RaceChrono

Manual for RaceChrono

About

RaceChrono is a smart phone application intended for measuring lap times and analyzing laps, and is available for Windows Mobile and S60 smart phones.

The free application is developed by a Finnish company named RaceChrono. The aim of RaceChrono is to give immediate feedback of laps and to provide a way to analyze laps without transferring any data to a computer. The software is particularly aimed towards recording lap times in motor sports, but it has also a lot of users in down hill skiing, bicycling and even horse racing.

With Lap timing feature you can test and improve your track driving skills. RaceChrono supports both circuit and special stage type tracks. Of course using this feature is not limited only to track driving; you can for example time your commute to work.

RaceChrono offers its users a huge online track library containing the start, finish and split lines for many different race tracks. There is currently over 200 tracks in 40 countries in the library, all of which are downloadable within the application.

RaceChrono uses global positioning system, and requires a Windows Mobile or S60 (Symbian) smart phone plus a GPS receiver. RaceChrono's lap time error margin is typically 0.15-0.25 seconds depending on satellite positioning accuracy and the quality of the GPS receiver being used. The best accuracy is gained with an external Bluetooth GPS receiver, but phones with internal GPS receivers are supported as well.

RaceChrono also has performance testing feature which you can use to time your car's or bike's performance on a for example quarter mile track, and view the speeds at the finish line.

Please visit our web pages at www.racechrono.com for latest news, installation files, manuals and support forum!

Contents

1. Getting started

RaceChrono works on Symbian phones with S60 3rd edition and 5th edition operating system and Windows phones with Windows Mobile 5 and 6 operating system. Both touchscreen and non-touchscreen are supported. In addition RaceChrono is available for little bit more marginal operating systems like S60 2nd edition, Pocket PC 2003 and Windows CE 5.0.

Since RaceChrono uses GPS data to measure lap times and performance, a GPS receiver is needed. Both Bluetooth and Internal GPS will work, but a good Bluetooth GPS is recommended for best accuracy. RaceChrono team recommends any MTK-II chipset 5 Hz receiver, such as the QSTARZ BT-Q818X.

1.1. Installation (Symbian / S60)

To install RaceChrono to a Symbian phone you first need to copy the .sisx installation file to your phone. This can be done through USB-cable, Bluetooth or memory card, but maybe the easiest way is to use the phone's web browser. Just point the browser to www.racechrono.com/mobile/ and click the suitable installation file for your device.

Once the installation file is loaded to the device, just open it and continue through the information dialog.

Next you are asked for installation location. You may install RaceChrono either to your Memory card or to your Phone memory. Memory card is always recommended as even the one megabyte of storage space required by RaceChrono can be precious for limited Phone Memory.

Notice that the application installation location does not affect where your session and track files will be saved! Memory card is used as the default.

1.2. Installation (Windows Mobile)

To install RaceChrono to a Windows Mobile phone you first need to copy the .cab installation file to your phone. This can be done through USB-cable, Bluetooth or memory card, but maybe the easiest way is to use the phone's Internet Explorer. Just point the browser to www.racechrono.com/mobile/ and click the suitable installation file for your device.

After the installation file has been loaded, just open it and you will be asked for installation location. Notice that the application installation location does not affect where your session and track files will be saved!

1.3.   User generated files

RaceChrono saves the session and track files to \RaceChrono\ folder on the selected storage.

Memory card is selected as the default storage on Symbian platform. Also the usually quite limited phone memory can be used, but it's not recommended since **the user generated files are not deleted during un-installation**.

Once you have uninstalled the software and do not need the track and session files anymore, just delete the whole \RaceChrono\ folder to free up the storage space.

In Windows Mobile you might want to change the default storage to which ever media has the most available space, as the default location might rather limited in available space.

| Folder	Description
\RaceChrono\	Main directory
\RaceChrono\Sessions\	Saved sessions. *-nmea.txt files contain the raw NMEA, *.bin files contain RaceChrono format files.
\RaceChrono\Tracks\	Saved track profiles.
\RaceChrono\Exports\	Exported files. Delete the exported files after copying them to your PC to save space.

