iBike® Gen III Power Meter
Operating Instructions
Firmware 424+

December 2010

The Way To Measure Power

Congratulations on the purchase of your iBike® Generation III power meter!

In just a few minutes you'll have your new iBike® power meter mounted on your bicycle, set-up and ready to use. And with the iBike as your guide you'll enter the exciting world of power training—the way the world's top cyclists get to their peak levels of performance.

With the Generation III iBike you'll get even higher accuracy, increased ride file storage time, improved temperature and weather performance, a lap timer, on-the-bike profile storage, a built-in power-based fitness test, workouts customized to your fitness level, a lap timer, simpler set-up, and more.

All of us at Velocomp are avid cyclists. Frustrated by the high cost, weight burden, inflexibility, and complex operating procedures of existing power meters, we knew there had to be a better way.

There is. More than ever our new Generation III technology will show you why the iBike is *The Way to Measure Power.*

Enjoy!

These instructions are divided into two parts:

- **PART ONE provides basic instructions for all iBike users**
- **PART TWO provides additional instructions for extra iBike features of interest to advanced cyclists and coaches**

To learn how to install your iBike mount, please refer to the "iBike Mount and Sensor Installation" instructions, included separately.

Other resources:

Enjoy the large community of iBike owners participating in the iBike Forum:

www.ibikeforum.com

OR, please email us at

technicalsupport@velocomp.com

Also, check out our blog:

www.ibikeblog.com

Make sure to visit our website frequently to get the very latest in iBike product, software, and information updates:

www.ibikesports.com

PART ONE
BASIC OPERATION

PART TWO
ADVANCED FEATURES

INSTALL IBIKE BATTERY

1. Turn the iBike upside down.
2. Open the battery door with a coin.
3. Install the CR2032 battery. MAKE SURE THE + SIGN IS FACING YOU.
4. Replace the battery cover.

INSTALL IBIKE WIRELESS MOUNT BATTERY

1. Remove battery door from wireless mount.
2. Install CR2032 battery, + SIDE UP. Replace cover.

iBIKE BATTERY LIFE

New batteries have a voltage of about 3.00 volts. As the battery is used, or in cold temperatures, the battery voltage will drop. The iBike battery should be changed when its voltage is 275 or less.

In summer riding conditions (70°F+) the iBike battery and wireless mount battery will last 50 hours or more before needing replacement.

In winter conditions (45F or lower) the iBike battery and wireless mount battery are cold and their performance drops. They will last 2-5 hours before needing replacement.

For temperatures below 40°F, we recommend that the iBike battery and wireless mount battery be changed *every 4 hours*.

Batteries used in wireless sensors last about one year.

Each time the iBike is awakened from Sleep, the battery voltage is checked. If the message "BATT BAD" appears, replace the battery immediately.

The iBike also checks battery voltage frequently during each ride. If the message "BATT LOW" appears, change your battery soon.

IMPORTANT: Your iBike will not work correctly if the battery is weak. Symptoms of a weak battery include:

- Incorrect power readings
- Incorrect temperature readings
- Incorrect/changing hill slope readings
- Incorrect wind speed readings
- Error messages appearing on the screen

IMPORTANT: IF THE IBIKE BATTERY IS LOW, **REPLACE BOTH THE IBIKE BATTERY AND THE WIRELESS MOUNT BATTERY**

USING YOUR iBIKE IN COLD TEMPERATURES

For cold-weather riding carry an extra battery with you.

TO PRESERVE RIDE DATA, PERFORM A "TRIP RESET" PRIOR TO REMOVING YOUR WORN IBIKE BATTERY.

IBIKE SETUP AND CALIBRATION PROCESS

Before using your iBike on the road, it is essential to complete a one-time setup and calibration process *for each bike*. **YOUR IBIKE WON'T WORK PROPERLY UNTIL THE SETUP PROCESS HAS BEEN COMPLETED**.

The setup process involves two simple steps:

1) Enter information into the iBike's memory. This is done through "Setup" screens and setup "Sequences" The "Fast Start" sequence is mandatory.
2) Perform a 2 mile long calibration ride

IMPORTANT: Your iBike won't work properly until steps 1) and 2) are performed.

If you are a very fast rider (speeds on the flats regularly above 22 mph), or want to take advantage of some of the iBike's advanced measurement capabilities, you may want to consider optional coast down measurements. To learn more about coast downs, see Part Two of these instructions (pages 30-32), and refer also to the iBike Software instructions.

iBIKE SETUP MODE

All of the required setup and calibration steps are accessed through the Set-Up mode.

How to *enter* the Set-Up mode

1. Click any button to wake-up the iBike
2. *Press and hold the up-arrow for about 2 seconds* (UP-ARROW FOR SET-UP); the words "set up" will appear. When the set-up screen appears release the button.

How to *exit* the Set-Up mode

1. Press-hold the UP arrow for two seconds, OR
2. Do not press any button for 30 seconds.

NAVIGATING THE iBIKE SETUP SCREENS

Once entering the "Setup" mode (press-hold up arrow for two seconds), scroll to any setup screen by clicking the up or down arrows located on the red button:

Click the up arrow: advance to the NEXT setup screen,

Click the down arrow: return to the PREVIOUS setup screen

Each setup screen displays one step of the iBike's setup process.

iBike screens are organized like a Rolodex. You can scroll forwards and backwards to any setup screen. When you reach the final screen and click the up arrow to advance to the next screen, you will return to the first screen.

STEP ONE:

ENTER INFORMATION INTO THE IBIKE

Important information about you and your bike is entered into the iBike with special screens. Information entry is organized into three "sequences":

1) "**Fast Start**" sequence: *six required setup steps*.

2) "**User**" sequence: *eight optional steps* that the iBike owner *should* complete when possible *but which are not required*

3) "**Racr**" (Racer) sequence: *six optional, advanced settings* of interest primarily to advanced riders and racers

When a sequence screen is set to YES (for example, "USER YES"), clicking the up arrow enters the sequence and shows the steps of that sequence. When a sequence screen is set to NO (for example, "USER NO"), clicking the up arrow bypasses the steps of that sequence; the steps in the User sequence will be hidden.

To perform a sequence, enter Setup and click the up arrow repeatedly to scroll to the sequence you want to perform. Then, click the center button. Use the up arrow to select YES (for example, "RACR YES"). Click the center button. YES stops flashing. Now, click the up arrow to perform the first step of the selected sequence.

USING THE IBIKE BUTTONS TO PERFORM A SETUP STEP

To perform a setup step, *click the center button.* The parameter to be adjusted flashes on the screen. Use the up, down, left and right arrows as needed to change the parameter. When the parameter is set to the desired value, *click the center button to confirm the entry*. The word "DONE" flashes and the iBike advances to the next step of the sequence.

IMPORTANT: Click the UP arrow to advance sequentially from step 1, to step 2, etc.

PERFORM THE "FAST START" SEQUENCE

The FAST START sequence must be performed one time, for each different bicycle.

CRITICAL: BEFORE PERFORMING THE FAST START SEQUENCE, ATTACH YOUR IBIKE TO YOUR MOUNT. SEE "IBIKE MOUNT INSTALLATON" INSTRUCTIONS FOR INFORMATION REGARDING MOUNT AND SENSOR INSTALLATION.

Enter Setup. Note that when a new battery is inserted in to the iBike, the screen "YES FAST START" appears automatically when the user enters Setup.

If, after entering Setup, the iBike screen does not say YES FAST START, remove the iBike battery and reinsert it. Then, enter Setup. Your iBike will say "YES FAST START".

NOTE: IF THE FAST START SEQUENCE HAS ALREADY BEEN PERFORMED, EITHER BY YOU OR SOMEONE ELSE, THERE IS NO NEED TO REPEAT THE FAST START SEQUENCE.

With the screen "YES FAST START" showing, click the up arrow to start the Fast Start sequence.

- "**UNITS**"

Select between English and metric units; the iBike default setting is English units. To change units, *click the center button*. The screen flashes, indicating that the selection can be changed by clicking the up arrow. Click the up arrow once; the units change to metric (KM/hr, etc.). To change back to English, click the up arrow again. The screen again flashes English units (m/h, etc.). Once you've selected the units you want, **confirm and memorize your choice by clicking the center button**. The message "done" flashes and the iBike advances to the next setup step, "**TIRE CIRC**".

NOTE: TO SKIP A SETUP STEP, CLICK THE UP ARROW.

- "**TIRE CIRC**"

Enter the circumference of your tires, measured in millimeters. The factory default is 2096 mm (700 x 23C). Click the center button. The current setting of tire circumference is shown and the left-most digit flashes. The digit that is flashing can be adjusted with the up and down arrows. To select a different digit for adjustment, use the left and right arrows.

Enter your tire circumference, then click the center button. "Done" will flash, and the iBike advances to the next setup screen, "TOT WGHT".

- "**TOT WGHT**"

Enter the total weight of you, your bike, and your bike gear. When the total weight is entered click the center button. "Done" will flash, and the iBike advances to the next setup screen, "EST AERO".

- "**EST AERO**" (estimated aero drag)

Each rider has a different aerodynamic drag. The iBike estimates your aero drag based on certain factors. *Click the center button* to start the EST AERO steps:

- Enter your body height, then click the center button to continue;

- Enter your body weight *only*, then click the center button to continue;
- Finally, select the riding position you use most often: Hoods (hands clasped around the brakes); Drops (hands clasped around the bottom of the handlebars); or TT (time trial—using aero bars).

The first choice is "HOOD NO". The word "NO" flashes, indicating that its setting can be changed. The default choice is "NO", meaning that you do NOT ride on the hoods most often. If you DO ride on the hoods most often, click the up arrow to select "YES". The word "YES" flashes. To confirm your choice of HOOD YES, click the center button. The word "DONE" flashes and the iBike advances to the "TILT" screen.

If you do NOT ride on the hoods most often, then leave the word Hood NO flashing, then click the center button to confirm your choice of NO. The screen advances to DROP NO; the word NO flashes.

In a similar manner, select NO or YES for drops, then click the center button; if you select DROP NO, the screen advances to TT.

"TT NO" flashes; select NO or YES, then click the center button.

IMPORTANT: IF YOU SELECT "NO" FOR ALL THREE OPTIONS, THE VALUE CURRENTLY STORED FOR AERODYNAMIC DRAG IS UNCHANGED.

IMPORTANT: "EST CDA" STEP ESTIMATES YOUR AERO DRAG. YOU CAN MEASURE YOUR AERODYNAMIC AND FRICTIONAL DRAG WITH "COAST DOWN" CALIBRATIONS DESCRIBED LATER IN THESE INSTRUCTIONS.

- **"TILT" calibration**

The Tilt calibration allows your iBike to measure hill slope with extremely high precision.

To perform the Tilt calibration, do the following:

1. Set your bike on reasonably level ground. Mark the spots where the wheels touch the pavement.

TIP: DO NOT PERFORM A TILT CALIBRATION ON A ROAD WITH LOOSE STONES OR JAGGED PAVEMENT. YOU WILL GET POOR RESULTS.

2. **Hold the bike still and upright**, *with the front wheel pointed straight ahead*.
3. Click the center button to start the tilt calibration process.

IMPORTANT: YOU MUST HOLD THE BIKE STILL DURING THIS STEP. AN EASY WAY TO KEEP YOUR BIKE FROM MOVING IS TO WEDGE YOUR FOOT IN FRONT OF THE BACK TIRE.

