears when the "Show" button is clicked, or right click while the mouse is hovered over the stats window.

8) To see your ride stats for any portion of the ride, simply click in the graph where you want to review your stats. At the point marked by the yellow line you see power, speed, wind, elevation, slope, HR, cadence data *at the very bottom of the window*:
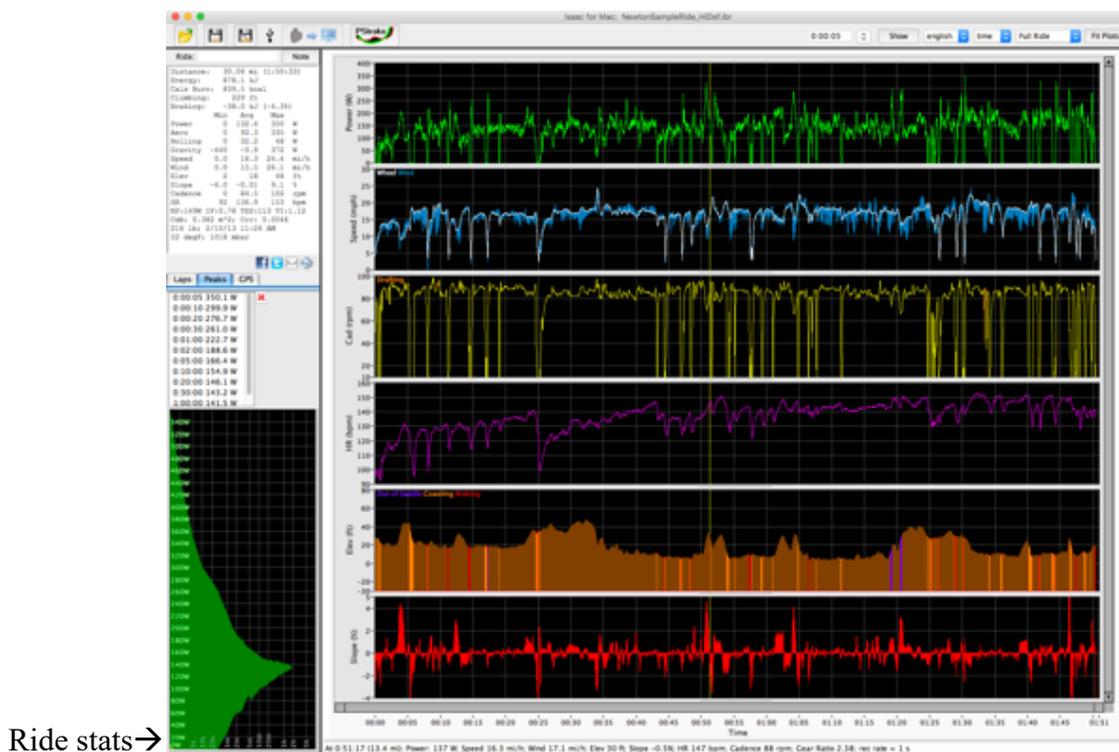
Ride stats→

9) Isaac 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 5.4 to mile 6.4. Click anywhere on the graph at the point at the start of the hill. Then click and drag to the end of the hill. The section you're analyzing will be highlighted in blue and the stats *for this section only* will be shown on the left:
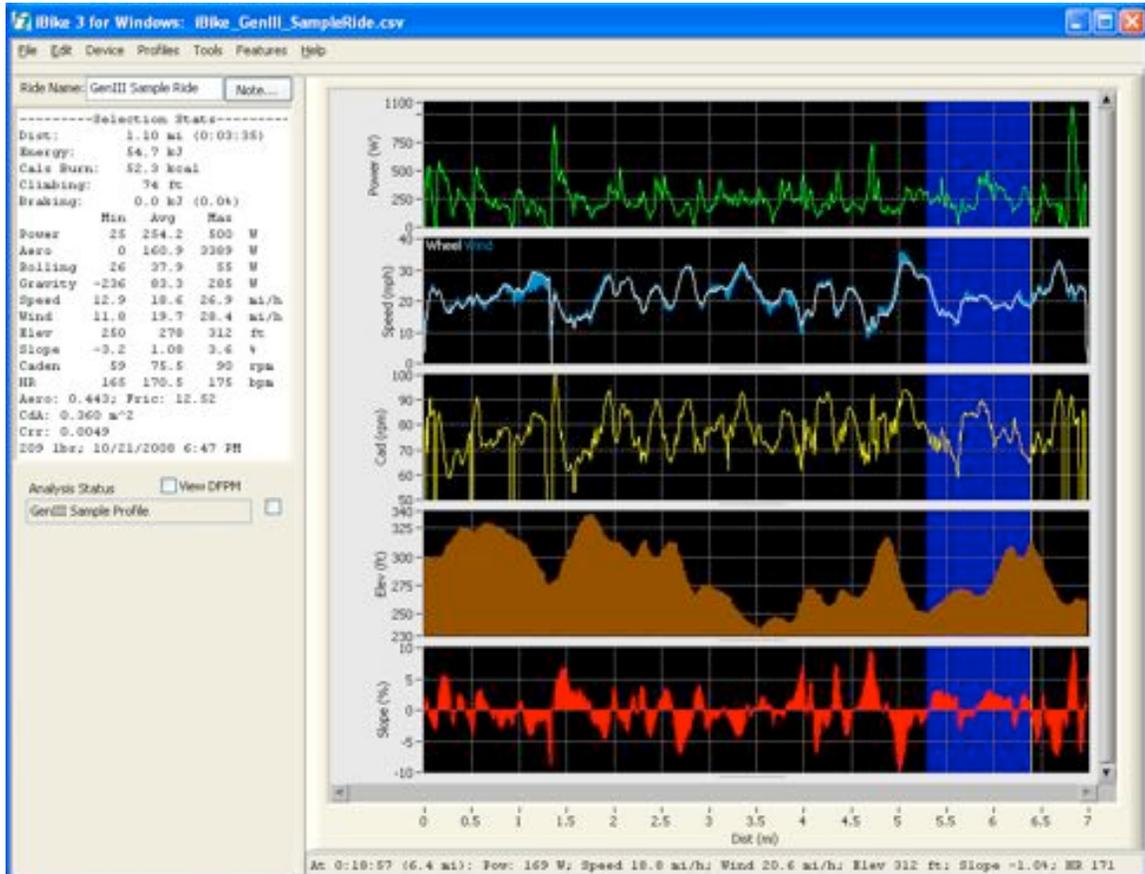
10) If you have a direct force power meter (DFPM) installed on your bike, at the bottom left of the window is a check box can be used to compare your Device results to your DFPM. We will describe this feature in a latter section.

Now, let's move on to other features of Isaac software.

ISAAC SOFTWARE MENU

These are the items available in the Isaac software screen (Mac or Windows).

We will explain the function of each item.
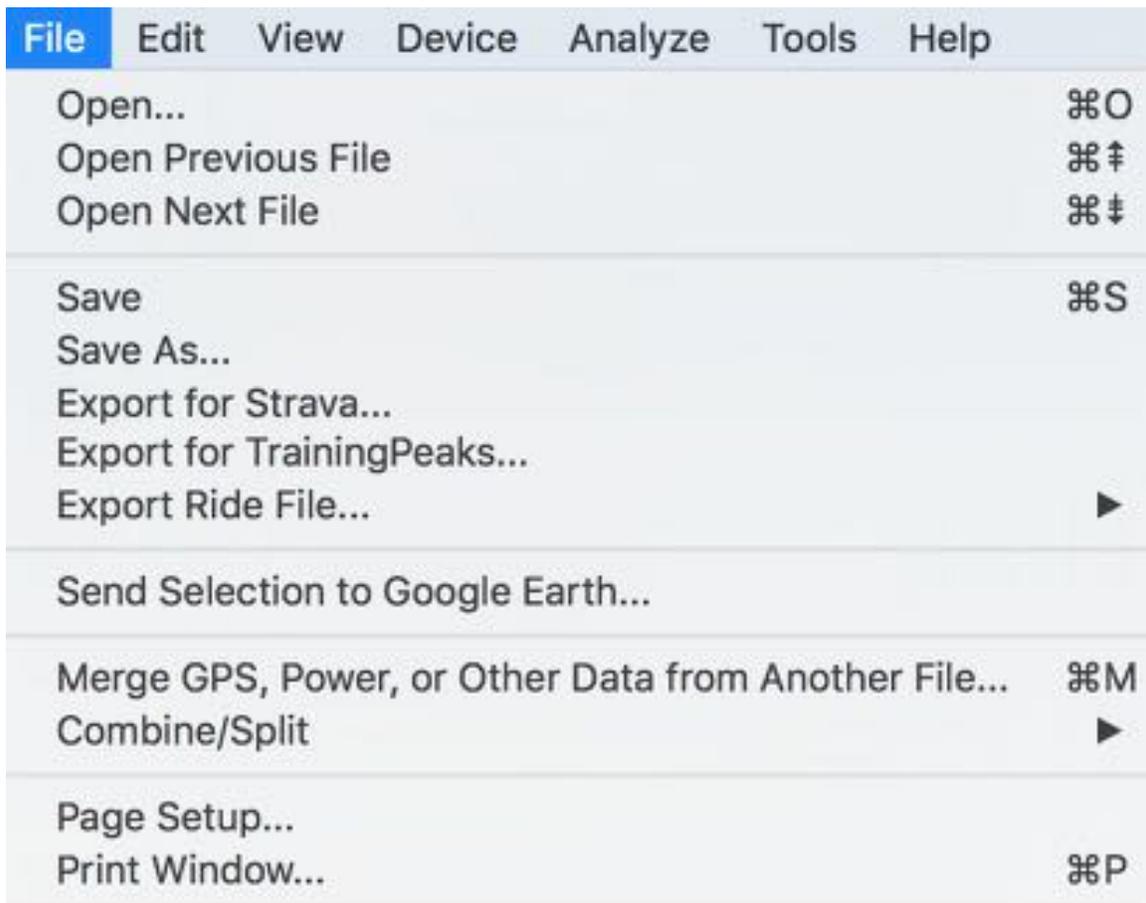
Here is the function of selected sub-items:

File/Open…

When this item is selected a pop-up window appears. Navigate to the file you wish to view and click the "Open" button to open the file in the main screen. Alternatively, you can click on the Folder icon that is above the stats window.

VIEWING BIKE ROUTES WITH ISAAC AND GOOGLE EARTH SOFTWARE

If you have the optional GPS Tracker feature installed on your Device, then you're in for an extra treat; you can view your bike route and overlay your device's data onto your route!

NOTE: WE RECOMMEND YOU INSTALL GOOGLE EARTH ON YOUR COMPUTER: WWW.EARTH.GOOGLE.COM

Open your ride file with Isaac. Notice that the Google Earth (GE) icon, in the left-center of the main window, is solid blue (the GE icon is to the right of the Facebook, Twitter, and email icons). When the GE icon is solid blue, this indicates that bike route information is available (the Google Earth icon is grey-blue when map information is not available)

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Click on the Google Earth icon, and your Google Earth app will launch automatically. A dialog box will confirm that you want to send the ride file to Google Earth.

In a few moments, your ride route will appear!
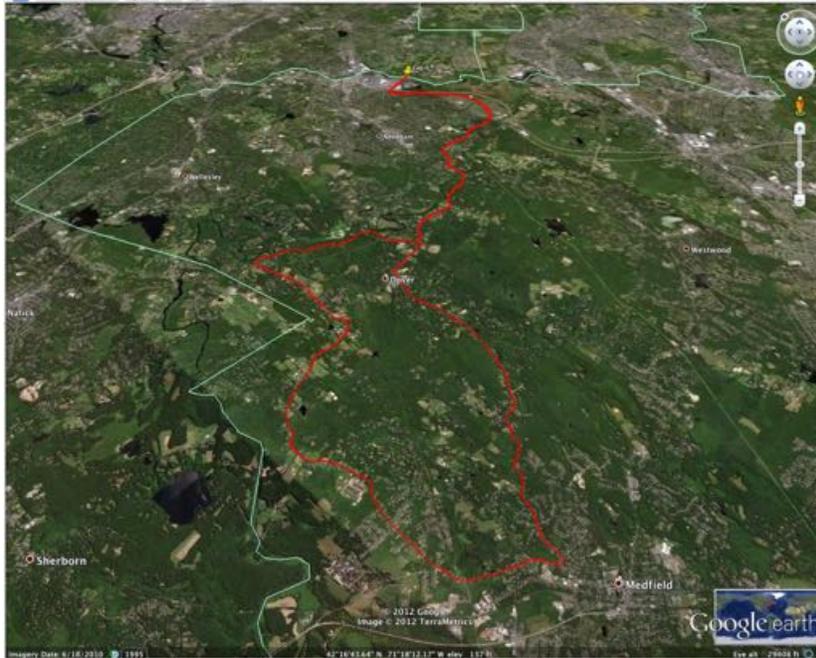
NOTE: THIS MANUAL DOES NOT PROVIDE INSTRUCTIONS ABOUT HOW TO INSTALL AND USE GOOGLE EARTH

File/Open Previous File/Open Next File: If your rides are stored in a folder, these two commands open the previous or next file stored in that folder

Export for Strava…

If you have GPS information recorded in your ride file, then you can export your ride file in a form that can be read by Strava.

Export for TrainingPeaks…

This command creates a csv file that can be imported into TrainingPeaks.

Export Ride File

This command allows you to export your files in csv (excel format readable by other software such as Microsoft Excel or WKO+) or GPX/TCX/PWX/KML formats, used by other websites.

Merge GPS, power, or Other Data from Another Device

If you have a ride file from a GPS bike computer device, and that bike computer records bike speed and GPS data in a suitable format (.tcx or .gpx format), then you can merge the ride information from your device into your ride file.

When you use this command, the Isaac software will ask you to select the file to be merged. Once the selection is made follow the prompts to complete the merging of the files.

You can merge data from compatible computer devices including PowerTap, SRM, CinQo, Garmin, and Polar, and .gpx files.

Combine/Split/Append Ride File

Suppose you have two ride files that you wish to join together. This might happen if you ride in a race, click the "Trip Reset" button at the beginning of the race, and then ride in the race. Or, you could have two files if your AeroPod/PowerPod went to sleep during a long rest break (20 minutes or more).

You can join two (or more) ride files together with this command.

Here's what to do:

1) Download the rides you want to join together. Make sure you keep track of which ride is the first one of the complete ride, the second, and so on
2) Use the Open command to open the first ride file of the complete ride.
3) Select the "File/Combine-Split/Append Device File…" command
4) A pop-window will appear. Navigate to the file you wish to append to the END of the file shown in your main window. Click "Accept" and the file will be joined. You will have the option to force the elevation of the joined files to be the same; generally, you will accept this option.
5) If you have yet another ride file to attach to the longer ride file just created, repeat steps 3) and 4)

Combine-Split/Split File at Cursor…

Suppose you have a ride file for a race includes ride data from your warm-up. You'd like to remove the warm-up data and focus only on the stats for the race. This command does the trick! Here's how to use it:

1) Open the ride file you'd like to split apart. Let's use the sample ride file:

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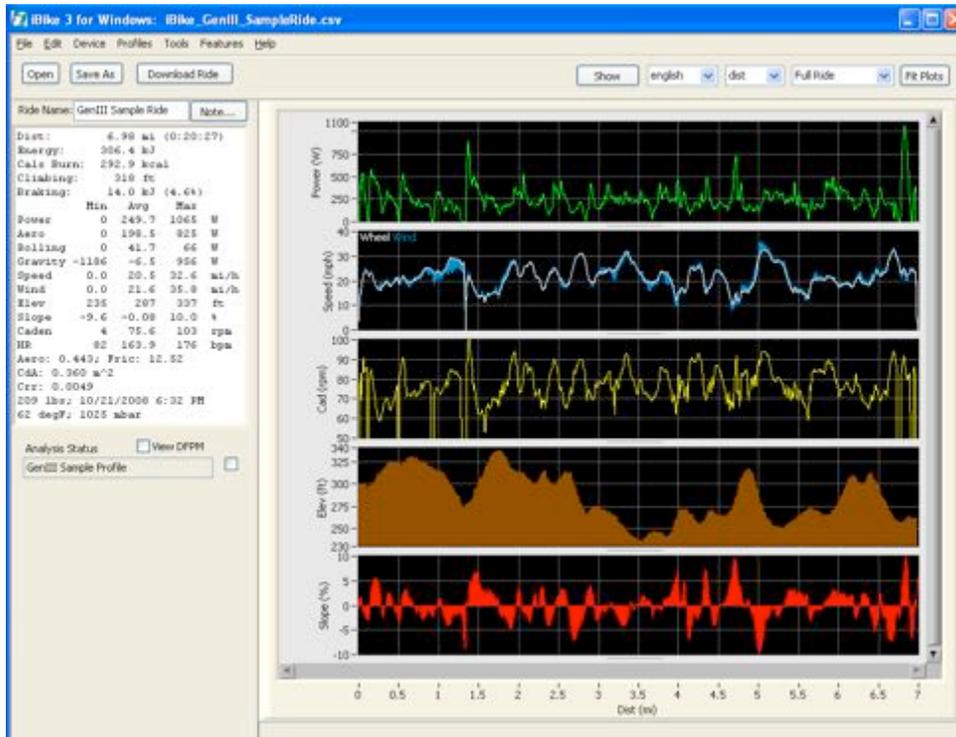
2) We're going to split the file at mile 3.5, where a hill climb begins. Click your cursor anywhere in the window, at mile 3.5. A yellow line will appear. The ride file will be split at the yellow line:
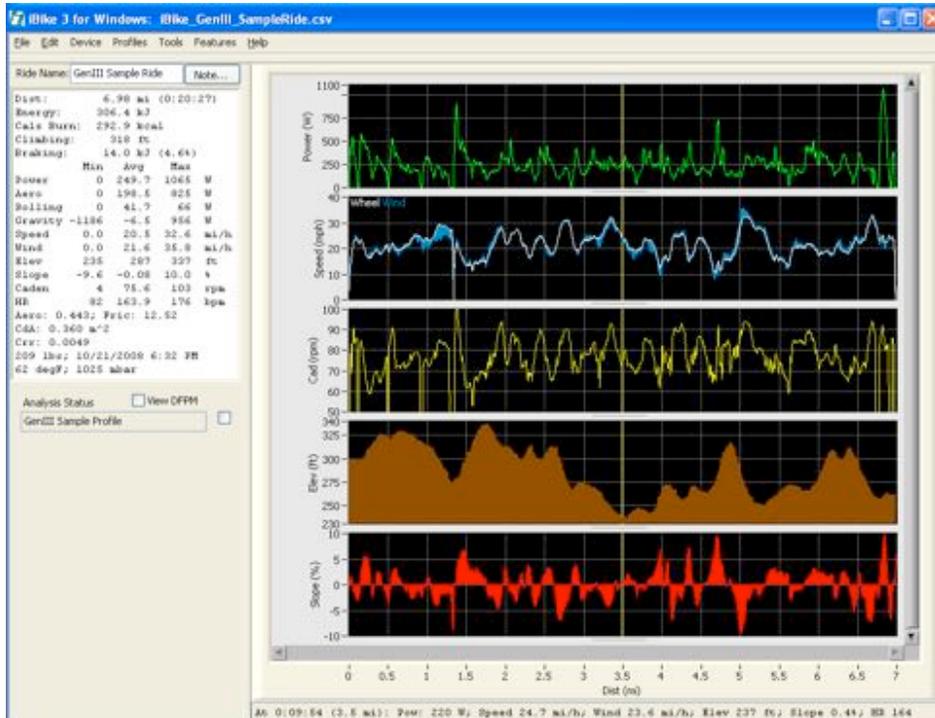
3) Select the File/Split File at Cursor…command. The following window will appear:

4) You will see displayed in the window details about the two files that will be formed by the split. The "First Part" file is for data to the LEFT of the cursor; the "Last Part" is for data to the RIGHT of the cursor. Use the check boxes to select the files you want to save. You can change the name of the saved file by typing changes in the white boxes below each ride file name. Click "OK" to complete the command.