2. Main Menu

From the root menu, the user can navigate:

- New sessions

- Previous sessions

- Track profiles

- Performance test

- Settings

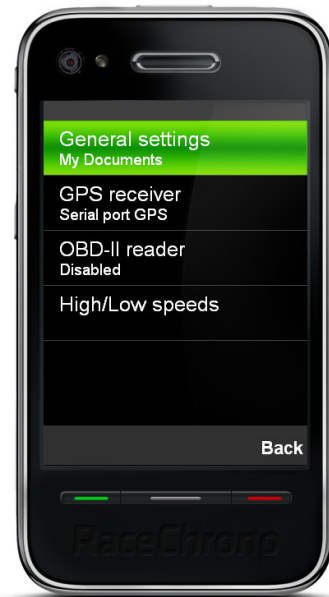- Options

In Main Menu you can also see

- storage space left (Kb)

- total of:
  - Sessions
  - Track profiles
  - Performance tests

- Options shows version number and other software information.
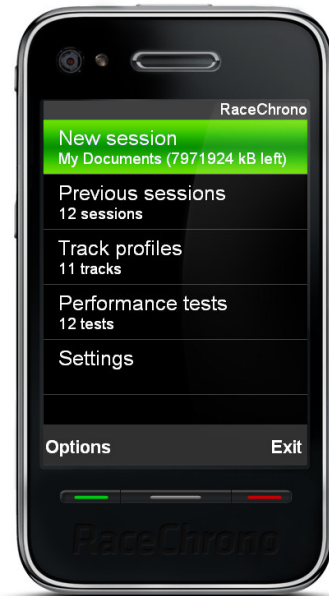
3. Settings

The settings are divided in four separate groups:

- General settings

- GPS receiver settings

- OBD-II reader settings

- High/low speeds settings.

3.1.   General settings

Most important general setting is the Storage selection. You can select which storage you want your sessions and tracks to be saved.

Storage selection

Choose between your possible storage locations. All new sessions and tracks will be saved to the selected storage.

In Symbian you should never use the Phone Memory (C: drive) since it can be very limited in space. Always use Memory Card (E: or F: drives). **Using the Phone Memory is recommended only if you do not have a memory card!**

Notice that uninstalling the software does not remove the saved tracks and sessions. After you don't need them anymore, to free up the space you will need to delete the \RaceChrono\ folder manually (under the storage that was used for saving them).

Timer backlight

Timer backlight is always on in Live Timer by default. Turn this setting off if you never need the Live Timer to stay lit. Notice that if you want to turn off your timer backlight occasionally; just lock the keys!

Timer orientation

Timer orientation is the orientation of your live timer screen. You can force the screen orientation to portrait (higher than wide) or landscape (wider than high), if your device installation location requires so.
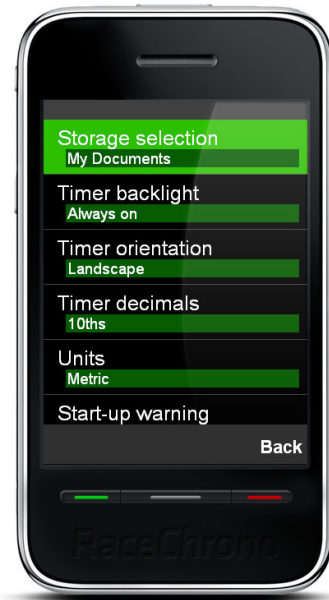
Timer decimals

The times are displayed with accuracy of $1/10^{th}$ of a second by default. Change this setting to $1/100^{th}$ if you are using an expensive high-end professional GPS (10-100 Hz).

Units

The units can be changed between Metric and English units with this setting. Default is Metric.

Start-up warning

The start-up warning can be switched on/off with this setting.

3.2. GPS receiver settings

The GPS receiver settings tell RaceChrono how the position data is to be collected.

GPS type

Here you can choose between internal GPS and external Bluetooth GPS receiver. Windows Mobile version has also an option to use serial port GPS receiver.

The Internal GPS option actually means 'Managed by Operating System'. So also a Bluetooth GPS can be used with this setting once you have instructed the phone's the operating system to use it instead of the internal GPS. This way you can share the GPS between multiple applications running at the same time.

NMEA file option is used for testing purposes. Once a session is started with this setting, RaceChrono will replay a raw NMEA file from under your selected storage media at \RaceChrono\Sessions\input.txt
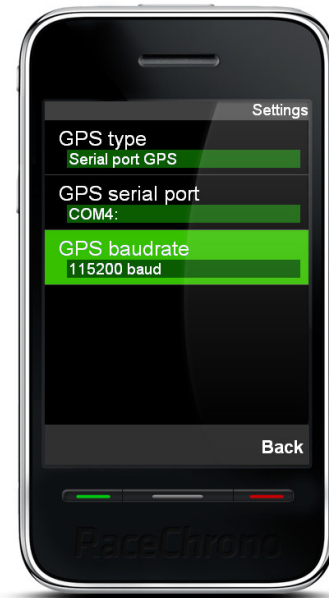
GPS device

Select the Bluetooth GPS device.

GPS serial port

Select the serial port (COM port) for your GPS device.

GPS baudrate

Don't change this setting unless you really need to. You can override the default setting for Bluetooth serial GPS baud rate. With internal GPS type this setting has no effect.