4. The screen says "HOLD STILL" and the horizontal bar moves from right to left, towards zero. Do not move the bike.
5. Once the bar disappears, the screen flashes "turn 180 degrees".
6. Turn the bike around 180 degrees; the bike now points in exactly the opposite direction *with the tires resting on the same two spots*.
7. **Hold the bike still and upright**, with the front wheel pointed straight ahead. Click the center button. The horizontal bar counts down to zero. Do not move the bike.
8. Once the bar disappears, the words "turn 180" flashes *again*. Turn the bike 180

degrees; the bike now points in the original direction *with the tires resting on the same two spots.*
9. **Hold the bike still and upright**, with the front wheel pointed straight ahead. Click the center button. The horizontal bar counts down to zero. Do not move the bike.
10. Once the bar disappears, if the calibration is good the words "GOOD TILT" flash a few times and the iBike advances to the CAL WIND screen.
11. If you moved the bike during any of the three "countdowns" you may get the message "BAD TILT". If so, repeat steps 2-10, making sure you point the bike straight ahead and hold it as still as possible during the calibrations.

- **"CAL WIND" calibration**

The iBike has a very sensitive wind sensor. "CAL WIND" calibrates the wind sensor so that the sensor reads wind speed correctly.

1. Leave your bike and iBike outdoors for 5 minutes. This acclimates your iBike to outdoor temperature.
2. If it is windy where the calibration is being performed, cup your hand over the iBike's wind port (at the front of the iBike) to prevent wind from striking the wind port.
3. Click the center button; the iBike flashes "Done Wind" and the top number will settle to a value near 0_0
4. You can repeat the CAL WIND step if you wish
5. A few seconds after the CAL WIND step is finished, the iBike exits setup automatically

STEP TWO:

THE CALIBRATION RIDE

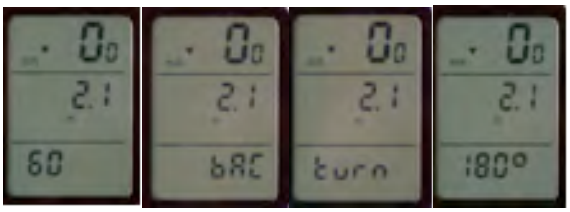
The Calibration Ride improves the accuracy of your wind sensor and tilt sensor, and also improves the accuracy of your estimated aerodynamic and frictional drag coefficients.

The Calibration Ride is 2 miles (3.2 KM) long. The cyclist rides one mile out, then turns around and rides back on the same road.

Here's how to perform the Calibration Ride:

1) Make sure the FAST START sequence has been completed
2) Place the iBike on its mount.
3) Click the center button to awaken the iBike. Cup your hand over the wind port during the "Auto Wind" calibration.
4) Ride your bike to the location where you will start the Cal Ride. While riding the iBike will show readings but power and wind speed measurements may not be accurate.
5) When ready to start the Cal Ride, press-hold the up arrow to enter Setup.
6) Click the up arrow twice to find the "Cal Ride" screen.
7) To start the Cal Ride click the center button.
8) Your iBike checks to see when the Tilt and Cal Wind steps were performed. If these steps were performed more than 30 minutes prior to the start of your Cal Ride, you will be required to perform the Tilt and Cal Wind calibrations again.
9) If prompted, perform Tilt and Cal Wind. Just before starting the Cal Ride the screen "Start" will flash.
10) To start the Cal Ride click the center button. You'll see the following screen:

10) Begin your Cal Ride. Ride at a leisurely pace, in your normal riding position.
11) NO DRAFTING ALLOWED!
12) During your ride out the iBike center window will tell you how far you've traveled. Your goal is to travel at least 1 mile from the starting point.
13) Once you've traveled 1 miles your iBike will tell you to turn around. You will see these screens <u>flash</u> in succession, telling you exactly what to do: (Go back, turn 180 degrees)



14) When you see these messages, **STOP, THEN TURN AROUND.** The flashing messages disappear the word "Bac" appears in the bottom window, and does not flash.

TIP: IT'S OK TO RIDE OUT MORE THAN ONE MILE. AS LONG AS YOUR BIKE SPEED REMAINS ABOVE 10 MPH THE IBIKE WILL CONTINUE TO RECORD DATA EVEN WHILE FLASHING "GO BAC". IF YOU RIDE MORE THAN ONE MILE YOUR CAL RIDE WILL BE EVEN MORE ACCURATE; A FOUR MILE OUT-AND-BACK RIDE IS EXCELLENT!

14) As you ride back your iBike distance measurement will count down to zero, telling you how much distance remains until the end of the Cal Ride.

IMPORTANT: RIDE BACK ON THE SAME ROADS

17) At the end of your calibration ride your iBike will notify you that the cal ride is done ("Cal Done"). After a few seconds your iBike will exit setup.

RACER TIP: IF YOU DECIDE TO DO COAST DOWNS, DO THEM **IMMEDIATELY** AFTER YOUR CALIBRATION RIDE. ALSO, DO NOT ERASE YOUR RIDE DATA AFTER YOUR CAL RIDE AND PRIOR TO YOUR COAST DOWNS!

NOTICE: ONCE BEGINNING YOUR CAL RIDE, IF YOU WISH TO TERMINATE IT, PRESS-HOLD THE CENTER BUTTON FOR TWO SECONDS. THIS ABORTS THE CAL RIDE AND LEAVES ANY PRIOR RESULTS UNCHANGED.

YOUR IBIKE IS NOW READY TO RIDE!!!

THE IBIKE PROFILE

The information you entered in the Fast Start sequence, in combination with the Cal Ride, together form a "Profile", a description of all the things that make your iBike work properly with you and your particular bike. A profile includes:

1) total bike and rider weight
2) tire circumference
3) wireless IDs (if you are using a wireless mount)
4) calibration data (drag coefficients, riding tilt, and wind scaling factor)

Your iBike stores two Profiles in its memory, and your iBike software can store *as many profiles as you like*. Any two of the profiles stored on your iBike software can be uploaded into your iBike.

IMPORTANT: TO LEARN HOW TO STORE A PROFILE ON YOUR COMPUTER AND TO LOAD A PROFILE INTO YOUR IBIKE, REFER TO THE "IBIKE SOFTWARE INSTRUCTIONS".

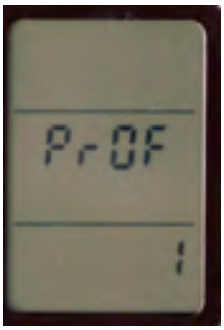
When you completed your iBike Fast Start sequence and Cal Ride, your information was stored in Profile 1.

You can create a completely separate profile and store it in Profile 2. This is useful if you own two bikes or have two different riding positions (for example, hoods and TT).

Here is how to select a different profile:

Enter Setup and click the down arrow repeatedly to find the Set Prof (Set Profile) screen:

Click the center button; the default setting is profile 1



Any Setup data you have entered and any calibrations you have performed are stored in "Profile 1".

To select Profile 2, click the up arrow and use the up arrow to change the setting to "Prof 2" (Profile 2). To accept your choice of Profile 2, click the center button.

After selecting Profile 2, any Setup entries and any Calibration Rides made afterwards will be stored on your iBike in the "Profile 2" memory.

REMEMBER: YOU MUST PERFORM A "FAST START" SEQUENCE *AND* CALIBRATION RIDE FOR EACH BIKE.

REMEMBER: IF YOU HAVE A WIRELESS MOUNT, YOU'LL NEED TO "SCAN" YOUR WIRELESS SENSORS FOR EACH BIKE. SEE INSTRUCTIONS ON PAGES 23-26 TO PERFORM A WIRELESS "SCAN".

USING PROFILES

If you have two different profiles stored in your iBike, say for two different bikes, to use your iBike's Profile 2 with bike #2, enter setup, scroll to Set Prof, select "Prof 2", then click the center button to accept. Exit setup. Your iBike will now load all the settings for Profile 2 into memory and you're ready to ride.

USING iBIKE BUTTONS AND FEATURES

This section describes the functions and features of the five control buttons on your iBike (center button, up, down, left, right arrow).

Center Button: BIKE COMPUTER AND POWER SCREENS

The iBike has two *main screens*:

- bike computer screen
- power screen

The bike computer screen shows bike speed, trip distance, and trip time. The power screen shows speed, power, cadence, and Heart Rate (wireless mount).

Bike Computer

Power

Click the center button to toggle between each main screen.

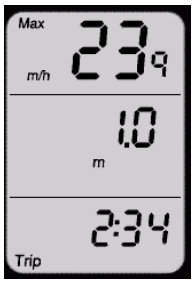
NOTICE: ON THE BIKE COMPUTER SCREEN, THE MIDDLE WINDOW ALTERNATES AUTOMATICALLY BETWEEN DISTANCE AND POWER.

Top Arrow: AVERAGE (AVG) AND MAXIMUM (MAX) SCREENS

Clicking the top arrow toggles between the average and maximum values of your current screen's display:

- Click the up arrow once to see average values (illustration shows average values for Bike Computer screen).

- Click top arrow again to see max values.



IMPORTANT: To return to the main screen click the center button.

Bottom Arrow: HILL SLOPE AND WIND SPEED DISPLAY

No matter which main screen you are using, at any point in your ride you can find out the slope of the hill you're climbing, or the amount of head wind or tail wind.

- Click the down arrow once to see hill slope in the top window.

- Click the down arrow again to see opposing wind speed in the top window.

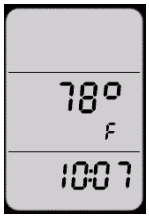
To return to the main screen click the center button.

TIP: PRESS-HOLD THE BOTTOM ARROW FOR TWO SECONDS TO TURN "AUTO-HILL SLOPE DISPLAY" ON OR OFF. SEE BELOW FOR MORE DETAILS ABOUT AUTO-HILL FUNCTION.

Right Arrow: ENVIRO (Environment) SCREENS/FIT TRAIN MODE

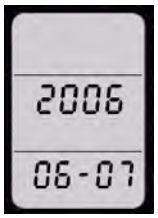
You can learn useful information about your ride by clicking the Enviro button (right arrow).

- Click the right arrow: Temperature and current time are displayed.



- Click the right arrow again (enviro screen 2): current hill slope, wind speed, and current elevation are displayed.

- Click the right arrow again (enviro screen 3): Date and time are displayed.



To return to the main screen click the center button.

TIP: PRESS-HOLD THE RIGHT ARROW FOR TWO SECONDS TO ENTER THE "FIT TRAIN" SCREENS. SEE BELOW FOR MORE DETAILS ABOUT FITNESS TRAINING SCREENS.

Left Arrow: TOTAL SCREENS/LAP SCREEN

You can get summary statistics for the entire ride with the "Total" screens. Total screens are shown by clicking the left arrow.

- Click left arrow once: Total energy expended (in kilojoules or KJ) and calories (Kcal) are displayed.
- Click left arrow again, distance traveled and elevation gained are displayed.

OPTIONAL: IF YOU HAVE SELECTED "TSS ON" IN THE RACR SEQUENCE, THE NEXT THREE SCREENS SHOW NORMALIZED POWER (NP), INTENSITY FACTOR (IF) AND TRAINING STRESS SCORE (TSS).

- Click the left arrow again and "Log x% Full" shown ("x" is a number between 0 and 99). This screen indicates the amount of memory used (logged) by your ride files. When the screen says 0% full your ride memory is empty; when it says 99% full your ride memory is full.