EDIT MENU
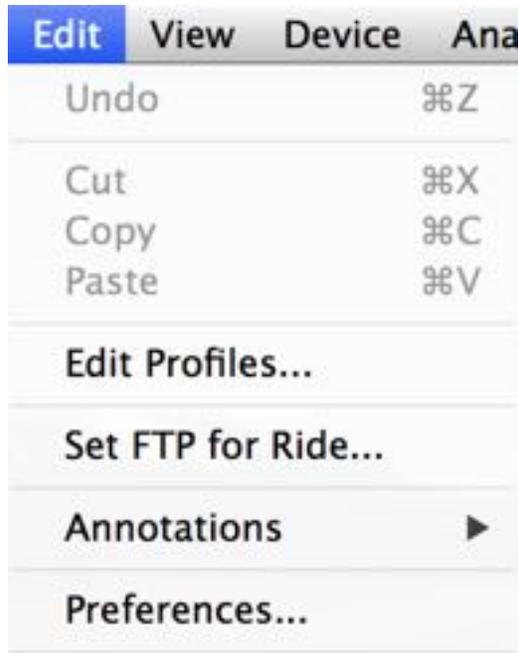
Edit Profiles…

Profiles are unique to you and your bike, and are the result of careful measurements (Bike Setup, Tilt Cal, Cal Ride). In general, profiles are not to be "tinkered" with. However, there are some situations where you might want to edit a profile:

1) You want to update the wireless ID information in your "old" profile
2) Your Crr is obviously wrong and you want to adjust it
3) You want to export and import profiles to other computers
4) You want to change the names of profiles

Editing profiles should be done judiciously; you did a LOT of hard work to get your original profile!

If you want to edit your profiles here's how to do it:

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Go to **Edit Profiles…**

You'll see the profiles you've created in a list on the left:
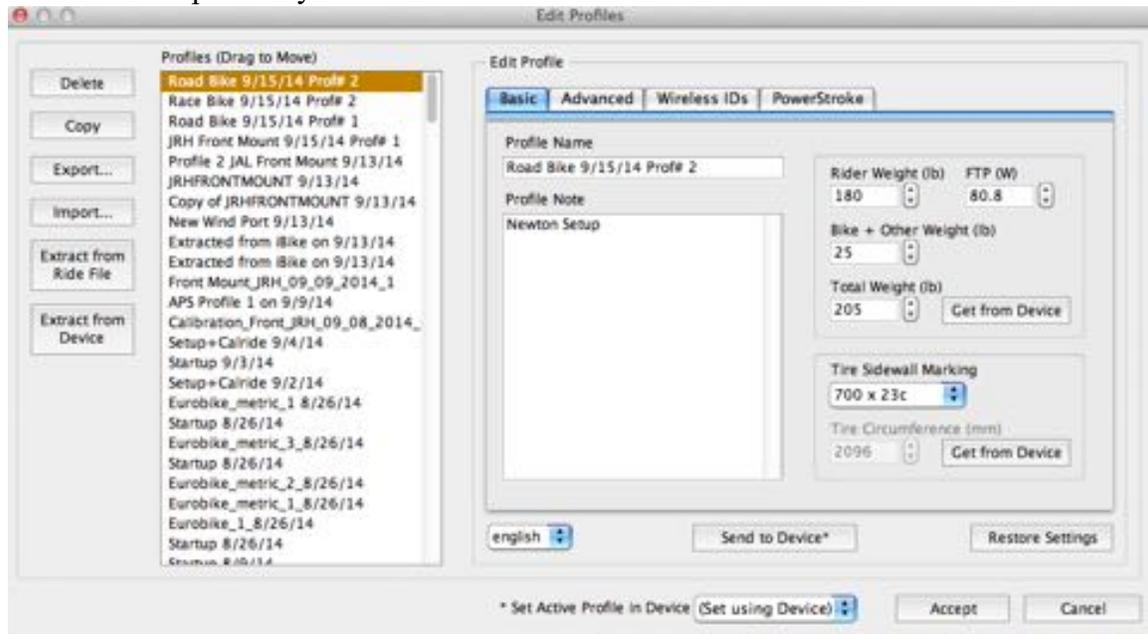
Click on the profile you wish to edit. We've selected the "Road Bike 9/15/14 Prof #2" profile.

Delete

If you have a profile in the window that you no longer use, select it and use the Delete button to remove it. After deleting the profile, use the Accept button to confirm your action.

Copy

If you wish to copy your profile (e.g. maybe you want to experiment with changes to your current profile while keeping the original one) use the Copy button.

Export…

This command creates a small file that contains your complete Device profile. You can email this profile.

Import…

If you have received a profile file (for example, in an email), then use the Import command to add it to your list. The imported profile will be saved in your Profile List.

Extracting your Profile

Your profile is stored both in your Device and in each ride file. You can use the "Extract from Ride File" button to obtain the profile that was used for the ride file shown in the main window. You can use the "Extract from Device" button to obtain the profile that is currently selected and stored in your Device. When using these buttons, if your profile is already stored in the Isaac software, a message will appear saying that you already have a matching profile.

"BASIC" TAB

In this window you will see your profile summary but you can edit the ONLY following:

1) Profile name
2) Total weight
3) FTP (functional threshold power)
4) Wheel circumference
5) Profile note

CRITICAL: ANY CHANGES YOU MAKE WILL NOT BE STORED UNTIL YOU CLICK THE "ACCEPT" BUTTON.

"ADVANCED" TAB

Click the "Advanced" and the following window will appear:
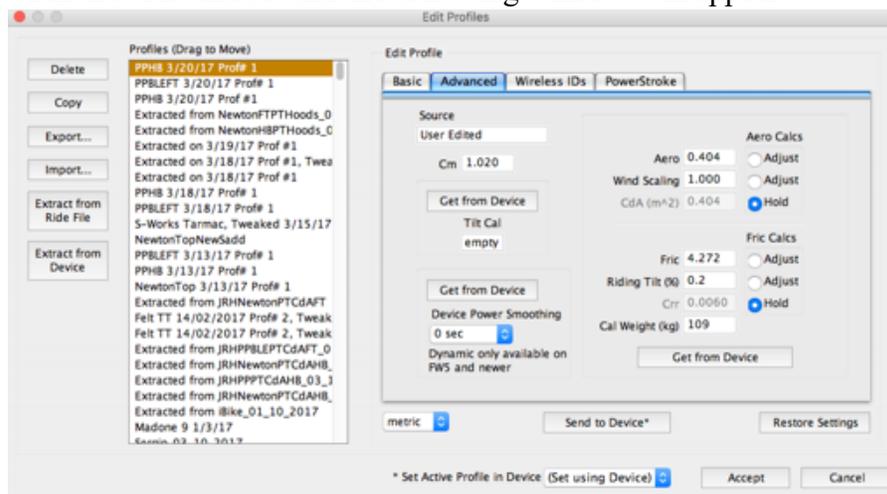
This is a very powerful, yet somewhat "tricky" window.

For example, suppose your Crr is obviously wrong. For example, you ride on smooth concrete where your Crr should be around 0.004, but your profile's Crr is .0060 (too high). You can change this in the Advanced Profile Settings Window:

1) Click the radio button to the immediate right of the Riding Tilt box. The screen will change as follows, so that the Crr number is no longer greyed-out:

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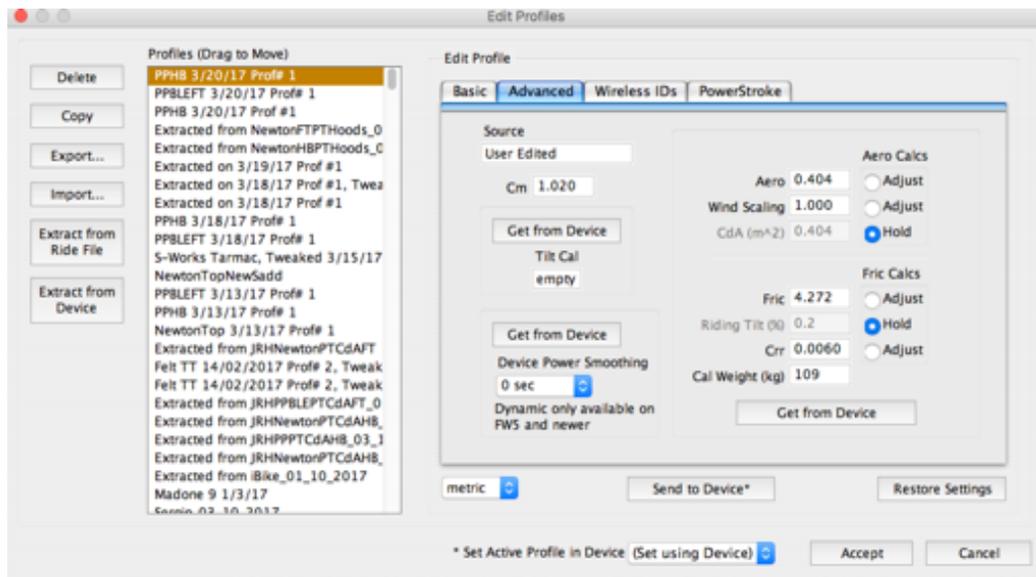
Now, type in 0.0040 into the Crr box. The value of fric (an internal calibration constant used by your Device) will be recalculated automatically:
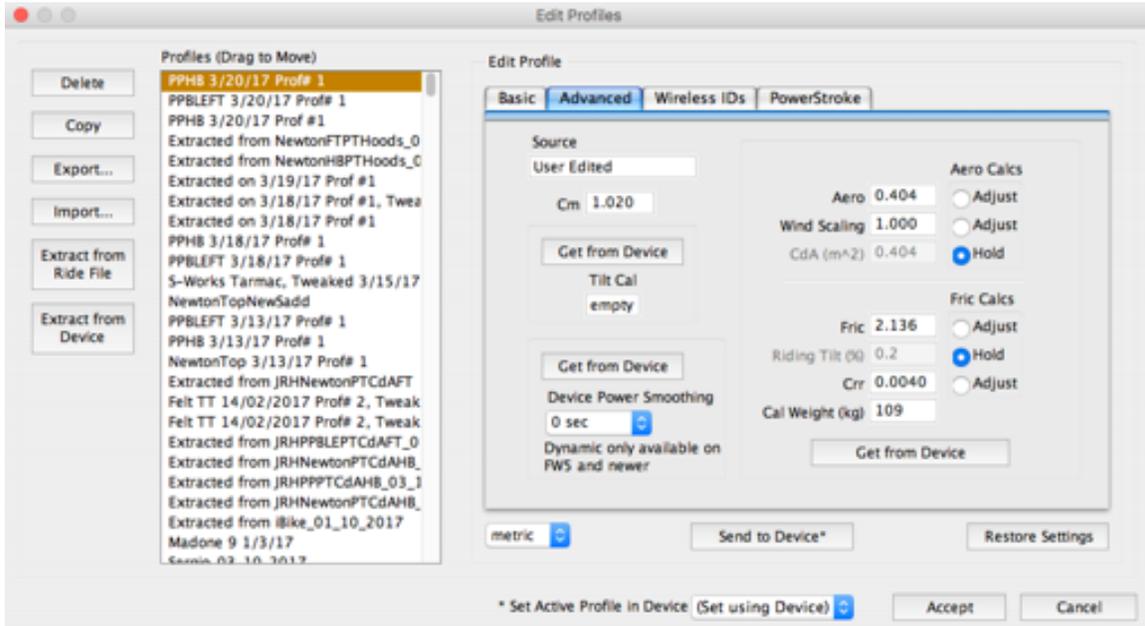
2) Click on the Basic tab and make notes in the Profile Notes, and change the Profile Name, to reflect the changes you've made:
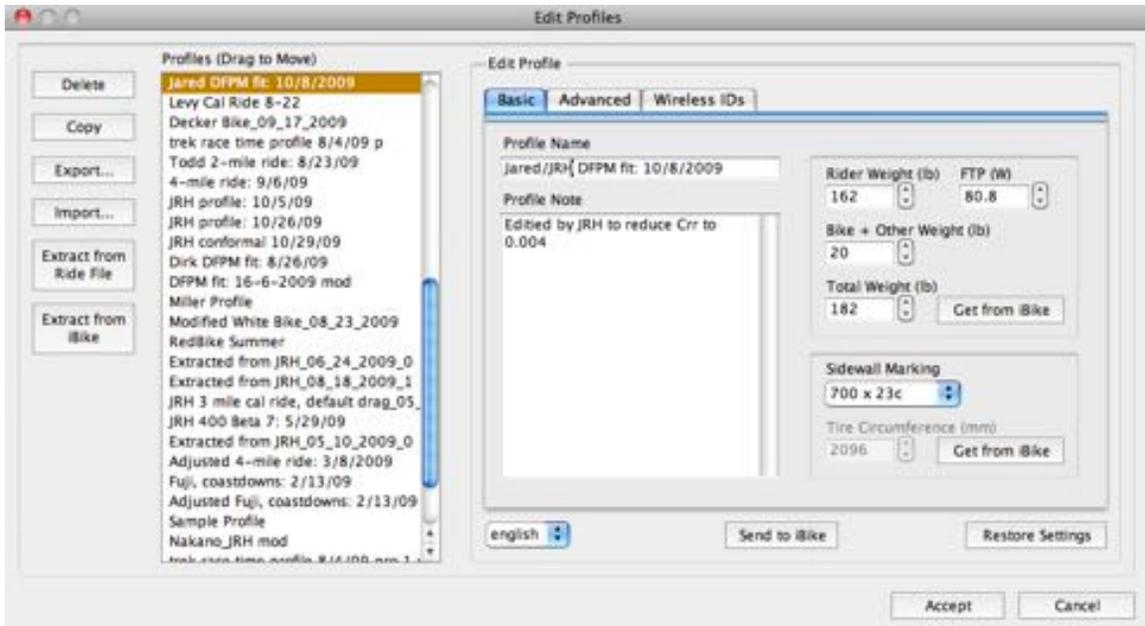
3) **CRITICAL: Send your modified profile to your Device with the "Send to Device" command**.

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4) CRITICAL: CLICK THE "ACCEPT" BUTTON IN THE LOWER RIGHT CORNER. **ONLY WHEN THE ACCEPT BUTTON IS CLICKED WILL YOUR CHANGES BE SAVED**.

In this same manner you can adjust CdA, riding tilt, and wind scaling factors.

NOTICE: WE RECOMMEND THAT YOU DO **NOT** CHANGE **ANY** NUMBER IN THE ADVANCED PROFILE SETTINGS WINDOW UNLESS YOU'RE REALLY CERTAIN ABOUT WHAT YOU ARE DOING.