3.3. OBD-II reader settings

The OBD-II reader settings tell RaceChrono if it should connect to an OBD-II reader, and what channels it should request from the reader.

OBD-II type

You can enable the OBD-II reader by changing this setting to ELM or compatible.

OBD-II device

You can select the used OBD-II reader with this setting.

OBD-II serial port

Select the serial port (COM port) for your GPS device.

OBD-II baudrate

Don't change this setting unless you really need to. You can override the default setting for OBD-II reader baud rate.

High priority channels

Select the OBD-II channels that are monitored most frequently. OBD-II generally allows 2 - 4 channel requests per second, so update rate for each channel gets slower the more channels have been selected. It not recommended having more than 3 channels selected as high priority channels.

Low priority channels

Select the OBD-II channels that are monitored less frequently, generally each high priority channel is monitored 10 times more often than low priority channels. It makes sense to have all "slow moving" channels (like temperatures) as low priority channels. But for channels like RPM it is not much use, as the polling frequency will be very low.
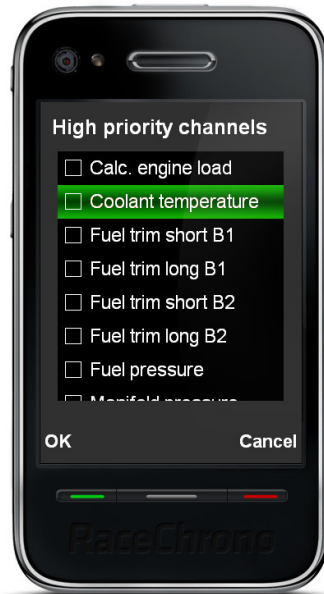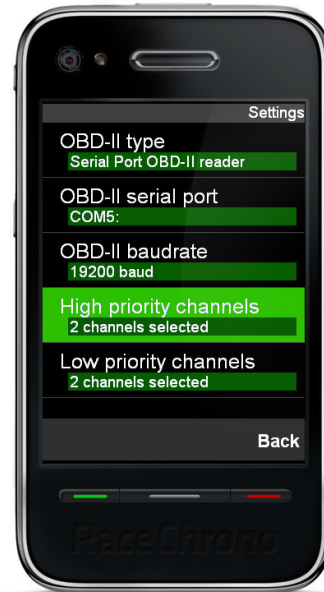
3.4. High/low speeds settings

The High/low speeds settings tell RaceChrono how to draw the High/low speeds display mode in lap times view.

Hi/Lo speed threshold

Depending on the track and the vehicle you may need to change this setting. Generally lower value will show more marked highs and lows in High/Low speed mode and higher value will show less of them.

Acceleration limit

The amount of positive longitudinal G-force, where the route in Hi/low speeds mode is drawn with the brightest green color.

Braking limit

The amount of negative longitudinal G-force, where the route in Hi/low speeds mode is drawn with the brightest red color.
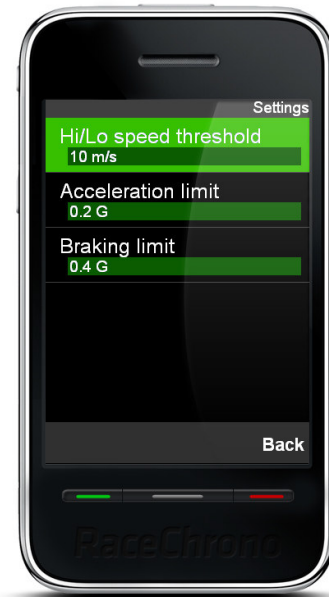
Image: Hi/Lo speed threshold 15 m/s.
If you select example 2 m/s you see much more speeds.

4. About the GPS receivers

RaceChrono supports the internal GPS on some phone models, but unfortunately the accuracy of RaceChrono suffers quite a bit when used with the current internal receivers. The lap timing accuracy with an internal GPS can sometimes be relatively good, but a good external Bluetooth GPS is recommended for frequent track day use. One of the best 5 Hz receivers currently is the QSTARZ BT-Q818X.

For optimal GPS reception, make sure that the antenna is fitted to the highest point of the vehicle away from any obstructions that may block satellite reception.

When using any GPS equipment, a clear sky view is important. Objects in the surrounding area such and tall buildings or trees can block the GPS signal causing a reduction or loss in the number of satellites being tracked.

Also keep in mind that you should wait for proper lock to satellites before you start driving. Getting the lock while driving may or may not happen.

Car: GPS antennas where possible should be placed on a large ground plane such as a roof. The center of the dashboard very near your windshield could also be good compromise if you are hesitant in attaching the receiver to the roof.