TIP: THE IBIKE RECORDS AT ONE SECOND INTERVALS (13 HOURS OF DATA RECORDING) OR FIVE SECOND INTERVALS (65 HOURS OF DATA RECORDING). SELECT THE RECORD INTERVAL IN THE SETUP SCREEN.

TIP: YOU WILL GET WARNING MESSAGES WHEN YOUR RIDE MEMORY IS 80% FULL AND 90% FULL. DOWNLOAD YOUR RIDES AS SOON AS POSSIBLE OR YOU MAY LOSE YOUR MOST RECENT RIDE FILE!

TIP: YOU CAN ERASE YOUR MEMORY WITH AN IBIKE COMMAND THAT LOCATED IN THE SETUP MENU. THE "ERAS DATA" COMMAND CLEARS ALL YOUR MEMORY AND ERASE ALL RIDES STORED IN YOUR IBIKE.

To return to the main screen click the center button.

TIP: PRESS-HOLD THE LEFT ARROW FOR TWO SECONDS TO ENTER THE LAP TIMER SCREENS. SEE BELOW FOR MORE DETAILS ABOUT LAP TIMER.

iBike TRIP DATA AND RIDE FILES

iBike "Trips"

The iBike gathers, stores, analyzes, and displays data as "trips". Information from each trip is recorded in a "Ride File".

Generally, each time you start a new day's ride you'll want to start a new iBike trip. A simple and fast "Trip-Reset" (described below) closes the previous ride file and creates a new iBike Trip and opens a new ride file.

Also, if your iBike Pro or iBike Aero sleeps for more than 4 hours it will automatically begin a new Trip and ride file.

An iBike "Trip Reset" starts a new ride file and resets the iBike screens with zero readings of:

- Trip odometer
- Trip time
- Lap Timer and lap stats
- Instantaneous, average and maximum:
  - Power
  - kilojoules
  - speed
  - hill slope
  - wind speed
  - elevation gain

Starting a New Trip (Trip-Reset):

You can start a new trip and new ride file at any time. Here is how:

1. Click and hold the center button for two seconds.
2. The screen says "trip reset". The word "trip" does not flash and the word "reset" does flash.

3. **To confirm your trip-reset, click the center button again. Both words ("trip", "reset") will flash, then the main screen will return**.
4. If you decide you DON'T want to complete the trip-reset, cancel the trip reset by waiting for four seconds, or by clicking any button EXCEPT the center button. The message "not rESEt" will appear and will remain on the screen until you click the center button.

IMPORTANT: UNLESS YOU CONFIRM THE TRIP RESET BY CLICKING THE CENTER BUTTON A SECOND TIME, YOU WILL NOT COMPLETE THE TRIP RESET AND YOU WON'T START A NEW RIDE FILE!

TIP: You can do a trip reset any time, even while riding.

HOW TO START YOUR IBIKE PRIOR TO A RIDE

Each time you ride with the iBike, follow these simple steps:

1) Attach your iBike to your mount
2) Let your iBike acclimate to outdoor temperature for 5 minutes
3) Click the center button of your iBike to awaken it. If you are using a heart rate strap, make sure to stand next to your iBike until your iBike competes its startup process
4) During the startup process the iBike checks battery voltage. If the message "BATT BAD" appears, replace your iBike and wireless mount batteries.
5) During the startup process cup your hand over the wind port while the "Auto Wind" calibration occurs

At the end of the startup process the wireless sensors will be detected automatically by the iBike.

If you have the iBike combined speed/cadence sensor, or you're using an ANT+ combined speed cadence sensor, you'll see the message "SPCD FOUND":

If you have separate speed and cadence sensors (iBike models manufactured in 2007-2010) you'll see the messages "SPD FOUND" (speed found), "CAD FOUND" (cadence found), "HRT FOUND" (heart rate found).

Once the main iBike screen appears you're ready to ride!

NOTE: IF YOUR IBIKE RIDE MEMORY IS 80% FULL OR MORE YOU WILL SEE WARNING MESSAGES APPEAR. YOU CAN ERASE YOUR IBIKE MEMORY FROM THE IBIKE SETUP SCREEN, "ERAS DATA".

"AUTO-WIND" AND "CAL WIND" FEATURE

For best accuracy of the iBike, the wind sensor must be calibrated prior to every ride.

To help make the Cal Wind calibration as simple as possible, the iBike automatically performs an "AUTO WIND" calibration each time the iBike is awakened from sleep.

You can also calibrate the wind sensor at any point during a bike ride with the "CAL WIND" feature:

1) Enter Setup
2) The "Cal Wind" screen appears. Cup your hand over the wind port

3) Click the center button:

When the calibration is complete the message "DONE WIND" displays, the number in the top window goes to 0_0, and the iBike returns automatically to the main screen

IBIKE WIRELESS SENSOR TYPES

There are two different types of iBike wireless sensors.

iBike Wireless Sensors, years 2007 to 2010:

The wireless iBike speed and cadence sensors (model BKM3, model number shown just below the ANT icon) were shipped between 2007 and 2010 and look like this:

The original HR strap (model HRM1B) looks like this:

The 2007-2010 series sensors have the characteristic that, when the sensor battery is removed, **the sensor forgets its prior wireless ID.** Whenever a new battery is inserted, **the sensor creates a new wireless ID**. *So, each time a new battery is inserted in to any of these sensors, a new "Scan" process needs to be performed so that the new wireless ID codes can be memorized by the iBike.*

iBike Wireless Sensors, years late 2010+

In late 2010, iBike introduced a new series of wireless sensors.

The two, separate speed and cadence sensors have been replaced by a single, combined speed/cadence sensor (model BKM4**G**):

The heart rate strap has been updated to model HRM1**G**:

An important characteristic of these model "G" sensors is that their wireless IDs are stored PERMANENTLY and are not lost when the sensor battery is removed. *So, it is NOT necessary to do a new "Scan" when the batteries in these sensors are changed.*

WHAT IS A WIRELESS SENSOR "SCAN"?

A wireless "Scan" allows your iBike to memorize the unique wireless IDs of your sensors. The Scan allows your iBike to pick up signals from your sensors *and* to ignore signals from any other ANT+ sensor.

WHY DO I NEED TO PERFORM A SENSOR "SCAN"?

Until your iBike learns and memorizes the unique IDs of your sensors, your iBike won't work properly and your speed, cadence, and HR readings won't appear (they will be 0).

WHEN SHOULD I DO WIRELESS SENSOR SCAN?

Perform a wireless Scan every time *any* of these events occur:

1) You remove the sensor battery from **ANY** original iBike wireless sensor (shipped 2007-2010)
2) You remove the sensor battery from **ANY** wireless ANT+ sensor made by any other manufacturer (Garmin, Trek, etc)
3) You install a new set of iBike or ANT+ sensors, either for a new bike or to replace wireless sensors on your existing bike

Note that you do NOT need to do a new Scan after replacing the sensor battery on any iBike model "G" sensor (combined speed/cadence and HRT strap).

HOW DO I DO A WIRELESS SCAN?

Any time you do a Scan, ALL of the wireless sensors you're using must be present.

1) Activate the sensors:
   A. Wake up (activate) the speed and cadence sensors by waving a spoke magnet past each sensor's pickup notch. For the original iBike sensor, the notch is located at the top right corner of the side with white lettering. For the combined speed/cadence sensor, the notch is located on the side with the battery door, at the top left corner.
   B. Activate your HR strap by attaching it to your chest
   C. OPTIONAL: Activate Garmin speed/cadence sensor by spinning crank 3 turns.
   D. OPTIONAL: if you own a DFPM, spin wheel and crank to wake up DFPM.

2) Attach iBike to your wireless mount. Make sure a battery is in your wireless mount!

3) Press and hold the top and bottom arrows simultaneously. After a few seconds you will see the word "Scan".

4) When the word "Scan" is displayed, release the top and bottom arrows. The wireless scan process begins.

5) As the pairing process is performed the top window will continue to flash. As each sensor is found you'll get a message when the sensor is found, and you'll also see the top window increment by 1. So, you might see "SPD FOUND", "CAD FOUND", HR FOUND" and the top window flashes "3", meaning that 3 sensors have been found. If you're using the combined speed/cadence sensor, you'll see "SPCD FOUND".

6) Whenever the top window flashes, the iBike is still looking for other wireless sensors. For any sensors your iBike does NOT find, you'll see the message "xxx OFF", where xxx is the name of the sensor the iBike does not find.

7) When the pairing process is finished the top window will stop flashing. Your iBike will automatically return to the main screen and the wireless scan process is complete.

PART TWO

ADVANCED FEATURES

GETTING MORE FROM YOUR IBIKE: "USER" AND "RACR" SEQUENCES

For most cyclists it is not necessary to use the USER and RACR sequences; however, there are some extra features available that can be accessed from these sequences.

The USER sequence contains features and settings of value to many iBike users.

The RACR (racer) sequence contains features and settings of interest to advanced users and racers.

USER SEQUENCE

To access the USER sequence, enter Setup then click the up arrow to find the USER screen. If the screen says "USER YES" then click the up arrow to enter the USER sequence; if the screen says USER NO, then click the center button, select YES with the up arrow, then click the center button to accept USER YES. Then, click the up arrow to enter the USER sequence. Here are the steps included in the USER sequence:

"USER YES", click the up arrow successively to perform:

- Set trainer mode (standard with iAero, optional with iPro): "**TRNR**": See page 43 for details
- Set Year: "**YEAR**"
- Set Date: "**DATE**"
- Set Time: "**CLOC**"

TIP: YEAR, DATE AND TIME CAN BE ENTERED INSTANTLY USING THE IBIKE SOFTWARE.

- Set Display Contrast: "**LCD**"

Also, there are four other selections you can make in the User Sequence:

- Perform Coast Down calibration: "**COAST**" (special instructions below)
- Display ambient wind speed: "**ABS WIND**"
- Perform Fitness Test: "**FIT TEST**" (special instructions below)

"COAST DOWN" PROCEDURE

When you ride at high speed the effects of wind, bike aerodynamics, and riding position become very significant. These effects are measured by aerodynamic drag, commonly called CdA.

In the Fast Start sequence *estimates* your CdA. The estimates of CdA made by the iBike are the result of considerable testing and experience. For 99% of riders, estimated CdA and Crr provide both consistent and very accurate results under a wide variety of cycling conditions.

If you do solo rides on the flats at speeds consistently above 22 mph, or you want to measure your CdA (and, optionally Crr), then the coast down procedure is an advanced feature that is available.

The coast down calibration found in the User sequence *measures* the aerodynamic (and optionally, friction) drag coefficients that are particular to each cyclist, riding position, bike type, tires, and road type. These drag coefficients are stored in the iBike's memory (in a Profile) and are used in power calculations.

The coast down procedure is this: accelerate to 20 mph (32 kph), *then stop pedaling*. Your bike will slow due to aerodynamic and frictional drag (your bike may also slow due to the effect of hill slope, but the iBike factors hill slope effects into its calculations). Once you slow to 8 mph (13 kph) the coast down is complete. For much better accuracy, repeat the coast down 5-8 times, then analyze your results in the iBike software to get the best composite measurements.

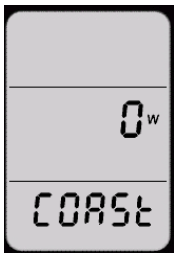
The Coast Down measurement works very well when its steps are followed carefully. However, if the procedure is not followed EXACTLY, then it is likely that your iBike will be more poorly calibrated than it was prior to the Coast Downs! So, if you decide to do coast downs, please read the instructions carefully and follow them exactly.