WIRELESS ID SETTINGS

Click on the "Wireless" tab to see your wireless settings and to see which sensors are enabled (bright green dots):
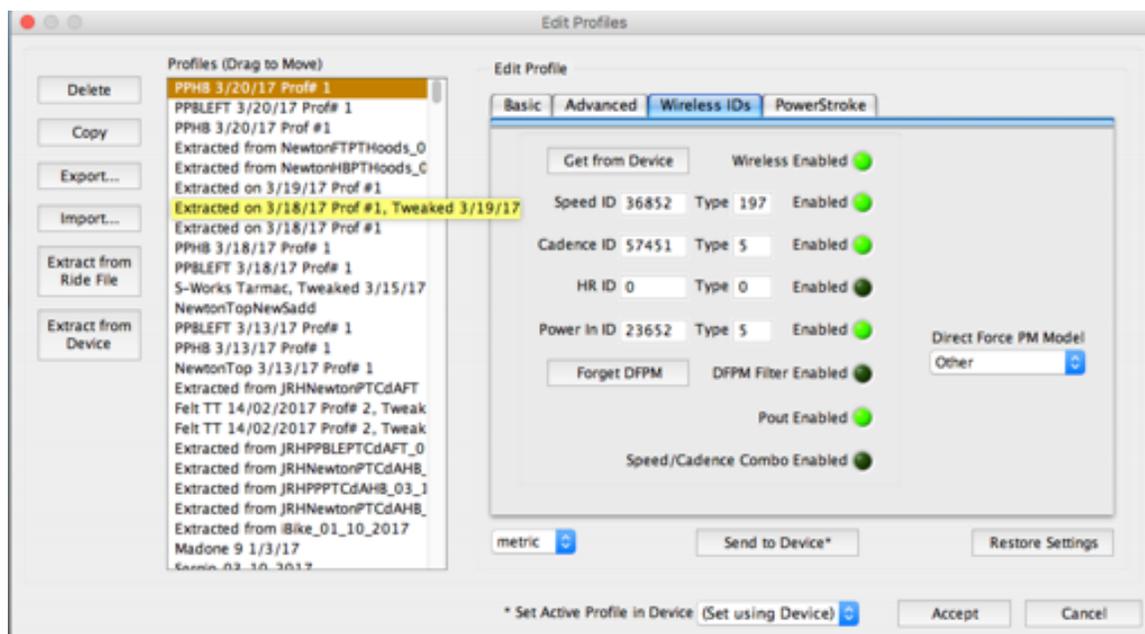
If you have a DFPM sensor and you'd like to remove it from your profile, click the "Forget DFPM" button, then click the "Send to Device" button to update the profile stored in your Device.

PowerStroke Tab

In this tab you can set the location of your cadence sensor position on your left crank.
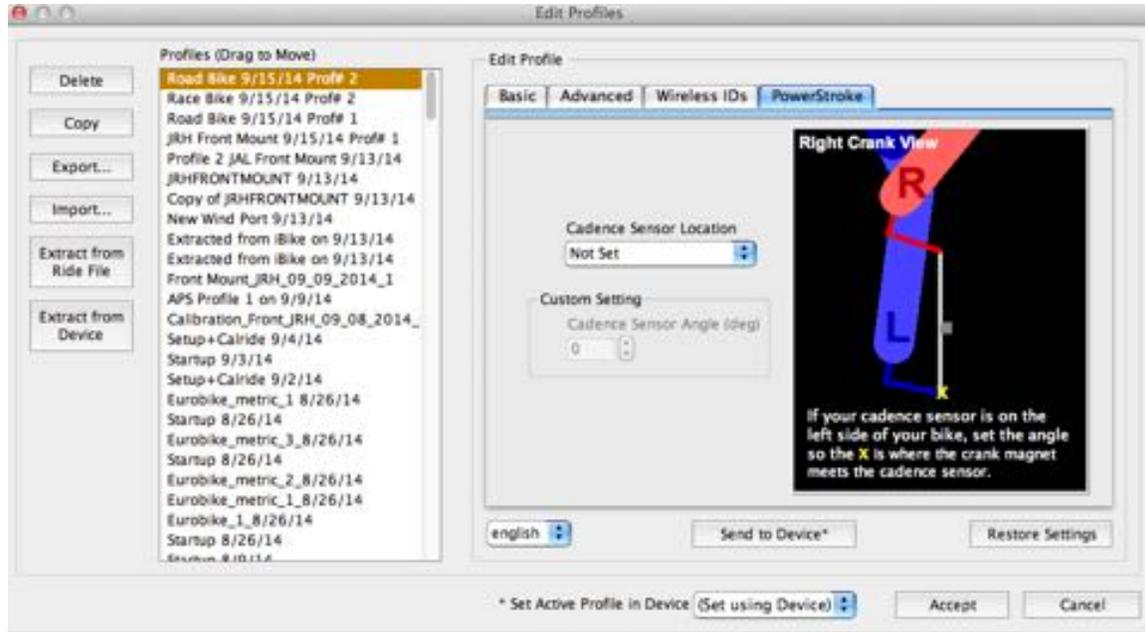
TIP: If you're using one of the new "magnet-less" sensors, set the sensor location to "Above the Chainstay".

Set FTP for Ride

FTP (Functional Threshold Power) is a measure of your overall cycling power. Set your ride's FTP with this command
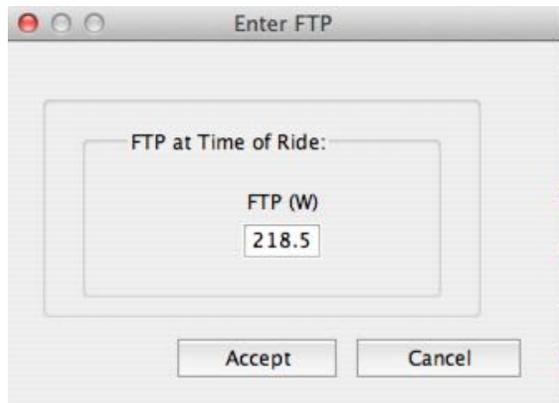
Edit/Annotations

You can make comments on your ride file's graph with the annotations feature.

Edit/Preferences opens this window:

In the "General" preference window you can select how frequently to have the Isaac software check for new software and firmware updates. Also, you can choose how much data you would like to see, and select the menu items and windows that are most appropriate for the device you're using.

In the "Analysis" window you can select the "Automatically Analyze Route" feature. The Analyze Route feature looks for out and back rides and, if it finds them, provides extra levels of accuracy to wind data and elevation data.
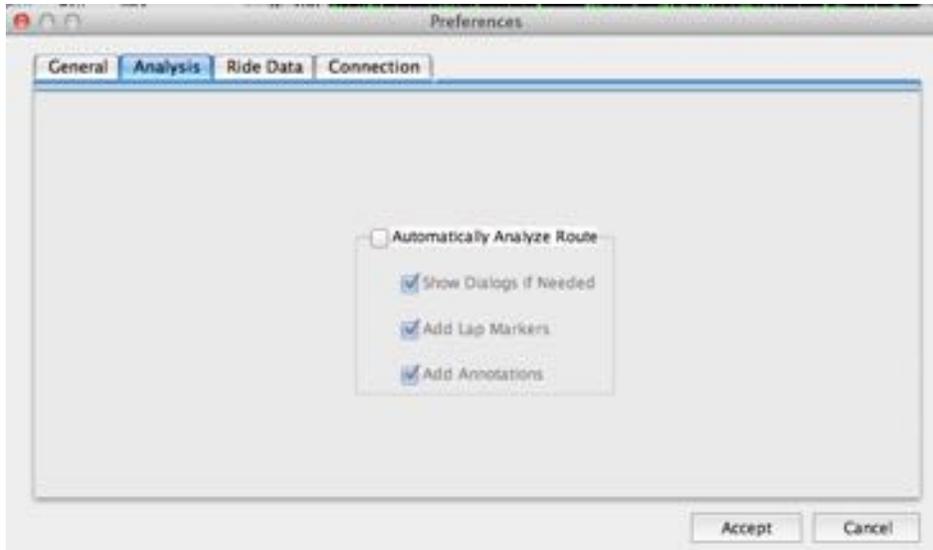
If you'd like this fine-tuning function to work automatically, just check the box; after checking the box your data will be checked automatically and fine tuned each time you download a ride. If the box is unchecked your data will be just as it came out of your Device, but you can still use the Analyze Route your data in a separate command available in the Tools menu.

TIP: WE ALMOST ALWAYS LEAVE "AUTO FINE TUNE" UNCHECKED, BECAUSE AUTO FINE TUNING IS ALMOST NEVER NEEDED.

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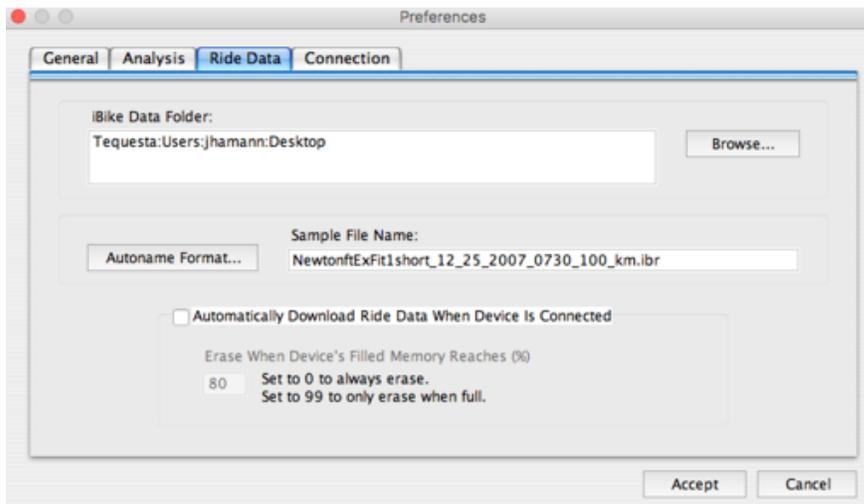
The top portion of Ride Data window shows where your rides are being stored at present. If you wish to change the default location of your ride storage click the "Browse" button, navigate to the folder you'd like to use, then click "Accept".

The middle portion of this window allows you to change the name format. Click "Autoname Format"…to make changes to the ride file format.

The bottom portion of the window provides a check box that causes Isaac to automatically download data when the device is connected, and to automatically erase the device ride memory at a user-set percentage of full.

VIEW MENU

View/Menus

This item lets you select the device you're using, and the level of detail you wish to have for the menus displayed by Isaac
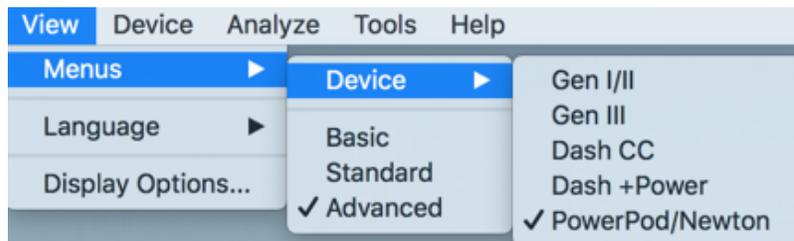
View Language

This command allows you to select the language used for Isaac. Available languages are listed

View/Display Options…

This item is identical to the "Show" button located in the top right portion of the main window.

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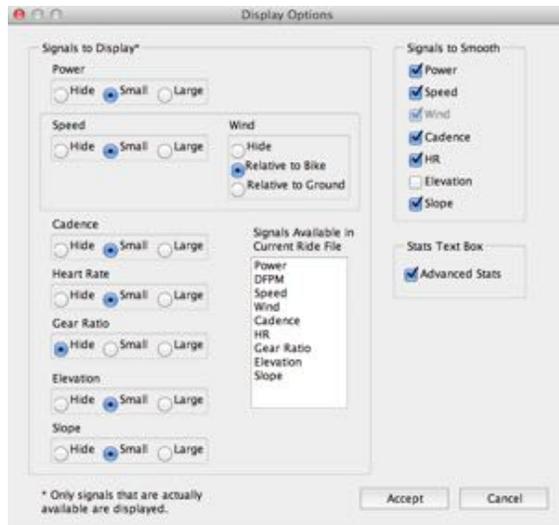
DEVICE MENU

Device	Analyze	Tools	Help

Set Up Device...
Configure Screens...

Download Ride Data...   ⌘D
Erase All Ride Data

Setup   ▶
Send Profile to Device...
Set Active Profile in Device...

Edit Intervals...

Turn On Indoor Trainer Mode
Turn Off Indoor Trainer Mode
Edit Trainer Settings...
Check Online for Trainer Update...

S/N and FW Version...
Check Online for Firmware Update...
Unlock Feature...

Newton Tracker Login/Register...
Newton Tracker Get GPS Data...
View Newton Tracker Community...

<u>Device/Set Up Device…</u>

This is an important command that makes Device setup easy and fast. Setup Device starts a wizard that completes nearly all of the tasks required to create a Profile,

Do the following:

1) Connect your Device to the computer using your cable
2) Select the command Device/Set Up Device…
3) Follow the screens to select profile and to enter information for your particular bike

Isaac will take you through a few screens, where you will enter your information. Make sure to enter your information accurately, as the accuracy of your Device's measurements depends on correct entries!

The final step will ask you to Send Profile to Device. Make sure you click this button;

<u>Device/Configure Screens…</u>

This is a command only for Newtons with FW 5.0 or higher, this screen allows you to configure the two main screens of your Newton. See the Newton Instructions for more details.

<u>Device/Download Ride Data …</u>

Your Device stores your ride files in its non-volatile memory. To download your ride data to your computer do the following:

From the menu click on Device/Download Ride Data (or click) You will see a list of all ride files stored in your Device that have not yet been downloaded into Isaac.

If you click the "Download and Save" button, all files shown in the window will be downloaded into Isaac (files you've previously downloaded and saved will not be shown in this window).

New Ride Files

☐ Automatically Open This Window When Device Is Connected

PPHBHDH_03_09_2017_0938_3_km_CalRide.ibr
PPHBHDH_03_10_2017_1125_0_km_HiDef.ibr
PPHBHDH_03_10_2017_1126_4_km_CalRide.ibr
PPHBHDH_03_13_2017_0809_0_km_HiDef.ibr
PPHBHDH_03_13_2017_0813_4_km_CalRide.ibr
PPHBHDH_03_16_2017_0751_0_km_HiDef.ibr
PPHBHDH_03_18_2017_1115_0_km_HiDef.ibr
PPHBHDH_03_18_2017_1117_4_km_CalRide.ibr
PPHBHDH_03_18_2017_1344_4_km_HiDef.ibr
PPHBHDH_03_19_2017_0914_4_km_HiDef.ibr

Device Memory

35 % Full

Download and Save

☐ Erase when Done

Show Download Window

Cancel

Or, you can click the "Show Download Window" button to show all ride files stored in your Device, including ride files you may have downloaded previously:

Download Ride Data

Download and Display a Single Ride

Download Ride List

Select a Ride:

PPHBHDH_03_20_2017_1226_3_km_HiDef.ibr ⇕   Download Ride   ☑ Save?

PPHBHDH   Autoname Format...

Download and Save All Rides to a Folder
iBike Data Folder:

Tequesta:Users:jhamann:Desktop   Browse...

Download & Save All Rides

Erase All Ride Data in Device

Device Memory

35 % Full

Update Device Clock   Close

The drop-down menu beneath the caption "Select a Ride" will populate. Click the blue arrow to the right of the drop-down menu list to see all of your rides. Below is an example:
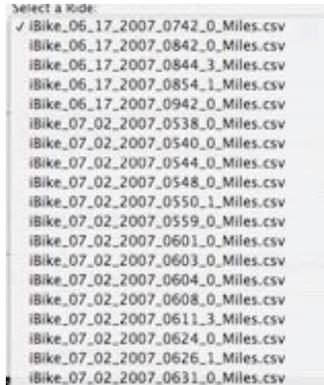
TIP: YOUR MOST RECENT RIDE IS AT THE VERY BOTTOM OF THE LIST.
THIS IS TRUE EVEN IF ITS RIDE DATE/TIME ARE INCORRECT

Highlight the ride you want, then click the "Download Ride" button. In a few moments the ride will appear on your main screen.

The process above allows you to select and display *one ride at a time*. If you want to save all your rides simultaneously you can click the button in the center, "Download & Save All Rides"

Isaac software will tell you the data folder where it intends to save the ride data. If you want to use a different folder, click the "Browse" button. Select the folder you want, then click the Download and Save All Rides Button. All of the ride files in your Device will be saved to this folder; a progress bar will let you know how things are going.

> **NOTE**: DOWNLOADING ALL FILES MAY TAKE SOME TIME.

In the bottom portion of the window you can see how much memory has been used by your Device rides. After you have downloaded all the rides you want, you can erase your memory.

Finally, if your Device's clock has gotten out of sync (a possible outcome following a hard reset of your Device); you can update its time in this window.

MAKE SURE TO SAVE YOUR RIDE FILES!

Device/Setup…
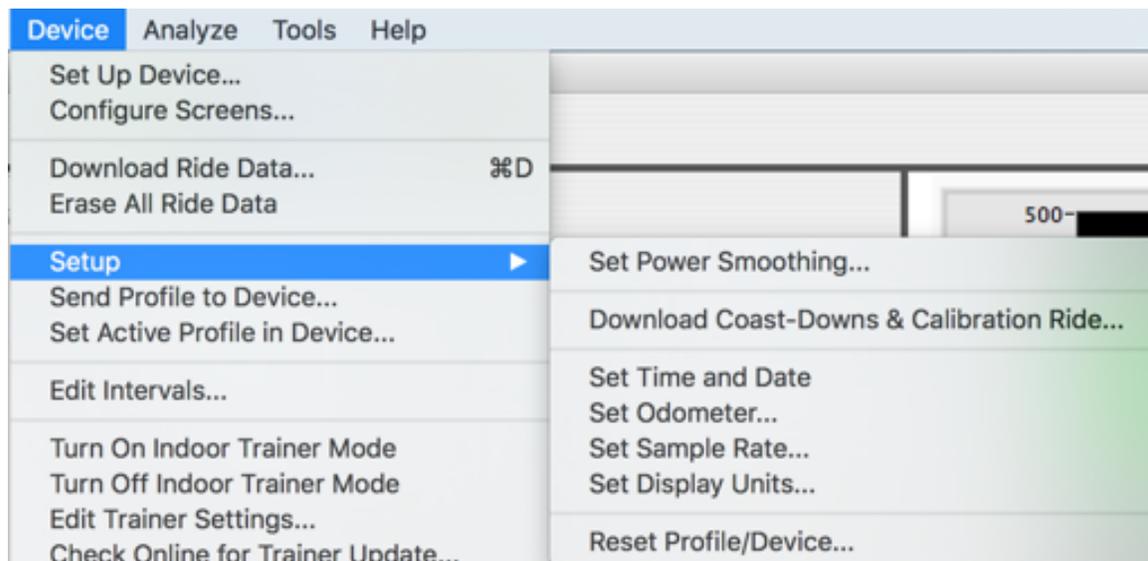
Setup/Set Power Smoothing…

The smoothing shown on your Newton's power screen, or the smoothing of data sent by your AeroPod/PowerPod to your bike computer, is set with this command. Note that Power Smoothing does not smooth the data stored in your Device's ride file.