Motorbikes: On a motorbike the antenna should be placed as far from the rider as possible to reduce the satellite signal shadowing effect of the rider. Usually the best place is at the tail section of the bike, or even the rider's helmet if the tail section is suffering too much vibration.

Almost all modern smart phones come with internal GPS, which quite often are not very sensitive. So if you decide to use the internal receiver (despite your warnings of them), It is very important to have a proper installation location for your phone. Your phone is the GPS receiver, so the phone should have clear view to the sky. It is not enough to have your phone in your pocket, in glove compartment, or on a seat next to you! Also always keep the slider open when using the GPS on Nokia N95 or N95 8 GB, since the GPS reception is better that way!

Note that RaceChrono does not recommend on doing performance testing using the internal GPS. You may or may not get reliable results, but when you don't it can get a bit frustrating.

5.1 How to optimize the internal GPS performance on Symbian phones

To use the internal GPS use the Internal GPS type in the RaceChrono's GPS settings. Then make sure your phone's A-GPS feature is enabled and the correct Internet Access Point is defined for it. Having working A-GPS dramatically improves the time to lock to satellites, and the ability to keep them locked. Notice, that when you change your operator the access point might become unselected.

Here is a check list for keeping the A-GPS feature working on your Nokia S60 phone:

1. Open the positioning settings from **Settings ➡ General ➡ Positioning** on 3rd edition phone, and **Applications ➡ Location ➡ Positioning** on 5th edition phone.

2. Enable A-GPS from **Positioning methods ➡ Assisted GPS**.

3. Select correct internet access point for the A-GPS from **Positioning server ➡ Access point**.

4. Confirm that the server is set to **supl.nokia.com** in **Positioning server ➡ Network address**.

After that your phone should open a (brief) the data connection every time the GPS is used.

5. Online track library

It is naturally possible to create your own tracks in RaceChrono, but remember to check our online track library first, so you can just download instead of creating! We're constantly updating our track library with the submissions we get from our users. You can download new track by opening **Track Profiles ➡ Options ➡ Download new**.

1. All tracks are sorted by countries. First select the correct country and then the track you wish to download.

2. After selecting the track you want open **Options ➡ Download** and then confirm the download.

3. When you have successfully downloaded a new track, you will find it in the **Track Profiles** list.

In addition to downloading tracks using RaceChrono application itself, you can browse the tracks and download them manually with your PC from www.racechrono.com/tracks/ . This is particularly useful for those without data connection on their mobile phones, and just good fun for others.

6. Starting a new session

To start a new session, open **New session** from the application main view. When starting a session, please be careful with the remaining storage space. One hour session requires approximately 10 megabytes of space, when using a 5 Hz GPS receiver and also saving the NMEA data. Available space on selected storage can be viewed in main menu.

Session title

Then please to enter a descriptive name for the new session. This name will be used to identify this session in the future.

Session type

Choose Lap timing, Performance Test or Data logging session. The data logging session just saves the route, and does no timing or measuring.

Track / Performance test

If lap timing session was selected then select **Track**. If you don't have the track you need, you must either download a track or create a new, empty track. Necessary start and finish lines are added to the new tracks while the session is running.

If performance testing session was selected then select **Performance test**. If you cannot find one you need, you can always create a new one from the Performance tests menu.

Session notes

Next, enter some initial *Session notes*. This can contain any information that is useful for you when analyzing the session later. For example track conditions and used tires are always useful information to have in the notes.

Save NMEA data

Lastly, you can choose if you want to save NMEA data or not. You can save a lot of storage space if you choose not to Save NMEA data, but this data is particularly useful when you are having some problems with the software and the RaceChrono team needs to find out the reason. So it is still recommended to keep this setting enabled.

Start

After configuring your new session, just press *Start*. Now RaceChrono will try to connect to your GPS receiver. If you are using RaceChrono for the first time, you will be asked whether to use internal or Bluetooth GPS receiver, and if you selected Bluetooth, also which device to connect to. After connection has been made, your session is then running!
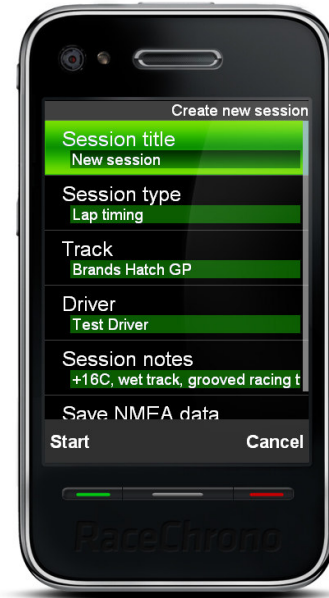
7. Creating a new track

RaceChrono team is updating the ready made tracks library all the time. If we do not have your favorite track, you can easily create it by yourself. The track can be created either while driving the first lap, or more safely after driving. This chapter describes the both ways to create your own track. Basically this means creating an empty track, then adding the start and finish lines to it, as well as the split lines are added during the session. The start, finish and split lines are commonly referred as traps.