Here is the Coast Down procedure:

1. **Before doing Coast Downs you MUST complete the Fast Start sequence AND the Calibration Ride.**
2. Wear the clothing, bike helmet, and shoes you're going to use during your rides.
3. ***Find a fairly level to uphill road,*** with few cars, where you can coast on the road for about 1/4 mile, without stopping, hitting big bumps in the road, making sharp turns, or being subjected to wind gusts caused by passing traffic or other cyclists.

NOTE: THE ROAD MUST BE MOSTLY LEVEL TO SLIGHTLY UPHILL. IF THE ROAD HAS TOO MUCH DOWNHILL YOU WON'T SLOW TO 8 MPH!

4. Just before starting your Coast Down, enter Setup, then scroll to USER. If "USER YES" is shown, click the up arrow to enter the user sequence. If "USER NO" is shown, click the center button (to make the word "NO" flash), then select YES with the up arrow, then click the center button to accept ("USER YES"). Then, click the up arrow to enter the User sequence.
5. In the User sequence, click the up arrow button until you find the "Coast" menu. You will see the word "Coast" in the bottom window.



6. To begin the Coast Down procedure, click the center button.
7. Before going to the coast down screen your iBike will check to see how recently you performed the "Tilt" and "Cal Wind" steps. If these steps were performed more than 30 minutes prior to the start of your Coast Downs, you will be required to do them again. This assures maximum accuracy of your Coast Downs. The word "Start" will flash after performing Tilt and Cal Wind calibrations. Click the center button
8. The Coast Down screen shows the word "Fast", and your current bike speed appears in the display.

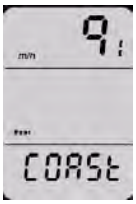
9. When this screen is shown, pedal your bike faster BUT INCREASE SPEED A LEISURELY MANNER, making sure you remain ride in your usual ride position.
10. As you go faster the horizontal bar in the screen will start to fill. Your goal is to get to 20 mph (32KPH).
11. Once you've reached full speed, the word "coast" will appear. Stop pedaling IMMEDIATELY; you will begin to slow down due to aerodynamic and frictional drag.

12. **Make sure you remain in your usual riding position during the coast down**.
13. As you coast the bike will slow down and the iBike will measure your drag coefficients (aerodynamic and frictional).

TIP: COAST DOWN DATA IS COLLECTED BETWEEN THE SPEEDS OF 18 MPH AND 8 MPH.

14. Do not pedal your bike, apply the brakes, or make abrupt moves with the front wheel during the coast down.

15. As the bike slows the horizontal bar will empty and your bike speed will drop.



16. Once you get to a speed of about 8 mph, the words "DONE COAST" will flash for a few seconds, then the screen "CALC COAST" (calculating coast) will appear, then main coast down screen will appear, indicating that the measurement is complete.

CRITICAL: FOR BEST RESULTS **PERFORM 5 TO 8 COAST DOWNS**, BACK-TO-BACK. **RETURN TO THE PLACE WHERE YOU STARTED YOUR COAST DOWN AND DO MORE COAST DOWNS BY REPEATING STEPS 6-15.**

TIP: IF YOU ACCIDENTALLY INITIATE THE COAST-DOWN CALIBRATION PROCESS YOU MAY STOP IT BY CLICKING THE CENTER BUTTON. THE SCREEN WILL SAY "Abrt COASt" (abort coast). THE COAST-DOWN READINGS CURRENTLY STORED WILL BE UNCHANGED.

RACER TIP: BY DEFAULT, THE COAST DOWN USES A FIXED VALUE OF ROLLING RESISTANCE (CRR = 0.0055) IN THE COAST DOWN MEASUREMENT.

IMPORTANT: YOUR COAST DOWN AND CAL RIDE DATA **MUST** BE DOWNLOADED AND ANALYZED IN THE IBIKE SOFTWARE TO PROVIDE YOU THE BEST RESULTS. SEE THE "IBIKE SOFTWARE INSTRUCTIONS" FOR DETAILS.

SETTING WIND SPEED DISPLAY ("ABS WIND YES/NO")

Your iBike measures opposing wind speed. Opposing wind includes both the absolute ground wind that comes from nature, and the wind caused because you are riding your bike. You can display opposing wind speed in one of two ways:

1) ABS WIND NO shows the TOTAL amount of wind opposing you. So, if you're riding 20 mph and there is a headwind of 5 mph, your iBike will display the opposing wind as 25 mph. ABS WIND NO is the default setting of your iBike.
2) "ABS WIND YES" shows *only* the ground wind force opposing you. In the same example as above, the iBike would show a wind speed of 5 mph. NOTE: if you have a tail wind the iBike will show the magnitude of the tail wind.

The "ABS WIND NO/YES" selection is in the "USER" sequence. Make your selection with the center button and up arrow, then click the center button again to accept.

FITNESS TEST (FTP TEST)

Your iBike includes a built-in, power-based fitness test that measures your cycling fitness. It is a very simple test: you ride as hard as you can for 20 minutes. Then, the iBike computes the average watts you held during the test, divided by your body weight in KG. This "Watts per kilogram" ratio is a simple and critical measure of cycling fitness. Simply put, the higher your watts per kilogram the more fit you are and the faster you'll go.

Also, the average watts held during the Fitness Test, times the multiplier of 0.95, is an excellent measure of your Functional Threshold Power (FTP). FTP is used by most experts as a key measure of your overall aerobic limit and cycling fitness.

The iBike firmware includes a table developed by professional racer and noted cycling coach Boyd Johnson that interprets your W/KG score as a fitness level from one to ten. Your fitness level is based on your W/KG measurement and your sex. Here is the table that is loaded into the iBike firmware:

Fitness Level	w/kg male	w/kg female
1	0-2	0-1.5
2	2.01-2.45	1.51-2.08
3	2.46-2.8	2.09-2.4
4	2.81-3.46	2.41-2.94
5	3.47-3.8	2.95-3.23
6	3.81-4.25	3.24-3.62
7	4.26-4.82	3.62-4.1
8	4.83-5.27	4.11-4.48
9	5.28-5.75	4.49-4.86
10	5.75+	4.87+

So, for example, if you are male and your 20 minute test returns a W/KG measurement of 2.48, then your fitness level is "3" (the female would score a higher fitness level of "4" for the same W/KG result).

What can you do with this test? Three things:

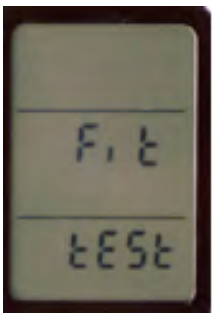
1) You can use the test result to provide you and objective and meaningful assessment of your current level of cycling fitness
2) You can use the test result in conjunction with built-in fat burning, cardio, and strength workouts that are targeted to your specific level of fitness. These workouts will help you improve your cycling fitness quickly and efficiently. The workout feature is described in the next section
3) You can repeat the fitness test during the season, and quantify the improvements achieved by your cycling efforts

At the end of the 20 minute test your iBike will show you your test result, expressed both as your W/KG ratio and as your fitness level.

Here is how to do the fitness test:

Enter Setup and click the up arrow to find the User sequence. Using the center button and up arrow, set "USER YES".

Then, click the up arrow to find the Fit Test screen in the User sequence:



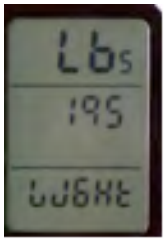
Click the center button of your iBike to start the test sequence.

The first screen you'll see is the result from your *previous* Fitness Test.

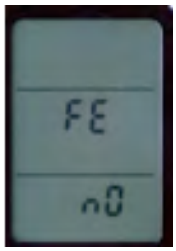
Your watts-per-kilogram (W/KG) number will be shown in the center window. It will read x_yz, where x,y and z are numbers, and the underscore indicates a decimal point. For example, 3_54 indicates a watts/kg result of 3.54. The bottom window shows your fitness level associated with your W/KG test result.

Click the center button to continue. You will be asked to enter your *body weight only*; **DO NOT INCLUDE THE WEIGHT OF YOUR BIKE, EQUIPMENT, AND CLOTHING**. If you're

sure of your body weight then enter it; if you haven't weighed yourself recently take the time to get on a scale so you'll have the right weight working in the calculations.



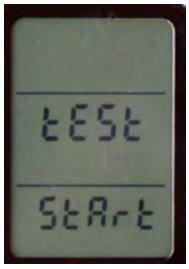
Click the center button to continue; you'll be asked to tell the iBike if you are female or male. If you are male select the screen that says "FE NO" (not female); if you are female click the up arrow to select "FE YES" (female yes). Then, click the center button to continue



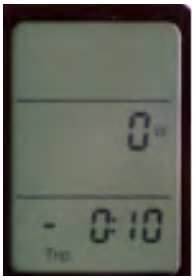
Now, your iBike is set up for the test.

Find a place where you can cycle at a very aggressive pace for 20 minutes. **You need to be pedaling during the entire test**, so a hilly course is not a good idea (on the downhills you'll likely be coasting and this will reduce your fitness score). A flat course without stoplights and traffic is best; depending on how fast you can pedal you should try to find a course that is 5 to 8 miles long.

Before beginning the test ride around for a few minutes to warm up. When you are ready click the center button to start the fitness test. The screen should look like this:



Click the center button to start the test. You will see this screen, indicating that the test will start after a 10 second countdown:



The instant you start pedaling the bottom window clock will start counting down to zero. When the clock reaches 0:00 the test will begin and the timer will reset to 20 minutes, zero seconds, and count down towards zero.

Pedal as hard as you can for the 20 minute testing period. As you do the test your body will adjust naturally: if you start out too hard your performance will fall-off later in the test. If you have energy to spare in the last few minutes you can "pour it on".

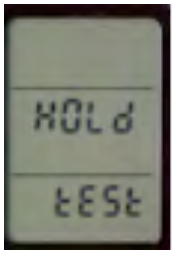
During the test you will see your average watts in the top screen, your instantaneous watts in the middle window, and the elapsed time of your test in the bottom window. Here is an example of how the screen might look:

This screen shows that this rider has 18 minutes, 32 seconds remaining on the test (bottom window), and that, up to this point of the test, the rider has sustained an average of 218W (top window). The middle screen shows the watts output at the instant of the photo: 191W. So, the rider's wattage output AT THAT INSTANT is below the average. The down arrow to the left of the reading 191W indicates that the instantaneous wattage output is below the average watts output.

During the 20 minute test pedal your bike as aggressively as you can and try to keep those watts up.

TIP: 20 minutes is a long time! You'll see that both average and current watts are displayed on the iBike. Both of these numbers will help you keep a good pace. For example, if you start off way too hard your current watts will be huge for a few minutes and your average watts will be high too. However, you will be unable to maintain the pace for 20 minutes and will fade: your current watts will diminish because you are tired. Your iBike screen will report that your current watts are below your average watts, indicating that you "blew up" too soon. If you blow up prior to the end of the test then you won't have a W/KG measurement that reflects your potential. **Work hard, but try to keep an even pace throughout the ride.**

During the test a situation may arise where you need to stop (say, at a traffic light). If that happens you can pause the test by clicking the center button. The screen will say "hold test":



To resume the test, click the center button.

