

Bike-O-Meter User Manual

for

BlackBerry® Smartphones

Version 5

Date 2010-11-14

Thank you for purchasing the Bike-O-Meter App from Cellimagine.

NEW ADVANCED FEATURES:

- Ability to Auto Mark Waypoints and trips. For each trip, two files are generated. A kml file that can be plotted on Google Earth.
- A xml file that contains vital information that can be analyzed using MS Excel spreadsheet.
- Provides complex analysis capability.
- Unlimited trips can be Auto Marked and stored on a SD Card.
- Remembers User Settings such as Mode (Walk or Vehicle) and Measurement Units (Metric or English).
- Backlight ON capability to keep the screen from going to “sleep”.
- Auto save the User Preference settings such as Mode, Units. Upon program exit, automatically save the Odometer and Elapsed time readings

- Bike-O-Meter setup to work in **Unattended Mode** so even with no user activity, the App and GPS device does not stop working.
- Comprehensive set of GPS measurements.
- Configure Waypoint Sampling interval, Trip Duration and file names.
- The sampling interval and trip duration can be selected.
- Save trip data to SD cards in KML and XML format

As one of the first users described - *“It has a cool factor”*
It is a high precision instrument and very reliable.

Before getting started, please follow the checklist below to make sure your BlackBerry phone meets the minimum requirements and GPS is setup properly.

SETUP

STEP 1: Make sure your BlackBerry Phone has OS version 4.6.0 or higher

Settings->Options->About

(it should show something like this)

v4.6.x.yyy

STEP 2: Make sure that the GPS chip is turned on. If not, turn it on as shown below:

Settings->Options->Advanced Options->GPS

GPS Data Source Device GPS

GPS Services Location ON

When you are outside, the Latitude: Longitude: are not zero and show correct reading.

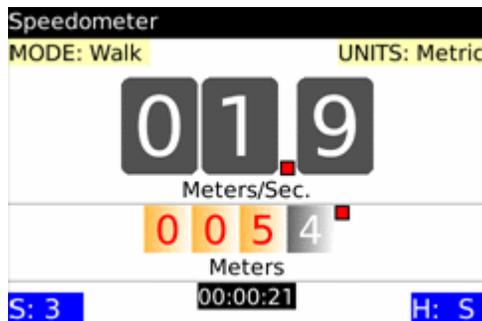
Number of Satellites: 9 // make sure it is not 0
Accuracy : 2.68 m

GPS	
GPS Services	Location ON
GPS Location:	
Latitude:	N 43° 27.789'
Longitude:	W 80° 31.2487'
Fix Time:	21 May 2010 14:43
Number of Satellites:	3
Accuracy:	0.0 m
Location Aiding:	Enabled

STEP 3: Go outdoors with a clear view of the sky. Turn the Bike-O-Meter App on and wait for about a minute to get a satellite fix. (First time you may have to wait for about 2 to 3 minutes). When you get a good Satellite Fix, you should see the satellite count (in the blue block) on the main screen bottom left hand corner.

S: 8

A screen shot of the Bike-O-Meter main screen is shown below:



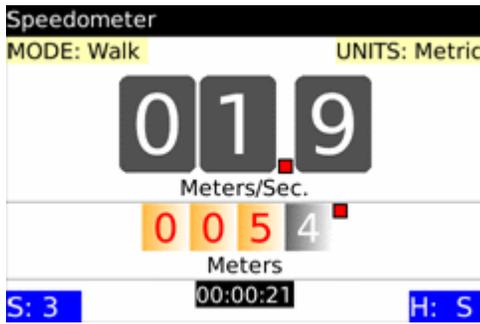
Once you get a satellite fix (more than 6 is good), if you move about 60 feet in any direction you will see the speed and distance readings change.

We have tested the App while walking, on a bike and in a car. With good GPS coverage (7 to 10 satellites) the speed and (odometer) distance readings are very accurate.

STEP 4: Make sure your carrier allows other GPS App (such a such as Bike-O-Meter) to access your GPS. Some carriers in the USA block other third-party Apps from accessing the GPS . For e.g. only the phone company installed Apps such as Navigator are allowed on some devices.

If that is the case, you have to talk to your phone company.

The main screen shows the following information:



Mode of operation: Walk or Vehicle mode

Measurement Units: English or Metric.

The combination of Mode and Units is used to display the proper measurement units.