To create a new track, you first need to start a new session with an empty track. See the previous chapter how to do it. When starting a new session with empty track you should now **see *Start line not defined*** warning on top of the Live Timer screen. The warning tells that your track is incomplete, and need to add a start line (as well as a finish line, or a combination of both). Now you need to add some traps to your track. This is covered by the next chapter. After adding the traps you are ready to start timing your laps!

Traps can unlocked/locked from **Browse traps ➡ Options ➡ Unlock traps / Lock traps**. Locking the traps is very useful after you have finished your track, and do not want to do any more changes to it.

Please submit your own tracks to RaceChrono online track library!

7.1. Adding traps while driving

The first method of adding traps to the empty tracks is adding them on your first lap. You should drive slowly if adding them while driving yourself. Please note driving slowly or stopping on the track is dangerous, if there are others on the track. Please use the second method if in doubt.

Start driving with low speed and press **Add trap** to open a pop-up menu. When you are close to the wanted position, for example the start/finish line, select the trap type. Don't worry, if you are too busy to select the correct type, it can be changed later.

After you have successfully inserted a trap line to the new track, you see blue crossing through your route. Trap line is placed in a straight angle to your current bearing, and is 50 meters wide.

Name, type, bearing and width of the trap can be modified later from **Browse traps** by selecting the correct trap and then opening **Options ➡ Open**.

7.2.   Adding traps after driving

Sometimes it is not feasible or safe to add traps while driving. If this is the case do not hesitate to take advantage of the possibility to add traps in the pits after driving a few laps.

Open **Browse traps** to add and modify traps after driving. Then you can add traps by **Options ➜ Add new***.* First select the location of the trap by moving the trap to wanted location. Second press **OK** and select the trap type you want.

Function	Keyboard	Touchscreen
Zoom the map	Press up and down keys	Tap the + and – icons
Select the trap (when browsing traps)	Press left and right	Tap the ⬅ and ➡ icons
Select new trap location (when adding new trap)	Press left and right keys	Tap the ⬅ and ➡ icons
Select new trap location quickly (when adding new trap)	Press 2 and 3 keys	Hold down the ⬅ and ➡ icons

8. Live Timer

Once the session has been started, and is running you can **Switch to Live timer**. The live timer used to watch lap times and performance test results in real-time. Before going to the track, wait until the status text on top says your GPS receiver has been locked to some satellites.

Notice that if you do not want to watch the results in real-time, it is useful to lock the keys instead, and save battery power by not illuminating the screen unnecessarily.

Tap **Toggle** or press the **Navi key** to switch between the Simple, Classic or Gauge modes.

Function	Keyboard	Touchscreen
Toggle to another Live timer mode	Press the navi key	Tap the **Toggle** text
Add a new trap (in a lap timing session)	Press left softkey	Tap the **Add trap** text
Back to Session view	Press the right softkey	Tap the **Back** text

Simple mode

The Live Timer will open in simple mode as default. In simple mode you will see your current time, previous time and best time.

If the screen is in landscape mode (the screen is wider than lower), you can see only either best or previous lap.

Function	Keyboard	Touchscreen
Switch between Best and Previous in landscape mode	Press left or right keys	Tap the Best or Previous item

Classic mode

The classic mode shows the current lap (or test) time, the traveled route and a selectable gauge. The gauge is in the bottom left corner, and the default is the satellite gauge which displays detailed status of the satellites. The satellites in view are drawn as colored balloons and the locked satellites have a white border. If a satellite is green the reception is good and when the balloons are fading to red the reception is getting worse. Gauge mode shows the gauge bigger, but no traveled route.

Function	Keyboard	Touchscreen
Zoom the traveled route	Press up and down keys	Tap the + and – icons
Switch to another gauge	Press left and right keys	Tap the gauge

Gauge mode

Gauge mode shows big selectable gauge and current lap (or test) time.

Function	Keyboard	Touchscreen
Switch to another gauge	Press left and right keys	Tap the gauge

9. Lap times

To view and analyze your driven laps, open **Lap times** from the session view. From this view, various aspects of the recorded laps can be viewed and analyzed.

An optimal lap is displayed at the top and is composed of best sectors of the current session. The theoretical optimal lap is treated like any other lap, so it can be viewed in graph, used as comparison and it can be exported to some of the formats (KML).

