

Version December 30, 2009

# GPS2 – software for spatial random sampling using GPS receivers and handheld computers

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## Installation

Installation is begun with running executable file and following all appeared instructions. Software asked to be installed is required for functioning of GPS2 program. Some additions are optional.

## GPS2 Description

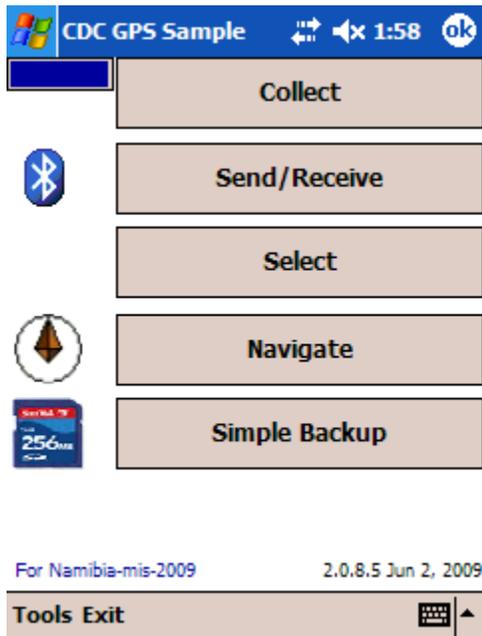
GPS2 program was developed for collecting coordinates of houses (further – points), drawing a random sample of those points, and navigating back to the selected points. Additional features include the ability to remove coordinates, join data collected on different PDAs, exporting data in a text format, and running other software.

An additional executable module named *GPS2.Config* allows for users to personalize the configuration specifications of GPS2 to their specific needs, maintain and manage different configuration sets and easily switch between them.

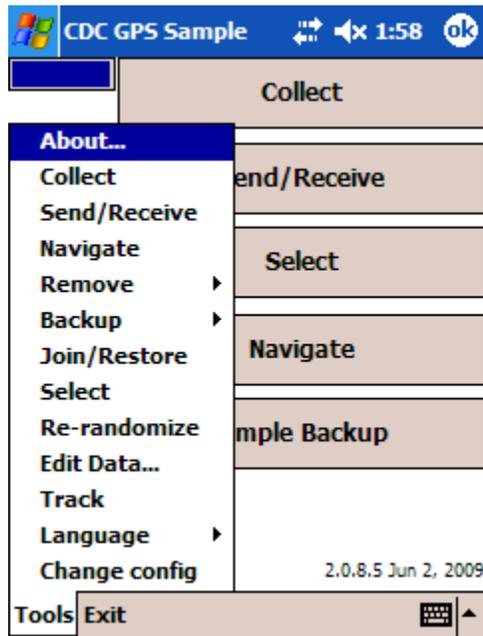
The GPS2 program has 4 main components (Collect, Send/Receive, Selection, and Navigation) and several additional tools and utilities (eg. Map Navigation, Simple Backup, Export and Run). These components and tools can be accessed from the main screen. The main screen appears on startup, and can be returned to at any time from any of the other screens.

The following section will describe each of these components in more detail.

### Main Screen



Main Screen: Main tasks



Main Screen: Additional tasks

This screen allows the user to perform main and additional tasks. Rectangle on upper left screen shows battery power.

Main tasks:

- Collecting data and GPS coordinate using the “**Collect**” button (see [Collect screen](#))
- Joining data and GPS coordinates from another PDA, using the “**Send/Receive**” button (see [Send/Receive screen](#))
- Selecting a random sample of data points using the “**Select**” button (see [Selection screen](#))
- Navigating to selected points using the “**Navigate**” button (see [Navigation screen](#)).

Additional tasks:

- Making a quick backup of collected data to a pre-specified folder using the “**Simple Backup**” button (see [Simple Backup screen](#))
- Exporting data to a text file and executing an external software program using the “**Export and Run**” button (see [Export and Run](#) in GPS Configuration)

Other additional tasks are available from menu:

- Obtain information about program, “**About...**” menu item. This info is also available after clicking on the version number label on right bottom corner of the screen
- Remove points by different criteria, “**Remove**” submenu
- Full or simple (fast) backup, “**Backup**” submenu
- Adding data from another points set or restore data to empty database, “**Join/Restore**” button
- Assign new random numbers to each data point, resulting in a different random sample of data points during “Selection“, “**Re-randomize**” button
- Edit information about points in the database, “**Edit data**” button
- Tracking position, i.e. automatic background writing the position either after specific interval either period of time.
- Reset PDA, “**Reset device**” button
- Change language of menus, messages etc, “**Language**” button.
- Change actual [configuration parameters set](#).



*Some menu items like “Simple Backup” or “Export and Run” buttons can be hidden by editing of configuration file.*

## Collect Screen

The screenshot shows a mobile application window titled "Collect Data" with a status bar at the top showing the time as 6:30 and an "ok" button. The main interface includes:

- 1**: A text input field for "Place Name".
- 2**: A numeric input field for "House Number".
- 3**: A "+" button next to the "House Number" field.
- 4**: A button labeled "last+1" next to the "+" button.
- 6**: A text input field for "Comment".
- 7, 8, 9, 10**: A row of five circular icons representing different GPS signal statuses.
- 5**: A red circle icon next to the "Status:" label.
- Select Survey:** A list box containing "Enfant 0-11 mois", "Enfant 12-23 mois" (with **11** next to it), and "Pas d'enfants".
- 12**: A "Save" button.
- Close**: A button at the bottom of the screen.

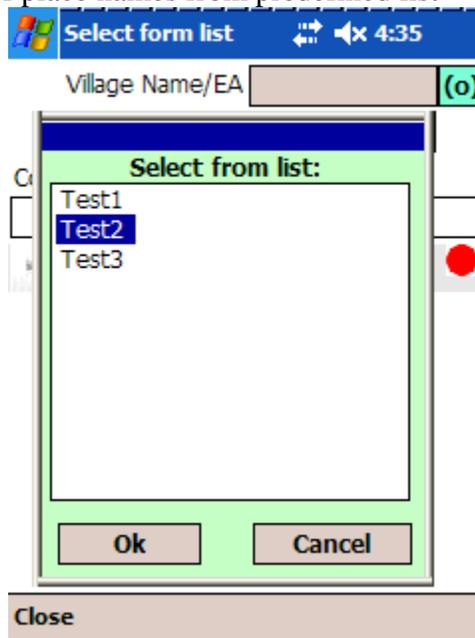
This screen is accessed by selecting the “Collect” button from the main screen. The primary functions of this screen are data entry and collection of GPS coordinates.

Parts of the screen:

1. Place Name: text edit box for the location other identifier where points are collected. It is possible to use predefined names with editing ability or predefined names only.
2. House number: numeric edit box for creating a numeric id for each data point collected. It is possible to automatically increment a value by 1 after saving each data point. The numeric value does not have any special meaning and can be repeated. If this field is left blank the value “1” will be entered when saving.
3. [+]: Adds 1 to existing value of “House Number”
4. last + 1 : extracts the last added “House Number” from existing set of points, adds 1 and set this value to “House Number” edit box.
5. Status: shows the current GPS coordinates and the quality of the GPS signal. A color/shape indicator shows the current state of the GPS signal. Clicking on the symbol will give a detailed description of the GPS signal. The different shape/color coding are indicated below:
  - a. Black circle – no GPS unit connected
  - b. Red circle – GPS connected, no signal obtained
  - c. Purple, yellow, yellow-green circles – coordinates are available but with bad quality
  - d. Green circle – good GPS signal
  - e. Green square – the signal has best possible accuracy
6. Comment: text edit box for a description of the data point. It can be cleared automatically after saving each point.
7. Undo button: This button will allow the user to delete the last saved point.

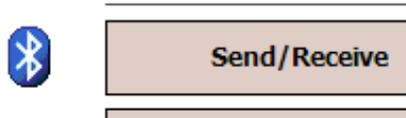
8. Exclude point from sampling: Allows user to save information on points of interest for navigational or other purposes. When the user saves the data point, it will be excluded from “Selection” and not be included in the random sampling procedure.
9. Force to include this point in sampling as an addition to main set.
10. Restore last house number and comment from last saved point during this collecting.
11. If enabled, it contains a list of surveys current point to be assigned to. It resets after each saving and must be selected again.
12. Save: This button saves entered data and GPS coordinates into database. If there is no GPS signal present or the signal quality is bad, a warning message will appear. Alternatively, the program can be configured to show a warning message when the GPS signal is not within user specifications of quality and ask the user to try to save the data point again.

Collect screen in mode of selection of place names from predefined list

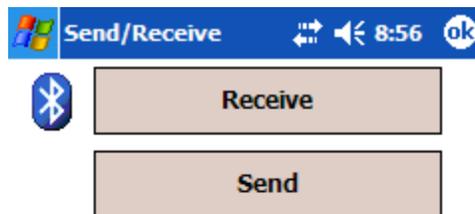


### Send/Receive Screen, Bluetooth

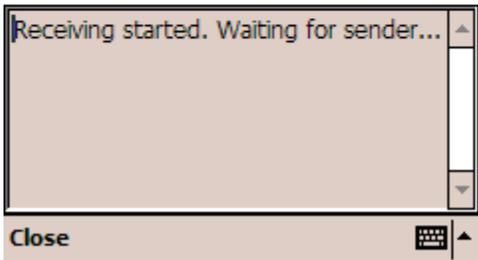
This screen is accessed by selecting the “**Send/Receive**” button from the main screen. The primary functions of this screen are to transfer and receive data from another PDA using GPS2. The GPS2 program transfers data using the *Bluetooth* port and combines the transferred data with the current database.



Appearance of Send/Receive screen:



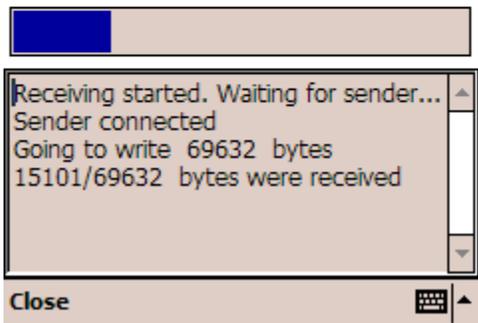
To transfer data between PDAs: the receiver must press the “**Recieve**” button *before* the transmitter will press “**Send**” button. Transfer process will start automatically after pressing these buttons.



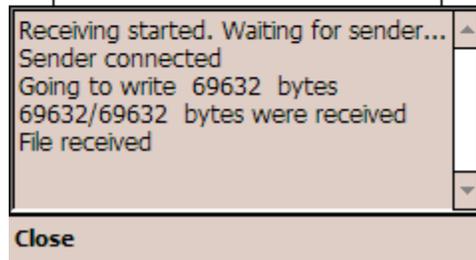
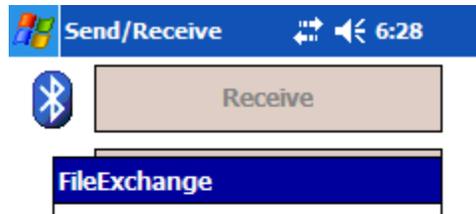
Waiting for sender in receive mode



Sending file in send mode



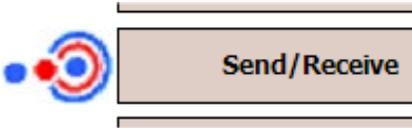
Receiving file in receive mode:



Screen after successful transferring:

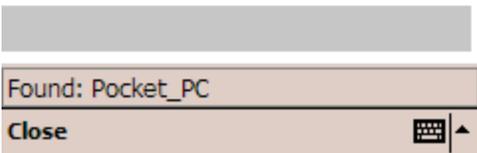
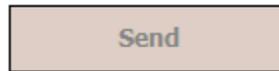
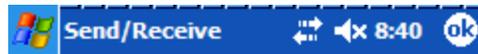
### Send/Receive Screen, Infrared

This screen is accessed by selecting the “**Send/Receive**” button from the main screen. The primary functions of this screen are to transfer and receive data from another PDA using GPS2. The GPS2 program transfers data using the *infrared* port when Bluetooth connection is unavailable or [infrared mode](#) intentionally selected in configuration file. GPS2 combines the transferred data with the current database.

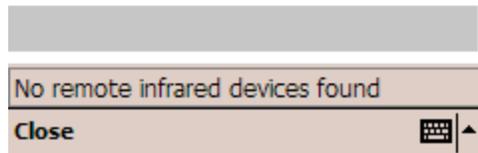


The signal icon to the left of the “**Send/Receive**” button on the main screen can be used to determine if the infrared send/receive function is active on both PDAs. The icon becomes colorful when another infrared device, not necessary PDA, is detected.