Finally, if for some reason you don't like how your test is going you can abort the test at any time by pressing and holding the center button for about 5 seconds. The screen will say "Test Abrt" (test abort) and the test will end. The W/KG and fitness score result from your earlier test will be remain in memory.

At the end of the ride your iBike will compute your watts per kilogram and show you your fitness level.

TIP: THE IBIKE MEASURES YOUR "FUNCTIONAL THRESHOLD POWER" (FTP) AS A TRAINING AID. AT THE END OF YOUR FITNESS TEST THE IBIKE WILL AUTOMATICALLY UPDATE YOUR FTP NUMBER, LOCATED IN THE "RACR/FTP CFG" SCREEN. OR, IF YOU KNOW AND ENTER YOUR FTP NUMBER IN THE FTP CFG SCREEN, THE IBIKE WILL AUTOMATICALLY COMPUTE YOUR 20 MINUTE W/KG AND FITNESS RATING.

RACR SEQUENCE

The Racr (racer) sequence contains settings of interest to advanced power meter users and bike racers.

To access the RACR sequence, enter Setup then scroll to RACR. If the screen says RACR YES then click up arrow button to enter the sequence; if the screen says RACR NO, then click the center button, select YES with the up arrow, then click the center button to accept. Then, click the up arrow to enter the RACR sequence. Here are the steps included in the RACR sequence:

"RACR YES", then click up/left arrow successively to perform:

- Estimate frictional drag: "**EST FRIC**"
- Display TSS/IF/NP measurements in the Totals screen: "**TSS**"
- Configure Functional Threshold Power: "**FTP CFG**"
- Display CdA data on screen (NOTE: iAero feature ONLY): "**CdA**"
- Set total hours logged: "**TOTAL HRS LOG**"
- Set total distance logged: "**TOTAL ODO**"

Each of these settings is explained below:

- "**EST FRIC**" (estimate Frictional drag)

Bikes have an intrinsic level of rolling resistance (frictional drag) that is dependent on tire type, tire pressure, and road surface. This factor is called "Crr" (coefficient of rolling resistance) and Crr is a number generally between 0.003 and 0.008. The higher the Crr the higher the rolling resistance.

For example, with normal bike tires a very smooth velodrome track will have a Crr of about 0.003; asphalt will have a Crr of about 0.0055, and dirt roads will have a Crr of 0.008 or higher.

The iBike's coast down process can measure Crr (in addition to CdA, the aerodynamic resistance) but in many cases it's easier and faster just to assume a value for Crr. Assuming a value of Crr can improve the accuracy of the CdA measurement.

The default setting for EST FRIC is YES; that is, in the EST FRIC YES setting the iBike will assume a fixed, user-set value of Crr, *even when coast downs are performed*.

The default value of Crr has been set at the factory to 0.0055; on the iBike, this reads as "55" in the screen. The value of Crr can be set by the user.

To use the estimated Crr feature do the following:

1) Go to Setup/RACR YES/EST FRIC.
2) Click the center button; the bottom screen flashes. Use the up arrow to select YES, then click the center button to accept. "done" flashes
3) The screen FRIC appears; the number at the bottom is the value of Crr currently stored in the iBike.
4) To change the value of Crr (fric) click the center button. Adjust the digits to the value you want. Fric = 30 corresponds to a very smooth velodrome; 55 is an average asphalt road; 80 is rough concrete; 100 or higher is dirt roads. These values are approximate; you can get more exact values from the web.
5) When you've entered the value you want, click the center button to accept. Done flashes and the iBike proceeds to the next RACR screen, TSS

REMEMBER: IF YOU SET EST FRIC TO "YES" THE VALUE SHOWN WILL BE USED BOTH IN ESTIMATED DRAG COEFFICIENTS AND AS THE ASSUMED VALUE IN COAST DOWNS.

If you do NOT want to use the estimated Crr feature do the following:

1) Go to Setup/RACR YES/EST FRIC.
2) Click the center button; the bottom screen flashes. Use the up arrow to select NO, then click the center button to accept. "done" flashes and the iBike proceeds to the next RACR screen, TSS

IMPORTANT: WHEN EST FRIC IS "OFF", COAST DOWNS WILL MEASURE BOTH AERO *AND* FRICTIONAL DRAG.

TIP: WHEN COAST DOWNS ARE DONE WITH EST FRIC "OFF", THE CRR CORRESPONDING TO THE MEASURED FRICTIONAL DRAG WILL APPEAR IN THE EST FRIC WINDOW.

- **TSS ON/OFF (iPro and iAero only)**

The Gen III iBike incorporates special measurements to help serious cyclists improve their training. These three measurements, called Training Stress score (TSS™), Intensity Factor (IF™), and Normalized Power (NP™) are described in the Appendix.

Normally, TSS, IF and NP measurements are not visible in the iBike's Totals screen ("TSS OFF"). If you'd like to see them, then do the following:

1) Go to Setup/RACR YES/TSS.
2) Click the center button; the bottom screen flashes. Use the up arrow to select YES, then click the center button to accept. "done" flashes and the iBike proceeds to the next RACR screen, "FTP CFG"

- **FTP CFG (Functional Threshold Power Configuration)**

Functional Threshold Power is another specialized measurement of interest to advanced cyclists. FTP is described in the Appendix.

There are two ways your functional threshold power can be determined:

1) By direct measurement in a 1 hour test
2) By estimate, based on the 20 minute iBike Fitness Test

If an iBike Fitness Test is performed then FTP = Average watts from 20 minute test * 0.95

IMPORTANT: WHENEVER YOU DO AN IBIKE FITNESS TEST, YOUR ESTIMATED FTP WILL BE AUTOMATICALLY COMPUTED AND STORED.

If you have measured your FTP by some other means, you can override the results of the iBike Fitness Test and enter your FTP directly

IMPORTANT: IF YOU ENTER YOUR FTP DIRECTLY, YOUR IBIKE FITNESS TEST WILL BE UPDATED. YOUR W/KG SCORE AND YOUR FITNESS LEVEL WILL CORRESPOND TO YOUR FTP RESULT

You can see, and change, your FTP number as follows:

1) Go to Setup/RACR YES/FTP CFG.
2) Click the center button; the bottom screen flashes and shows your current value of FTP. If you've done a Fitness Test, the FTP is based on the Fitness Test. If you haven't done a fitness test, a default value o 0001 (1Watt) will be shown
3) If you wish to change the FTP number do so
4) To accept your choice or exit the item, click the center button to accept. "done" flashes and the iBike proceeds to the next RACR screen, "CDA"

- **CDA ON/OFF (iAero only)**

CdA is an important aerodynamic measurement that can be displayed on the screen of the iAero only. You can read about CdA measurements in your iAero manual.

If you wish to see CdA measurement on the bottom window of your iAero power screen do the following:

1) Go to Setup/RACR YES/CDA ON-OFF.
2) Click the center button; the bottom screen flashes. To turn CDA on select "ON" with the up arrow.
3) If you don't want to see CdA measurements on your iAero click the up arrow to select "OFF".
4) To accept your choice click the center button; the screen flashes "done" and the iBike advances to the next menu item, "TOTAL HRS LOG"

- **TOTAL HRS LOG**

You can set the iBike's hours-on-bike log to start at a number other than the default number of zero. This is a handy feature if you want to copy this value from your old bike computer. Click the center button to set the log; when finished, click the center button to accept. "done" will flash and the iBike will move to the next screen, "TOTAL ODO"

- **TOTAL ODO (total Odometer)**

You can set the iBike's odometer to start at a number other than the default number of zero. This is a handy feature if you want to copy your odometer setting from your old bike computer. Click the center button to set the log; when finished, click the center button to accept. "done" will flash and the iBike will move to the next screen, "RACR NO"

IMPORTANT: UPON COMPLETION OF THE "TOTAL ODO" SETTING YOU WILL EXIT THE RACR SEQUENCE AND THE IBIKE WILL AUTOMATICALLY CHANGE THE SETTING TO "RACR NO".

DAY-TO-DAY SETUP SCREENS

Your iBike setup is designed around one-time setup sequences. Once these sequences are performed, you'll rarely need to access them to make changes. So, unless you choose to reveal the sequence steps, they'll remain hidden from view.

Some iBike setup and calibration steps are very common, so much so that you'll want easy access to them. We've gathered the most common setup items together as "day-to-day" screens that you'll find whenever you enter setup.

All of the day-to-day setup screens are listed below. Many of them have been described so we won't repeat their function here. The new screens will be in **BOLD**:

1) CAL WIND
   This important calibration is the screen you'll see when entering Setup. Once you click the center button to perform the wind calibration, your iBike will automatically exit setup after a few seconds, OR you can click the up arrow to move to the next screen:
2) TILT
3) CAL RIDE
4) **BATT (battery voltage)**. Use this screen to find out the voltage of your battery (3.00V in this image):

IMPORTANT: IF YOUR BATTERY VOLTAGE IS 275 OR BELOW AT THE START OF YOUR RIDE, REPLACE THE BATTERY!

5) **ALT (altitude)**

   Use this screen to enter the starting elevation for your ride.

TIP: THE STARTING ELEVATION IS OPTIONAL AND NOT REQUIRED FOR ANY IBIKE CALCULATIONS

IMPORTANT: EVEN IF YOUR IBIKE HASN'T MOVED, THE STARTING ELEVATION WILL CHANGE WHEN WEATHER CONDITIONS CHANGE. THIS IS NORMAL.

6) TOTAL WGHT

7) SCAN (Wireless Setup)
8) SET PROF
9) **REC INT (RECORD INTERVAL)**

Your iBike's memory will fill with information as you ride. You can select in this screen how often to record your ride information:

Click the center button, then select 1 sec (one second recording interval) to record about 10-13 hours of data, OR

Click the up arrow to select 5 sec (five second recording interval) to record about 50-65 hours of data.

TIP: YOU CAN HAVE AS MANY RIDE FILES AS YOU WANT. THEIR TOTAL TIME LENGTH IS DETERMINED BY YOUR RECORDING INTERVAL

TIP: YOU'LL GET WARNING MESSAGES WHEN YOUR RIDE MEMORY IS NEAR CAPACITY. IF YOUR RIDE MEMORY FILLS TO 100% DURING A RIDE YOUR IBIKE WILL CONTINUE TO FUNCTION BUT YOU'LL LOSE THE RIDE DATA FOR THAT RIDE.

RACER TIP: WHEN 5 SECOND RECORDING INTERVALS ARE CHOSEN, YOUR IBIKE WILL AVERAGE THE WATTS DATA FOR 5 SECONDS, THEN RECORD THE AVERAGED DATA FOR THE PREVIOUS 5 SECONDS

10) **ERAS DATA (ERASE RIDE DATA FROM IBIKE)**

After downloading your rides to your iBike software (see the iBike software instructions) you can erase your ride data with the iBike software.

Alternatively, you can erase your ride data directly on your iBike:

- Click the center button. The word "NO" flashes. If you do NOT want to erase your data, click the center button
- If you DO want to erase the data, click the up arrow. The word YES flashes. Click the center button to confirm your choice and erase the data. The word "done" flashes for a few seconds.

11) **REL (firmware release number)**

This screen shows the firmware version installed in your unit. iPro and iAero owners can update their firmware to the latest version using the iBike software. See the iBike Software instructions for details.

USING THE INDOOR TRAINER FEATURE

The Indoor Trainer feature allows you to measure power with your iBike when using many models of indoor trainers and rollers. Consult the iBike software, "Device/Edit Trainer Settings…" for a complete list of supported trainers and rollers.