Lap times display can be switched between Sectors, Splits, Trap speeds, High/Low speeds and Information modes. The different display and result modes are described in detail in the chapters below.

Also the results mode can be switched between Absolute or Difference. The difference mode will show the results as the difference from the selected comparison lap. You can switch the comparison lap from **Options ➡ Comparison**.

Function	Keyboard	Touchscreen
Switch results mode	Press *	Select from menu **Options ➡ Results Mode**
Switch display mode	Press #	Select from menu **Options ➡ Display mode**
Mark lap invalid / valid (in matrix only)	Press 0 key	Select from menu **Options ➡ Mark invalid/valid**
Open details for the focused lap (in matrix only)	Press navi key	Select from menu **Options ➡ Open details**
Focus another row or column (in matrix only)	Press up, down, left and right	Drag the view by sliding your finger on the screen, and tap shortly on a box to focus it.
Open graph for the focused lap (in details only)	Press navi key	Select from menu Options ➡ Open graph
Zoom the map (in details only)	Press up and down keys	Tap the + and - icons
Select the next item (in details only)	Press left and right keys	Tap the ⬅ and ➡ icons
Select previous or next lap (in details only)	Press 2 and 3 keys	No touchscreen equivalent
Change text size	Press 5 and 6 keys	No touchscreen equivalent

9.1. Sectors mode

In Sectors mode you can view sector times for each lap. A sector is the part of the track between two traps.

The **Full** column shows your full lap time. The **Diff** column shows the difference to the comparison lap, and the rest of the columns show the sector times.

The sectors times that are faster than the same sector in the comparison lap are green and slower sectors are red. The comparison lap is blue.

You view details for a selected lap by opening **Options ➡ Open details**. This will show you the lap in a map where the route is colored by same criteria as in the sector matrix.

9.2. Splits mode

In Splits mode you can view split times for each lap. A split time is the time it took from the start to that split line.

The **Full** column shows your full lap time. The **Diff** column shows the difference to the comparison lap, and the rest of the columns show the split times. Split times that are faster than in the comparison lap are green, and slower splits are red. The comparison lap is blue.

You view details for a selected lap by opening **Options ➡ Open details**. This will show you the lap in a map where the color of the route indicates locked satellite count on that position. Green indicates good reception (8 or more satellites), yellow is fair (6 - 7 satellites), orange is bad (4 - 5 satellites) and red is no reception (0 - 3 satellites).

9.3. Trap speeds mode

In Trap speeds mode you can view trap speeds for each lap. A trap speed is the current speed (GPS) when a trap line was crossed. Trap line is a start, finish or split line. The **Full** column shows your full lap time. The **Diff** column shows the difference to the comparison lap and the rest of the columns show trap speeds.
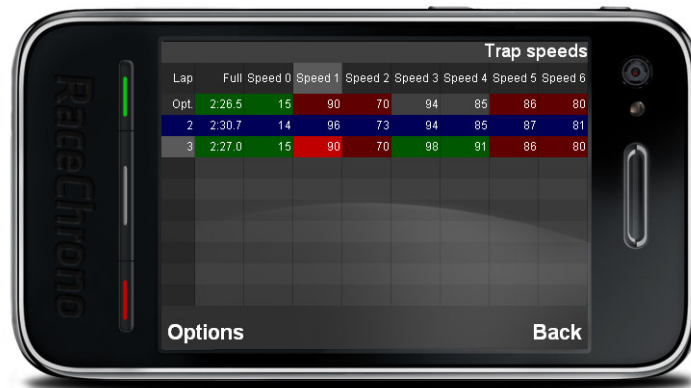
You view details for a selected lap by opening **Options ➡ Open details**. This will show you the lap in a map where the route color indicates the speed on that position. Colors between red-yellow indicates 0 - 100 km/h, yellow-green indicates 100 - 200 km/h and green-cyan indicates 200 - 300 km/h.

9.4. High/low speeds mode

In High/low speeds mode you can view the maximum, minimum, average, straight and corner speeds for each lap. The matrix displays the lap time, maximum speed, minimum speed and average speed for each lap. Faster speeds than in the comparison lap are green, and slower speeds are red. A comparison lap is blue.

You view details for a selected lap by opening **Options ➧ Open details**. The details will show you the straight and corner speeds on the map. A straight speed is a high point on your speed curve, and a corner speed is a low point. Depending on the track and the vehicle it may be needed to change the High/low threshold speed defined in **Options ➧ Settings.** Generally lower value will show more marked highs and lows and higher value will show less of them.