Appearance of Send/Receive screen with/without other infrared devices detected:

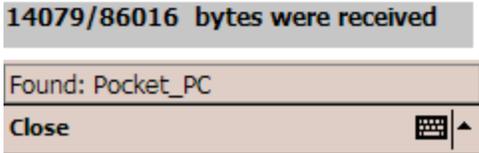
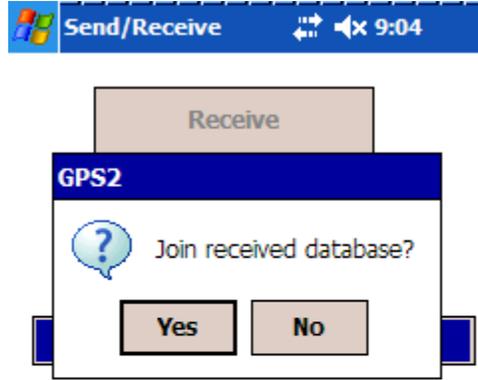
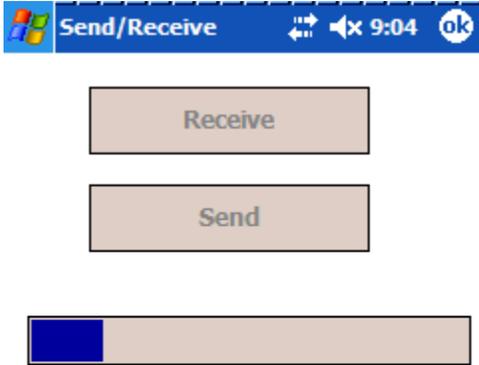


Another infrared device detected (bold text)

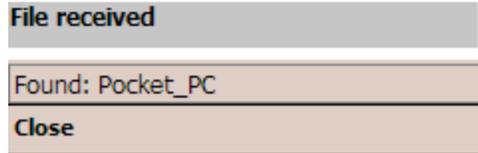


No infrared device detected (grey text)

To transfer data between PDAs: the receiver must press the “**Recieve**” button *before* the transmitter will press “**Send**” button. Transfer process will start automatically after pressing these buttons.



Transfer progress is shown:



Screen after successful transferring:

**Selection Screen**

Select Points 9:14 ok

42 valid records in database

1 Select  2 random records

and  3 additional records

and  4 alternates

5 **Select and Navigate** 6 **Select**

Select Survey:

group 1 (13) 7

group 2 (15)

Close

This screen is accessed by selecting the “**Select**” button from the main screen. The primary function of this screen is to select a random sample of points from all valid points in the database. Additional and alternate points may also be selected. The user can determine how the selected points will be displayed in the “[Navigation Screen](#)”. Selection of some points may be [forced](#). Other methods of making samples may be used by connecting of [external procedures](#).

Parts of the screen:

1. Valid records: total number of records included in the selection of a random sample (points with valid coordinates and not labeled as excluded)
2. Random records: total number of records selected for the primary random sample.
3. Additional records: total number of records selected for multi-study sampling with different sample size requirements.
4. Alternates: total number of records selected as spares for random sampling. They can be used as alternates when the primary selected points may be unavailable.
5. Select and Navigate: selects a sample based on the parameters entered and opens Navigation screen [Navigation Screen](#). This button can be hidden using the [GPS2.Config](#) program.
6. Select: selects a sample based on the parameters entered and returns to the main menu.
7. If enabled, it contains a list of surveys. After selecting specific survey a number of points for main, additional and alternate records to be shown in appropriate boxes. It should be noted that combination of cluster and multi-survey modes may not work properly.

Selection screen in “[Systematic sampling](#)” mode:



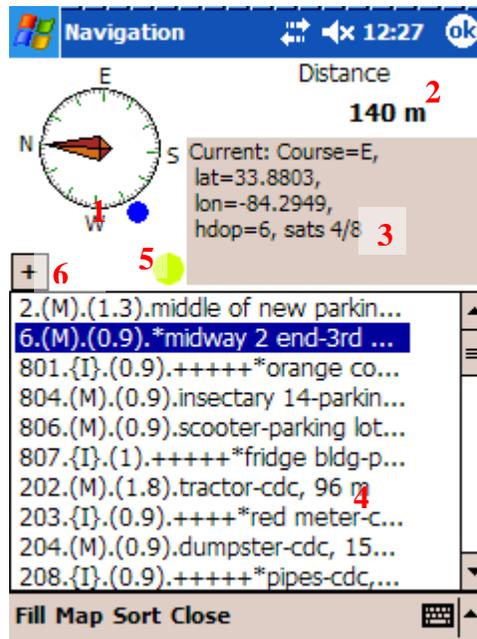
51 valid records in database

Select  random records



Only main points may be selected in this mode. Selection is being made not random base but on time base of records creation.

## Navigation Screen



This screen is accessed by selecting the “**Navigate**” button from the main screen. The primary function of this screen is to use GPS to navigate and locate the sampled data points. The GPS2 program provides an electronic compass, list of selected points and an information display on the selected coordinates.

### Notes:

1. If new points were added since the last selection (see “[Selection Screen](#)”), a warning message will appear with suggestion to make a new selection before opening this screen.
2. Using GPS2.config, the user can configure a simple data backup before opening this screen.
3. In multiple surveys mode point color may be different for different surveys which can be specified on [Multiple Survey](#) section of GPS2.Config.

### Parts of the screen:

1. Compass emulator: **The Compass only works while moving.** Compass arrow points to true north. If a point is selected in Navigation list [4], and the GPS signal is good [5], a blue circle will appear around the compass showing the relative direction of the selected point.
2. Distance: Shows the distance from the current position to the selected point when GPS signal is good.
3. GPS Information Box: displays additional information about current course and coordinates.
4. Navigation list: displays the current list of data points. Each point displays whether it is selected (\*), Alternate (x) or additional (+); the house number; the description comment entered; Place Name, and distance to the point from the current location. Using GPS2.Config it is possible to change the appearance of points in list. It is also possible to display actual distances to points and add color.

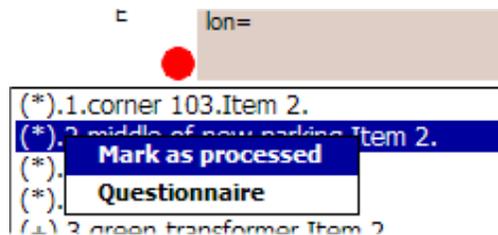
5. Status: shows the current GPS coordinates and the quality of the GPS signal. A color/shape indicator shows the current state of the GPS signal. Clicking on the symbol will give a detailed description of the GPS signal. The different shape/color codings are indicated below:
  - a. Black circle – no GPS unit connected
  - b. Red circle – GPS connected, no signal obtained
  - c. Purple, yellow, yellow-green circles – coordinates are available but with bad quality
  - d. Green circle – good GPS signal
  - e. Green square – the signal has best possible accuracy
6. If enabled, allows adding current location, i.e. point where device is now as a new point using [Collect](#) screen. No additional actions, like selection for sampling are taken during adding by such way.

The menu at the bottom of the screen gives several additional functionalities. Some of these optional functionalities may be hidden by setting the configuration file using GPS2.config.

“**Fill**” Allows selection of the type of points to display (see “[Fill Points Screen](#)”).

“**Map**” switches navigation to a graphics mode (see “[Map Navigation Screen](#)”).

“**Sort**” sorts the navigation list items [4] either by place name and house number or by distance.



#### Additional Features:

After tapping and holding stylus on an item in the list a submenu will appear with two items.

The first item “**Mark as processed**” will remove the selected point from the list, as long as the point was not set to be displayed in the [Fill Points Screen](#).

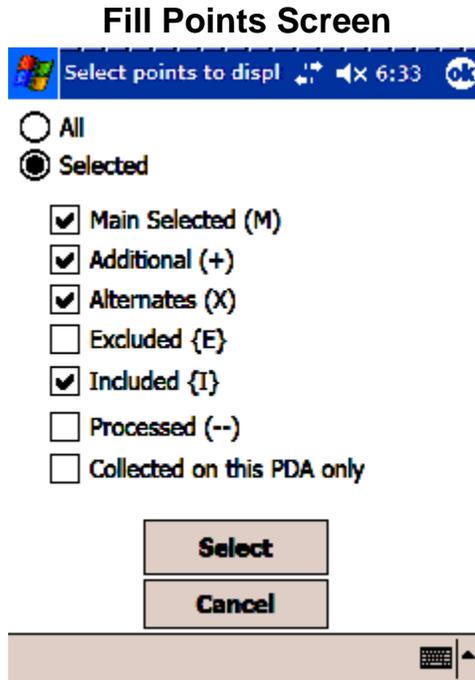
The second item “**Questionnaire**” will start an external program. The amount of integration, between GPS2 and the external program depends on the configuration mode:

- In mode 0 information about the point is exported into a pre-specified file and the external program is started.
- In mode 1 a unique identifier of the selected item is sent to the external program in a command line.

GPS2.config can be used to a warning message appear when current coordinates are far from the selected item or the GPS data is not available while starting the external program.

Additionally, navigation list items may be colored based on their distance from the current position. There are two levels and colors, yellow and green, which are stored in the configuration file. All points in the list within the specified level distance (as radii from the current position) will appear green (or yellow accordingly). To use both levels simultaneously, the yellow distance must be larger than the green one. As a result, the points within

the smaller radius will appear green, whereas the points at a distance between the smaller radius and larger radius will appear yellow.



This screen is accessed by selecting the “**Fill**” menu item from the [Navigation screen](#). The primary function of this screen is to select which points will be displayed in the navigation list.

“**All**” instructs GPS2 to display all points in the database. This option overrides all other settings.

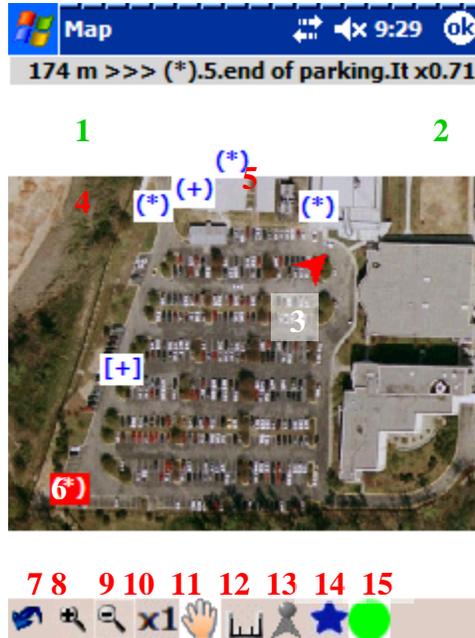
“**Selected**” switches to the specific display types checked from the list.

Types of point which can be displayed:

“**Main Selected**”, “**Additional**” and “**Alternates**” are basic types of points in the GPS2 program (see [Selection Screen](#) for descriptions). “**Excluded**” are points written on “**Collect Data**” screen with “**Exclude point from sampling**” checked (See [Collect Screen](#)). These points are excluded from sampling but still can be shown in the Navigation list.

“**Collected on this PDA only**” is a useful feature when working in teams. Information about the PDA name is stored in the database. Team members can collect data, join databases, select a sample, and send/receive joined data back to every member’s PDA in order to synchronize data on all the PDAs. The “**Collected on this PDA only**” feature allows the ability to filter by PDA name, so members will not be confused with excessive information.

## Map Navigation Screen



This screen is accessed by selecting the “Map” menu item from the [Navigation screen](#) or the [Fill Points Screen](#). The primary function of this screen is to provide a visual map of the points in the Navigation list relative to the current position.

### Parts of screen:

1. Status string which contains the distance to the selected point from current position or the interval if the user is in measure interval mode
2. Current zoom value.
3. Red Arrow denotes “You are Here”. It is the actual position of the PDA on the Map.
4. Image of current surroundings. This component is optional and requires a picture file with geocoded reference points.
5. Position of points from the Navigation list. In multiple surveys mode point color may be different for different surveys which can be specified on [Multiple Survey](#) section of GPS2.Config.
6. Position of selected point (highlighted in red).

### Menu items:

7. Return to Navigation screen
8. Zoom in
9. Zoom out
10. Zoom to initial size, where all points are visible
11. Pan mode, tap and move stylus to move map in this direction
12. Measure interval, tap and move stylus will show a black line and calculate the distance of the line (interval between the initial and final position of the stylus).

13. Fixed position mode, current position (red arrow) is fixed in the lower part of the screen and the map rotates and moves to adjust according to the current course and movement (herein Auto Map Mode).
14. When not in Auto Map Mode, the map moves such that the actual position will be in the center of the screen.
15. GPS Indicator Status: shows the current quality of the GPS signal. A color/shape indicator shows the current state of the GPS signal. Clicking on the symbol will give a detailed description of the GPS signal. The different shape/color codings are indicated below:
  - a. Black circle – no GPS unit connected
  - b. Red circle – GPS connected, no signal obtained
  - c. Purple, yellow, yellow-green circles – coordinates are available but with bad quality
  - d. Green circle – good GPS signal
  - e. Green square – the signal has best possible accuracy

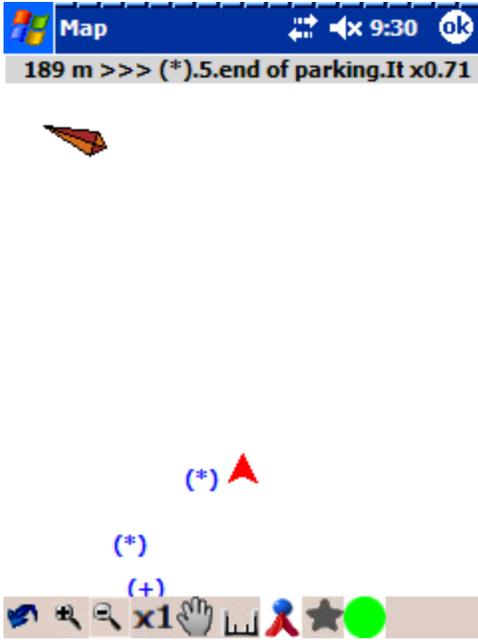
Tap and hold the stylus anywhere on the screen and a menu pops up. The 1<sup>st</sup> item in the menu will either show coordinates if there are no points in the current vicinity with all other menu items grayed or the name of the points and other menu items available. The 2<sup>nd</sup> “**Mark as processed**” and 3<sup>rd</sup> “**Questionnaire**” items are the same as in Navigation list (see [Navigation Screen](#) for details).