Setup/Download Coast-Downs and Calibration Ride (Newton Only)…

IF YOU DO NOT OWN A NEWTON, SKIP TO PAGE 47

This command works with Newtons only. For 99% of Newton owners, this command is not necessary to use. Why? After you use the Device/Setup command in Isaac to enter your basic bike/rider parameters, and then do a Calibration Ride, your Newton automatically does everything this software command does!

When, then, is this command useful? The Newton Power Meter instructions show how to do "coast down and calibration ride" measurements. If you choose to do "coast down" measurements, then, *and only then*, is this command necessary to use.

NOTE: FOR 99% OF USERS, IT NOT ADVISED TO PERFORM COAST DOWN MEASUREMENTS. UNLESS COAST DOWNS ARE DONE VERY CAREFULLY, YOUR NEWTON ACCURACY WILL BE WORSE, NOT BETTER.

I**f you choose to measure CdA and Crr drag coefficients, then prior to using this software command, YOU MUST PERFORM THE "MULTIPLE COAST DOWN AND CALIBRATION RIDE" PROCEDURE.**

This multiple coast-down/cal ride procedure is described in the Newton Power Meter instructions; for convenience, these instructions are repeated here:

OVERVIEW

The idea is simple: you will do a 2 mile long calibration ride (1 mile out, turn around and 1 mile back), then immediately thereafter 4 to 10 coast downs. That's it; **the only requirement is that you do the coast downs and calibration ride at the same time.**

CRITICAL: TO MEASURE CDA AND CRR, YOU MUST DO COAST DOWNS IMMEDIATELY AFTER THE CAL RIDE.

CALIBRATION RIDE

The calibration ride is a simple (and leisurely) 1 mile out and 1 mile back ride that calibrates your tilt and wind sensors to maximum accuracy. There's no need to ride fast. **DO THE CAL RIDE BERFORE DOING MULTIPLE COAST DOWNS. The only requirement for this ride is that wind conditions aren't extremely gusty or that the weather doesn't change during the ride!**

You will ride approximately 1 mile out on the course you select, turn around, then ride back to the starting point on the same course. The Isaac software will compare tilt, wind, and other conditions on the "out" portion of your ride to the "return" portion of your ride. By comparing the out and back data the Isaac software can further improve the accuracy

of your Device.

Here's how to do the 2 mile calibration ride:
1) Ride to the place where you will do your calibration ride.
2) The location where you do your two mile ride should have the following characteristics:
    a. The course should be approximately one mile long and not have heavy traffic (traffic can cause wind gusts).
    b. It's OK if the course is rolling and twisty but try to avoid steep uphills and downhills. Stop signs or stoplights are OK, too.
    c. THE COURSE CAN BE LONGER THAN TWO MILES; IN FACT, **MORE DATA IS BETTER!**
    d. There should be no gusty winds due to buildings, cyclists, etc.
    e. The course should not have frequent stops, but occasional stops are OK.
    f. The course should not have sharp turns, such as at street corners.
3) *Just before starting your calibration ride*, enter Setup and click the up arrow to find the screen that says "Cal Ride".
4) When you're ready to ride, press the center button of your Newton. *You must do a Tilt Calibration and Cal Wind calibration within 30 minutes of your Cal Ride. If this has not happened then your Newton will have you perform these two calibrations prior to going to the starting screen of the Cal Ride.*
5) You'll see a screen that shows your bike speed in the top window, the distance you've traveled in the center window, and the bottom window will say "Out"
    a. ride on the out portion of your calibration ride. As you ride out the center window will show the distance you've traveled. Keep riding out until you've ridden 1 mile.
    b. At the one mile mark in the bottom window you'll see the flashing messages "go bac" (go back), then "turn 180°" (turn one hundred eighty degrees). When you see these messages, stop, SLOW DOWN TO 10 MPH OR LESS, **STOP**, and turn your bike around so you're headed back towards the beginning place of your ride.
    c. The flashing messages will stop in the bottom window and you will see the solid message "bac" (back) in the bottom window, indicating that you are headed back to the starting point of your ride.
    d. Ride back until the middle counts down to zero. At the end of the calibration ride you'll see the message "CAL DONE" (calibration ride done), then "CALC CAL" (calculate calibration data). When the calibration ride is completed you'll see the message "Cal Ride". After a few seconds the Newton will exit Setup automatically.

TIP: During your ride, STAY IN YOUR USUAL RIDING POSITION FOR THE ENTIRE LENGTH OF THE RIDE. NO DRAFTING ALLOWED!

Once completing your Cal Ride you can proceed to the Coast Downs.

IF YOU DO COAST DOWNS AFTER YOUR CAL RIDE DO NOT REMOVE YOUR NEWTON FROM YOUR MOUNT. REPEAT: DO NOT REMOVE YOUR NEWTON FROM YOUR MOUNT!! PROCEED IMMEDIATELY TO THE COAST DOWN, DESCRIBED BELOW.

Here's the procedure for multiple coast downs:

1) If you don't know how to perform a coast down calibration, read the instructions in the Newton PM Operating Instructions.
2) Each time a coast down is done the results can be slightly different due to the nature of the measurement. Therefore, THE MORE COAST DOWNS YOU DO, THE MORE ACCURATE THE OVERALL MEASUREMENT WILL BE.
3) Do *at least* four coast downs, **making sure you ride on the same section of road, in the same direction, with the same equipment,** *and in the same riding position.*
4) If you have the time (and energy!) do five to ten coast downs. Remember: more data is better!
5) There are hidden files in your Newton that hold the raw data from every coast down. Each time you do a coast down the Newton will record the coast down file. Later on the Isaac software will analyze ALL coast down files and compute overall drag coefficients that incorporate *all* of the data.
6) Don't worry if a "mistake" (such as hitting a pot hole, or having an 18 wheeler zoom by you) happens while doing a coast down. The Isaac software will see any of these problems and correct for the bad data caused by the mistake.
7) If you DO think you've had a problem with a particular coast down, DO ANOTHER COAST DOWN. Remember: MORE DATA IS BETTER THAN LESS DATA!

OK, so you've completed your Cal Ride and 4-10 coast downs. What's next?

USING THE DEVICE/SETUP/DOWNLOAD COAST-DOWNS & CALIBRATION RIDE COMMAND

Once you've done your coast downs and calibration ride, here's how to use the Isaac software to analyze your measurements.

1) Make sure your Newton is connected to your computer. Then, select the command:

2) The Isaac software will select the appropriate files. Check the Cal Ride it selects in the top right corner of the screen. If this isn't the Cal Ride you did with your coast downs, you can click on the drop down menu select the correct ride. Eventually a screen like this will appear (your data will be different):

Crr "Setting in iBike":
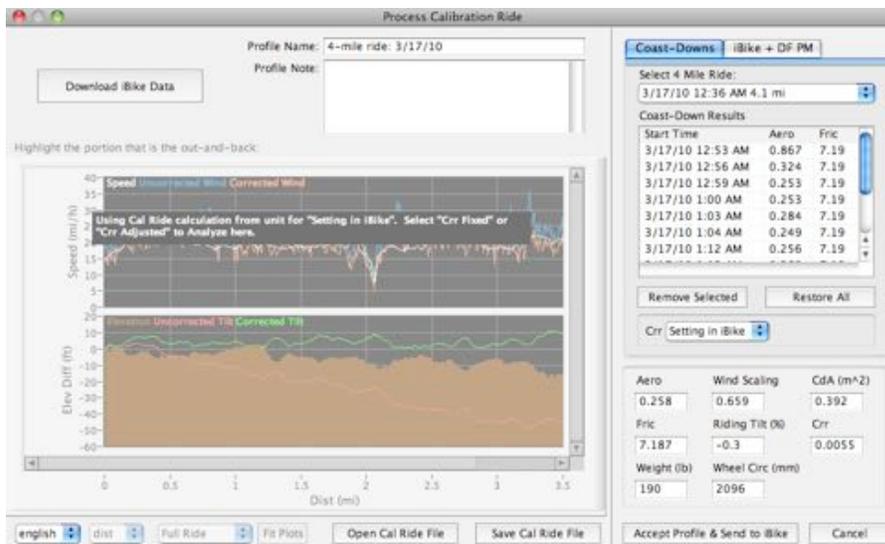
3) There's a lot going on in this screen! On the far right you'll see *all* of the coast downs results that are stored in your Newton. Below the coast downs are two buttons that can be used to remove any selected coast down from the calculations, or a button that restores all data to the coast down measurements. If you have old

coast down data, say from a different day, select them and click the "Remove Selected" button.

4) Below the Remove/Restore buttons is a setting for "Crr". Click on the drop down menu to the right to view the three options: "Setting in iBike", "Crr Fixed", and "Crr Adjusted". By default, "Setting in iBike" is shown; in this selection the graph is grayed out. When selecting either of the other two options the graph is not grayed out:

Crr: "Crr Fixed":
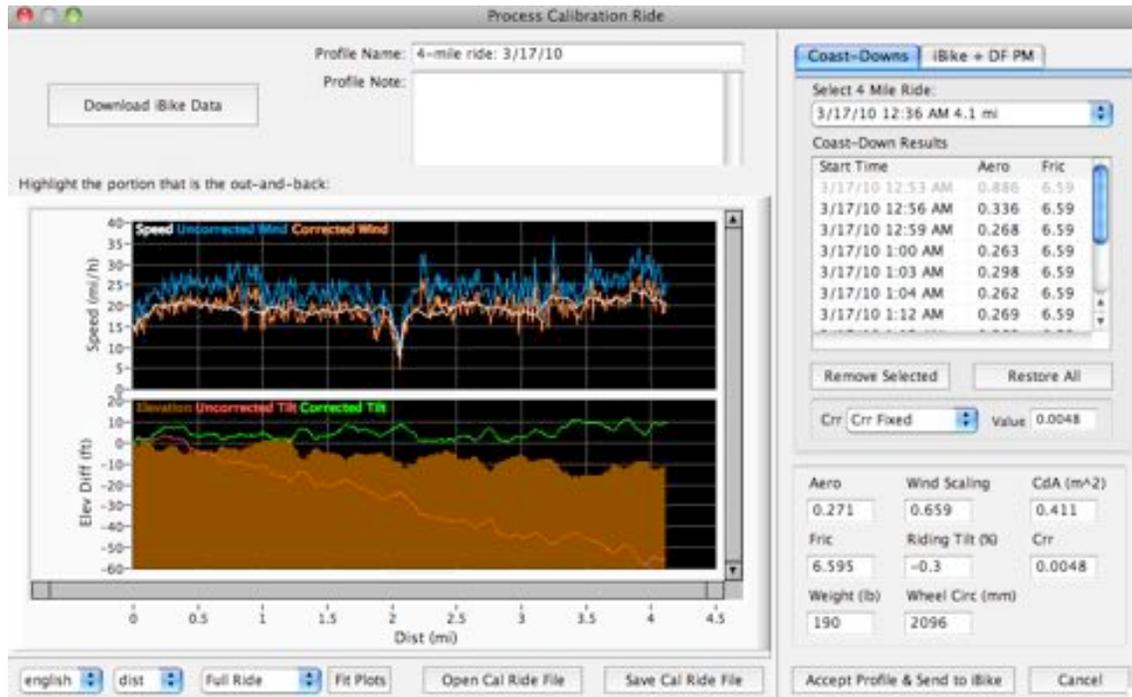
5) Below the Crr box is another box showing composite results from the Cal Ride and Coast downs. Look at the Crr box near the bottom right. When "Setting in iBike" is selected, the Crr value that is currently stored in the Newton's EST CRR window (located in the RACR sequence) is shown in the Crr box in the lower right (factory default is 0.0054).

When "Crr Fixed" is selected, a new box named "Value" appears to the right of the drop-down menu. The user may enter any value of Crr. In this example 0.0048 has been entered manually. Note that the Crr box in the bottom right is set to the same value as entered by the user.

When "Crr Adjusted" is shown, the value of Crr shown in the bottom right is the number measured by the coast downs selected in the top right of the window.

Crr: "Crr Adjusted":
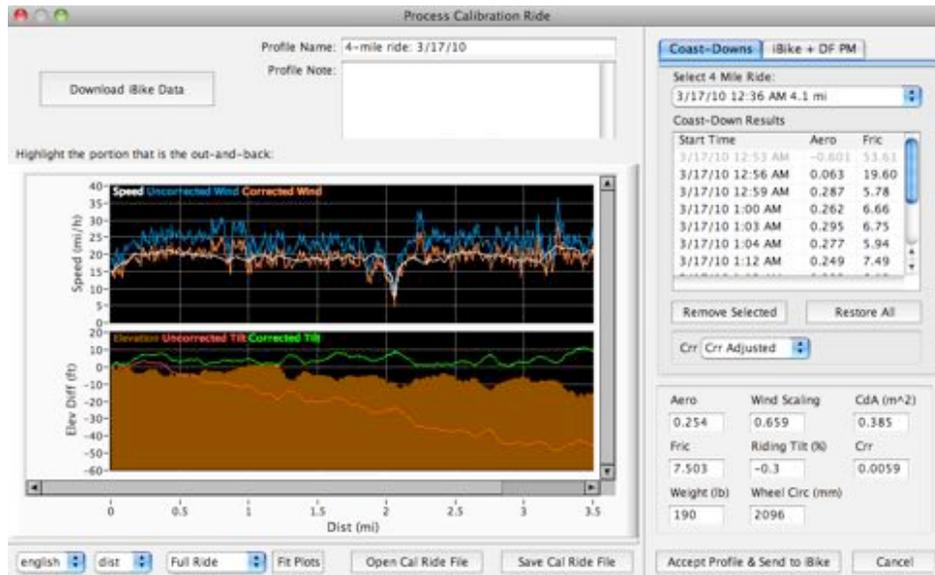
6) When "Setting in iBike" or "Crr Fixed" is selected, the frictional drag numbers shown in the Coast Down window are held fixed to a number that is consistent with the Crr value entered. The frictional drag number in the coast downs depends on the Crr. In this example, for this cyclist, with his bike, a Crr of 0.0055 corresponds to a frictional drag value of 7.19. A Crr of 0.0048 corresponds to a frictional drag of 6.59. Note that in both selections ALL coast downs have the same (forced) value of frictional drag.

7) To see the actual values of frictional drag measured by the coast downs, select "Crr Adjusted". The top right window now shows the values of aero and fric as actually measured by the Newton.

8) The Isaac software automatically analyzes each coast down. Some coast downs are truly bad (notice the first coast down has a negative aero drag coefficient); the Isaac software ignores this bad coast down even if you don't remove it manually. Also, some of the variation of the remaining coast downs are caused by wind gusts. The Isaac software figures out which coast downs are the best and gives them highest weighting; other coast downs receive a lower weighting. You can look at the data manually and remove any "suspicious" coast down results, too.

9) The graph presents information regarding the Newton's measured wind scaling factors and riding tilt.

10) Generally, a rider's weight on the bike will cause the red line (uncorrected tilt) to slope downward. In this example the average slope of this "riding tilt" line is -0.3%.

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Riding Tilt is used to determine Crr from frictional drag measurements, or frictional drag from specified Crr measurements.

11) Your Newton measures air pressure. The Cal Ride allows the Newton to determine the correct wind speed from actual air pressure measurements. In the graph the "Uncorrected Wind" speed shown in blue represents the raw measurements from the Newton.

12) One consequence of a Cal Ride is that Average Wind Speed for the entire ride should be the same as average bike speed. If the uncorrected average wind speed is not equal to the average bike speed, the calibration ride determines a "Wind Scaling Factor" that makes average bike speed and average wind speed the same. In the example above the Newton uncorrected wind speed (blue) is much higher than the average bike speed (white); a Wind Scaling Factor of 0.659 makes the average corrected wind speed (orange) equal to average bike speed.

Notice that Isaac software corrects the wind speed and that corrected wind speed is now accurate. When you upload this profile to your Newton the wind speed seen on your Newton will be the corrected value.

13) In the bottom right corner you'll see your riding tilt, wind scaling factor, Newton aero and fric drag coefficients, and drag coefficients expressed as CdA and Crr. These numbers will vary somewhat depending on which Crr selection you've made and which coast downs you've selected.

14) In the top center of the window is a place where you can name your profile. We suggest you give it a descriptive name; you'll use this name later on to call-up this profile. This profile will be saved on your computer!

> **IMPORTANT**: When you've completed your review, **click the "Accept Profile & Send to Device" button.** Your profile will be saved on your computer, AND your best-fit drag coefficients will be sent to your Newton, AND your Wind Scaling Factor and Riding Tilt will be sent to your Newton. Your Newton is dialed-in!

> **NOTE**: IF YOU HAVE MORE THAN ONE BIKE, YOU'LL NEED TO CREATE AND NAME A CALIBRATION PROFILE FOR EACH OF YOUR BIKE SETUPS.

Setup/Set Time and Date

This command updates your Device with the Date and Time stored in your computer.

NOTE: date and time are automatically updated in your Device each time you connect your Device to Isaac.

Setup/Set Odometer (Newton Only)…

This command sets the Odometer reading in your Newton to the value you enter in the Isaac software

Setup/Set Sample Rate (All Devices)…

Your Device can record ride files with 1 second sampling or 5 second sampling. 1 second sampling provides the most detail; 5 second sampling provides the ability to record rides that are 5x longer.