When using the indoor trainer function your iBike must measure the speed of the rear wheel. Therefore, you will need to use a wireless mount, with speed sensor mounted on the rear wheel. The iBike uses the trainer profile to estimate the power required to produce the measured rear wheel speed.

The Indoor Trainer function is standard on the iAero and is an optional upgrade for the iPro and iSport. For iSport models only, the Indoor Trainer function is installed at the factory, or by an authorized iBike dealer.

Here's how turn the Indoor Trainer function "On":

1) Make sure your speed sensor is mounted on the rear wheel of your bike
2) (iPro and iAero only) Use the iBike software to install the select and install the profile for your indoor trainer, "Device/Edit Trainer Settings…"
3) iSport only: a generic indoor trainer profile has been installed at the factory. Your authorized iBike dealer can change the profile for your iSport.
4) To turn the trainer function ON, enter Setup and click the bottom arrow repeatedly to find "User". If "User/No" is on the screen, click the center button to make the word "Yes" flash. Then, click the center button so that "User/Yes" is displayed without any flashing.
5) With "User/Yes" shown, click the up arrow one time. "Trnr" is shown. If "Trnr/Off" is shown, click the center button so that Off flashes. Click the up arrow so that "Trnr/On" flashes. Click the center button to accept. "Trnr/On" is shown.
6) Exit Setup. Your iBike is ready to use with your indoor trainer.
7) When downloading ride files recorded with the Indoor Trainer function On, the status window of your iBike software will read "Indoor Trainer".

How to turn the Indoor Trainer function "Off":

When riding outdoors you need to turn your Indoor Trainer function off so that the iBike's power measurement sensors will function normally:

1) To turn the trainer function Off, enter Setup and click the bottom arrow repeatedly to find "User". If "User/No" is on the screen, click the center button to make the word "Yes" flash. Then, click the center button so that "User/Yes" is displayed without any flashing.
2) With "User/Yes" shown, click the up arrow one time. "Trnr" is shown. If "Trnr/On" is shown, click the center button so that "On" flashes. Click the up arrow so that "Trnr/Off" flashes. Click the center button to accept. "Trnr/Off" is shown.
3) Exit Setup. Your iBike is ready to use on your outdoor rides.

NOTE: YOUR IBIKE MAY NOT PROVIDE ACCURATE WATTS READINGS IF "TRNR/ON" IS SET DURING OUTDOOR RIDES.

OTHER SPECIAL FEATURES

There are some other very useful features available with your iBike.

SPECIAL FEATURE #1: "AUTO HILL"

You're riding along on the flats but you see a steep hill ahead. Once you start climbing you'll want to know: how tough is the climb? Your iBike can tell you AUTOMATICALLY.

Anytime you ride on a hill slope higher than two percent, the top window of your main screen will AUTOMATICALLY alternate between your bike speed and the hill slope.

Once the hill slope drops below 2%, the Auto Hill feature will automatically cancel.

TIP: BY DEFAULT AUTO HILL IS TURNED "OFF". PRESS-HOLD THE BOTTOM ARROW FOR TWO SECONDS TO TURN AUTO HILL ON ("Hill Auto"). DO THIS AGAIN TO TURN AUTO-HILL OFF ("Hill OFF").

SPECIAL FEATURE #2: "LAP TIMER"

Your iBike screens display information about each iBike Trip, while simultaneously storing all your trip ride data in memory. But if you're racing in a crit or training on a route where you're doing multiple laps you will likely want to compare your performance from lap to lap.

The iBike has a lap timer that lets you see your important lap stats (lap number, average speed, average watts, and lap time) *while on the bike* and that marks those laps in your ride file for later analysis.

Each time you press-hold the left arrow for two seconds, four things happen:

1) The previous lap ends, and the screen flashes the lap number that has just ended
2) Stats from the previous lap are flashed on the screen for about 10 seconds (average speed, average watts, lap time)
3) A new lap is started and stats are gathered in the background for the new lap
4) Your iBike automatically returns to the main screen

The lap timer automatically resets to lap 1 whenever you perform a "trip reset" command. So, if you're racing, perform a trip-reset while waiting at the starting line; your first lap will start recording lap one.

When you've finished your ride you can download your ride, then perform a trip-reset to reset your lap timer.

SPECIAL FEATURE #3: "TIME-TRIAL INTERVAL WORKOUTS"

Suppose you're going to do a time trial; the time trial can be thought of as one huge interval. The iBike gives you a way to manage your time trial so you can see average watts, actual watts, and elapsed time, all on the same screen. Here's how:

1: Press-hold the right arrow to enter FIT TRAIN.

Use the left/right arrow to select "USER":

2. To start the first User Interval, click the center button or just start pedaling; when you start moving the User Interval will start automatically.
3. You'll see average watts in the top window, actual watts in the middle screen, and elapsed time in the bottom window.

NOTE: IN THE TOP WINDOW THE LEAST SIGNIFICANT DIGIT OF THE AVERAGE WATTS NUMBER WILL BE SUBSCRIPTED. FOR EXAMPLE, AN AVERAGE WATTAGE OF 198W WILL SHOW IN THE TOP WINDOW AS 19_8

4. **To end an interval, click the center button**. The prior user interval will stop and a new user interval will begin immediately.
5. **During any user interval you may pause the interval by clicking the left arrow**. To resume the interval, click the left arrow again.
6. At any time, you may review the results of all prior user intervals by clicking the up arrow. You'll see the interval number in the top window, average watts for the interval in

the center window, and elapsed time for the interval in the bottom window.
7. To exit the user interval, press-hold the right arrow. The message "End Train" will appear:

SPECIAL FEATURE #4: "PRE-PROGRAMMED FITNESS WORKOUTS"

Your iBike is equipped with pre-programmed workouts that are linked to your fitness score. There are three types of *pre-programmed* workouts: fat burning, cardio, and strength. You can select any of these different workouts to help improve your cycling, quickly and efficiently. Also, the workout intensity is controlled by your fitness score, so you won't work either too hard or too little.

Here's a summary of how to use your iBike for fitness workouts.

1) Perform the fitness test.

2) Decide what kind of workout you want to do. There are three pre-programmed workouts: fat burning, cardio and strength.

3) Press-hold the right arrow. You will enter "FIT TRAIN".

4) Use the left or right arrow to select the kind of workout you want.

5) For the workout you've selected, you can choose from three levels of difficulty: 0, 1, (and sometimes 2. 2 is the most difficult and is available only with some workouts). Use the up/down arrows to select workout intensity.

6) When you're ready to do you workout, click the center button. You'll see your target watts in the top window, your actual watts and number of remaining intervals in the center window, and the time remaining for the interval in the bottom window.

7) As each interval ends, the interval counter will decrement by one and the target watts and time for the next interval will appear. Continue with the workout until the set is finished.

8) To exit the interval workout, press-hold the right arrow.

SPECIAL FEATURE #5: "USER-PROGRAMMED INTERVAL WORKOUTS"

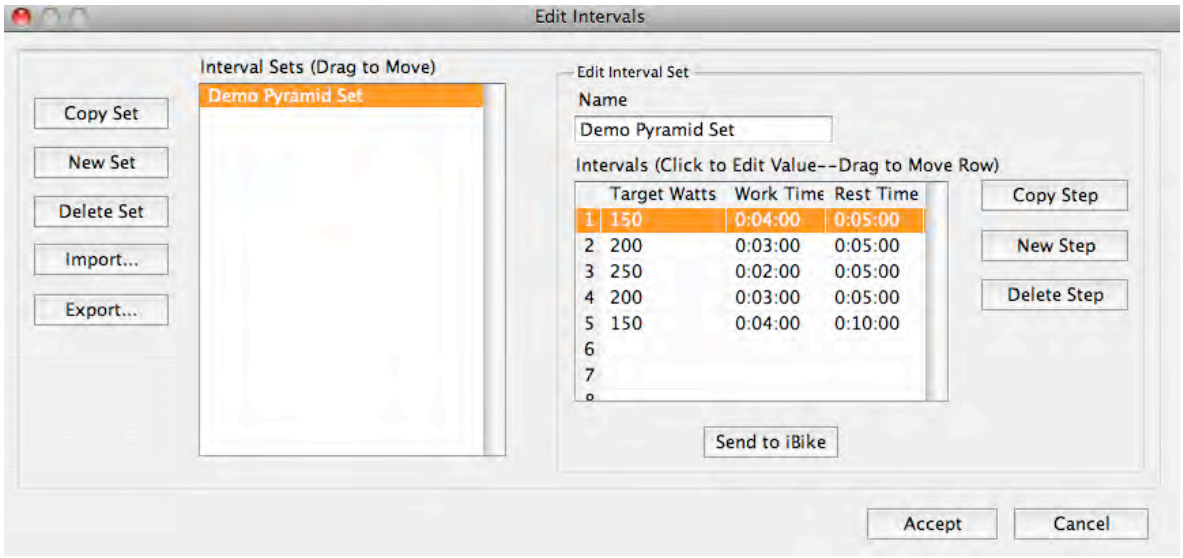
Not only is it possible to use the iBike with the pre-programmed workouts described in

Special Feature #3, it is also possible to create your own power-based interval set.

How to Create a Custom Interval Set

Interval programs are created in the iBike software. Consult th iBike software instructions to learn how to create interval sets.

Here is an example interval set, created in the iBike software. In this example interval set there are five intervals: the first interval is 150W for 4 minutes, followed by 5 minutes of rest, followed by a second interval of 200W for 3 minutes, with a 5 minute rest thereafter, and a third interval of 250W for 2 minutes, followed by a 5 minute rest period, a fourth interval of 200W for 3 minutes with a 5 minute rest, and a final 150W interval for 4 minutes with a final 10 minute rest/cool-down.



Uploading a Custom Interval Set into your iBike

After you've created your custom interval set, simply click the "Send to iBike" button, located on the Edit Intervals window. Your interval set will be transferred to your iBike.

TIP: YOUR COACH CAN CREATE INTERVAL SETS FOR YOU WITH HIS COPY OF IBIKE SOFTWARE. HE WILL SEND YOU THE INTERVAL SET FILE, WHICH YOU'LL IMPORT INTO YOUR EDIT INTERVALS WINDOW WITH THE "IMPORT" BUTTON. ONCE YOU HAVE IMPORTED THE SET, HIGHLIGHT IT TO SELECT IT, THEN CLICK THE "SEND TO IBIKE" BUTTON.

Selecting and Using the Customized Interval Workout on your iBike

Once you have uploaded your customized workout, you'll need to tell your iBike that you want to perform the iBike Software, customized workout (instead of the pre-programmed workout).

This is extremely easy to do:

1) Press-hold the right arrow to enter FIT TRAIN.
2) With the left/right arrow, select iB3 (iBike software).
3) To start the workout, click the center button.

4) To end the workout, press-hold the right arrow.

TIP: INTERVAL PAUSE

You're in the middle of your interval training session and you have to stop because of a traffic light. What to do? Click the center button (of course!). Your interval timer pauses. When you're ready to resume interval training click the center button. Your interval training continues at the point where you left off.

TIP: INTERVAL SETS

You can repeat interval sets as many times as you like (or your body can stand). *How*? At the end of your first set click the center button (what else?) and hold for 3 seconds. The word "Set" will flash in the center window, and the word "no:" and a number will flash in the bottom window. For example, the second set will be "Set No: 2". Of course, the set counter will increment each time you do a new set.