~~To display an image on the map screen a special file must be created containing two rows of data. The first row is a short description of the contents in the second row. The second row contains a path to the image and coordinates to georeference the image points. The size of the image must not be too large (500 KB or less).~~

```
PictureFile, x1, y1, lat1, lon1, x2, y2, lat2, lon2  
\Program Files\gps2\Cham3.png, 392,57, 33.880295, 84.2950967, 96,377, 33.879048, 84.296415
```

Since version 2.0.8.0 GPS2 will gradually stop to support this format, please use Google Earth compatible formats.

Since version 2.0.6.2 GPS2 can use Google Earth \*.kml and \*.kmz files which uses overlaying image. For KML files, since such file is created on desktop computer, path to image must be checked if image does not appear. GPS2 automatically recognizes file name extension and switches to appropriate file interpretation mode.



Map screen in Auto Map Mode.



Map screen in Measure Interval mode.

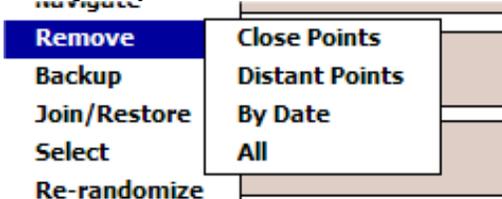
In Auto Map Mode the current position is fixed and the map rotates and moves relative to the current position. In this mode the measure interval, image, centering, and pan mode do not work.

### Simple Backup

Simple backup will copy the collected points in the database to another file. The file name of the backup file consists of the most recently used place name, date, and time stamp. Several file locations can be used for storing backups. Also, it is possible to append collected points into an existing file.

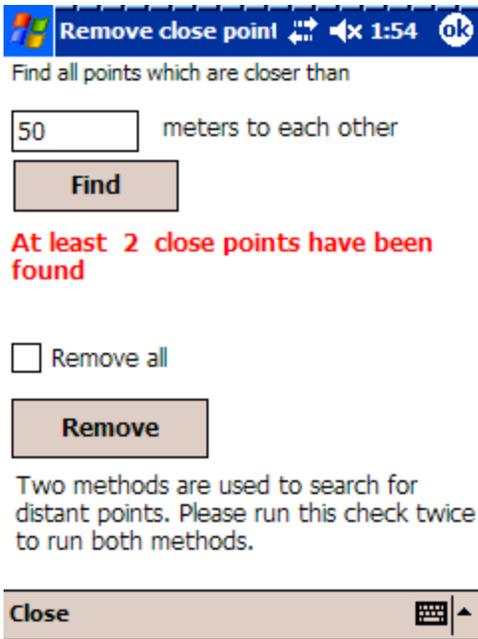
### Remove

There are several methods available to remove points from the current database. Some are useful for improving data quality; others delete obsolete data.

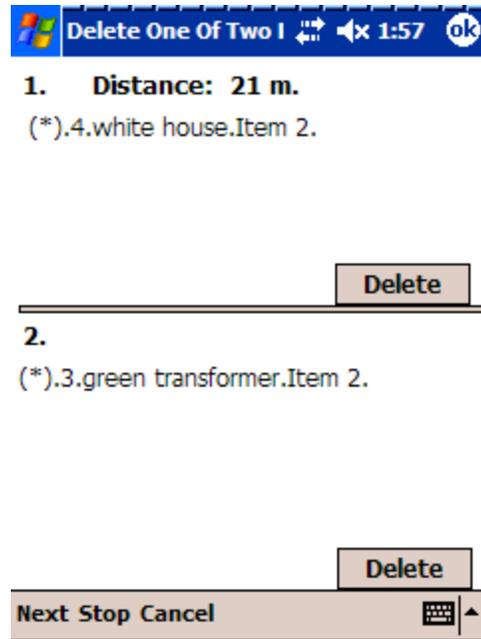


### Remove Close Points

In the event that more than one point was collected with the same (or similar) coordinates (close together in distance) but only one of the “close” points should be retained in the database, it is possible to delete one of the points using “Remove Close Points”. If both points remain in the database, they both will be included in the selection (random sampling) procedure. To remove the extra point, the Remove->Close Points menu item must be used.



Remove Close Points screen with close points found.



Interactive screen for deleting a close point.

It is possible to remove all close points (by removing one point from each pair determined by the GPS2 program) using the “Remove all” checkbox or to use an interactive method in which the user can choose which point to delete using the “Remove” button.

In the interactive mode points are labeled in the same format as the [Navigation list](#).

“Next” menu item skips to the next pair (does not delete either point).

“Stop” menu item finishes the pair to pair searching of close points and deletes selected points from the database.

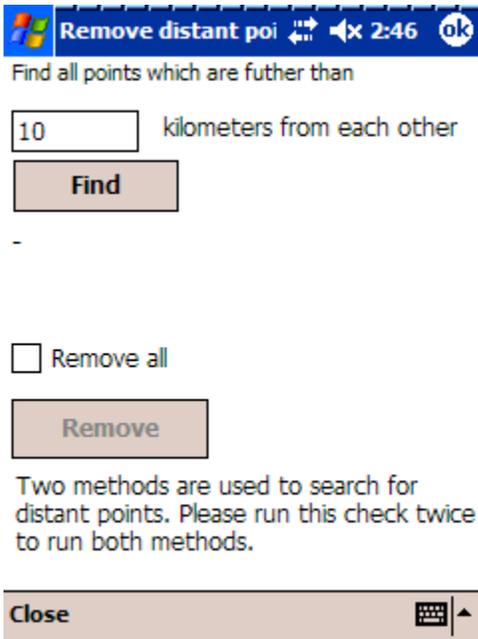
“Cancel” menu item closes this dialog and cancels the deletion of any selected records.

Initial distance comparison is based on the default settings in the configuration file. The algorithm to detect close points requires several iterations to detect all possible pairs of close points. A reminder to do repeat the search until no more close points are found will appear:



### Remove Distant Points

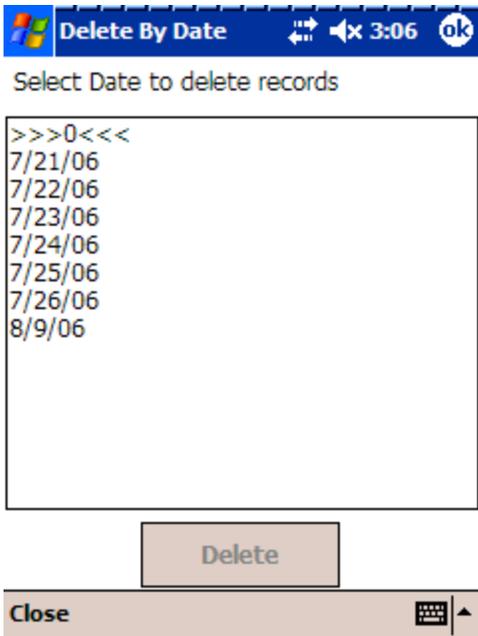
In the event that data points were collected at a distance too far away, or when a poor GPS signal gave incorrect coordinates outside enumeration area, it is possible to delete them using “Remove Distant Points”. If these points remain in the database, they will be included in the selection (random sampling) procedure. To remove the distant points, the Remove->Distant Points menu item must be used.



This feature is similar to the [“Remove Close Points”](#) feature in both appearance and functionality. Please refer to the previous section for details.

### Remove by Date

In the event that data points were collected on different days, and data collected from certain dates are not needed, it is possible to delete them using “Remove by Date”. If these points remain in the database, they will be included in the selection (random sampling) procedure. To remove points by Date, the Remove->by Date menu item must be used.

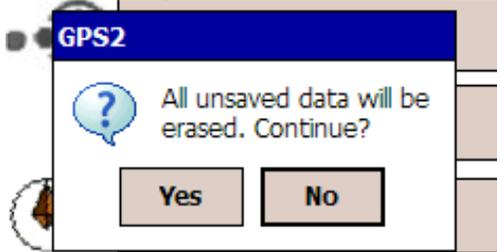


This tool will delete groups of points based on the date the records were taken. If no date was provided, the “>>>0<<<” string is used. If an automated simple backup is enabled in the configuration file, then it will occur before deleting points, otherwise a warning message will appear.

### Remove All

If a clean database is desired, and all data points collected need to be deleted, it is possible to delete them using the Remove->All menu item.

If an automated simple backup is enabled in the configuration file, then the data will be backed up before deleting the points, otherwise the following warning message appears:

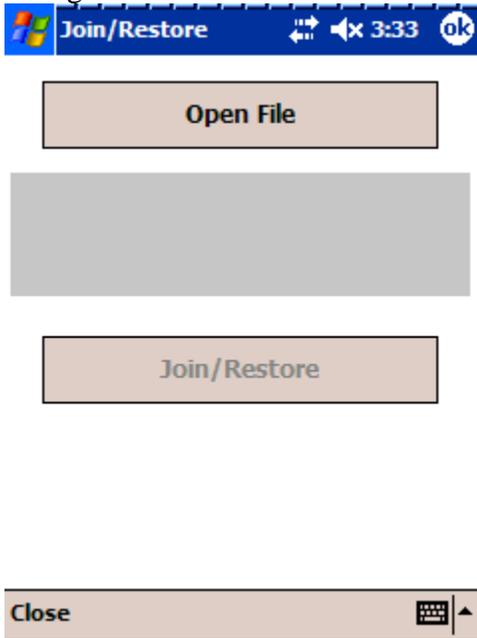


If “Yes” is selected, the data will be deleted without being saved. If no is selected, the dialog box will close.

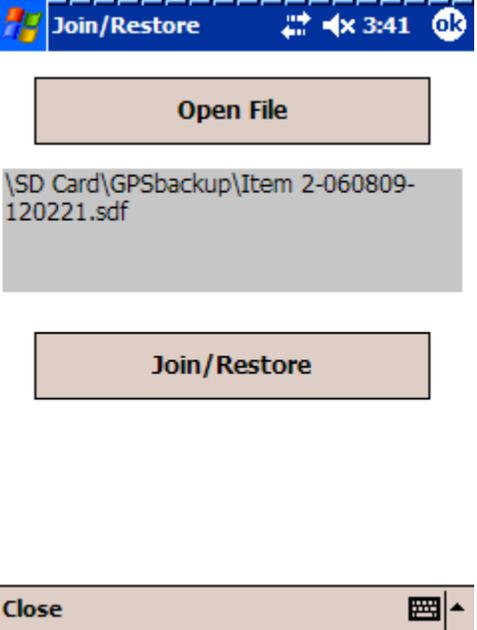
### Join/Restore

When there are no points in the current database they can be added manually from another dataset on the PDA or restored from a data backup.

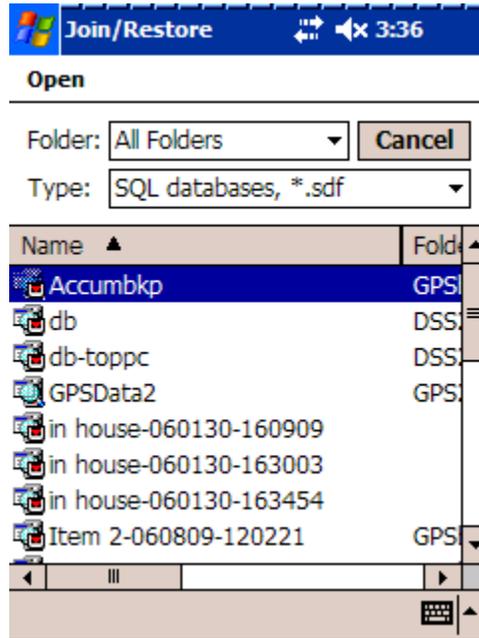
Join/Restore is useful in two cases, for data restore from backup if current database is empty or for manual adding of data from another dataset on the PDA.



Begin by pressing “Open File” button  
After selecting the file its full path appears in the gray rectangle:



Press “Join/Restore” to add the data to the current database. A message box will appear stating the status (success/failure) of the join.



Next Select the data file to join.

## Re-Randomize

This command assigns new random numbers to each data point, resulting in a different random sample set when using the “Select” operation. This is rarely needed, and can be hidden using GPS2.config.

### Edit Data

The screenshot shows a window titled 'Editor' with a blue header bar. The window contains a table with the following data:

	STime	Valid	hdop	Random	Select
▶	5/06	1	1.3	0.857218	1000
	5/06	1	1.3	0.056118	1000
	5/06	1	1.1	0.724997	100
	5/06	1	1.1	0.718361	1000
	5/06	1	1	0.472690	1000
	5/06	1	0.9	0.209702	10
	1/05	0	50	0.877435	0
	4/05	0	50	0.861034	0

Below the table is a context menu with the following options: Delete, Edit, SQL Command, and Edit Close. The 'SQL Command' option is currently selected, and a text input field is visible below it.

This screen gives direct access to information stored in the database. Data can be modified or deleted but changes are restricted to the specific data structure. Main operations include: deleting record, editing cell values, and performing batch operations using SQL queries. It is better limit the ability to make changes to the database to only experienced users or database managers. Access to this tool may be restricted by setting the GPS2.config file.

## Reset Device

This command makes a soft reset of the PDA, the same as pressing the reset button with the stylus. This command may be useful under certain circumstances especially when the PDA may be enclosed in a rugged protective box where the reset button is less accessible. A warning message appears before the PDA is reset.