Unless you are doing a multi-day bike trip, or download your ride files very infrequently, we recommend the 1 second setting.

If PowerStroke is installed on your Device, from this screen you can enable/disable PowerStroke recording. Disabling PowerStroke increases ride recording time by 16x, up to 768 hours.

Setup/Set Display Units (Newton Only)…

This command allows you to set the display in your Newton to English or metric units.

Reset Profile/Device

This command works with all Devices (NOTE: PowerPod Lite stores profile 1 only)

<u>Setup/Send Profile to Device…</u>

If you wish to store a different profile in your Device, or retrieve the profile currently stored in your Device, this is the command to use.

Select the profile you want, then click "Send to iBike"

NOTE: THE "SEND TO iBike" COMMAND WILL OVERWRITE THE PROFILE THAT IS CURRENTLY STORED IN YOUR DEVICE!

<u>Setup/Select Active Profile in Device</u>

NOTE: POWERPOD LITE WORKS WITH PROFILE 1 ONLY

<u>Device/Setup/Edit Intervals (Newton only)…</u>

You can create, save, upload, export, and import interval sets using the Isaac software.

This feature is very important if you're a power training coach, or if you are a cyclist trying to improve the quality of your training rides.

To get you started, your Isaac software comes pre-loaded with a "Demo Pyramid Set". To create, edit, save, import and export, and upload intervals, go to:

You'll see this screen:

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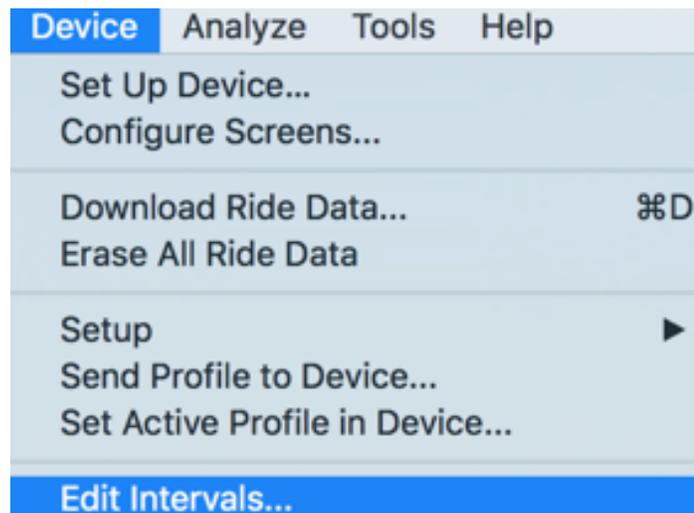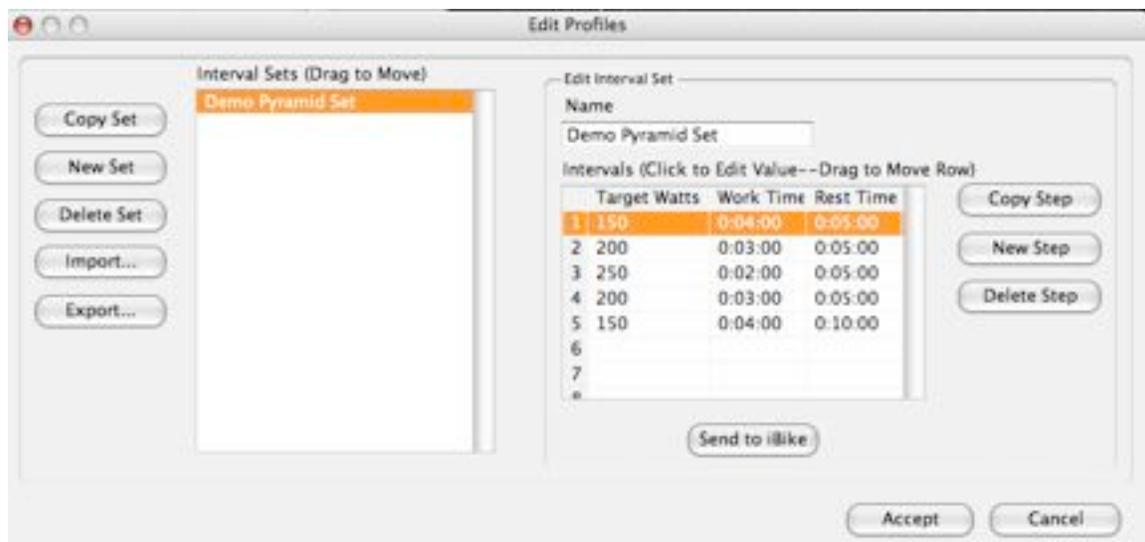
The heart of this window is the "Intervals" box in the center right. In the box is the actual workout. Target watts, work time for the target watts, and rest time after the work time is a complete "interval". The idea of a power-based workout is to have a carefully-planned set of target watts intervals, controlled both for wattage intensity and time length, followed by rest periods.

Power training workouts are beyond the scope of this manual. We suggest you read a book such as *"Training and Racing with a Power Meter"*, by Coggan and Allen, to learn more about power training.

Use the buttons to create interval sets for your desired workout. Click "New Set" to create and name a new interval set. Type in Target Watts, Work Time, Rest Time for each interval, then click Copy Step, New Step, etc to build your workout.

Once your set is complete use the "Send to iBike" button to load your interval set to your Newton.

If you're a coach creating Newton workouts for your athletes you can use the "Export" button to create a file that can be emailed to your athletes.

If you receive a Workout set by email, use the Import button to load it into Isaac software, then select the workout, then click the Send to iBike button.

<u>Turn On Indoor Trainer Mode; Turn Off Indoor Trainer Mode</u>

These two commands will turn the Indoor trainer mode on or off in your Device.

To turn indoor trainer mode on, with your device connected to Isaac select "Device/Turn On Indoor Trainer Mode".

To turn indoor trainer mode off, with your device connected to Isaac select "Device/Turn Off Indoor Trainer Mode".


IMPORTANT: WHEN USING YOUR DEVICE OUTDOORS, MAKE SURE TO TURN OFF INDOOR TRAINER MODE!

<u>Device/Edit Trainer Settings…</u>

**USING YOUR DEVICE WITH AN INDOOR TRAINER**

UPLOADING A TRAINER PROFILE TO YOUR DEVICE

The principle of the indoor trainer feature is very simple: most indoor trainers apply a resistive drag to the rear wheel that increases with speed. Each trainer has its own curve of power vs. speed; here's the speed/power curve for the Kurt Kinetic Road Machine:
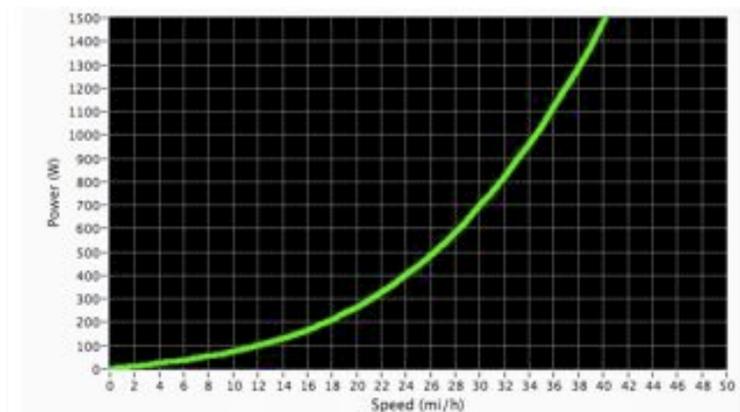

You'll use the Isaac software to select the model of trainer that you own, then upload the curve to your Device.

1) Select:
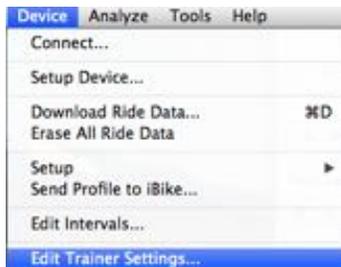
The following screen will appear:
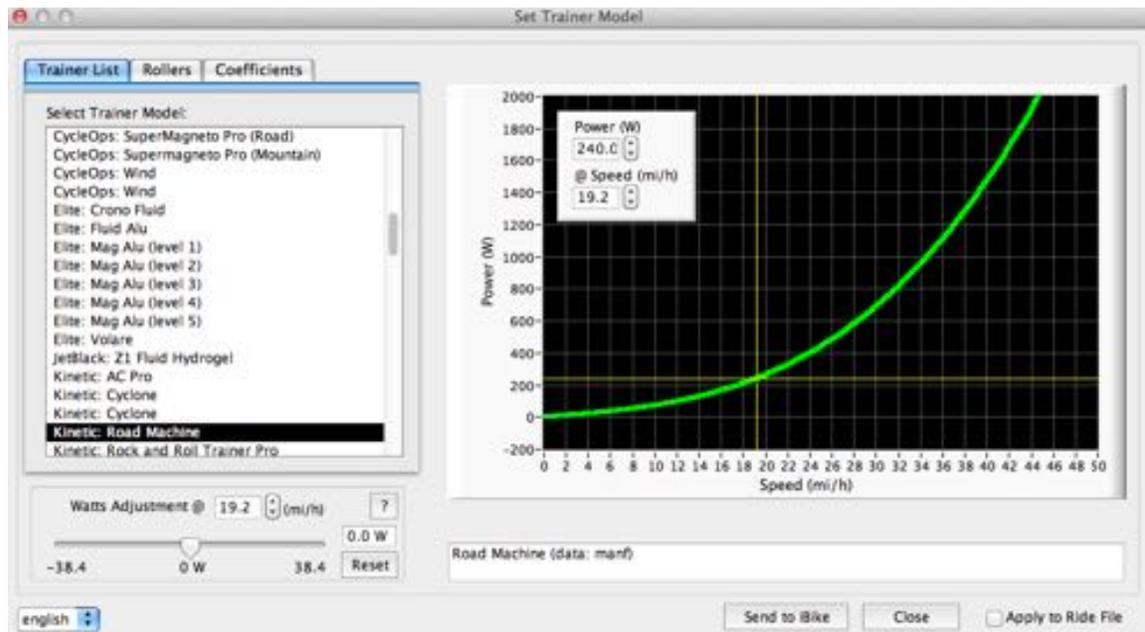
2) Select the model of trainer you own. Its graph will appear on the right.

3) Click the "Send to iBike" button. The trainer profile selected will be sent to your Device.

NOTE: THE CURVES USED IN THE ISAAC SOFTWARE COME FROM MANUFACTURER'S PUBLISHED INFORMATION AND FROM OTHER INTERNET-BASED SOURCES. VELOCOMP HAS NOT TESTED AND DOES NOT CERTIFY THE ACCURACY OF ANY CURVES USED IN ISAAC SOFTWARE.

> **NOTE:** YOU CAN CHANGE YOUR TRAINER AT ANY TIME. SIMPLY SELECT THE TRAINER YOU WANT TO USE, THEN UPLOAD THE TRAINER PROFILE WITH THE "SEND TO IBIKE" COMMAND. YOUR OLD TRAINER PROFILE WILL BE DELETED AND THE NEW PROFILE WILL REPLACE IT.

HOW TO USE THE INDOOR TRAINER FEATURE

When you're ready to ride indoors, simply upload your trainer profile, make sure your wheel speed sensor is located on the rear wheel of your bike, and using Isaac, set your device to indoor trainer mode.

You're ready to ride!

> **NOTE**: MAKE SURE TO TURN YOUR INDOOR TRAINER FEATURE IS **"ON"** WHEN USING YOUR DEVICE INDOORS!

> **NOTE**: MAKE SURE TO TURN YOUR INDOOR TRAINER FEATURE **"OFF" WHEN USING YOUR DEVICE OUTDOORS.** OTHERWISE YOUR DEVICE WON'T WORK PROPERLY!

NEWTON ONLY: If you've set your Newton for indoor trainer usage, whenever your Newton awakens from sleep, or you do a Trip Reset, a "trnr on" notification appears. Clear the message by clicking the center button, or press-hold the center button to change the trainer setting (either on or off). With the Newton you do not need to block your wind port, as you do with older models.

AEROPOD/POWERPOD ONLY: When your AeroPod/PowerPod is in indoor trainer mode, you do not need to ride for 5 minutes to calibrate it. When resuming outdoor riding, set AeroPod/PowerPod to outdoor mode. You will need to ride for a few minutes minutes to calibrate it for outdoor riding.

Device/Check Online for Trainer Update…

From time to time we add new trainer profiles to the Isaac software (over 100 different trainers and rollers are supported). This command checks for any updates.

Device: S/N and FW version…automatically captures your Device Serial number and firmware version:

TIP: YOU CAN USE THE COPY AND PASTE FEATURES OF YOUR COMPUTER TO EASILY TRANSFER YOUR SERIAL NUMBER TO AN EMAIL OR OTHER DOCUMENT.

NOTE: WHEN YOU DOWNLOAD A RIDE IT IS **NOT** **SAVED** ON YOUR COMPUTER **UNLESS** YOU CLICK THE "SAVE" BUTTON ON THE MAIN SCREEN. CLICK THE SAVE BUTTON TO SAVE YOUR RIDE TO YOUR COMPUTER.

Device/Check Online for Firmware Update

Firmware is the computer program that controls your Device.

Use this command at any time to check for firmware updates.

When a new version of firmware is released it means that we've added features, or fixed bugs. *The latest firmware version incorporates all of the changes of earlier firmware versions.*

So, it's a good idea to keep your Device's firmware up-to-date.

When a new version of firmware is released, and you launch your Isaac software, you will get a message informing you that new firmware is available. Just follow the prompts to install.

Device/Unlock Feature…

INSTALLING A FEATURE "KEY" ON YOUR DEVICE

If you have purchased a feature key (PowerStroke, CdA, etc.), you will need to install the "key" that enables the feature on your Device.

NOTE: THE UNLOCK KEY IS CUSTOMIZED TO YOUR DEVICE'S SERIAL NUMBER. IT WILL NOT WORK WITH ANY OTHER DEVICE. ONCE YOU INSTALL THE KEY YOUR DEVICE WILL NEVER AGAIN REQUIRE INSTALLATION OF THE KEY.

---

1) Purchase your Feature Key from the Velocomp webstore.
2) Locate your device's serial number (Device/SN and FW Version…) and email the serial number to technicalsupport@velocomp.com
3) You will receive an email from Velocomp with a small file attached; this is your Feature key. The file will have a peculiar name ending in .enc; HOWEVER, the four characters of the file name immediately preceding the .enc suffix will be the last four characters of your serial number
4) Place your unlock key file on your desktop. Then, select Device/Unlock Feature:

This screen will appear. PAY ATTENTION TO THE WARNING MESSAGES!
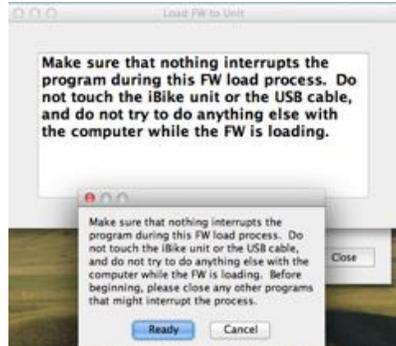
5) Click "Ready". After a few seconds this screen will appear…

NOTE: YOUR DEVICE MUST BE TURNED ON!
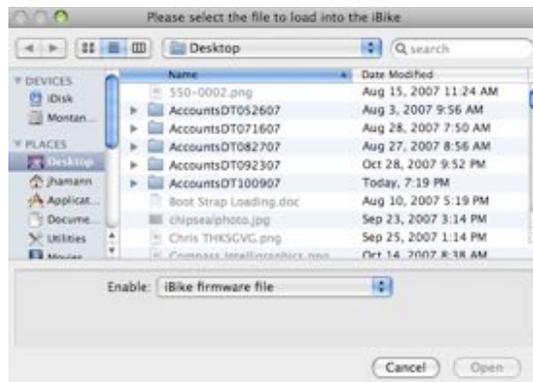
Navigate to the unlock key file you placed on your desktop. Then, click the "Open" button to upload the key to your device. This will take only a few seconds.

WARNING: DO NOT TOUCH YOUR DEVICE OR YOUR COMPUTER DURING THE UPLOAD PROCESS

6) Once you have uploaded your key you should be able use the feature you've installed. The upgraded feature is "permanent" and will never again need to be uploaded.

IMPORTANT: THIS SAME PROCESS IS USED TO UNLOCK OTHER FEATURES OF YOUR DEVICE, SUCH AS GPS TRACKER COMPATIBILITY

Checking the Features installed in your Device

Follow the "Device/Unlock Feature…" instructions above. When you see the page below click the "Get Unlock Status…" button
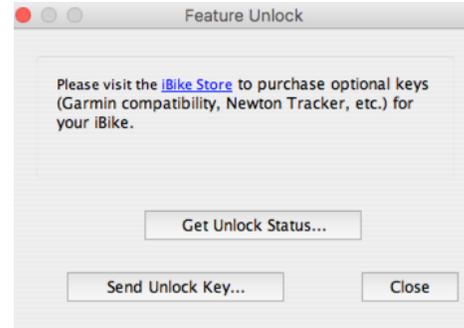
A complete list of all features installed on your Device will be shown (note: in the list below, GPS Tracker feature is referred to as "Newton Tracker")
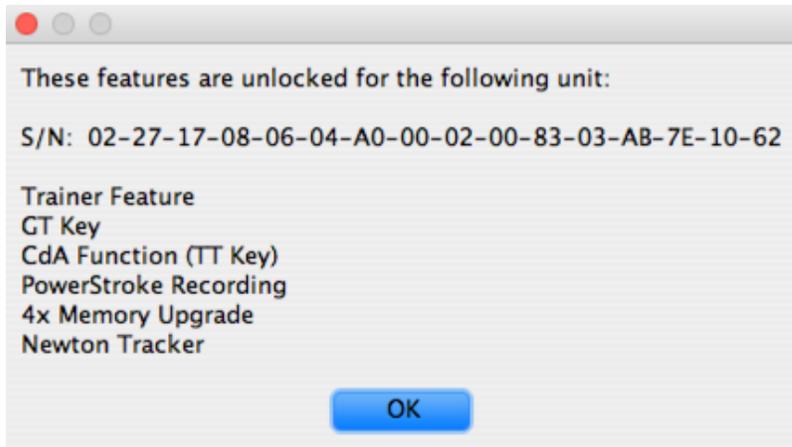

Device/GPS Tracker Login/Register…
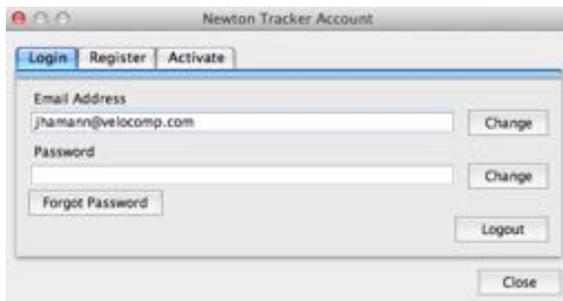
This screen allows you to login, register, and activate the GPS Tracker feature for your Device. See the GPS Tracker instructions, located in the Help menu of Isaac.