For e.g. Vehicle Mode, English Units will display Speed in Miles per hour and distance in Miles.

Walk Mode, Metric Units will display Speed in Meters/Second and distance in Meters.

The table below shows the various combination of mode and units and the resulting measurement units displayed.

	English Units		Metric Units	
	Speed	Distance	Speed	Distance
Walk Mode	Feet/Second	Feet	Meters/Second	Meters
Vehicle Mode	Miles/Hour	Miles	KM/Hour	Kilometers

In Vehicle mode, the Odometer last digit shows **Tenth of a Mile or Kilometer.**

e.g. 1234 is 123.4 Miles or Kilometers.

In the Walk mode, the Odometer readings show **whole units** either **Feet or Meters.**

e.g. 1234 is 1234.0 feet or meters

HELPFUL TIP: At any time you can switch Modes and Measurement Units. If you are walking more than 2 Miles, then it make sense to switch to Vehicle Mode to see the Total distance traveled correctly. Otherwise the distance in Feet will “wrap around”!

IMPORTANT: The user settings such as Mode and Units are automatically remembered when exiting the App and restarting it.

The Odometer readings and Elapsed Time are also saved while exiting the App and restored back on re-starting the App.

INSTRUCTIONS:

Bike-O-Meter is real simple and easy to use. We will explain how it works.

Keep in mind that App requires the use of GPS. The GPS accuracy is about 60 feet, and this technology requires movement to detect speed, distance and heading.

1. To start the App, simply click on the **Bike-O-Meter** icon. The Main screen shows up. It starts working as soon as it gets a satellite fix.

2. As with any regular speedometer/odometer, the speed readings and the distance readings will **not change unless there is movement**.

If you are walking, set the MODE to WALK. This way, you will see how much you moved in feet (or meters) as opposed to miles (or kilometers).

3. If you are in on a bicycle or car, switch to the VEHICLE mode. In this mode, you can use the **English** units (speed in Miles per Hour and distance in Miles). You can also set units to Metric (speed in Kilometers per Hour and distance in Kilometers)

4. The BlackBerry phone **does not have Magnetic Compass**. So the HEADING (direction) is calculated based on GPS locations.

To obtain proper heading values you need movement. Once you start walking or driving, you will get correct HEADING.

5. If you lose Satellite fix/count (for example you go indoors), the reading become unreliable.

6. With good satellite fix, the reading are reliable and the errors are less than 2%.

7. You can store and view the Waypoints. These are location along you travel path.

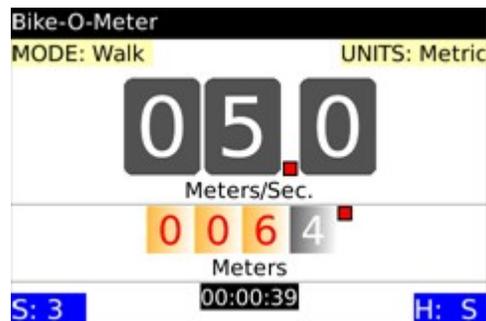
8. The **GPSInfo** screen gives you detailed information of both the GPS readings and calculated values.

USE CASES

Example 1: Running/Jogging

1. Step outside, turn on the Bike-O-Meter and wait for about 30 seconds to acquire the satellites. Usually you get 7 to 10 satellites. The satellite count is shown on the bottom left corner in the blue block.

S: 10



2. Next from the Main menu, set the **MODE to Walk**.

3. From the Main menu, select the units. Set the **UNITS to Metric** for speed in Meters/sec. and distance in Meters

(Set **UNITS to English** for speed in Feet/sec. and distance in Feet).

4. From the Main menu **Reset the Odometer**.

5 If necessary Reset the Timer.



6. **That is it!** start running or walking. When your speed is **above 3 Miles per hour**, you will see the speedometer shows readings.

7. While walking (even at Speed less than 3 miles per hour) you will see the Odometer (in feet or meters) changing and showing distances.



8. At any time, using the menus you can switch between the various MODES and UNITS.

Helpful Tips:

Internally the distance is stored as a "big number". The largest number it can store is 4,294,967,295 (4.2 Billion feet)

So even if you walk more than 9999 feet the distance is correctly stored internally.

Let us say you walked 5 miles = $5 * 5280 = 26400$ feet.