## Export and Run

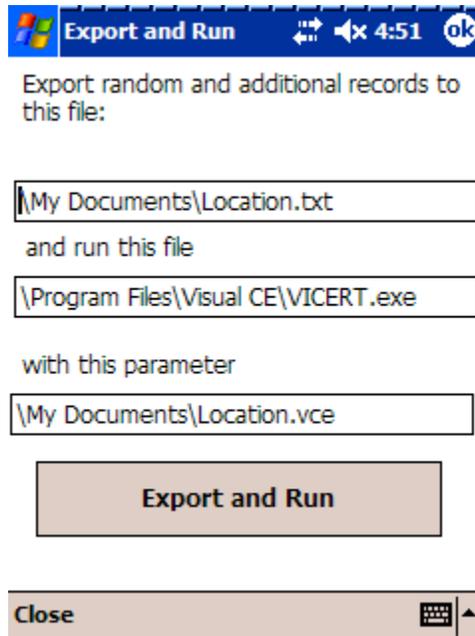
GPS2 has the ability to start another program and write data to an external file. Currently, there are two modes available. The mode, output file name and extension, and the external program name and extension must be specified in the configuration file of the GPS2.config program.

In mode 0 all of the data is exported in CSV format to a specified file and an external program is executed.

```
Comment,Lat,Lon
"(*).1.corner 103.Item 2.",33.8803,-84.2951
"(*).2.middle of new parking.Item 2.",33.8805,-84.2956
"(*).3.green transformer.Item 2.",33.8804,-84.2958
"(*).4.white house.Item 2.",33.8803,-84.296
```

The exported file contains an optional header row, information about points as it appears in Navigation list and the coordinates (longitude and latitude) of the point(s).

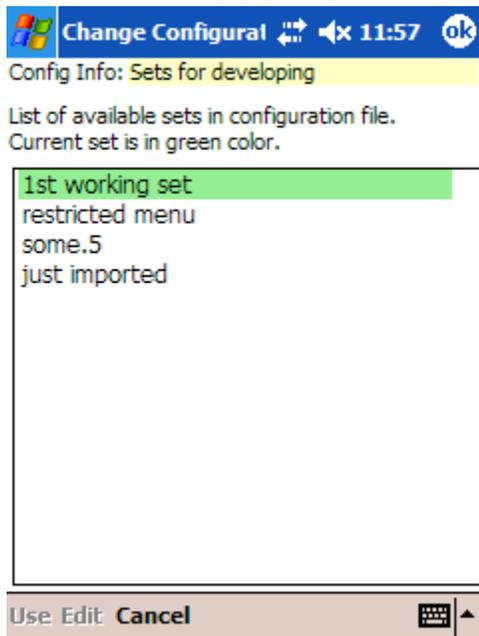
In mode 1 the “**Export and Run**” menu item is unavailable.



The “Export and Run” dialog allows last minute changes of file paths before execution. This dialog can be omitted using the configuration settings.

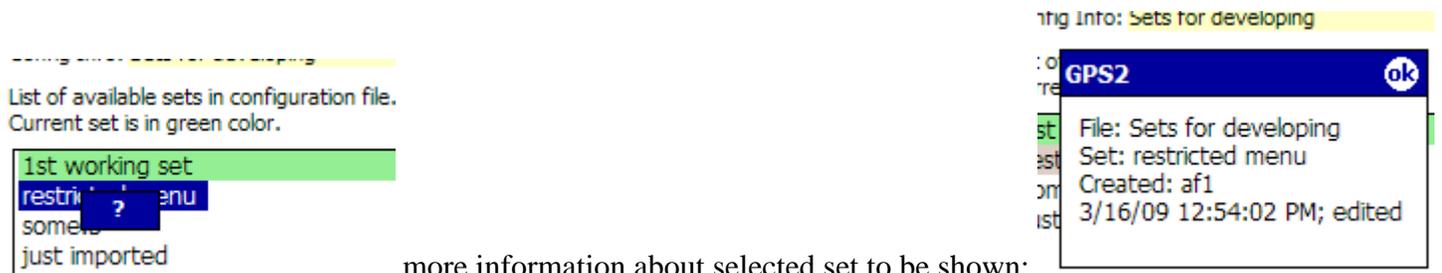
### Managing the configuration parameters set

Since version 2.0.8.0 GPS2 has a new management system for configuration files.



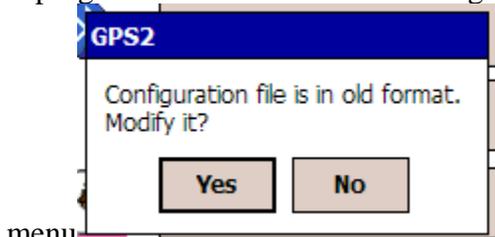
Change of configuration is available after selecting “**Change config**” menu item if it is visible.

Screen shows a comment for a whole configuration file and names of sets inside it. After tapping and holding a stylus on desired set name, and selecting “?” in the appeared menu it is possible to see an extended information about this set.

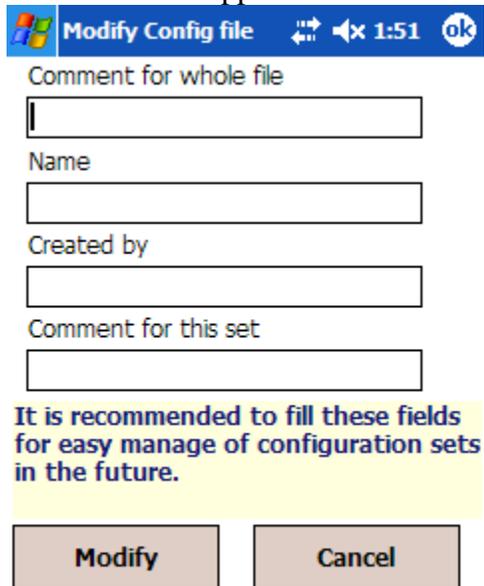


more information about selected set to be shown:

Configuration set which is currently in use is marked with green color. Menu item “Use” allows marking selected set as current and immediately using it. Menu item “Edit” allows editing selected set in [GPS2.Config](#) program. If program used old version of configuration file, it prompted to convert it after selecting “Change config”



menu. The dialog with suggestion to add additional information about newly created set will appear:



## Command line parameters

GPS2 supports a command line with parameter /config:FILENAME. If parameter is empty, then standard configuration is in use. If FILENAME is empty, dialog which allows selecting configuration file is appeared. Otherwise FILENAME file will be using as configuration file.

To create file which starts GPS2 with command line first create shortcut to GPS2 program, after it open in any desktop text-editing software and add desired configuration file like in example

```
30#"Program Files\gps2\GPS2.exe" /config:
```

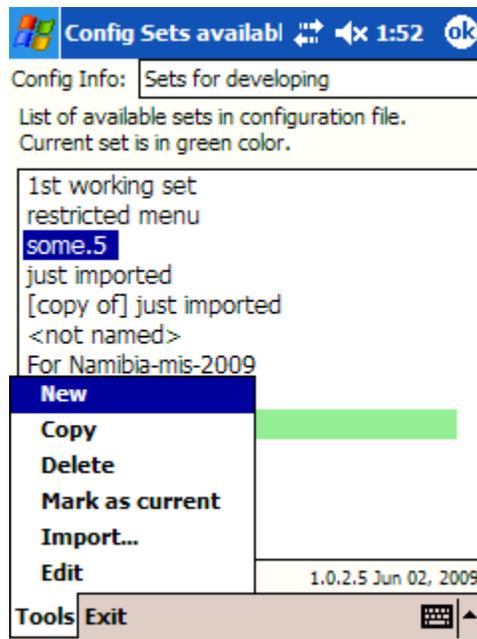
## GPS2.Config Description

The GPS2 package contains a GPS2.Config executable allowing the user to customize the settings of the main program. This program can be found in the same folder as the GPS2 executable using File Explorer on the PDA.

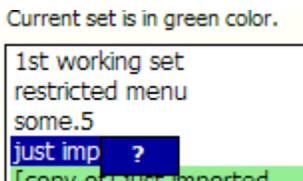
The program will look like the following:  **GPS2.Config** 7/25/06 116K

If configuration file is in old format, program suggests to convert it but may also work with old format. It is recommended to convert a set to the new format for easy managing in the future.

### View and select a configuration set.



From there it is possible to do a main managing tasks, including editing information about configuration file in “Config info” row. Configuration set which is currently in use is marked with green color. After tapping and holding a stylus on desired set name, and selecting “?” in the appeared menu it is possible to see an extended information about this set.



more information about selected set to be shown:



### Edit/create configuration set.

After selecting required set name and selecting “Edit” menu item, program starts to edit a set beginning with description of the set. Creating of new set is similar to edit existing one

GPS2.Config 3:20 ok

**Common set information 1**

Name  
1st common set

Created by

Comment for this set  
2009

It is recommended to fill these fields for easy manage of configuration sets in the future.

1.0.3.0 Oct 23, 2009 i

1 2 3 4 5 6 7 8 9 10 11 12 13 14 keyboard up

GPS2.Config consists of more than 10 numbered screens. The position of a specific control on a specific screen may be changed in the future.

### 2<sup>nd</sup> Screen GPS Ports, Distances, Misc.

GPS2.Config 2:58 ok

**GPS Ports 2**

Scan ports

4 Use this port Find

Baud rate ?

Disable Bluetooth GPS scan

**Distances**

10 Kilometers for distant points

10 Meters for close points

**Misc.**

Ask to clean data for previous date

Ask for database name during start

Use InfraRed for data exchange

i

1 2 3 4 5 6 7 8 9 10 11 12 13 14 keyboard up

**Scan ports** instructs the program to find an available GPS unit serial port on the PDA. It requires a longer time to scan than using of specific port for GPS unit. This is useful when using different combinations of GPS devices and PDAs.

**Use this port** – if **Scan ports** is not checked, the GPS2 program will use this port for the GPS signal. This option is preferable for known combinations of GPS/PDA. Values are usually in the range of 1-8 or COM1-COM8 .

**Baud rate** is a communication rate with GPS unit. If not defined, 4800 is assumed, what will work with most of GPS units. Some GPS units may require a 9600 or 57600 as this value. It must be used carefully because a lost of connection with GPS unit may follow.

**Disable Bluetooth scan** optimizes the scanning of direct **Scan ports**. Attempting to access Bluetooth serial ports on specific PDAs can cause significant delays. When checked, all Bluetooth devices are ignored, even if the GPS unit is connected to a PDA.

**“Kilometers for distant points”** is the threshold level for pairwise comparison of points beyond which the points are considered “distant” and will show up as such when using the “Remove Distant Points” feature. (See [Remove Distant Points](#)).

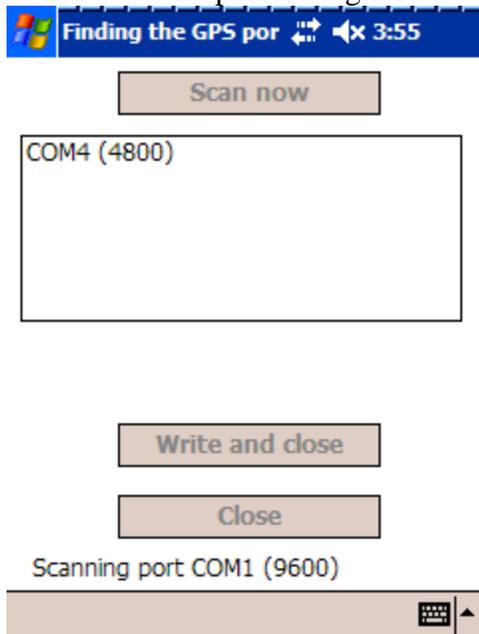
**“Meters for close points”** is the minimum distance where two points are considered different. If the points are closer than this distance, they are considered “close” and will show up as such when using the “Remove Close Points” feature. (See [Remove Close Points](#)).

**“Ask to clean data for previous date”**. Upon startup, the program checks to see if there are points collected from an earlier date and asks the user if the points should be removed from the database.

**“Ask for database name during start”**. This gives advanced users the ability to access different data sets from the same instance of the GPS2 program.

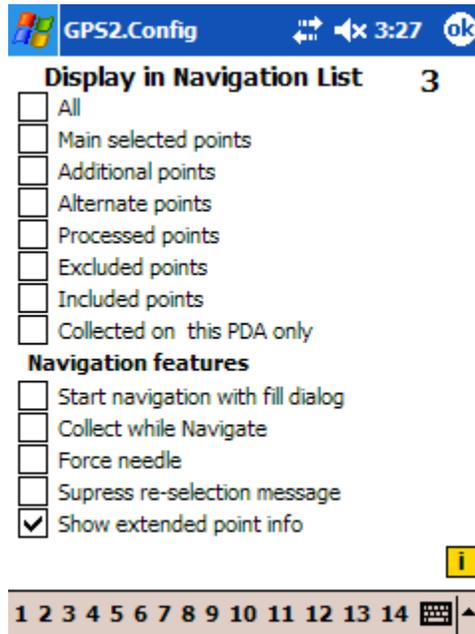
**“Use InfraRed for data exchange”**. Switch program from using [Bluetooth data exchange](#) to [infrared](#) one.

**“Find”** button opens dialog for automated discovery of GPS units attached.



Scanning begins after pressing “Scan now” button. After finishing it is possible to select desired device and write information about GPS unit on 1<sup>st</sup> screen. It scans now for few baud rates, 4800, 9600, 19200 and 57600, but it is possible to add additional baud rate by inserting it on 1<sup>st</sup> screen in “Baud Rate” control.

### 3<sup>rd</sup> Screen Display in Navigation List



This screen sets the default settings for determining which points will be displayed in the Navigation list (See [Fill Points Screen](#)).

“**All**” instructs GPS2 to display all points in the database. This option overrides all other settings.