Device/GPS Tracker Get GPS Data…

Normally, your GPS Tracker data will automatically merge into your ride file whenever a new ride file is downloaded. If the GPS Tracker data does not automatically merge, this command allows you to manually start the merge process.

Device/View GPS Tracker Community…

Wonder where your fellow AeroPod/PowerPod/Newton owners are riding? This command allows you to see where people are riding. Use Google Earth to view the data. Flags are planted…

ANALYZE MENU
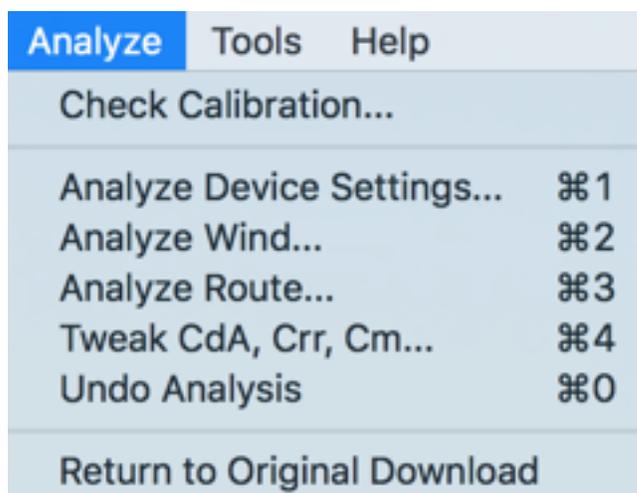
Analyze/Check Calibration…

Calibration is part of the Device setup process and when your Device is calibrated properly then you'll get the most accurate results.

The Analyze/Check Calibration feature is used to spot-check your ride files for calibration accuracy and, if necessary, to "tweak" the device profile to dial-in accuracy even more.

The Check Calibration feature works correctly only with ride files that have these characteristics:

1) The ride is an out-and-back ride
2) No drafting is done during the ride
3) Wind conditions do not change during the ride

If your ride file has ALL of the above characteristics, then you can use the Check Calibration feature.

Here's how to use the command:

1) Open the ride file you wish to check. **Make sure the file meets all three requirements above.**

Here is an example ride that meets these criteria. Note that the elevation profile is symmetrical around the center point of the ride, indicating that this was an out-and-back ride:
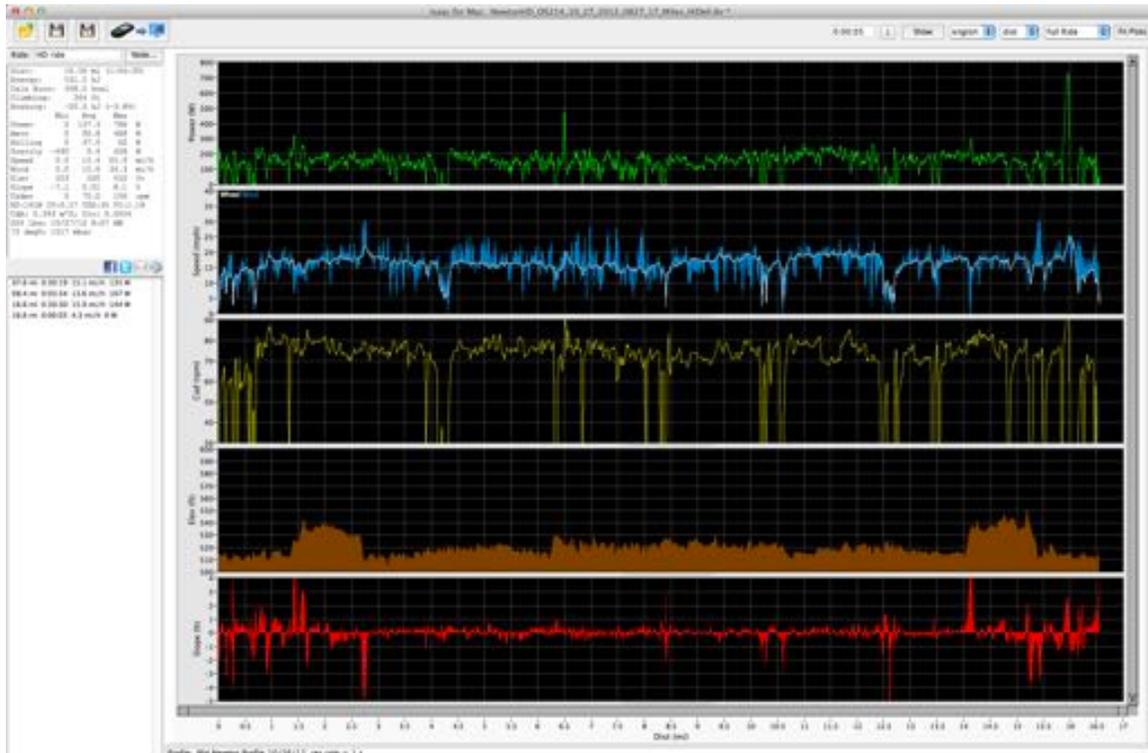
2) Select the Analyze/Check Calibration… command. You'll be asked the following:
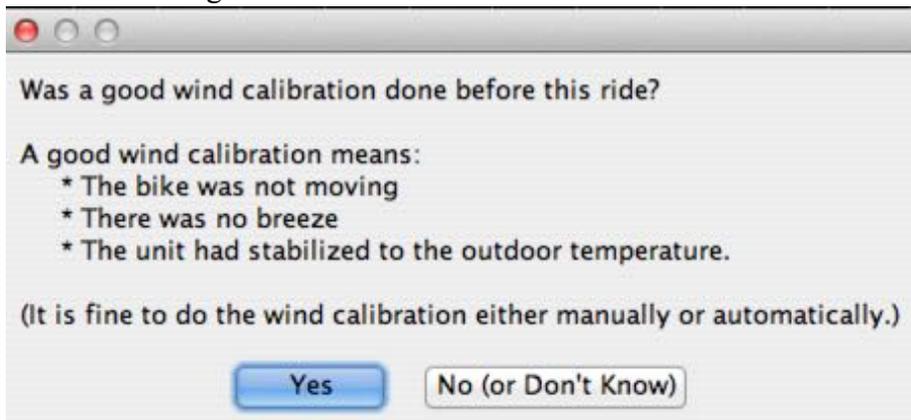
If you own an AeroPod or PowerPod, click "Yes" (Cal Wind is not required). You'll see this window appear:
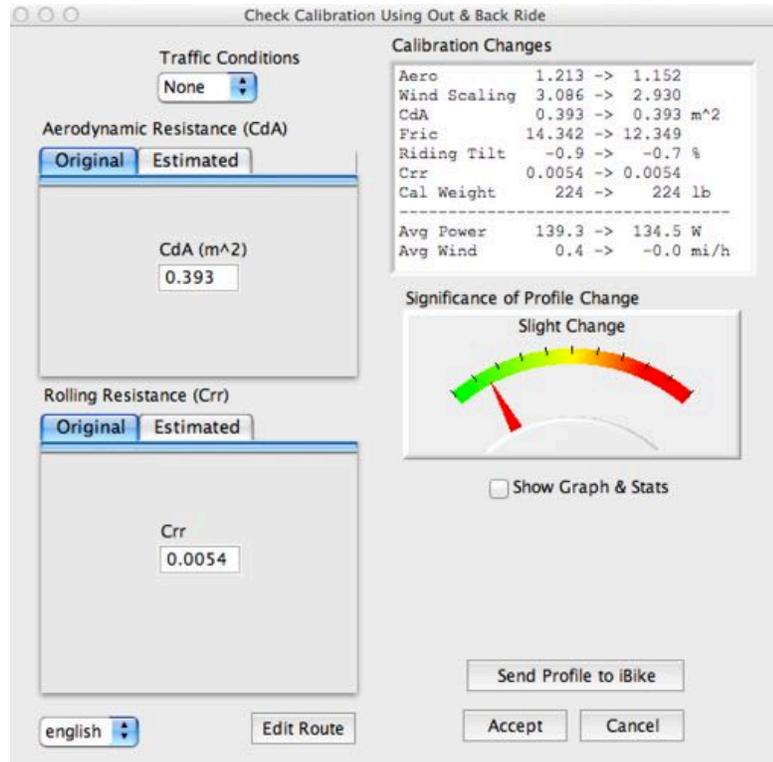
The Gauge in the center right provides a visual assessment of your device's current quality of calibration. If the needle is in the Green range, then your existing calibration is good. If the needle points close to the red zone, then your device profile will benefit from adjustment.

If you wish to update your calibration, click the "Send to iBike" button, then click Accept button; this will update the profile and correct the ride file. If you wish to correct your ride file AND send the corrected profile to your Device, click the Send Profile to iBike button. If you decide to leave your ride file alone, click the Cancel button.

Check Calibration Guidelines

In general, the Check Calibration command is most useful when you've first started using your Device. Check Calibration is a nifty way to dial-in your device, and we recommend you try it out.

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There is a natural tendency to strive for the highest "accuracy" in cycling measurements, and Isaac software includes powerful, proprietary tools for checking the calibration of any out and back ride file. (Note: there is no comparable way of checking, post-ride, if a DFPM was properly calibrated prior to a ride, or if its calibration drifted during the ride).

Since we all want highest accuracy, it's very temping to use the "Analyze/Check Calibration" with *every* out-and-back ride.

We strongly recommend against overusing the Check Calibration, because *more important than highest accuracy is ride-to-ride consistency*. That is, in order to know if you're improving, you want to be able to compare today's results with last week's results. If your numbers are increasing, then likely you're getting better.

But if you're constantly tweaking your profile, it won't be clear if your watts are changing because of better riding, or because of constant profile tweaking.

Your Device performs with very high consistency from ride to ride. So, once dialed-in properly there should be no reason to adjust their calibration.

In fact, whenever you "tweak" your ride files with the Check Calibration command, you are messing with the ride-to-ride consistency that tracks progress over time. You'll even get a warning message if you choose to adjust your ride when the changes are minor:

Are you sure you want to accept the changes to the profile? It would only cause a slight change.

OK   Cancel
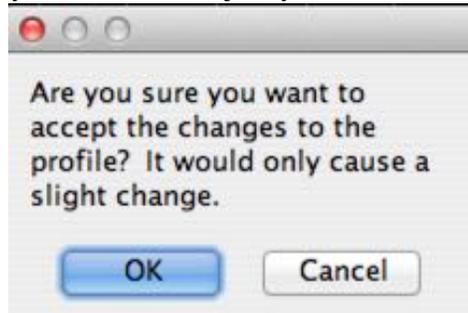
In summary: if your device is calibrated properly, then leave it alone!

What if my needle is in the red range?

Here is an example of an out-and-back file where Check Calibration will really help (note that the wind is constantly above bike speed, indicating a calibration problem):
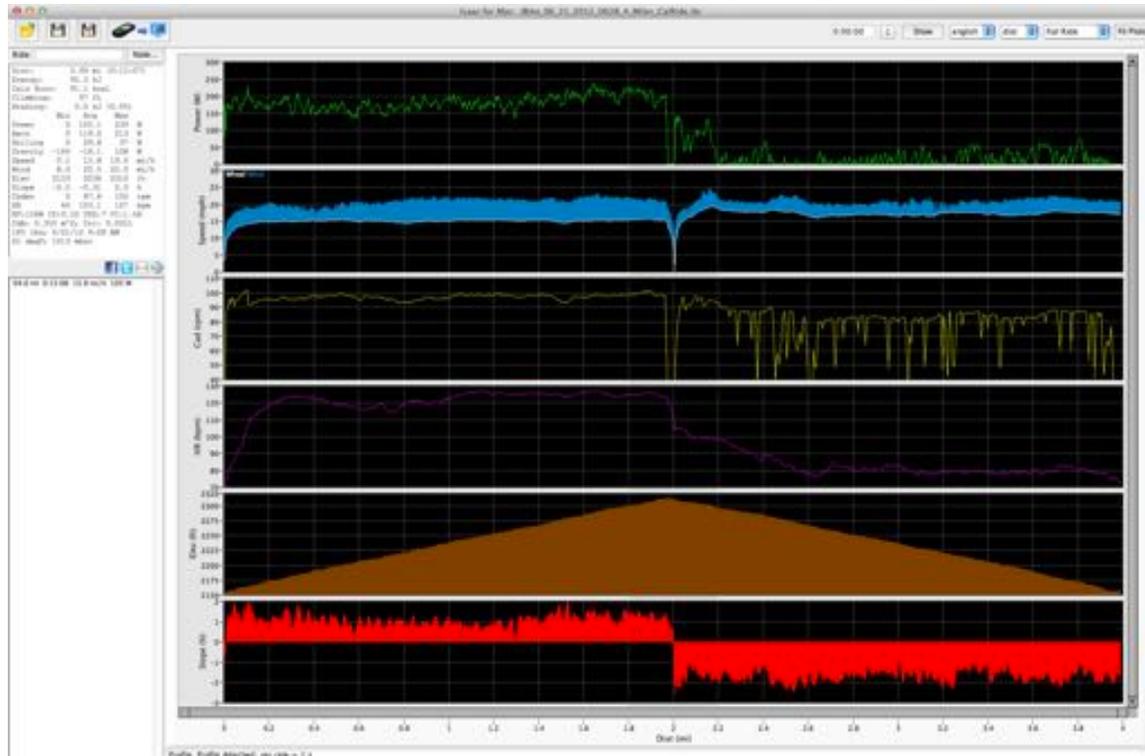
The elevation profile is symmetric—a necessary requirement for Check Calibration. Note, however, that there are blue "flames" of high wind speed constantly above the white bike speed; in an out-and back ride, the wind speed setting should be symmetric.

So, Check Calibration can really help this profile!

When Check Calibration is used, it will prompt the user to confirm certain things. For this ride:
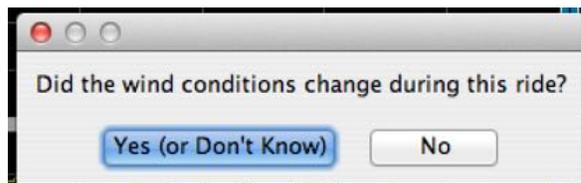
Click "no", then the analysis is performed:
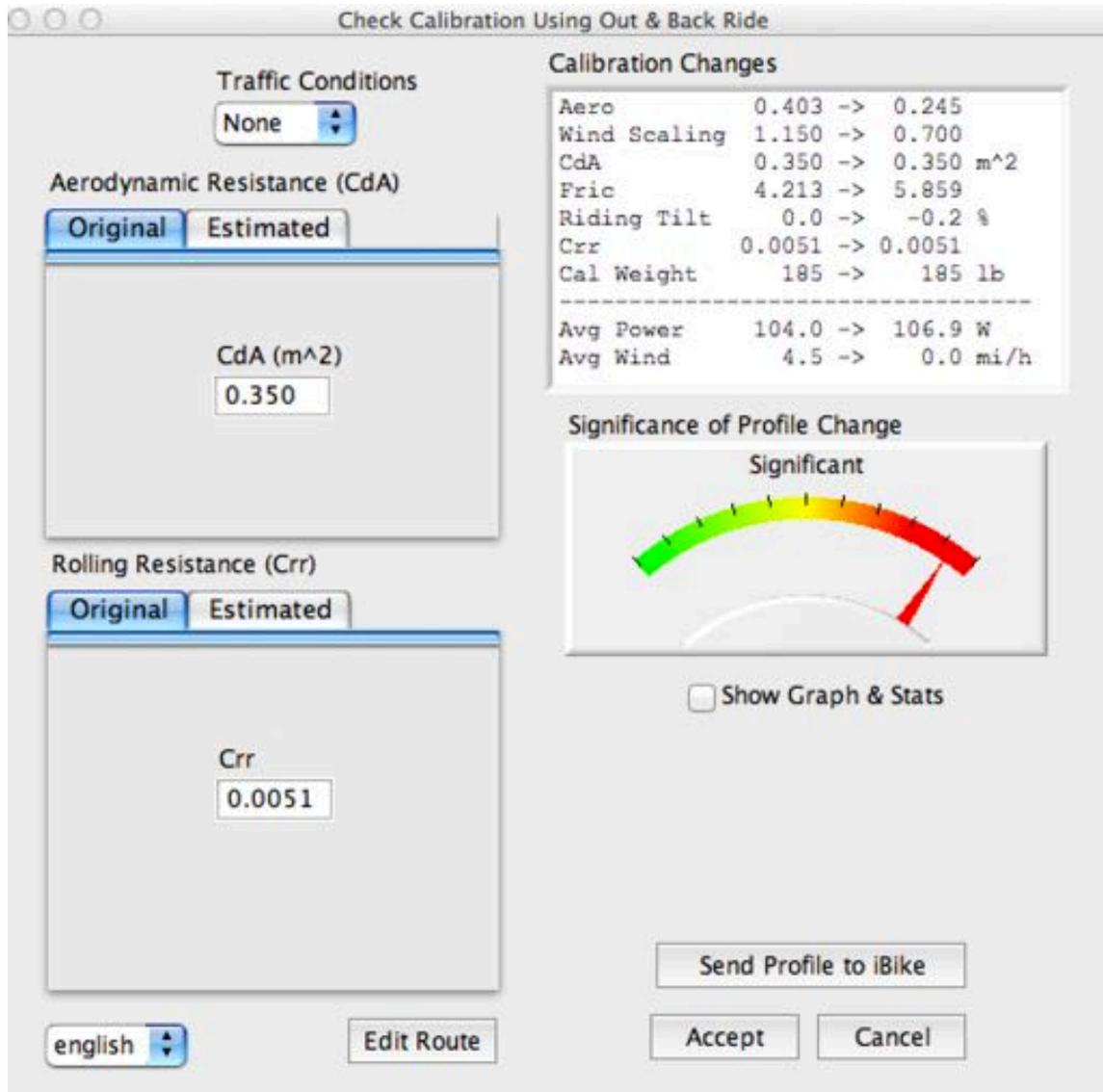
The needle is in the red range, in this particular example because the wind scaling factor is wrong. It's likely that the Cal Ride was done improperly.