The walk mode reading will show 6400 feet. Because the display has 4 digit positions, it can only display the last 4 digits. So you won't see the number 2. If you switch to the Vehicle mode, it will show 5 miles.

Since the odometer display has 4 positions, in mathematical terms it does Modulo 10000 arithmetic. It is like you keep subtracting 10000 from 26400 until what is left is less than 10000. In this case 6400. More simply it is as if you cannot see the digit 2 in 26400.

If you are walking more than 2 miles (9999 Feet), the distance value will “wrap around” and give incorrect values. Switch to Vehicle Mode. It is **easier to read the distance accurately in miles.**

Example 2: On a bicycle or in a car:

9. The App works exactly the same way whether you are on a bicycle or a car.

10. In this case, you would set the **MODE to Vehicle** and the **UNITS to English** or (Metric). The Bike-O-Meter provides very accurate readings for both speed and distance. We have checked that the readings closely match with the readings of the car.



11. With the **Vehicle Mode, English Units**, the Odometer shows distance in Miles . The right most odometer position (the black box/digit) now shows **10th of a mile**.

12. In the **Vehicle Mode, Metric Units**, the Odometer shows distance in Kilometers . **The right most odometer position** (the black box/digit) now shows **10th of a Kilometer**.

13. When you are moving, the **HEADING values show the correct magnetic direction** such as N (north), NE, E (east), SE, S (south), SW, W (west), NW etc. The actual values in degrees are displayed in the GPSInfo screen.

14. At any time you can also **save** (permanently) your Waypoints (Latitude, Longitude, Speed, Heading, etc) and **view** them later. We don't have the capability of downloading them to the computer yet.

STORING AND VIEWING WAYPOINTS:

The current version of Bike-O-Meter will allow you to:

1. Save Waypoints for a trip to a file on the SD card
2. View Waypoints
3. Download the Waypoints Files

You can manually store single waypoints, or automatically store multiple waypoints.

MANUALLY STORE WAYPOINTS

1. To Store a Waypoint:

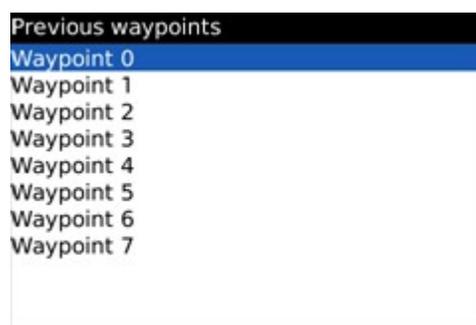
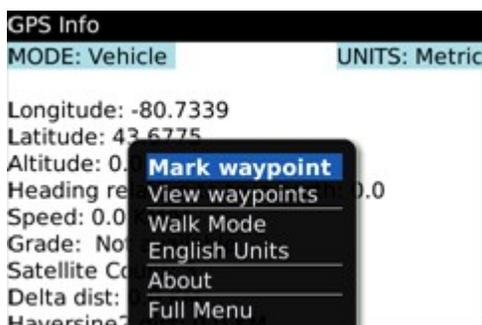
From the Main Screen go to the GPSInfo screen. Then use the Mark waypoint menu item:

Bike-O-Meter->GPSInfo->Mark waypoint

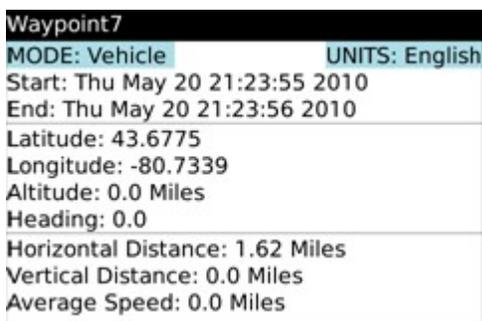
2. To View a WayPoint:

From the Main Screen go to the GPSInfo screen. Then use the View waypoint menu item:

Bike-O-Meter->GPSInfo->View waypoints



3. Select the Waypoint you want to view e.g. Waypoint 7 and click for details:

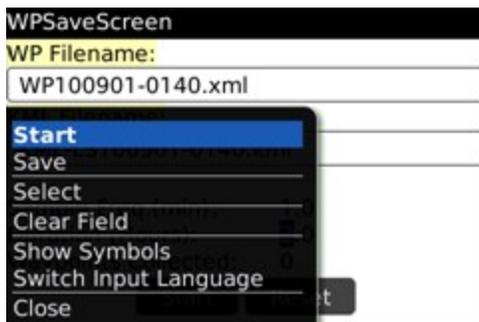
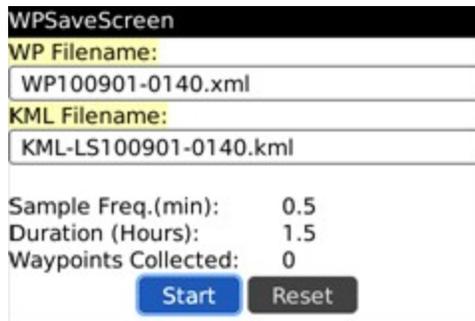


AUTO STORE WAYPOINTS

To automatically store trip waypoints, go to the WPSaveScreen

Bike-O-Meter->GpsInfo->Auto Mark Waypoint

The WPSaveScreen is displayed as shown below.



For each trip **two files** will be generated.

One is an XML file that contains the vital Waypoints data and statistics. XML is an open standard data interchange format and any application can read this file. An XML file is a simple text file in an easily readable form for both machines and people.

The XML filename that is displayed is a unique name based on the date and time when the Auto Mark waypoint function is invoked. The file extension is .xml. For e.g.

WP101012-1905.xml

This file was created on 2010 October 12 at 19 hrs and 05 minutes.

The second file is a KML file and has a .kml extension. This is a special file that contains the trip points that can be displayed in Google Earth. Again, a KML file is an open standard XML file understood by many Location Based Applications (LBS).

The KML file also has a unique name based on the date and time it was created. It has an extension

of .kml

KML-LS100901-0140.kml

This file was created on 2010 September 01 at 01 Hrs and 40 minutes

Both the XML and the KML file names can be changed if the user decides to do so.

The next field is the the Sampling Frequency in Minutes. This specifies how often the Waypoints are marked and stored. This is a Editfield where the user can select one of the values or enter a valid sampling value. **Fractional values are also accepted.**

For example a sampling frequency of 1 Minute specifies that trip locations are marked every 1 minute. A value of 0.25 minutes specifies sampling frequency of 15 seconds.

The Duration field specifies the Total time duration for which the waypoints are collected.. The duration is specified in hours. This is also a Editfield where the user can select one of the values or enter a valid sampling value.

Other values including fractional values are also accepted and can be directly entered.

For example a Duration of 2 Hours specifies that trip locations are marked at the sampling rate for two hours.

If the Duration is 2 hrs and the sampling rate is 1 minute, then Waypoints are collected every minute for 2 hours for a total of 120 Waypoints.

The Waypoints collected field shows how many waypoints have been collected so far since the start of the Auto Mark Waypoint. This field increments with time.

The Duration field serves a second dual purpose. Once started, this field shows the remaining time the time left to collect waypoints. It decrements and when it reaches zero, the Waypoint collection stops.

For a given trip, a maximum of 250 waypoints will be collected. After that the waypoint collection is stopped.

Once the Waypoint collection is stopped either manually or automatically, the waypoints are stored in the specified files on the SD card.

IMPORTANT: The xml and kml files are stored in the root directory of the SD card

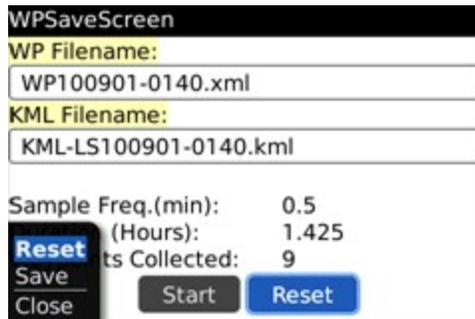
The **Start**, **Stop**, **Reset** and **Save** menu items are context sensitive and designed to be fool proof to prevent the user from accidentally overwriting a saved Waypoint file.

Any number of trip files can be created. The only limitation is the size of the SD card. Each trip generates two files that have unique names and help keep track of the trips chronologically.