“**Main selected points**” displays points selected for primary random sample.

“**Additional points**” displays additional points selected for multi-study sampling with different sample size requirements.

“**Alternate points**” displays spare points selected which can be used as alternates when the primary selected points are unavailable.

“**Processed points**” displays points that are marked as processed in order to hide them from the navigation list.

“**Excluded points**” displays points that were collected but “excluded from sampling”.

“**Collected on this PDA only**” displays only points that were collected with from the PDA and not those collected on other PDAs.

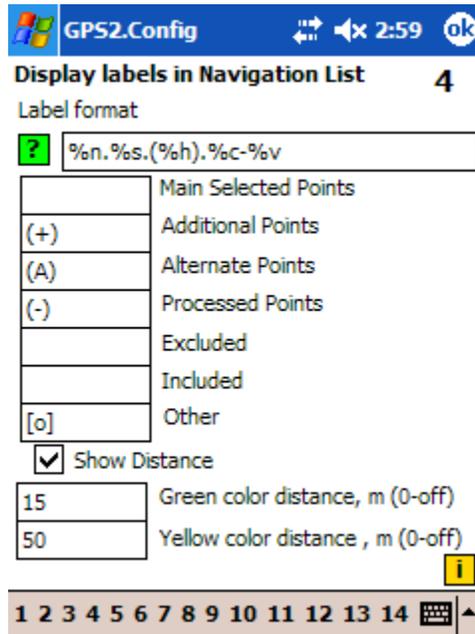
“**Start Navigation with Fill Dialog**” will show the “[Fill Points Screen](#)” before the “[Navigation Screen](#)” to allow changes in the type of points that will appear in the Navigation list.

“**Collect while Navigate**” will show small button on “[Navigation Screen](#)” which allows to collect point with actual coordinates using “[Collect screen](#)”.

“**Supress re-selection message**”. Before starting navigation, the GPS2 software looks if new points did appear in selection list for displaying of proper amount of selected points. To disable such testing, this option must be checked.

“**Show extended point info**”. Adds additional context menu item to show detailed information for selected point in list. Menu item appears in menu as a question mark.

#### 4<sup>th</sup> Screen Display labels in Navigation List



In the Navigation list, the symbols used to distinguish the different types of points as well as what appears as a label for each point are adjustable.

“**Label format**” changes the appearance of the label that appears for each point in the Navigation list. Default setting lists the symbol, house number, description, and place name.

Label notation: %s will be replaced by their definition

%s symbol for the type of data point

%n house number

%c comment

%v place name

%h hdop.

For example, %s.%n.%c.%v may become [--].22.near well.KALONGA. The dots between patterns remain in the final string. Any character may be used for convenience and the desired appearance in the Navigation list.

For example, %s:%n/%c--%v becomes [--]:22/near well--KALONGA.

The symbols used for each type of data point (main, additional, alternate, processed, excluded, included, other) may be modified to the users specifications.

“**Show distance**” displays the distance to the points in the Navigation list when a GPS signal is available.

The navigation list items may be colored based on their proximity to the current position. Two distances may be defined. All points in the list within the specified distance (as radii from the current position) will appear green (or yellow accordingly). Green overrides the yellow, therefore the green distance must be less than the yellow distance. If one or both distances are zero the items will not be colored.

### 5<sup>th</sup> Screen Export and Run

GPS2.Config
3:01 ok

Export and Run      5  
 Questionnaire

Export path:

Path to Visual CE executable:

Path to Visual CE Questionnaire

Not wait until Questionnaire will be finished

Do not show Export Dialog

Warning questionnaire distance, m (0-off)

1 2 3 4 5 6 7 8 9 10 11 12 13 14

This screen adjusts the default settings for the “Export and Run” function. All paths on this screen are used in mode 0 (see [“Export and Run”](#)).

“**Export path**” lists the file path for the CSV data. If the file exists, it will be overwritten.

“**Path to Visual CE executable**” is the path to the Visual CE program executable.

“**Path to Visual CE Questionnaire**” is the path to the Visual CE form.

If it is desired to work in parallel, GPS2 will not wait for the external program to terminate; in this case the box “**Not wait until Questionnaire will be finished**” must be checked. Common practice is to leave this unchecked.

“**Do not show Export Dialog**” will not show the export dialog screen which allows last minute changes before performing the “Export and Run” operation. For most cases this should be checked.

“**Warning questionnaire distance (0-off)**”. If the distance between the current position and the selected point in the Navigation list is larger than this value when the “**Questionnaire**” menu item is selected, then a warning message will appear.

## 6<sup>th</sup> Screen Advanced Export and Run, Language

GPS2.Config 3:02 ok

**Advanced Export and Run Questionnaire 6**

Export mode number, 0, 1, 2 or 3

Path to Questionnaire for mode 1,2

**Run after full Backup**

Path to Visual CE executable:

Path to Visual CE Questionnaire

**Localization**

Current language

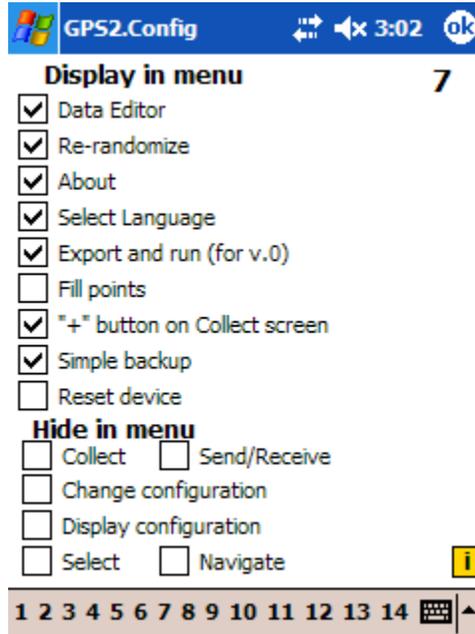
1 2 3 4 5 6 7 8 9 10 11 12 13 14

“**Export mode number**” determines how the external program will receive data from GPS2. In mode 0 the GPS2 first exports data into a file in CSV format, and then starts the program using the configuration parameter defined on the [4<sup>th</sup> screen](#). In mode 1 a different path to the external program is used for easy switching between programs. The command line for mode 1 contains 3 comma-delimited values, mode number, ID of currently selected point and path to GPS2 configuration file (Eg. *V001,A224EDIA-8EC6-4B51-B8A3-088EBFE3D385,\\Program Files\gps2\GPS2.config.xml*). This path can be used to retrieve additional information about points from the GPS2 database. Mode 2 is experimental and not in use now. Mode 3 is similar to mode 0. After running an external application, GPS2 software waits for changing of date of file which name is defined in [Export Path](#) row. External application **MUST** change date of this file otherwise GPS2 will hang up.

“**Run after full Backup**” is similar to “Export and Run”, allows automating of running of questionnaire, and may be useful in certain occasions.

“**Current language**” sets the default language for all text on the screens, menus, and messages. For each specific language a special file containing the language translations must be prepared. Not all languages are supported directly by the PDA. In some cases, tricks may be required, like substituting the Indonesian character set with Latvian.

### 7<sup>th</sup> Screen Menu Display



This screen controls the display of optional menu items and buttons and some other information. Items that are checked will appear as a button or in the menu bar. If left unchecked, they will be hidden from view. If an item is both on the menu and a button, then it will be hidden/shown in both locations.

“**Display configuration**” – if checked, hides actual configuration set name on the main screen



## 8<sup>th</sup> Screen Database and Backup File Paths

The screenshot shows the 'GPS2.Config' window with the following fields and options:

- Paths** (8)
- Database Path:** \Program Files\gps2\GPSData.sdf
- Accumulating backup path:** (empty field)
- Accumulate while collecting
- Regular backup paths:** (empty list with '+' and '-' buttons)
- Warn if main memory backup
- Force backup on flash cards only (with an information icon 'i')

At the bottom, there is a navigation bar with numbers 1 through 14, a keyboard icon, and an arrow.

This screen shows the paths to the database and [backup](#) files used by program.

“**Database Path**” gives the location and name of the main database. If there is no path specified for the main database, then the database will be placed in the default directory in which GPS2 program resides.

“**Accumulating backup path**” lists the file location and name of the backup database. It is possible to accumulate saved points into one file. Again, the default GPS2 directory is used unless an alternate path is specified.

“**Accumulate while collecting**” saves a data not only in main database but also in database, defined in accumulating backup path.

“**Regular backup paths**” lists the location of all paths in which the backup database will be stored. It is possible to keep backups in several places at the same time. “+” button is used to add an additional backup path, “-” to remove a path from the list.

“**Warn if main memory backup**” instructs the GPS2 program to display warning if some paths for backup point to main memory. It allows conserving a main memory space.

“**Force backup on flash cards only**” GPS2 program will check if path is pointing to memory card or built-in memory and will try to use names like “SD Card2” if they are referring to memory card to make a backup.

### 9<sup>th</sup> Screen Collect Screen

GPS2.Config
4:01 ok

? Bluetooth ID: 9

**Collect Screen**

HDOP critical level

All fields must be filled

Clear Comment after saving

Auto increase house number

EA names from list

EAs from list only

Run Questionnaire after save

Enable collect "included" points ?

Enable restore last comment

External saving procedure:

i

1 2 3 4 5 6 7 8 9 10 11 12 13 14 ⌨ ▲

“**Bluetooth ID**”. While doing [data exchange using Bluetooth](#), it works like a password for PDA’s to be visible to each other.

“**HDOP critical level**” will set a threshold, above which points saved on the [Collect Screen](#) will be considered poor accuracy. HDOP (Horizontal Dilution of Precision) is a measure of how the satellites geometry influences the latitude and longitude data accuracy. If the HDOP value is higher than about 4 the data is normally disregarded.

“**All fields must be filled**” instructs GPS2 to give an error message if the “Place Name” or “Comment” fields on the [Collect Screen](#) are empty. In this setting, the data will not be saved unless both fields are filled. If “House Number” is empty, it is automatically filled with the value “1”. This prevents saving missing data. **Clear comment after saving**” will remove any text in the comment field after saving the data point to help avoid duplicate comments.

“**Auto increase house number**” increments the house number by 1 each time a point is saved to help avoid counting errors.

“**EA names from list**” is used to prevent erroneous information in the Place field. A predefined list may be used to select names from a dropdown box. The values from these lists may still be edited.

“**EAs from list only**” will disable any ability to edit the place names from the list. The list of Places, must be stored in a text file called EAList.txt located in the same directory as the GPS2 program EAList.txt contains one Place per line. For example:

```
Item 1
Item 2
Item 3
```

“**Run Questionnaire after save**” Questionnaire to be run after saving a point information for this point.

“**Enable select "included" points**” shows [include this point to sampling](#).

“**Enable restore last comment**”. If enabled, then restores house number and comment saved for last point.

“**External saving procedure**”. Replaces existing simple data saving with another one some preprocessing of data before saving.

### 10<sup>th</sup> Screen Select Points

GPS2.Config
9:08

**Select Points** **10**

Main Selected Points

Additional Points

Alternate Points

Hide "Select and Navigate" button

Auto export after selecting

External sampling procedure:

i

1 2 3 4 5 6 7 8 9 10 11 12 13 14

“**Main Selected Points**”, “**Additional Points**” and “**Alternate points**” specify the default settings for the number of points sampled while selecting points (see “[Selection Screen](#)”).

“**Auto export after selecting**” will export the selected points to the specified file in CSV format before closing the “[Selection Screen](#)”.

“**Display “Cluster” checkbox**” will allow the option of doing segment sampling rather than simple random sampling. Segments are created by grouping together data points based on the distance to point with lowest random number.

“**Systematic sampling**” is another method to make samples. It uses “main selected points” value and selects points on the base of time where record created. Points are marked with such skipping of records sorted by time of creation, that total amount of selected records will be “main selected points” value. Additional and alternate amounts are ignored in this mode.

“**External sampling procedure**” replaces a standard random sampling and can be used to select points with specific criteria. This is a path to DLL file in same folder where GPS2 resides. Actual modules are:

- Cluster (ClustDist): Will do segment sampling rather than simple random sampling. Segments are created by grouping together data points based on the distance to point with lowest random number. Closest points become main samples.
- Systematic(SystSmpl): Another method to make samples. It uses “main selected points” value and selects points on the base of time where records were created. Points are marked with such skipping of records sorted by time of creation, that total amount of selected records will be “main selected points” value. Additional and alternate amounts are ignored in this mode.
- (Sel2Sur). Sampling which uses first three surveys for samplings. At first it duplicates points from third survey and assigns these points to second survey. After points from third survey are moved to the first survey. Simple random sampling for first two surveys is a final step in this module.

## 11<sup>th</sup> Screen Comma Delimited Export

GPS2.Config 3:10 ok

**Comma delimited export** 11

Enable export

Export Paths:

+ -

Export filename:

Do auto export before navigate

Export with headers

Export all as text (in ") i

1 2 3 4 5 6 7 8 9 10 11 12 13 14 [key] ^

This screen manages CSV file exporting.

“**Enable export**” enables silent CSV exporting.

“**Export paths**” lists the file paths for writing the CSV data file.

“**Export filename**” lists the name of the CSV data file.

“+” and “-” are used to add and remove paths from the list.

“**Do auto export before navigate**” instructs the GPS2 program to export the data to a CSV file before opening the Navigation screen.

If “**Export with headers**” is checked, then an additional 1<sup>st</sup> row with the column names is added to the exported file.