The color of the route in details view indicates the longitudinal acceleration; **Green** means acceleration, **Red** means braking, **Gray** means no change in the speed. The route color is brightest green at acceleration limit (and over it), and bright red at braking limit (and over it). As well as the High/low threshold setting, these limits can be changed in **Options ➧ Settings.**
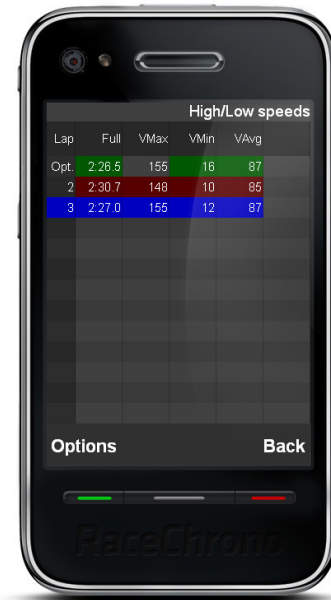
9.5.   Information mode

In Information mode you can view lap time, lap length (in km or miles depending on your settings), start time, start date, and a note for each lap. You view details for a selected lap by opening **Options ➜ Open details**.

9.6.   Changing comparison lap

A comparison lap can be changed by selecting **Options ➜ Comparison**. The session best is used as default comparison lap. You can select between comparing to the best lap and the selected lap (highlighted), or possibly a lap from another session.

9.7.   Marking and hiding laps

Laps with bad GPS data from **Options ➜ Mark invalid**. The invalid laps are not calculated to the optimal lap. Also it is useful to mark warm-up and cooling laps invalid, since the marked laps can be hidden from the list. To unmark previously marked lap just select **Options ➜ Mark valid**. To hide the invalid laps just select **Options ➜ Hide invalid**. To show them again, just select **Options ➜ Show invalid**.

9.8.   Viewing graphs

In the Graph view a lap can be analyzed in more detail.

The graphs for the selected lap will be shown in brighter colors and for comparison laps in darker colors.

You can modify the graph settings by selecting **Options ➡ Graph settings.** For example altitude and OBD-II data can be viewed.

Function	Keyboard	Touchscreen
Zoom the X-axis of the graph	Press up and down keys	Tap the + and – icons on the graph
Zoom the Y-axis of the map	Press the navi key	Tap the **Toggle** text
Zoom the map	Press 1 and 4 keys	Tap the + and – icons on the map
Move in the graph	Press left and right keys	Drag the graph to left or right
Move quickly in the graph	Press 2 and 3 keys	No touchscreen equivalent
Switch to another gauge	Press left and right keys	Tap the gauge
Hide and show the comparison graphs	Press 0 key	Select from menu **Options ➡ Hide comparison** and **Options ➡ Show comparison**

10. Run times

With the Performance Testing feature, you can test your vehicle's acceleration. You can select from various different tests, for example 0-100 km/h acceleration test and a quarter mile test. Remember not to try these tests on the public roads!

Pre-defined performance tests:

60 feet, 1/4 mile, 1/8 mile, 1000 meters, 1 mile, 0-60 mph, 0-100 kph, 0-200 kph, 80-120 kph, 0-100 mph, 60-160 kph and 100-200 kph.

User defined performance tests:
Performance Tests ➡ Options ➡ Create new

10.1. View run times and speeds

Select Run times to view all results for the performance tests. You will be able to browse through results for the main test that you have selected. Open a run and you can also all sub tests results for the run, for example 60 feet for a run 0-100 km/h.

To take a more detailed look, open **Options ➡ View logged data** to view graph of the run.

You can configure the graph by opening **Options ➡ Graph settings.** The graph can be browsed by left and right keys, and the x-axis can be zoomed with up and down keys. Navi key (in center of the directional keys) toggles between y-zoom on and off.
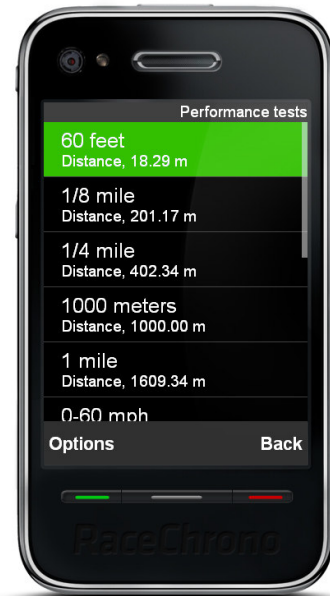
11. Browse traps

In browse traps you can browse the traps you have for your lap timing session. You can add new traps, and also move, rotate and delete old ones.

To add a new trap open **Options ➡ Add new**. First select the location of the trap by moving the trap to wanted location. Second press **OK** and select the trap type you want.