Click the Accept button to correct the ride file. Afterwards, you'll see that wind speed is nicely symmetric too. WITH THIS CHANGE, IT SHOULD NOT BE NECESSARY TO PERFORM FURTHER "CHECK CALIBRATIONS" FOR THIS UNIT
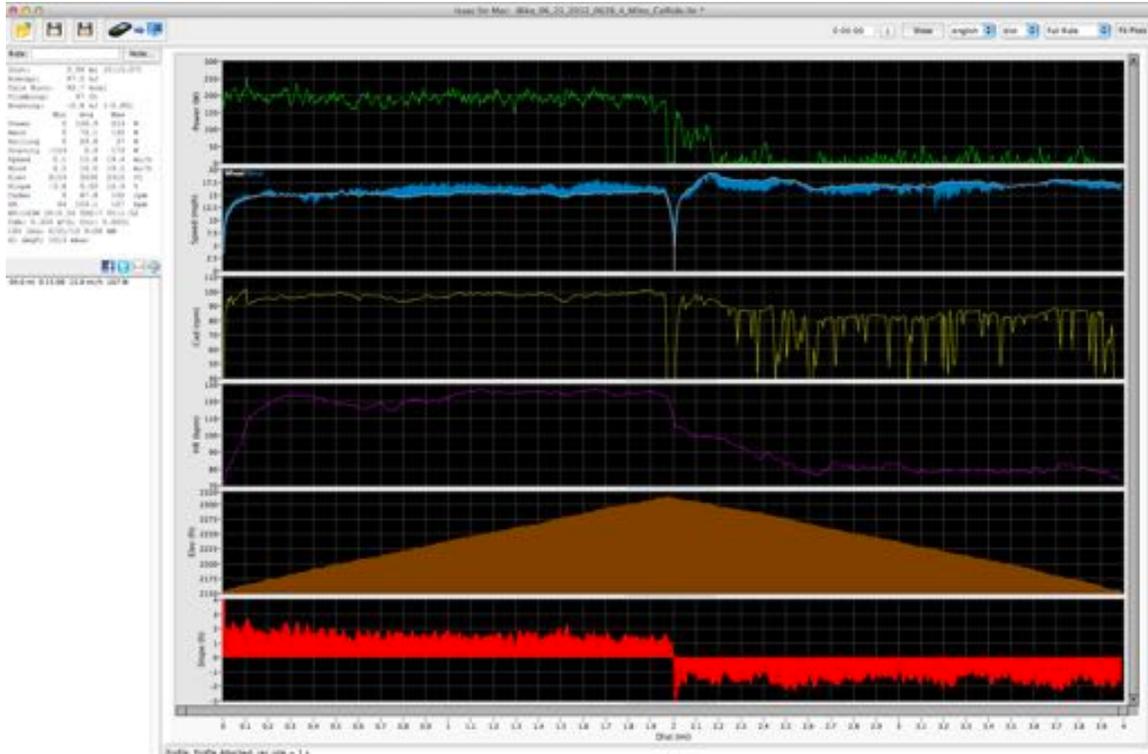
WARNING: Garbage In, Garbage Out!

This Check Calibration command cannot work properly if the device has been setup improperly. As an example here is a ride file that shows improper setup, caused by a blocked wind port:
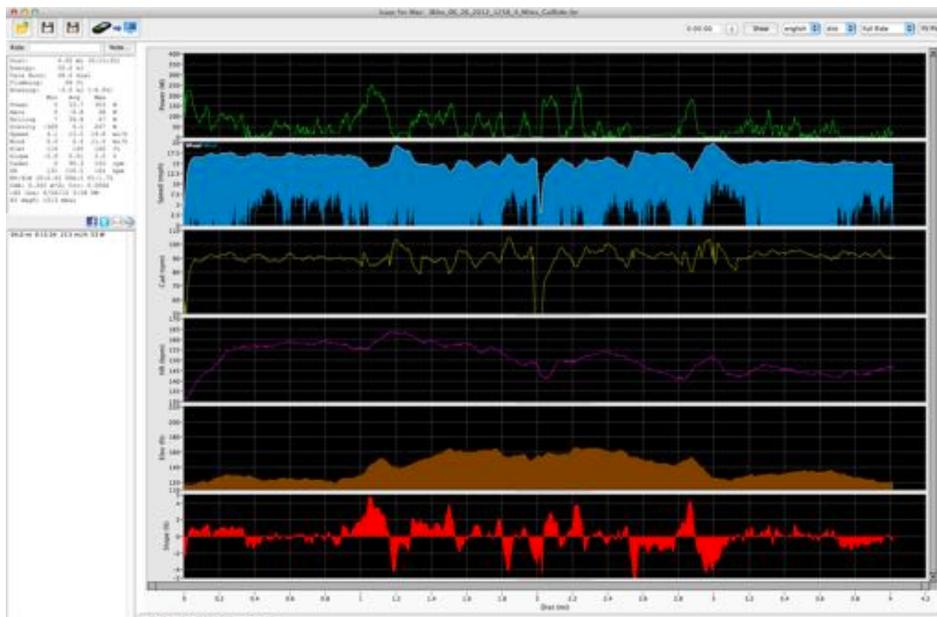
The elevation data is symmetric, but the wind sensor data is wildly "off" (wind "icicles" hanging below bike speed), indicating that the wind sensor was likely blocked. If Check Calibration is performed with this ride file, the Device will be in WORSE shape, not better.

The user should answer "No" to the question "Was a Cal Wind done properly prior to starting this ride?"

This particular ride file indicates that the user needs to "start from zero"—a completely new set of calibrations and Cal Ride.

Check Calibration with a DFPM

If you are using your Device with a DFPM, then the Check Calibration procedure can precisely calibrate your Device with the DFPM as a reference.

NOTE: Your DFPM is assumed to be properly calibrated.

Here is an out-and-back ride file that was recorded with a DFPM (note that the "View DFPM" box is visible)

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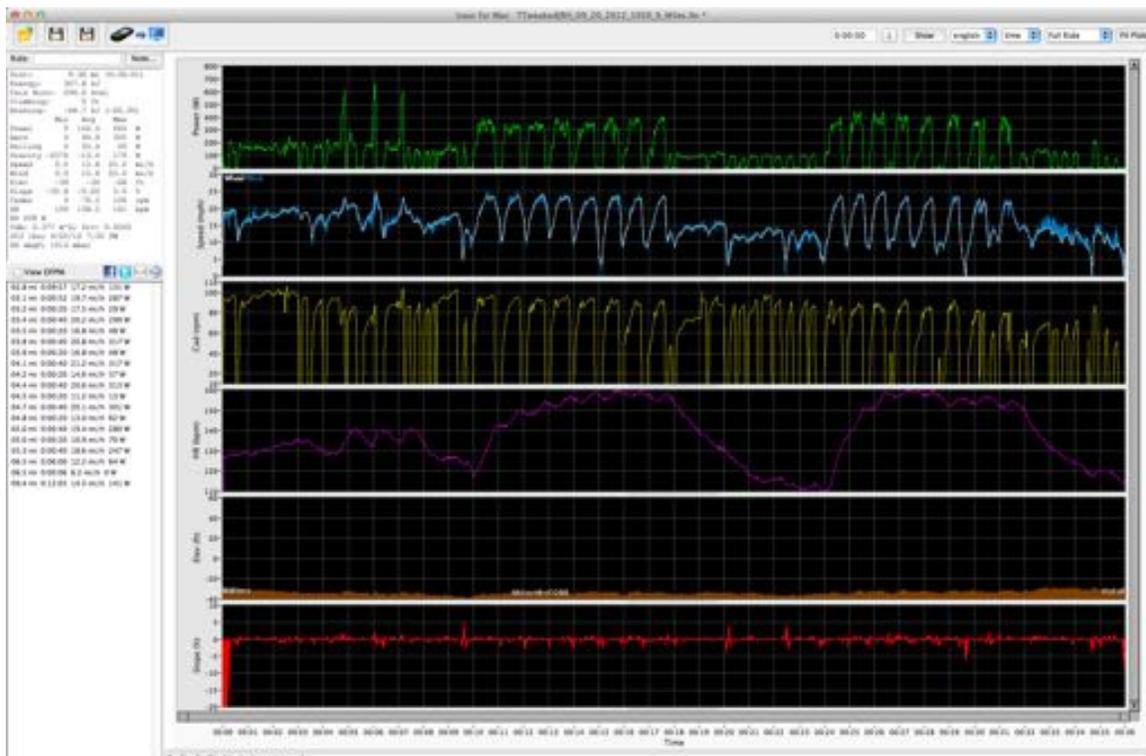
When Check Calibration is performed a new screen appears:
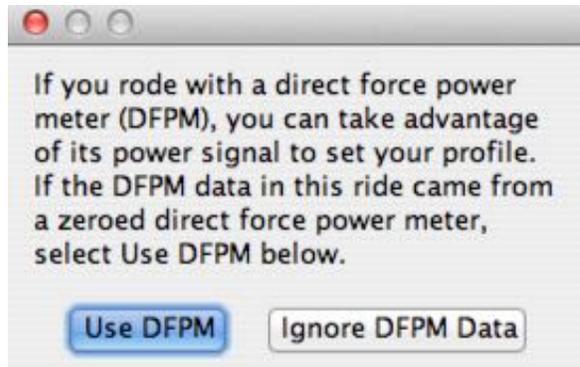
Click "Use DFPM".

You can now customize the calibration of your device against your DFPM. In this particular example needle is near the red zone; the rider's Crr is too high (.0065 is more representative of a mountain bike; this rider cycles with a road bike on asphalt roads, and uses premium tubulars):
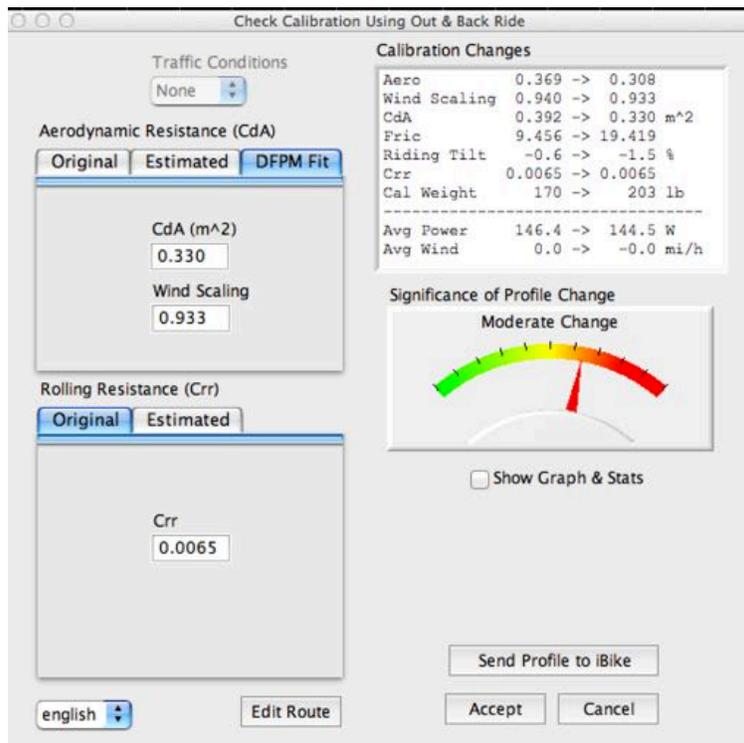
So, in the Crr box we click on the Estimated tab, and select tubular premium tires:
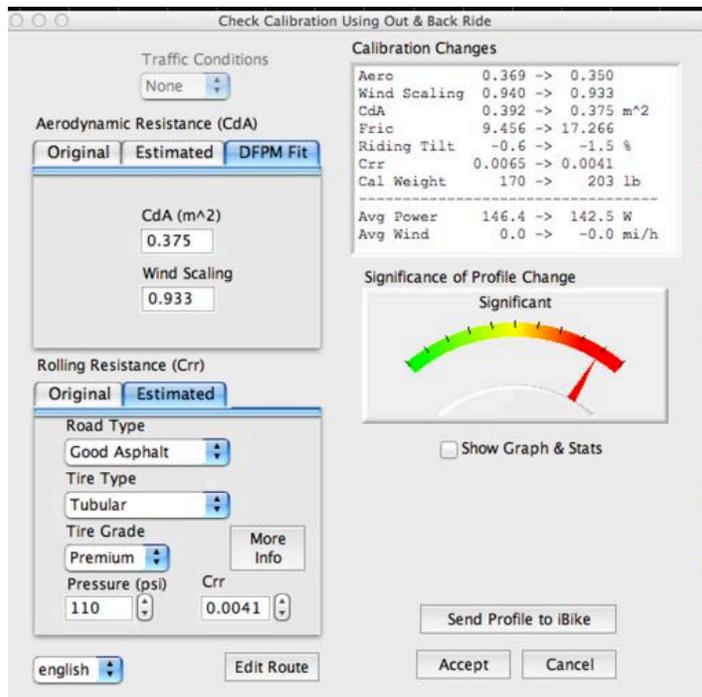
Note that Crr drops to 0.0041, and that CdA is automatically best-fitted to the value 0.375. Click Send Profile to iBike to send the best-fit profile to the Device. Now, your Device is calibrated to your DFPM.

```
---------Selection Stats---------
Dist:          2.36 mi (0:07:40)
Energy:      105.4 kJ
Cals Burn:   100.7 kcal
Climbing:        0 ft
Braking:     -20.6 kJ (-19.5%)
             Min   Avg    Max
DFPM Pow      0   229.1   428   W
Aero          0   145.8   281   W
Rolling       6    30.8    40   W
Gravity    -156    -0.1   105   W
Speed       3.6    18.5  23.9   mi/h
Wind        0.0    18.4  25.1   mi/h
Elev        -37     -34   -32   ft
Slope      -3.0   -0.00   1.4   %
Caden         6    80.6    97   rpm
HR          117   150.7   160   bpm
NP 256 W
CdA: 0.375 m^2; Crr: 0.0041
203 lbs; 9/20/12 7:40 PM
86 degF; 1013 mbar
```
☑ View DFPM

```
---------Selection Stats---------
Dist:          2.36 mi (0:07:40)
Energy:      104.2 kJ
Cals Burn:    99.6 kcal
Climbing:        0 ft
Braking:     -20.6 kJ (-19.7%)
             Min   Avg    Max
Power         0   226.5   411   W
Aero          0   145.8   281   W
Rolling       6    30.8    40   W
Gravity    -156    -0.1   105   W
Speed       3.6    18.5  23.9   mi/h
Wind        0.0    18.4  25.1   mi/h
Elev        -37     -34   -32   ft
Slope      -3.0   -0.00   1.4   %
Caden         6    80.6    97   rpm
HR          117   150.7   160   bpm
NP 257 W
CdA: 0.375 m^2; Crr: 0.0041
203 lbs; 9/20/12 7:40 PM
86 degF; 1013 mbar
```
☐ View DFPM

Analyze/Analyze Bike Settings…

This is the screen where you can adjust your wheel circumference, starting elevation, and rider weight. Any changes will be reflected in the ride file.

Analyze/Analyze Wind:

This command analyzes wind speed data. Use this command ONLY under the following circumstances:

1) No drafting was done during the ride
2) The ride was out-and-back

This command will adjust your wind speed if necessary so that average wind speed equals average bike speed (as must be the case for out and back rides).

When there is no ambient wind (wind is calm), or when you do an out-and-back ride, then the difference between average bike speed and average wind speed should be zero.