“**Export all as text**” changes the appearance of the data in the exported file by placing all values in quotation marks (for a CSV file, numeric values are typically not enclosed in quotation marks). For example, if this box is checked, the line

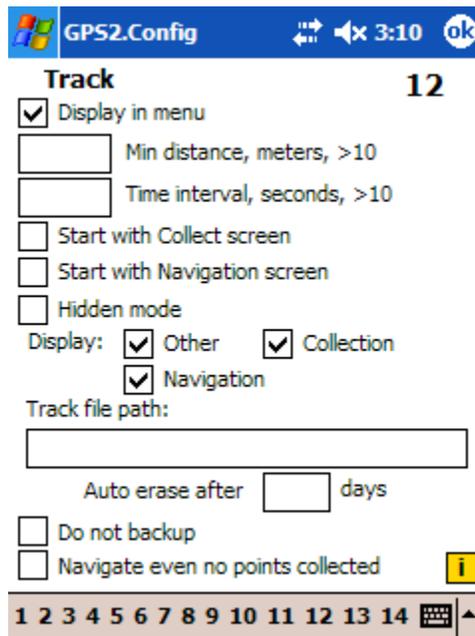
```
"Text" , 1.2345 , 2.3456
```

becomes

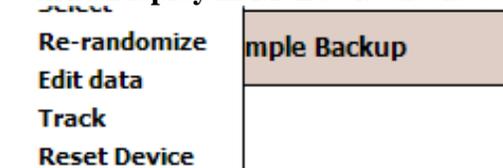
```
"Text" , "1.2345" , "2.3456"
```

## 12<sup>th</sup> Screen Track

This screen works with parameters of tracking, i.e. writing coordinates after certain time or distance in special file. This information may be displayed later on Map screen and may be used also for monitoring purposes.

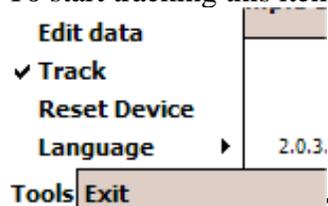


When **“Display in Menu”** is checked the **“Track”** item appears in main menu of GPS2 program.



Appearance of Track menu item

To start tracking this item must be clicked. Next selection of this item will stop a tracking.



Tracking mode is on. Selecting it switches off the tracking.

**“Min distance, meters, >10”** is a distance from previous tracked point, information about which is written to track file. Values <10 m is being considered as zero and is ignored.

**“Time interval, seconds, >10”** is minimal time after which next point to be written in track file. Values <10 are ignored. If both, distance and time, are valid, then time is ignored. If both of them are invalid then interval equals to 10 seconds is used for tracking.

**“Start with Collect screen”** and **“Start with Navigation screen”** allows an automatic start when these screens are opening and stop tracking after they close, if tracking was not made before opening.

**“Hidden mode”** disables, if allowed, appearance of Track menu item and automatically starts a tracking with program. Points written in this mode will never appear on Map screen.

“Track file path” is a valid folder name where track information to be stored.

“Auto erase after days” sets amount of day when old data to be backed up if enabled and to be erased for space conservation. Value must be more than 0, otherwise an erasing is ignored.

“Do not backup” instructs the backup skipping before erasing of file.

“Navigate even no points collected”. In standard mode navigation is disabled if there are no collected points in database. To enable to navigate using only tracking points this checkbox must be enabled.



Appearance of tracking on Map screen. Different colors are being used to show points, collected in different modes. Yellow color is used for points collected during navigation, blue while data collecting and red for others.

Track file format:

```
PDA:X50-2, 9/5/06 11:19:16 AM , ,  
lat ,lon, hdop, GPSTime, CollectMode (m/h/a, o/c/n)  
33.8804, -84.2955, 50, 9/5/06 3:19:24 PM, mo  
33.8803, -84.2954, 9.7, 9/5/06 3:19:26 PM, mo
```

First line contains PDA name and time when tracking was started.

Second line contains description of values below.

Collect mode uses abbreviation “m” for manual, “h” for hidden and “a” for automatic, i.e. start with Navigation and Collection screens as a first letter. Second letter is “o” for other, “c” for Collection screen and “n” for Navigation screen which was in use when this specified point has been written.

## 13<sup>th</sup> Screen Map

GPS2.Config    4:16    ok

**Map 13**

Path to Google Earth file

GPS2 Run Parameters

Timer, ms (1000)

Keep DB after receiving and joining

Disable auto backup on some operations

Use vertical scrollbar on Navigation screen

Use "Insert Number" dialog

1 2 3 4 5 6 7 8 9 10 11 12 13 14

This screen allows setting up map file for using it in map mode of navigation.

**“Path to master file”** is a path to file with information about map and reference points. File has following format:

```
PictureFile,          x1, y1, lat1, lon1,          x2, y2, lat2, lon2
\Program Files\gps2\Cham3.png, 392,57, 33.880295, -84.2950967, 96,377 ,33.879048, -84.296415
```

Google Earth’s KML and KMZ files may be used for using as [maps](#). In this case no any edition in GPS2.Config is required.

See also [Map Navigation Screen](#).

**“Timer, ms”** contains the time interval for refreshing the **Navigation** and **Map** screens.

**“Keep DB after receiving and joining”** will store a database received from another PDA in the ‘\Temp’ directory.

**“Disable auto backup on some operations”** will disable simple backups that automatically occur before any potential unsafe or milestone operation. This will save memory space. It is strongly recommended NOT to disable the auto backups.

**“Use vertical scrollbar on Navigation screen”** manages the appearance of points in the Navigation list. Either a vertical or a horizontal scroll bar may be used.

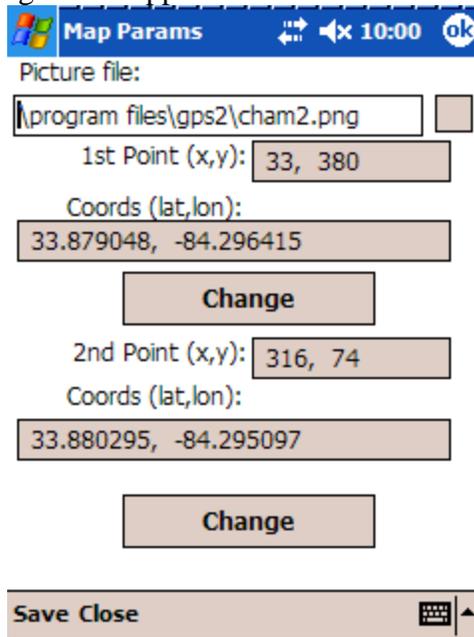
**“Use “Insert Number” dialog”** will use a large number pad instead of the keyboard when numeric input is required.



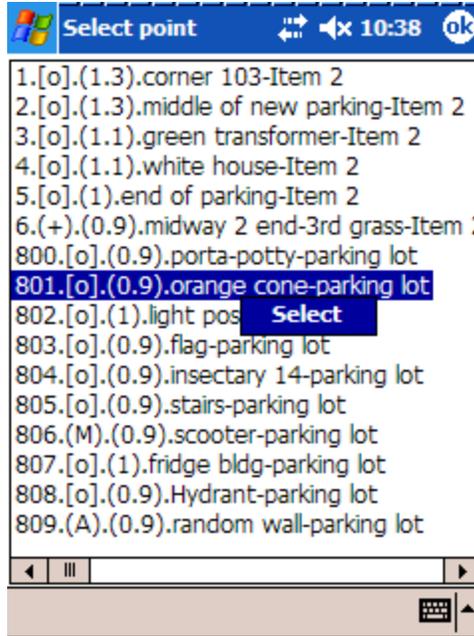
Close

“Enable multiple surveys” allows to collect and to use different sets of points for doing several surveys at same time. “Multiple surveys” section must be properly filled.

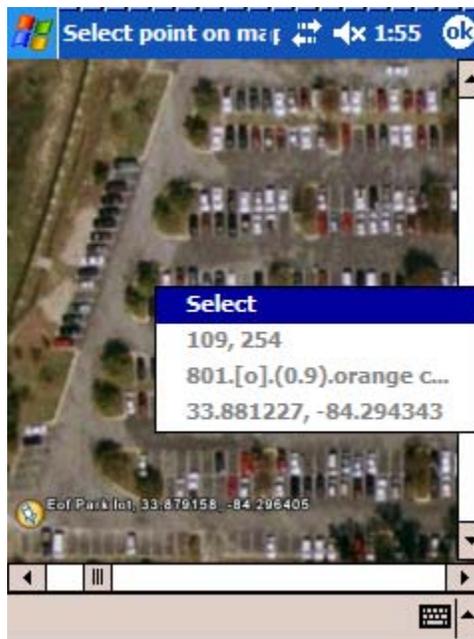
After pressing “Edit” button, following screen appears:



“Picture file” is an image which is shown on [Map Navigation Screen](#). Reference points may be changed/added using “Change” buttons. At first, point from existing collected points must be selected by “tap and hold” and select “Select” menu item



After it an image is shown



Select desired point on screen, use scrollbars if required, and tap and hold on desired point, popup menu with “Select” menu item active and other items are inactive and for information purposes only. After referencing two points, the map may be used in GPS2 program.

## 14<sup>th</sup> Screen Multiple survey

GPS2 allows providing more than one survey at time with different questionnaires on points collected at same time but for different surveys. Screen for managing survey info:

GPS2.Config 4:17 ok

**Multiple surveys 14**

Enable multiple surveys

Name

Main Points

Additional

Alternates Color: ■

App path

App param

Existing surveys:

Add new Update Delete i

1 2 3 4 5 6 7 8 9 10 11 12 13 14 [key] ^

It allows making a management of surveys. Parts of survey info are: Number, assigned automatically. Name, to display it in list while collect points. [Alternates](#), [Additional](#), [Main Selected Points](#) – each survey has its own set of defaults. Color, to differ points of surveys, they are showing on the [Navigation Screen](#) with different colors. After pressing on square with current color a dialog to choose a color will appear:

color 2:12 ok

2294e7

RED

GREEN

BLUE

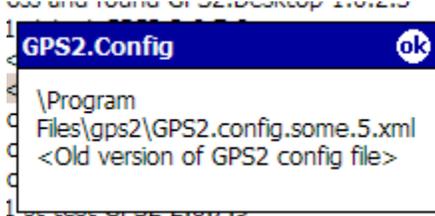
OK CANCEL [key] ^

Each survey might have its own external program with questionnaire to run. For this purpose “**App path**” and “**App param**” are used to show path to application and its command line parameter. It should be noted that in some configuration “App param” may not work.

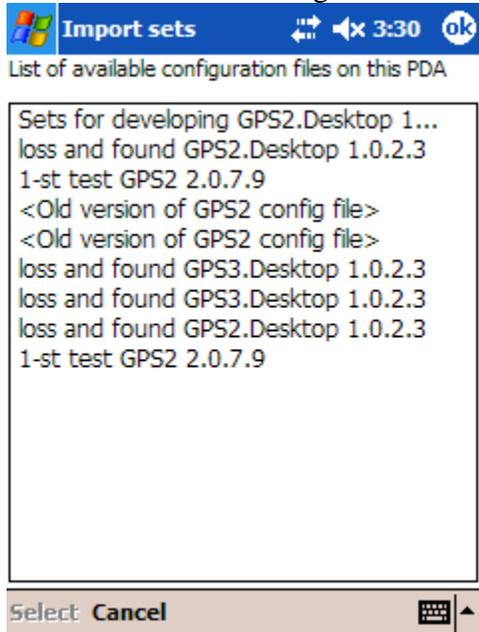
“**Existing surveys**” list shows numbers and names of existing surveys. After selecting desired survey all other information to be displayed in upper controls. Buttons below allows add new survey with information in control or update existing one or delete existing survey.

### Import sets from another files

After selecting “Import” menu item, program scan all \*.xml files for collecting the information about these files and information about valid GPS2 parameters content. Also, additional information about file is available like this



Screen with GPS2 configuration files which were found on PDA



If data imported from old version of GPS2 configuration file, program prompts to fill common set information on this screen



Name

Created by

Comment for this set



For files contained several sets program shows a list with ability select several sets at one time by checking appropriate checkboxes.



- to be doubled
- manually doubled
- <not named>



### Command line parameters

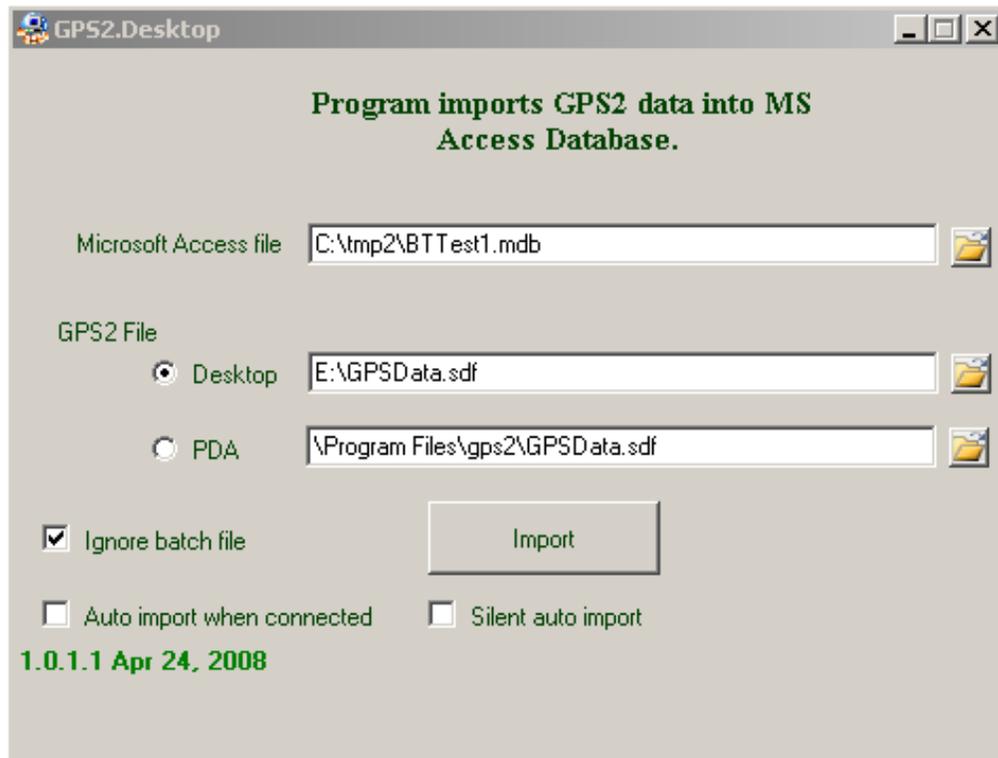
GPS2 supports a command line with parameter /config:FILENAME. If parameter is empty, then standard configuration is in use. If FILEANME is empty, dialog which allows selecting configuration file is appeared. Otherwise FILENAME file will be using as configuration file.