Function	Keyboard	Touchscreen
Zoom the map	Press up and down keys	Tap the + and – icons
Select the trap (when browsing traps)	Press left and right	Tap the ⬅ and ➡ icons
Select new trap location (when adding new trap)	Press left and right keys	Tap the ⬅ and ➡ icons
Select new trap location quickly (when adding new trap)	Press 2 and 3 keys	Hold down the ⬅ and ➡ icons
Change text size	Press 5 and 6 keys	No touchscreen equivalent

12. Traveled route

In traveled route you can view the logged plots.

To export your traveled route open **Options ➡ Export**. Please check Export chapter for details.

To view the traveled route in graph open **Options ➡ Next 15 mins**.

Function	Keyboard	Touchscreen
Zoom the map	Press up and down keys	Tap the + and – icons
Select previous or next plot	Press left and right keys	Tap the ⬅ and ➡ icons
Select previous or next plot quickly	Press 2 and 3 keys	Hold down the ⬅ and ➡ icons
Change text size	Press 5 and 6 keys	No touchscreen equivalent

13. Exporting

The exporting functionality allows you to export your laps and traveled route to various different formats. To export your traveled route open **Traveled route ➡ Options ➡ Export** and to export laps **Lap times ➡ Options➡ Export.** This will display few exporter settings, which you need to set before starting the export.

Scope of the export

All laps   Export all of the finished laps

Best lap   Export only the best lap of the session

Selected lap   Export the selected lap
                (selected prior opening the exporter)

Traveled route Export the whole traveled route. Only this
                export scope can be used for *Performance
   Testing* or *Data Logging* session.

Type of your export

See the full explanation of all possible export types from the chapter below.

Start

Then just press **Start** and the exporting begins. If there is nothing to export an error is displayed (for example if exporting laps and you have none completed).

After successful export, the exported file can be found in \RaceChrono\Exports\ folder of your selected storage.
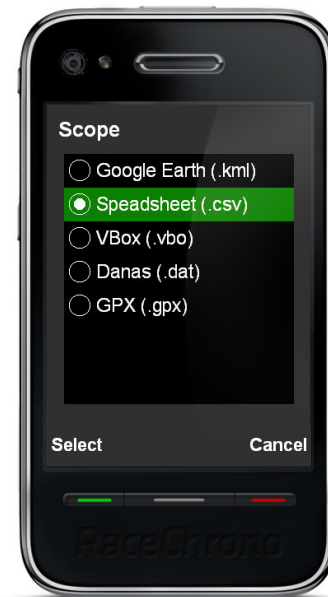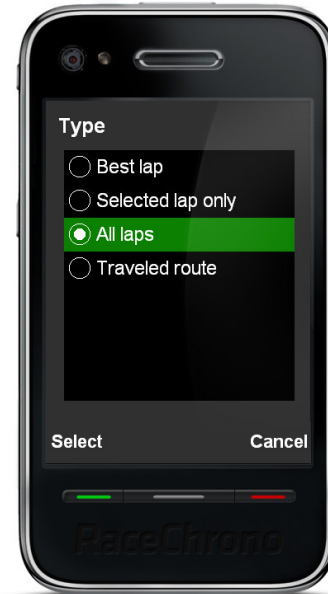
13.1. Export types

Google Earth (.kml)

KML files can be opened in Google Earth or Google Maps. Notice that the Google Earth satellite images are not always correctly aligned to the actual GPS-coordinates, so you might see slight offset between your traveled route and the road.

Spreadsheet (.csv)

CSV files can be opened in video software like RaceChrono2AVI and TrackVision (use the standard separators for these). You can also open CSV files in Microsoft Excel, but you need to select correct separator type depending on your Windows localization settings. Usually the standard separators will work, except for countries like Finland.

VBox (.vbo)

VBO files can be opened in for example PerformanceBox Performance Tools software. Notice that the Start/Finish line is not exported by RaceChrono, so you need to set it separately in Performance Tools.

Danas (.dat)

DAT files can be opened in I2M Danas software. Notice that the Start/Finish line is not exported by RaceChrono, so you need to set it separately in Danas.

GPX (.gpx)

GPX files can be opened by various software, like SportsTracks for example.

14. Importing

RaceChrono supports for importing track and session files from other data logging systems.

Importing sessions files

Open **Previous sessions ➤ Options ➤ Import new** to import session files from PerformanceBox, DriftBox, Vbox and G2xtreme formats.

Multiple files can be selected for import. This is useful especially for PerformanceBox which generate a new session file every time it is disconnected from its power source. Note that the importing order is determined by the file names, not the order which you select the files in.

Importing tracks files

Open *Track profiles ➤ Other ➤* **Import** to import track files from PerformanceBox, DriftBox and G2xtreme. Note that this feature is maybe not the most robust in the world, so please send any example files that can not be imported to RaceChrono team.