TIP: USING THE INTERVAL TRAINER WITH YOUR BIKE COACH

Your bike coach can create and email to you interval training files for your iBike. Your iBike Ride Analysis software is used to upload the training interval into your iBike. And, after you've downloaded your ride data to your PC/Mac, you can send your coach the actual ride data from your interval training session. That data will include hill slope, wind speed, altitude gained, and temperature, in addition to the usual time/distance/speed data. See the iBike Ride Analysis software instructions for more details.

Make sure to tell your coach that the iBike Ride Analysis software is free and available on our website www.ibikesports.com/downloads/html . This software can be used both to view your ride files and to create Intervals.

TROUBLESHOOTING

Problem: The iBike screen is blank even when I click the buttons
Possible causes:
1) The iBike battery is weak or dead.
2) The CR2032 battery is installed improperly (the battery is correctly installed when you can see the + sign).
3) The battery cover is not closed properly.
4) A firmware update has been interrupted during loading and has "frozen" the iBike. Contact us at technicalsupport@velocomp.com to diagnose.

Problem: I use a wired mount but get a "WLS FAIL" message
Possible causes:
1) Your iBike is looking for a wireless mount. Perform a "Scan" process to eliminate this problem.

Problem: The iBike screen doesn't show bike speed
Possible causes:
1) The iBike is not completely twisted on to the handlebar/stem mount.
2) The spoke magnet is not properly positioned. The spoke magnet must pass by the vertical notch of the sensor, no more than 1-2 coin widths from the sensor.
3) The batteries have been removed from a wireless sensor (2007-2010 speed and cadence sensors). Perform a wireless Scan.
4) The wireless mount battery is dead or is not installed. Replace the battery in the wireless mount.
5) The wheel pickup sensor is not properly mounted. See Mount Installation instructions.
6) Sensor is defective. Email or call iBike technical support for assistance.
7) Tire circumference has been set to zero in the Setup screen. Set tire circumference properly.

Problem: Power readings seem to be "off" for the entire ride
Possible causes:
1) FAST START sequence has not been done. See instructions to correct.
2) Calibration ride was not performed.
3) Wind offset was not zeroed prior to the ride. See instructions to correct.
4) iBike or wireless mount battery is weak. Battery voltage must be 275 or above. Replace BOTH batteries.
5) iBike handlebar mount rotates on handlebars. Tighten mount: see instructions to correct, then recalibrate. Make sure to use double-sided stickies!
6) Wind sensor has obstructed access to wind (hands, cables, etc.). See instructions to correct.
7) Rider and/or bike data (weight, tire circumference, etc.) has been entered improperly in the set-up screens. Check set-up screens.
8) Coast Downs were done improperly. Go to the USER sequence and perform the "EST AERO" procedure.

Problem: Power readings seem to be "off" for first five minutes only, then become "normal"
Possible causes:
1) Tilt calibration was not performed. See instructions to correct.
2) Calibration Ride was not performed. See instructions to correct

Problem: I get very low watts readings or zero watts readings.
Possible causes:

1) Your cadence sensor has been bumped away from the cadence magnet. When this happens the watts will be forced to zero. Make sure the cadence magnet passes within two coin thicknesses of the cadence sensor.
2) CAL RIDE has not been done. Perform a Cal Ride.
3) Cal Wind was not performed prior to ride. Perform a Cal Wind.
4) Drag coefficients have been set to zero. You can check this by clicking the left arrow 6 times to read the aero coefficient. Click again to read the frictional coefficient. If either is zero, do a new EST CDA.
5) Tire circumference has accidentally been set to zero. Check this by going to Setup/Tire Circ (tire circumference). If zero, set to correct value.

Problem: iBike shows bizarre numbers: watts, temperature, hill slope, wind speed
Possible cause:

1) Battery is weak. Battery voltage must be 275 or above. Replace battery in iBike AND wireless mount.

Problem: Unit locks-up (screen displays numbers but buttons don't work)
Possible causes:

1) Low battery voltage. Replace battery. Install new battery backwards to perform "Hard Reset", then reinstall battery properly. Reset Time and Date.
2) Error in data recording. Remove battery, reinstall battery backwards to perform "Hard Reset", then reinstall battery properly. Reset Time and Date. If problem persists, erase all ride data.
3) Firmware error. Remove battery, reinstall battery backwards to perform "Hard Reset", then reinstall battery properly. Reset Time and Date.

Problem: I can't download data to my computer and/or upload data to my iBike
Possible causes:

1) iBike is sleeping (nothing is visible on the display screen). Click the center button to turn on the unit and make the display visible.
2) USB cable isn't plugged into your computer.
3) Your iBike isn't fully fastened on to the USB adapter. Make sure you feel a solid "click" when connecting your iBike to your USB adapter. DO NOT WORRY ABOUT OVERTIGHTENING THE IBIKE ON THE USB ADAPTER!
4) iBike software and/or USB drivers are installed improperly. Consult DVD for installation instructions.
5) Windows, iBike Software ONLY. Connect your USB to the iBike with the command Device/Connect…/Accept
6) Mac, iBike software ONLY: Connect your USB to the iBike software with the command Device/Connect…/Accept

Problem: I'm having trouble getting a "good" coast down. After I do a coast down I get the message "Bad Coast".
Possible causes:

1) Either the Tilt calibration or Cal Wind steps have not been performed correctly.
2) Speed sensor is not functioning properly. Make sure spoke magnet is 1-2 coin widths separated from vertical notch in speed sensor
3) The road is down hill (road must be level to uphill).
4) Your iBike mount isn't rock-solid tight
5) You're getting big gusts of wind during the coast down, due to weather conditions, big trucks zooming by, cars passing, etc. Pick a calmer day or a quieter road!
6) You're pedaling even after the screen says "coast". YOU CANNOT PEDAL DURING THE COAST DOWN. MAKE SURE TO STOP PEDALING **IMMEDIATELY** ONCE THE SCREEN TELLS YOU TO COAST.

TIP: REMEMBER, THE EST CDA FUNCTION DOES A GREAT JOB OF PROVIDING AERO DRAG DATA, WITHOUT THE REQUIREMENT OF A COAST DOWN!

Problem: I get the message "bad data" when I put the battery into the iBike

Possible cause:

1) Your iBike's ride file structure has been corrupted. Using your iBike software, perform the command Device/Erase Ride Data. This will fix the problem.

APPENDIX 1

NP, TSS, AND IF: WHAT ARE THEY, AND HOW DO I BENEFIT FROM THEM?

Generation III iPro and iAero iBikes have Normalized Power™(NP), Training Stress Score™ (TSS), and Intensity Factor™ (IF) measurements. If you are a seasoned veteran of power training, you realize how important this information can be, and how great it is that the iBike can display this information on the road.

TSS, IF, and NP were developed by well-known exercise physiologist Dr. Andrew R. Coggan. These three measurements use the "raw" power data from your iBike, along with sophisticated mathematical formulas, to provide more detailed information about the intensity and quality of your workouts. If you have never heard of these three useful factors, then keep reading to find out what they are and how they can help you get the most out of your workouts and your fitness improvement goals.

Getting Started: Determining Your Functional Threshold Power (FTP)

Before you can obtain TSS, IF and NP measurements you need to have a "baseline" that characterizes your current level of fitness. This reference point is called your "Functional Threshold Power", or FTP.

One way to determine your FTP is to do a one hour Time Trial; your average watts for that one hour period is your FTP. Another way to estimate your FTP is by using the iBike's 20 minute fitness test. The iBike 20 minute fitness test is similar to a time trial, just shorter in time. To estimate your FTP from the iBike fitness test, take the watts per kilogram number shown in your "FIT TEST" screen, multiply that number by your weight (in kilograms), then multiply that number by 0.95. For example, if your W/KG measurement is 3.02 and your weight is 81KG, then your estimated FTP is 3.02 *81 *.95 = 233W.

Once you have determined your FTP number from either method, you must enter that value into the iBike. Go to Setup/FTP CFG (FTP Configuration). Click the center button, then use the arrows to enter your FTP in watts. Click the center button to Accept.

If you're training regularly you'll want to check your FTP about once a month.

Normalized Power (NP)

Have you ever participated in a group ride where your watts are never steady? Group rides can be very difficult, but afterwards you might suspect that your average watts don't accurately reflect how difficult the ride was. The disparity between measured and perceived effort is due to coasting, surging, using brakes, and soft pedaling. In fact, your average watts will be lower than your perceived effort suggests. This is where Normalized Power (NP) comes in.

NP takes your "raw" power data and gives you a related power measurement number (reported in watts) that better represents the "tax" on your body for the ride, especially when you're varying your power output considerably from moment to moment. For example, in a criterium, the NP number will be much higher than the average power because the NP measurement does a better job of accounting for the effects of coasting and large power surges. The NP number will be more representative your effort for the

ride.

In events such as a time trial or climbing hills where the wattage holds very steady, NP and average power will be very close to each other because you pedal almost all the time.

Using Intensity Factor (IF) to gauge the difficulty of your Workout

If you do cycling workouts regularly you know that some of your workouts are more intense than others. Average power and NP alone won't quantify the intensity of your workout, because the intensity of a workout is not based on power output alone but *also* the time length of your workout *and* how hard you work during each moment of your workout.

Normalized Power (NP) and Functional Threshold Power (FTP) can be used *together* to quantify the overall intensity of each of your workouts. The Intensity Factor (IF) is very simple to calculate: divide your NP by your FTP. The number IF represents the intensity of your workout as compared to the effort you expend in a one hour Time Trial. So, an IF of 1.0 represents a time trial effort and in theory can only be maintained for an hour.

One of the great things about an IF measurement is that you can manage your training schedule to make sure you're training hard, but not training too hard. Here are some values for IF and the kind of rides they represent:

- Less than 0.75 - recovery rides
- 0.75-0.85 - endurance-paced training rides
- 0.85-0.95 - tempo rides, aerobic and anaerobic interval workouts (work and rest periods combined), longer (>2.5 h) road races
- 0.95-1.05 - lactate threshold intervals (work period only), shorter (<2.5 h) road races, criteriums, circuit races, longer (e.g., 40 km) TTs
- 1.05-1.15 - shorter (e.g., 15 km) TTs, 10 minute hill climb
- Greater than 1.15 - prologue TT, track pursuit, 5 minute hill climb

One more way to gauge your workouts: Training Stress Score

We now know the true tax on our body (NP), and how intense each workout is (IF) compared to a reference one hour TT, but there is still one more thing to think about. For example, what is the comparative stress on the body from riding at 50% of our FTP for two hours, compared to a 100% FTP effort for one hour? A simple number called Training Stress Score (TSS) allows you to quantify and compare your different workouts, even when they are considerably different in time length and power intensity.

TSS is designed to give you a numeric value for each ride that tells you how much training load was on your body for that day's ride. A TSS of 100 equals an hour at an IF of 1.0. So, if you were out for a fairly easy four hour ride, and accumulated 200 TSS points, it's the same training load as doing two hours at time trial pace.

Importantly, TSS also quantifies how tired you can expect to be after a workout and how long the residual fatigue might last.

- Less than 150 - low (recovery generally complete by following day)
- 150-300 - medium (some residual fatigue may be present the next day, but gone by 2nd day)
- 300-450 - high (some residual fatigue may be present even after 2 days)
- Greater than 450 - very high (residual fatigue lasting several days likely)

Where to find your TSS, IF and NP factors in your iBike screen

After each ride you'll find your TSS, IF and NP measurements in the Totals screens (left arrow). Click the left arrow to find your scores.