To create file which starts GPS2 with command line first create shortcut to GPS2 program, after it open in any desktop text-editing software and add desired configuration file like in example

```
30#"Program Files\gps2\GPS2.exe" /config:
```



## GPS2.Desktop Description



The GPS2.Desktop program is designed to transfer data from the GPS2 format on the PDA or Desktop to a Microsoft Access database. This program is pretty simple to use and requires few input parameters to work. **“Microsoft Access file”** is the path to the Microsoft Access database. If file does not exist in the specified location, it will be created.

**“Desktop”** specifies the location of the GPS2 database if it is stored in a Desktop file system, on the hard-drive or a card reader. A database file must exist in this location in order for the program to work.

**“PDA”** specifies the location of the GPS2 file if it is stored in a PDA file system. The PDA must be connected to the desktop, the address string must not be grayed out, and the file must exist in this location in order for the program to work.

Pressing the **“Import”** button will convert the GPS2 data into MS Access format and save it in the specified database.

This software will not allow duplicate records and can be used to accumulate data in the desktop database. Existing data are not overwritten.

GPS2.Desktop supports a batch converting. GPS2.DesktopBatch.txt file must be created in the folder with GPS2.Desktop program. This file looks like

```
/toMDB
/src:C:\Set1\
/src:C:\Set2\
/dst:C:\output.mdb
```

Where /toMDB is a command to convert, “/src:...” is a path to folder which contains GPS2 databases, several paths can be defined on separate rows, “/dst:...” is a path to MS Access database.

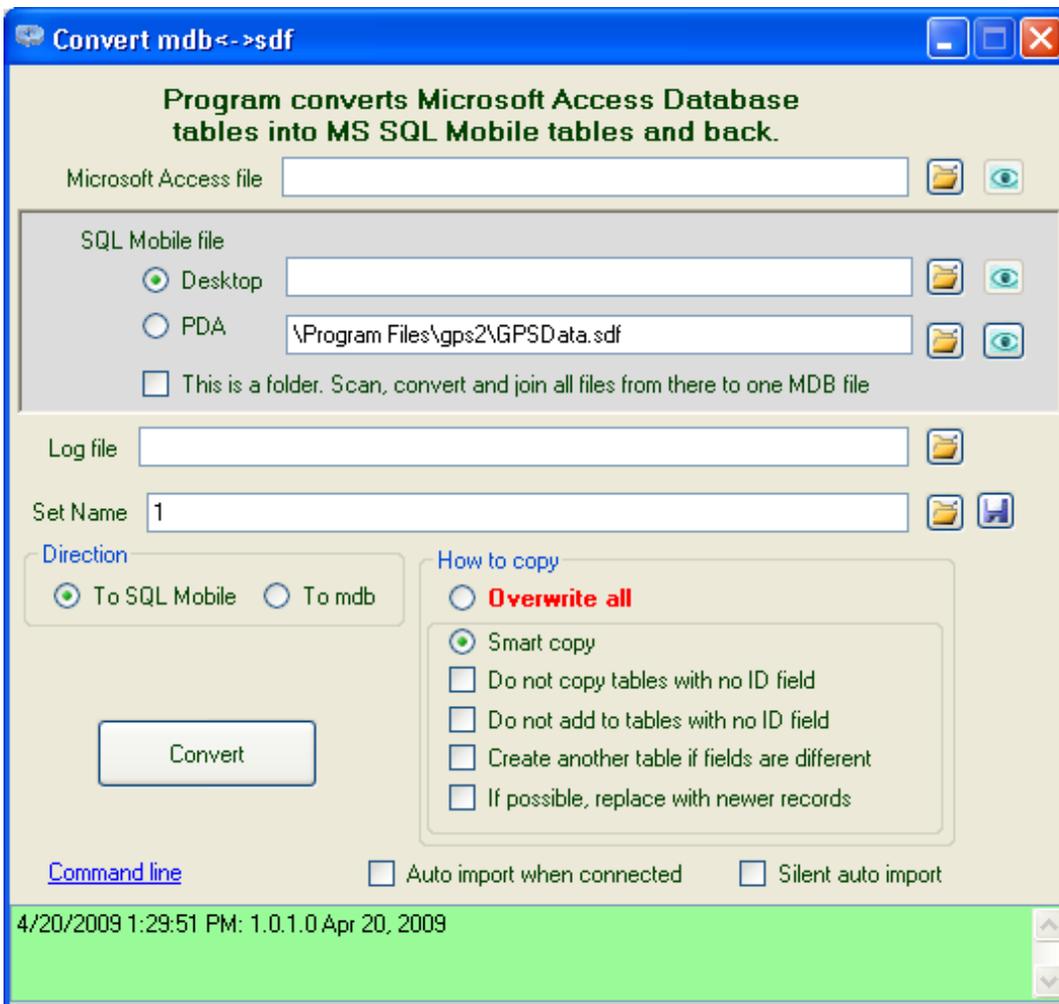
”**Auto import when connected**” – if checked, every time when PDA connected, program will automatically start, do the import and stay on the screen.

”**Silent auto import**” – if checked, every time when PDA connected, program will automatically start, do the import and play “TADA” sound if success and “RING” if failure. Program does not appear on the screen.

## Convert\_MDB\_SDF Description

To provide more complex and flexible data conversion it is recommended to use Convert\_MDB\_SDF software which is included in GPS2.Desktop package. Main purpose is to convert any MS SQL Mobile file to MS Access file and back. Also program can

- preview content of databases and table structure, using button .
- keep different sets of parameters for easily switch between them for different tasks
- process all files in specified folder including subfolders.
- try to join tables with same structure and more.



“**Microsoft Access file**” is the path to the Microsoft Access database. If file does not exist in the specified location, it will be created.

“**Desktop**” specifies the location of the MS SQL Mobile database if it is stored in a Desktop file system, on the hard-drive or a card reader. A database file must exist in this location in order for the program to work.

“**PDA**” specifies the location of the MS SQL Mobile file if it is stored in a PDA file system. The PDA must be connected to the desktop, the address string must not be grayed out, and the file must exist in this location in order for the program to work.

“**This is a folder. Scan, convert and join all files from there to one MDB file**” interpret locations Desktop/PDA as a folder and program will scan for files in this folder including all subfolders. On PDA folder may be selected only manually.

“**Log file**” path to file where all messages about tasks what program does are written.

“**Set Name**” – program has many parameters (path to files, options etc.) and for different tasks sets are different. For easy switching name may be assigned to set name and kept in the configuration file. There is some simple management system, described below.

“**To SQL Mobile/To mdb**” defines direction of conversion, to SQL Mobile or to MS Access file.

“**Auto import when connected**” – if checked, every time when PDA connected, program will automatically start, do the import and stay on the screen.

“**Silent auto import**” – if checked, every time when PDA connected, program will automatically start, do the import and play “TADA” sound if success and “RING” if failure. Program does not appear on the screen.

Section “**How to copy**” allows controlling a data merging while converting. If “**Overwrite all**” is selected, all tables in target database with same names as in source database are deleted before copying. If “**Smart copy**” is a selected option, then while conversion the program tries to add data to existing tables. In this mode, if table contain column with ID name, presumably of GUID type, only data which have different IDs are copied while conversion. Two checkboxes, “**Do not add to tables with no ID field**” and “**Do not add to tables with no ID field**” control behavior for tables. First option, if checked, disables copy of such tables at all. Second one does not allow making copying if table with same name already exists on target database.

“**Create another table if fields are different**” – before copying data, program checks for same structure in both table. If structure is different, then program creates an empty table and transfer data to this table. Later MS Access software can be used for joining such data manually.

“If possible, replace with newer records” used for special tables which contain ID field an DateTaken or TimeStamp field, allow to replace rows in target table where ID are same and date in source table is newer.

**Green area** at the bottom is a place for messages issued by program. Messages are almost same as for log file. Color of area may be yellow while data processing, red if error occurred and gray, if processing finished with error.

## Configuration set manager

Program keeps different configurations and may easily switch between them.

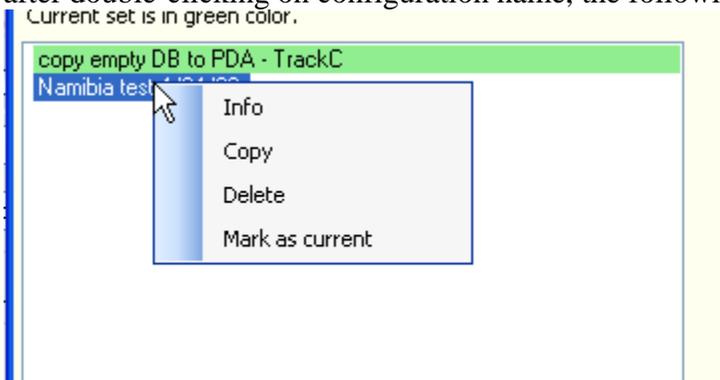
To access the list of configurations, press button right of current set name:



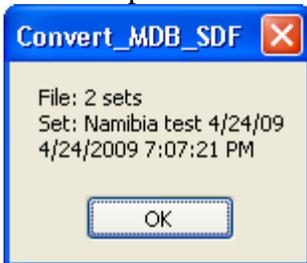
Configuration list looks like:



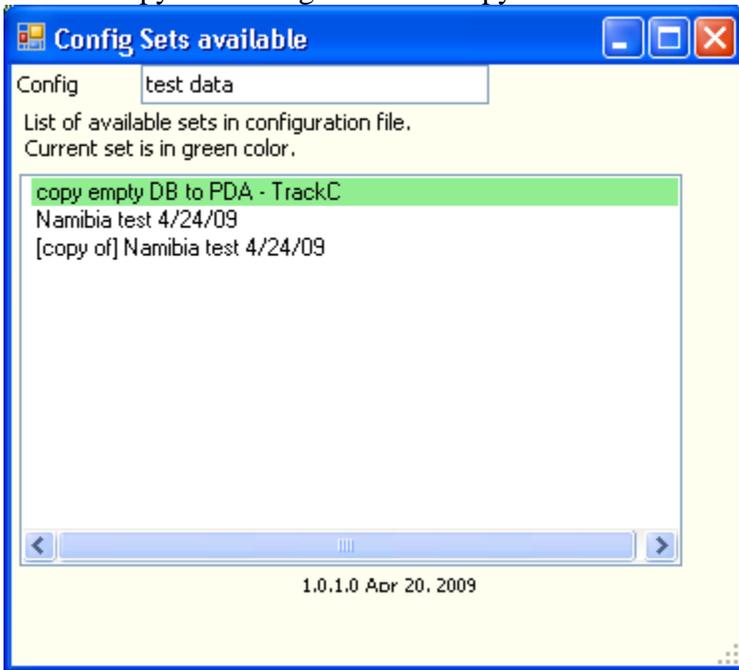
after double-clicking on configuration name, the following menu will appear



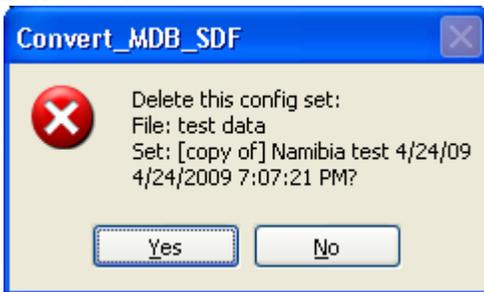
Here it is possible to view extended information about set by selecting of "Info" menu item,



create a copy of existing set with “Copy” menu item:

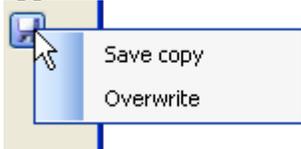


Delete selected set



and use selected set as a current working set.