In this command you can check to see what your device reported and, if desired, alter the wind speed to reflect actual conditions. To adjust the average wind speed, change the number in the "Average Ground Wind" box. You'll see the results of your adjustments in the After stats.
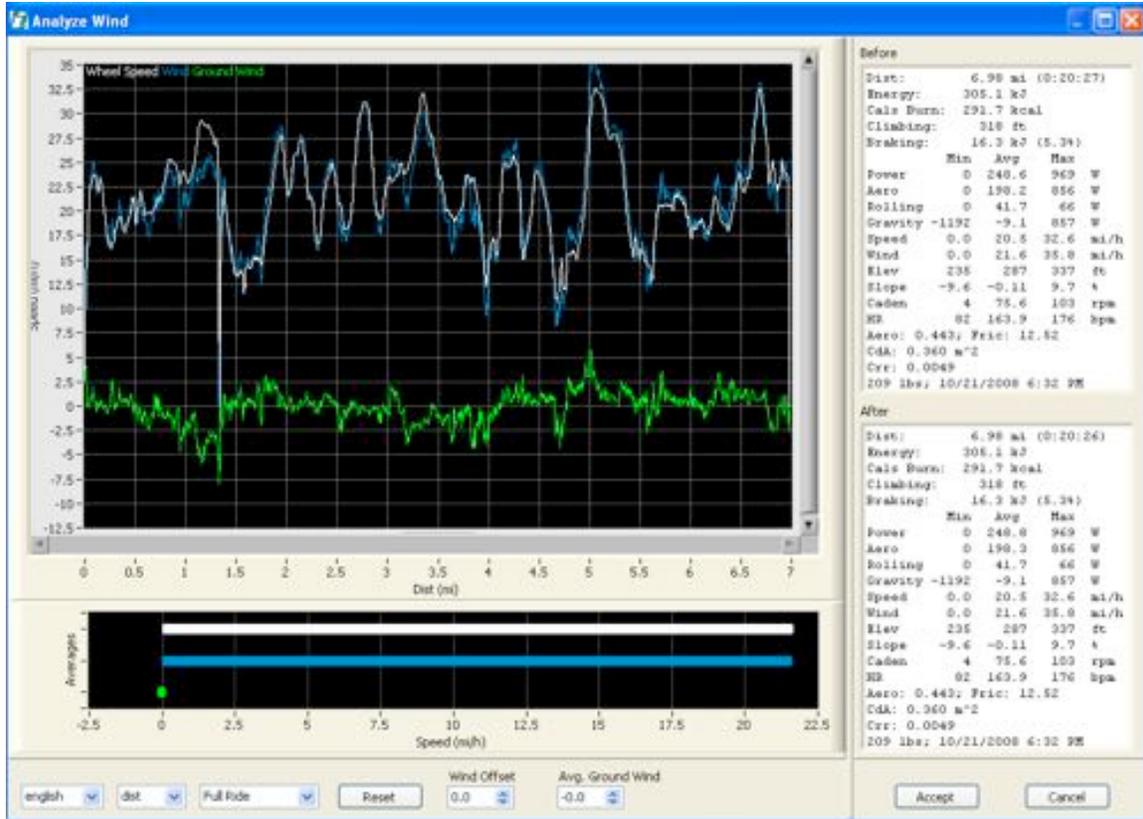
Analyze/Analyze Route…

This command is very similar to the Check Calibration command, and all of the cautions of the Check Calibration command apply to this command. The primary difference in this command is that you can get more detail about what parameters are adjusted.

Analyze/Tweak CdA, Crr, Cm

In this command you can adjust the values of CdA (aerodynamic drag), Crr (rolling resistance) and Cm (drive train losses).

Why would you want to tweak these parameters? Here are three scenarios (more are possible)

1) Your device was set to the "ride on hoods" position, but in the ride you happened to ride in the drops. You can tweak down your CdA, in order to reflect the more efficient ride position
2) You decided to ride your road bike on a dirt road. You tweak Crr to a higher number, to reflect the higher rolling resistance
3) After the ride you find out that your rear brake was rubbing constantly against the wheel. You tweak Cm to a higher number to reflect the drive train loss

Analyze/Undo Analysis

Use this command to undo the step you just performed.

Analyze/Return to Original Download

Use this command to return to the original data downloaded from your Device

TOOLS MENU

Switch Profile After the Ride

If you accidentally loaded the wrong profile into your device before starting your big ride then your data won't be as accurate as it could be. No worries: just use the "Switch Profile After the Ride" command to select the profile you should have used. Your ride data will be displayed with the correct factors and your results will be at their highest accuracy. Here's what the screen looks like:

In the bottom center window, select the profile you want to use, then click the Accept button.

NOTE: Use the "Device/Send Profile to iBike…" command to select and then send the correct profile to your Device.

Tools/Repair…
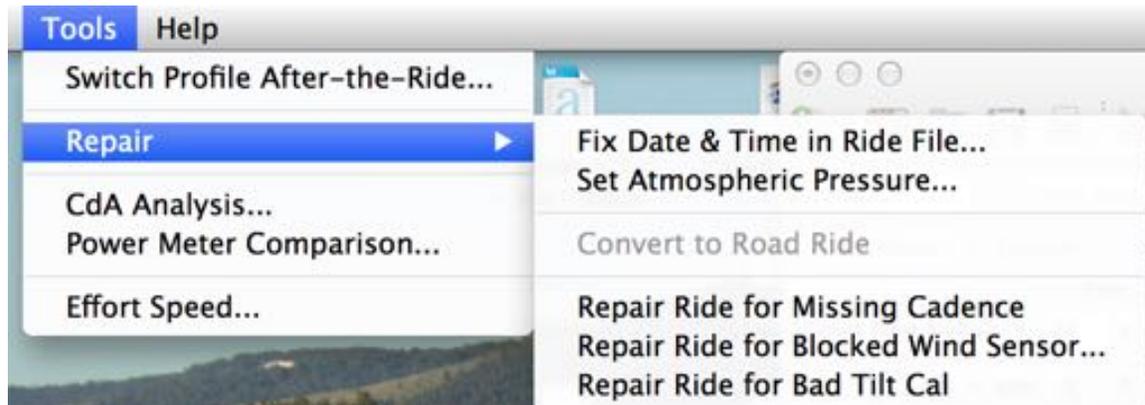
The first two commands are self explanatory.

Repair/Convert to Road Ride

If you did an outdoor ride and accidentally had your device set to indoor trainer mode, then you will get wacky watts readings. A tell-tale indicator of this problem is that there is no wind speed shown in the ride file data.

If this command is not "greyed out" then your ride was, indeed, recorded as a trainer ride, and you can convert your ride file into an outdoor version. The data won't be quite as accurate as if you had been in Outdoor Mode while doing your ride, but it will be pretty good.

Repair/Repair for Missing Cadence

During a bike ride, if you knock your cadence sensor out of position your reported watts will go to zero (cadence = 0 means power = 0). However, with this command you can restore your power readings, even where cadence equals zero.

Click-drag on the main screen to highlight the area to be corrected, then execute the command.

Repair Selection for Blocked Wind Sensor

Your Device won't be damaged by rain, but if too much rain gets in the wind port then your ride can show some crazy watts.

If you do have a ride file where your wind port is blocked, use this command to remove the effects of incorrect wind readings. Highlight the area of the ride where wind readings

are incorrect, then apply the command. Isaac software will estimate the value of opposing wind in the area highlighted and compute the corresponding level of watts.

Note that this repair won't be accurate for group ride situations.

Tools/CdA Analysis

If you have a ride file which was recorded with your AeroPod or DFPM-enabled Newton (TT key is installed), <u>AND</u> you also have a DFPM on your bike, you can look at your CdA at each moment of your ride, as well as the time benefit (time advantage) of changing your ride position.
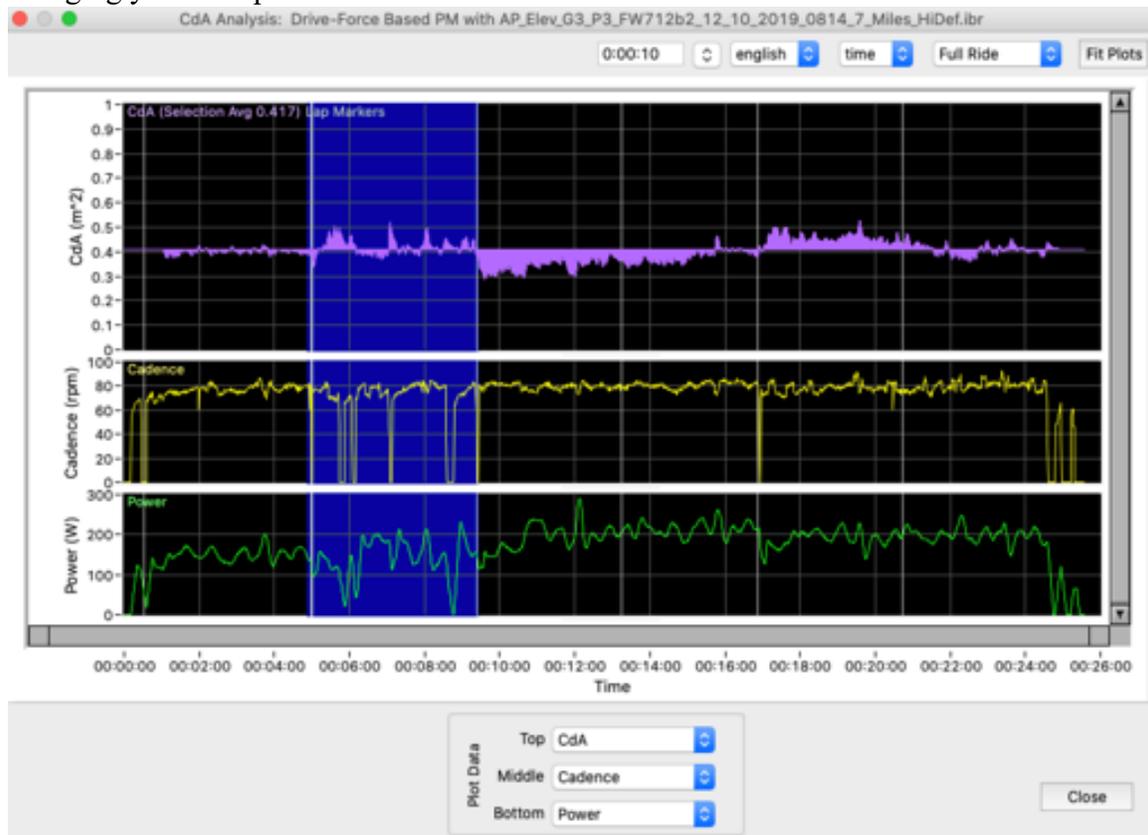
In the window shown above, the ride data has been highlighted between minute 4 and 9. Note that the average CdA for the highlighted area is shown (0.417)

Tools/Power Meter Comparison

If you have a ride file which was recorded with a DFPM-enabled Device (TT key is installed), AND a DFPM, you compare your power at each moment of your ride.

Here is an example of what you'll find:

Tools/Effort Speed…

Every cyclist knows that it is easier to ride with the wind at your back, compared to when the wind is in your face. But, just how much easier is it?

And, when you're riding solo and a speedy group ride goes zooming by you, it's natural to ask: are those cyclists working as hard as you are on your solo ride?

The exclusive Effort Speed command answers both questions. At any point of your bike ride, Effort Speed is how fast you would travel, without the benefit of any tail wind, or the penalty of head wind.

Here's an example. In this section of the ride, between miles 8.4 and 9.3 the cyclist is riding into a 3 mph headwind, and average bike speed is 17.2 mph.

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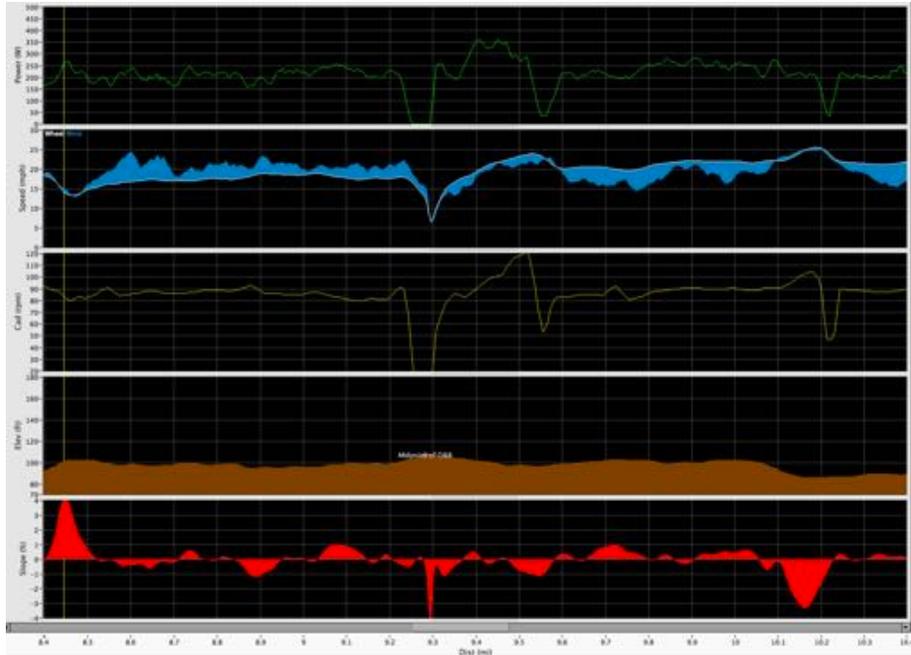
The cyclist turns around at mile 9.3—now, there is a comparable tail wind. The cyclist's average speed over the same part of road is 20.6 mph. But, is the cyclist still working as hard?

Highlight the area between miles 8.4 and 10.1, then use Tools/Effort Speed. Here is the result:
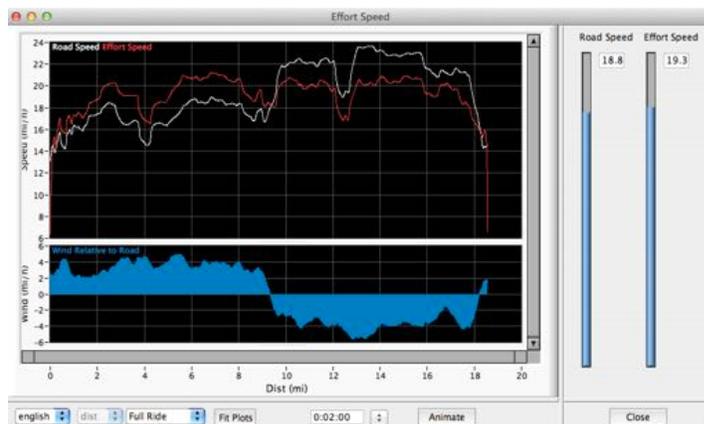
The plot shows the headwinds (between 0 and mile 9.6), then the almost symmetrical tail wind on the return trip.

The white line is measured road speed (bike speed). The cyclist averages about 18.2 mph in the headwind section, then goes well above 22 mph on the tailwind section.

However, the red Effort Speed graph tells a very different story: The cyclist's average Effort Speed on the headwind leg is closer to 21 mph between miles 6 and 8, and on the comparable portion of the return leg, miles 10-12, Effort Speed is about 20 mph, LOWER than the tailwind leg. So, the cyclist has actually backed-off on effort, even though road speed is greater…

This is a good way to compare your efforts on days when the wind is blowing hard, to rides on the same roads when winds are calm.

HELP MENU
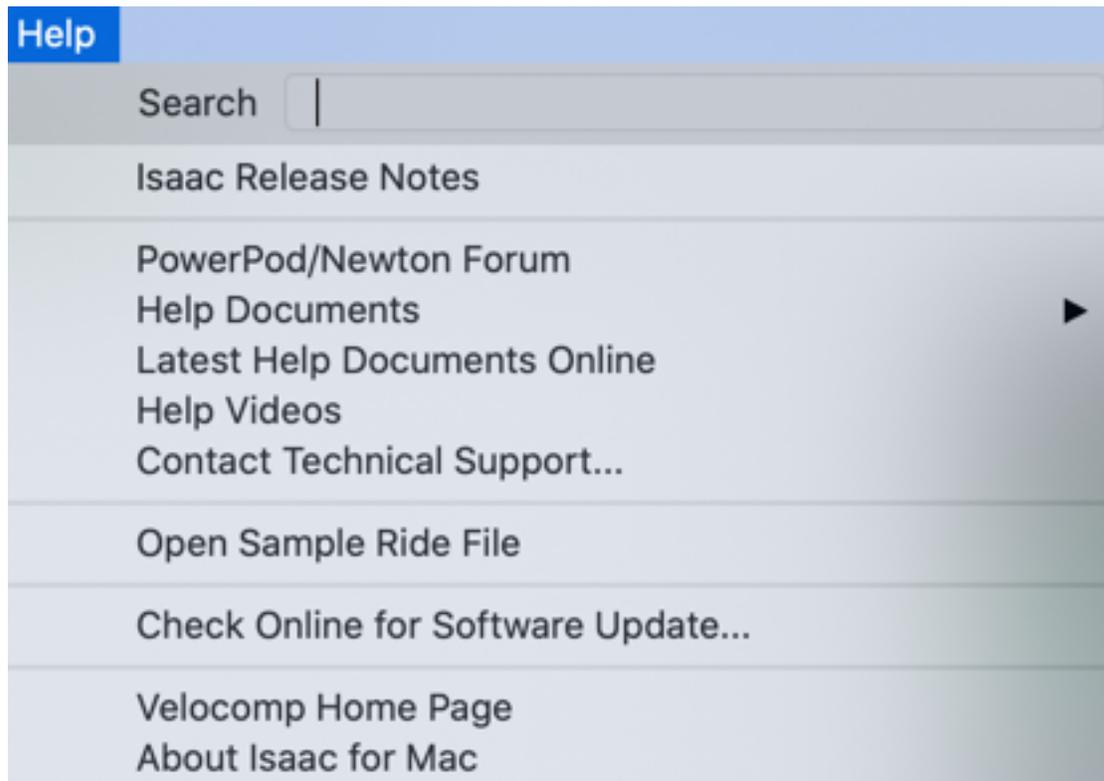
Help/Isaac Release Notes

Review this item to find out what is new in each revision of Isaac software.

PowerPod/Newton forum links directly to http://www.velocompforum.com/, where you can find answers to many other questions.

Help Documents includes detailed instructions, in pdf format, that you can use/print.

Help Videos provide tips for Device setup, calibration, and other topics.

Open Sample Ride File takes you to a file that shows many of the features of your device and of Isaac Software.

Check Online for Software Update is the command to use to make sure your version of Isaac is the most current.

About Isaac shows the version of software you're currently using.

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 Isaac 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 Isaac 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.