Whenever you do a Trip Reset (press-hold center button, then click to confirm) these three measurements will be reset to zero.

Summary

By looking at your TSS, IF and NP numbers after each ride you can track your workouts based on data from your own personal FTP number. Furthermore, these three metrics can be used to diagnose workouts and even prescribe rest days.

If you can normally ride two hours at an IF of .9, but today you really struggled, it might be time for a couple of easy recovery rides (IF of under .7). Using this information can make your iBike power data even more personalized to you, and help you maximize the effectiveness of your training.

For more detailed explanations of NP, IF, and TSS, see the Trainingpeaks article at: http://home.trainingpeaks.com/articles/cycling/normalized-power-intensity-factor-training-stress-score.aspx

APPENDIX 2: FREQUENTLY ASKED QUESTIONS

WHERE DO I FIND THE SERIAL NUMBER FOR MY iBIKE?

The serial number is stored in your iBike's internal memory. You download the serial number using the iBike software. Consult your iBike software manual for serial number downloading instructions.

HOW DOES THE iBIKE® POWER METER WORK?

The iBike power meter uses a revolutionary approach to power measurement that is based on Newton's third law:

> *"For every action there is an equal and opposite reaction"*

In bicycling terms, this means that the factors causing the cyclist to expend power during a bike ride (hill climbing; opposing wind; tire, bearing and other losses; bike acceleration) are equaled by the power applied through the pedals by the rider.

With the exception of the iBike, all other high performance power meters determine power by measuring the forces *applied* by the rider to the pedal. Directly measuring applied pedal force is an accurate way to derive power, provided the cyclist is willing to accept the weight, cost, installation, inflexibility, and operational penalties that are characteristic of a direct-force power meter (DFPM).

In radical contrast, the iBike uses state-of-the-art sensors, along with new and patented technology, to measure the opposing forces that cause the cyclist to *expend* power: opposing wind, hill climbs, bike acceleration, and rolling friction of the bike and tires.

A powerful microprocessor, programmed with proprietary DSP filters and real-time solutions to the dynamic power equation, processes the output from the iBike sensors many times per second, computing the total power demands created by hill slope, wind, etc. And thanks to Newton's third law, measuring the power consumed by hill climbing, overcoming wind resistance, etc. provides a comprehensive and accurate measurement of the power generated by the cyclist.

The iBike uses four sensors:

- an accelerometer to measure hill slope and bike acceleration/deceleration forces,
- a differential pressure sensor to measure wind speed forces,
- an absolute pressure sensor to measure elevation gain, and
- a wheel pickup to measure bike speed.

All sensors except the wheel pickup are located within the iBike housing, making it possible to use the iBike, quickly and easily, on all of your bicycles.

HOW IS HILL SLOPE CALCULATED?

When you climb a hill your bike's movement has two components of motion: the total distance traveled forward on the road, and the vertical distance traveled up the hill. The "Hill Slope" is the ratio of vertical movement to forward movement, expressed as a percentage.

> *Example:* You travel 1000 feet forward and climb 100 feet vertically. Your hill slope is 100/1000 x 100% = 10%

The accelerometer in the iBike measures hill slope instantaneously, much faster and more accurately than GPS or barometric pressure methods.

HOW ACCURATE IS THE HILL SLOPE MEASUREMENT?

Your iBike uses an accelerometer that measures hill slope and bike acceleration simultaneously. When your bike is at rest or you ride at a constant speed (in either case there is no bike acceleration) the hill slope displayed on your screen is very accurate (within 0.1% of the actual slope). When you are accelerating on your bike (going faster, coasting on a downhill, or braking) the hill slope may jump around a bit because the accelerometer not only senses hill slope but bike acceleration as well. In this circumstance the hill slope displayed on the screen will be only approximately correct (generally within 1% of actual slope). NOTE, HOWEVER, THAT WATTS ARE CALCULATED WITH HIGH PRECISION UNDER THESE RIDING CONDITIONS, *including those where the hill slope displayed is "off".*

WHAT IS THE RELATIONSHIP BETWEEN THE AERODYNAMIC AND FRICTIONAL DRAG COEFFICIENTS THE iBIKE MEASURES, AND CdA AND Crr?

The iBike measures aerodynamic and frictional drag coefficients in the coast down calibration. The numbers measured and reported on the iBike screens ("aero" and "fric") are related to, but not the same as, CdA and Crr. The value of aero can vary from 0.2 to 1.5, depending on the location of the iBike on the handlebars. The value of fric can vary from 5.00 to 25.00, depending on the weight of the rider.

NOTE: The iBike software will report drag coefficients in CdA and Crr format. To get this data from your iBike, you'll need to do the multiple coast-down/calibration ride, described in these instructions. Also, see the iBike software instructions for more details.

WHAT ARE TYPICAL VALUES OF CDA AND CRR?

CdA (coefficient of aerodynamic drag) is dependent mostly on ride position, rider height, and rider weight. The lower the CdA, the less effort that is required to overcome opposing wind.

The time trial position results in the lowest values of CdA: numbers between 0.22 and 0.28 are typical. The specific value will depend considerably on the details of bike type, rider position, and rider size.

The "drops" position is not as aerodynamically efficient. Values between 0.32 and 0.38 are typical.

The "hoods" position (hands grasping the brake levers) is the most typical riding position. CdA values of 0.34 to 0.43 are typical.

The CdA of a cyclist riding a comfort bike can be 0.45 or higher.

Crr (coefficient of rolling resistance) measures the amount of opposing friction caused by road surface, tire type, and bearing friction. A low value of Crr means low rolling resistance.

On a very smooth surface, such as those found at an indoor track, Crr can be 0.003. Asphalt roads have a typical Crr of 0.0055, and dirt roads can have Crr values of 0.008 or higher.

Values of CdA and Crr can be measured by the Coast Down procedure, or they can be estimated accurately as part of the Fast Start sequence.

WHAT DOES "HEADWIND" MEAN?

The headwind speed that is displayed by your iBike is the TOTAL magnitude of wind blowing directly in your face *as you pedal*. A few examples make this easy to understand:

- You ride at 15mph directly into a 12 mph headwind. The iBike will read 27 mph headwind.
- You're going 18 mph and there is a cross wind of 10 mph. The iBike will display 18 mph as the headwind (remember, you're riding perpendicular to the wind's direction.)
- You're going 20mph and there is a tailwind of 10mph. Your iBike reads 10mph as the headwind (it knows you're getting a bit of a free ride from mother nature!)

NOTE: WITH "ABS WIND/YES" YOUR IBIKE WILL REPORT THE ACTUAL WIND SPEED.

UNDER WHAT CONDITIONS CAN THE IBIKE BE "LESS ACCURATE"?

There are two extreme riding situations where it is difficult for the iBike to measure watts with highest accuracy:

1) Sharp turns such as hair-pin turns. During sharp turns when your handlebars are pointed into the turn your watts may read low. As soon as the turn ends your watt readings will return to full accuracy.

2) When pedaling at high speed in a tuck. While pedaling on downhills, any minor variation in ride position from your normal ride position (such as going into a tuck to pick up more speed), or any error in your drag coefficient measurement, can cause a false watts reading. The reason is simple: wind resistance varies as the cube of your speed, so high speeds "amplify" enormously the watts errors caused by ride position changes. As a practical matter, most riders DON'T pedal on downhills (it's a very poor use of rider energy) and when not pedaling, any iBike with a cadence mount will report zero watts.

WHAT CAN I DO TO GET THE MOST ACCURATE RESULTS FROM MY IBIKE?

Your iBike will work extremely well when it is properly calibrated:

1) Perform the Fast Start sequence AND the Cal Ride. For the highest level of accuracy, you may also perform multiple Coast Downs after completing the Cal Ride. Make sure to use the iBike software to analyze your Cal Ride/Coast Down data.
2) If you don't pedal on down hills, the cadence sensor will force watts to zero whenever zero cadence is detected.

HOW DOES THE iBIKE MEASURE TEMPERATURE?

The iBike indicates the temperature INSIDE of your iBike. If you've been riding and air is moving around your iBike, the temperature displayed will be close to the outdoor temperature. However, if your iBike has been sitting in the hot sun, without airflow over it, the display could show a significantly higher temperature.

NOTE: if you own a BLACK iBike, it will tend to over-report temperature by about 10F-15F, particularly in sunny weather.

I PURCHASED A FIRMWARE KEY FOR MY IBIKE. WHAT HAPPENS NEXT?

All purchase firmware keys are customized to the serial number of your iBike; until we have your correct serial number we can't create customized firmware updates for your iBike. Once you email us your serial number we will mail you your firmware key.

WHAT IS "TOTAL VERTICAL CLIMBED"?

Any time you climb, the iBike will accumulate the amount of elevation gain.

> Example: You climb a 100 foot hill, then descend 50 feet downhill, then slowly climb another 25 feet, and then ride back to your starting spot, descending 75 feet along the way. The iBike will show your Total Vertical as 100 + 25 = 125 feet.

DOES "TRIP RESET" ZERO-OUT SETUP, CALIBRATION, AND PREVIOUS RIDE DATA?

No! Your total odometer, tilt and coast down calibrations, wireless IDs, and other profile information are unaffected by trip reset. Also, any ride files recorded from prior rides is unaffected.

IS THE IBIKE SUITABLE FOR RAINY RIDES?

Yes! Your iBike was designed to be water resistant so don't worry if you get it wet. If the front port becomes filled with water your power readings may be wrong. To correct this problem, remove your iBike, blow the water out of the front port, and dry your mount and underside of the iBike with a dry cloth. Replace and continue on your ride.

TIP: IF YOU RIDE OFTEN IN RAINY CONDITIONS, CONSIDER PURCHASING THE OPTIONAL REMOTE WIND SENSOR (RWS). THE RWS WILL KEEP RAIN FROM FILLING THE IBIKE'S WIND PORT AND WILL IMPROVE WATTS ACCURACY DURING RAINY RIDES.

HOW DO I <u>HARD RESET</u> THE iBike?

Your iBike contains a microprocessor. It is possible, *though extremely unlikely*, that your iBike might experience a computer "freeze" malfunction. Symptoms of a freeze include: the buttons do not function properly, the screens are frozen, or you can't download rides. In this unlikely event a hard-reset may correct the problem. To do a "hard reset" perform the following steps:

1. Remove the battery from your iBike.
2. Reinstall the battery, *upside down*. That is, install it so that you do NOT see the + sign of the battery.
3. Leave the battery in the upside down position for five seconds.
4. Remove the battery and reinstall it normally, that is, with the + side up so that you

can see it.

5. Your iBike will now be totally reset, in a condition identical to that when it was shipped from the factory

NOTICE: AFTER YOU DO A HARD RESET YOU WILL NEED TO RESET THE DATE AND TIME IN YOUR IBIKE. HOWEVER, YOU WILL NOT NEED TO RE-ENTER WEIGHT, TIRE CIRCUMFERENCE, AND CALIBRATION DATA. THAT DATA IS STORED PERMANENTLY IN THE IBIKE'S NON-VOLATILE MEMORY. ALSO, ALL OF YOUR STORED RIDE FILES WILL REMAIN IN YOUR IBIKE AFTER A HARD RESET.

OTHER QUESTIONS?

Please contact us anytime with your questions:

technicalsupport@velocomp.com