Once a trip is started, the user can exit the WPSaveScreen and go back to the Bike-O-Meter (main

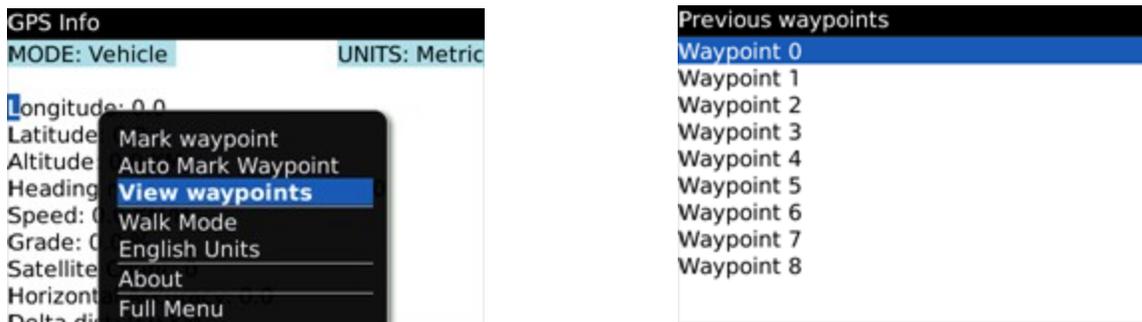
screen) to view the Speed and Distance instrumentation. Since the state of the WPSaveScreen is preserved, the user can return to this screen any time to check the status of waypoint collection or stop and save the files.

The Reset button can be used to reset the filenames, and sampling interval and duration to default values. The Reset button cannot only be activated while the trip is active and waypoints are being recorded.



Waypoints that are stored can be viewed as a list in the Previous waypoints

Bike-O-Meter->GpsScreen->View Waypoint



Details of a Waypoint can be viewed by selecting a particular Waypoint. Select the Waypoint you want to view e.g. Waypoint 7 and click for details:

Waypoint6	
MODE: Vehicle	UNITS: Metric
Start: Wed Sep 01 01:45:51 2010	
End: Wed Sep 01 01:46:21 2010	
Latitude: 0.0	
Longitude: 0.0	
Altitude: 0.0 KM	
Heading: 0.0	
Horizontal Distance: 0.0 KM	
Vertical Distance: 0.0 KM	
Average Speed: 0.0 KM/H	

ADVANCED ANALYTICS

The Trip Waypoints and measurements can be downloaded to a computer for complex analysis and advanced graphing.

The XML files can be easily imported to Microsoft Excel spreadsheets and various trend analysis can be performed.

Since all the measured and calculated data are available, various graphs can be easily plotted such as:

- speed vs distance,
- Distance vs. Time
- vertical distance vs distance
- altitude vs distance

All these advanced capabilities that are normally reserved for expensive GPS devices and software are available a virtually no cost.

Similarly the KML files can be used to display Line segments on Google Earth on your local computer. Alternately, they can be uploaded to Web servers such as:

MapMyRide.com and ***RideWithGps.com***

These sites can accept kml files and plot contour maps, street maps, hybrid maps etc. The possibilities are endless and comparable to expensive professional GPS biking gear.

DISABLE COMPATIBILITY MODE

We have seen cases on some BlackBerry Storms where the virtual keyboard always stays on. This is because it is running in what is called as the compatibility mode.

The good news is that this problem can be easily fixed and we will send detailed instructions on how to fix this problem.

On your BlackBerry Storm (95xx) if the App is running in the "**Compatibility Mode**" you need to disable it.

You can disable compatibility mode by going to:

1. **Options >> Advanced Options >> Applications >> Speedometer**
2. Highlight the **Speedometer (Bike-O-Meter App)**
3. Click/Hit the **Menu button** (the one with logo)
4. Select **Disable Compatibility Mode**
5. Sometimes you may have to do a battery pull.
6. Once you disable compatibility mode, **restart your application**. the blue border and the **persistent virtual SureType keyboard** should be **gone**.

After that, you should be able to go from the figure on the left to the screen on the right with no keyboards.



You may be able to use the application in landscape mode as well.



BlackBerry Curve 8530 and 8350i

If you have any of these devices, the screen resolution on the **device is 320 by 240 pixels**. Compared to that, most newer BlackBerry smart phones today have a **screen resolution of 480 by 360 pixels**. (For e.g. Curve 8900, Bold 9000 or Storm (9350, 9550)

Since the screen does not have enough resolution (display pixel/dots), you may not see the **Elapsed Timer** on the screen.

All other functionality will work properly.

Please contact info@Cellimage.com for a version of the Bike-O-Meter that is customized for BlackBerry devices such as 8530 and 8350i with lower resolution screens.

Questions? Please contact: Support@Cellimage.com