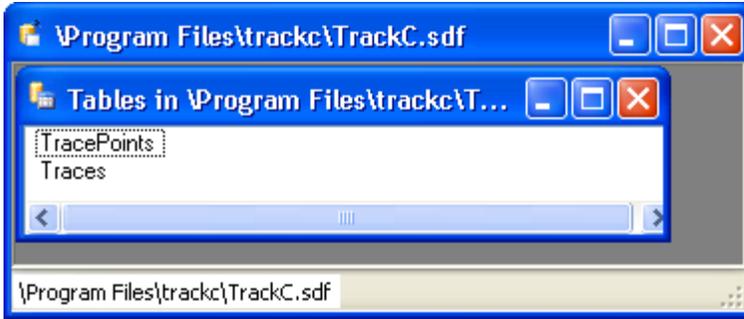
To save changes about current working set, pressing of  button on main screen is required. Short menu which appear there



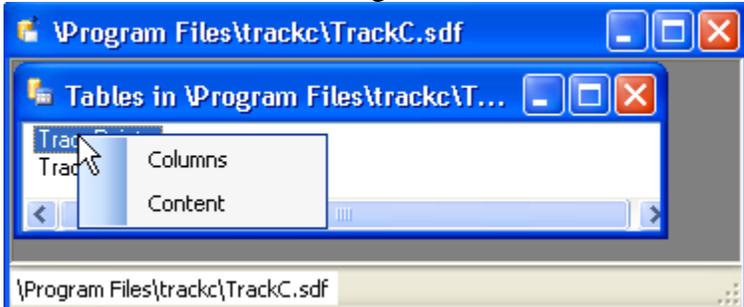
which allows to create copy of settings or overwrite existing set of parameters.

### Preview database content

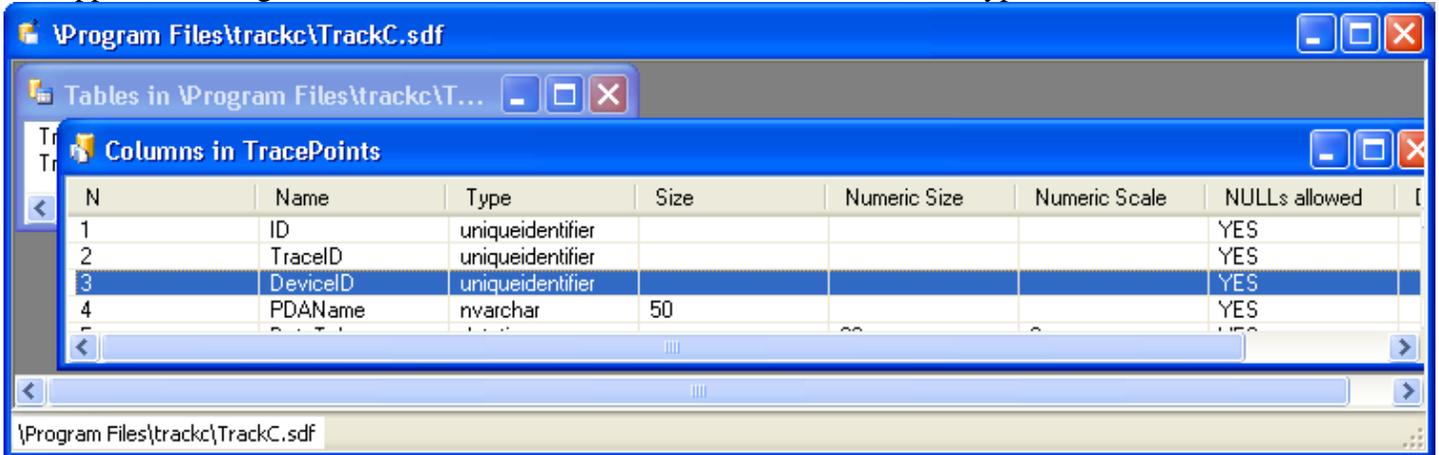
All three available databases on main screen can viewed for table content and structure by pressing  button. List of available tables will appear



After double—left click or right mouse button click on table the menu



will appear, allowing to view either table structure, i.e. column names, their types and more:



or content of this table:

	Latitude	Longitude	Altitude	GPSTime	HDOP	SatsUsed	DGPS	CurSpeedK
	33.88114833333...	-84.2943516666...	288.2999998898...	4/30/2009 4:46 ...	1.2	9	<input type="checkbox"/>	0
	33.881	-84.29437	289.0999998895...	4/30/2009 4:46 ...	1.2	9	<input type="checkbox"/>	0
	33.88098	-84.2943783333...	288.5999998897...	4/30/2009 4:46 ...	1.2	9	<input type="checkbox"/>	6.83387733
	33.88089166666...	-84.2943433333...	295.7999998870...	4/30/2009 4:46 ...	1.2	9	<input type="checkbox"/>	0
	33.88007	-84.2951933333...	334.09999987239	5/1/2009 2:49 PM	3.3	3	<input type="checkbox"/>	0.40743993
	33.88006333333...	-84.2951666666...	334.09999987239	5/1/2009 2:49 PM	3.3	3	<input type="checkbox"/>	0.25927995
	33.88006166666...	-84.2952216666...	334.09999987239	5/1/2009 2:49 PM	3.3	3	<input type="checkbox"/>	0.37039993
	33.880615234375	-84.2956085205...	284.2999877929...	3/18/2009 7:03 ...	1.200...	8	<input type="checkbox"/>	

Information provided in this mode can not be changed.

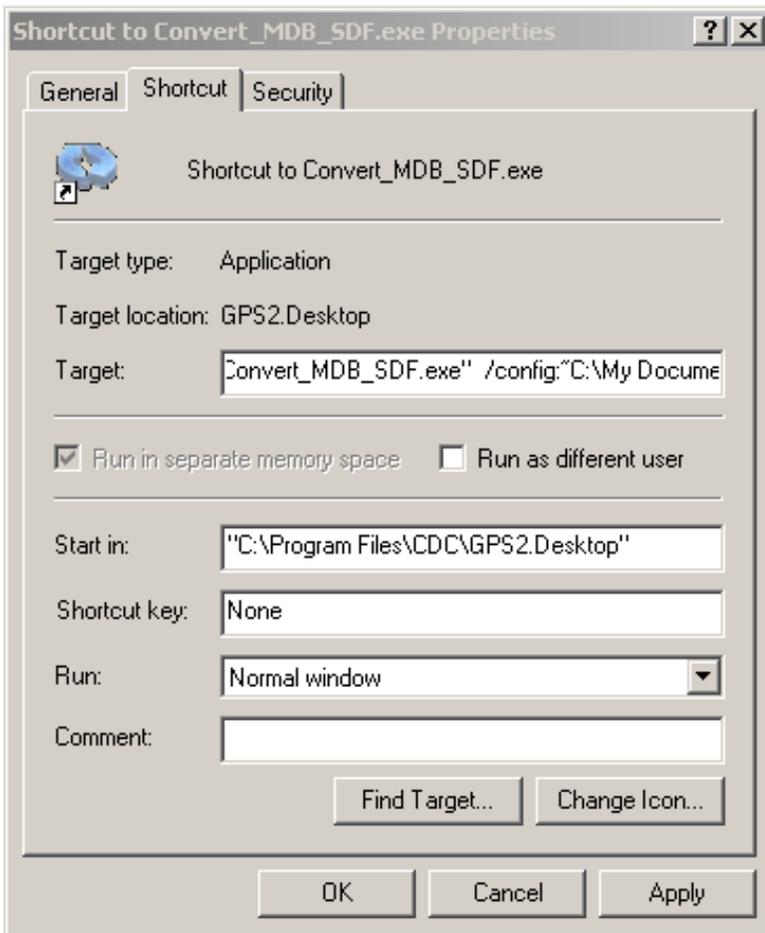
### Command line

Using Convert\_MDB\_SDF software with command line allows doing powerful tasks without reinserting required file names and to have different combination of transferring rules. Command line may be used as by creating \*.bat or \*.cmd file or modifying options of shortcut to Convert\_MDB\_SDF.EXE program.

Example of \*.bat file

```
"c:\Program Files\CDC\Convert_MDB_SDF\ Convert_MDB_SDF.exe" /config:"C:\My Documents\cnf1.cfg"
```

Example of modified shortcut file:



If path to configuration file contains spaces, it must be enclosed in quotation marks.

## Configuration file for command line

Configuration file may contain following strings:

**/close** - close program after finishing of conversion.

**/direction:**{ToMDB|ToSDF} – value determines a direction of conversion and may be *ToMDB* or *ToSDF*. 'ToMDB' is default.

**/mdb:**filename - name of MS Access MDB file to use. If file contains several lines with different file names, the first one to be used. File to be created if does not exist and direction is conversion to MDB file.

**/sdf:**filename - name of SQL Server Compact SDF file DB to use or folder name to scan SDF files inside to full depth. It may be several such lines. All SDF files found are converted to single MS Access file. It may be a path either in Desktop or PDA file system.

**/log:**filename - Write information about processing events to file defined here. Information to be appended to existing file or new file to be created

**/sdflocation:**{PDA|Desktop} - location of SDF file, either PDA or desktop/laptop computer Valid values are *PDA* or *Desktop*. 'Desktop' is default.

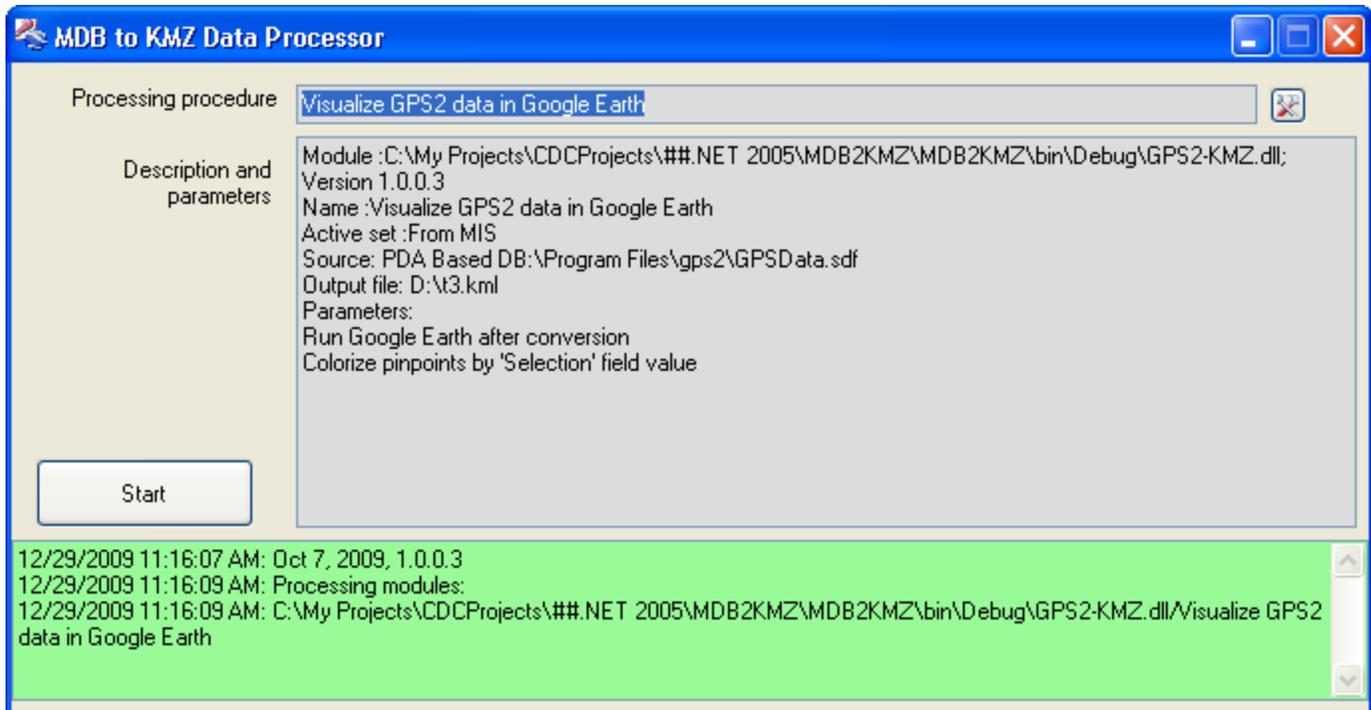
Example of configuration file:

```
/direction:ToMDB
/sdflocation:PDA
/mdb:c:\clg1.mdb
/sdf:\Program Files
/log:c:\convert_mdb_pda.txt
```

Here all SDF files from PDA below “\Program files” folder will be converted to MS Access file “c:\clg1.mdb”.

## MDB2KMZ Description

MDB2KMZ is a tool for quick visualization of geospatial data, particularly GPS2 data, and show them on map using [Google Earth](#) software. It converts geocoordinates into KML format and optionally may run Google Earth software.



Program allows selecting a source file in MS Access form, or SQL Server Mobile format, either on desktop either on selected PDA. It processes data from with tables which contain *Latitude* and *Longitude* or *Lat* and *Lon* fields as a data source. Best results

Output appears on Google Earth map as a set of pushpins and other signs depending of point properties. Parameters for conversion may be edited on next window.

GPS2 to KMZ conversion parameters

Set Name: From MIS

MS Access: C:\My Projects\CDCCProjects\###.NET 2005\GPS2\181009\_GPS2test.mdb

Desktop SQL Mobile: c:\My Projects\CDCCProjects\###.NET 2005\GPS2\GPS2-Adam1.sdf

PDA: \Program Files\gps2\GPSData.sdf

Output file: D:\t3.kml

Log file:

Use folders and use "Place name" as folders name  
 Run Google Earth after conversion  
 Truncate "Comment" field to 8 characters  
 Do not use comments as names  
 Use all possible information in point description  
 Colorize pinpoints by "Selection" field value

Save Cancel

Following options which modify appearance and processing of data are available:

“**Set name**” Allows using a different combination of file paths and parameters. Set may be saved for a future use or cloning.

“**Use folders and use Place Name as a folder**” is useful for better data presentation for large amount of points. Is used for creates folders in KML file for every Place Name and places appropriate points in these folders.

“**Run Google Earth after conversion**” runs Google Earth after finishing with exported points to display.

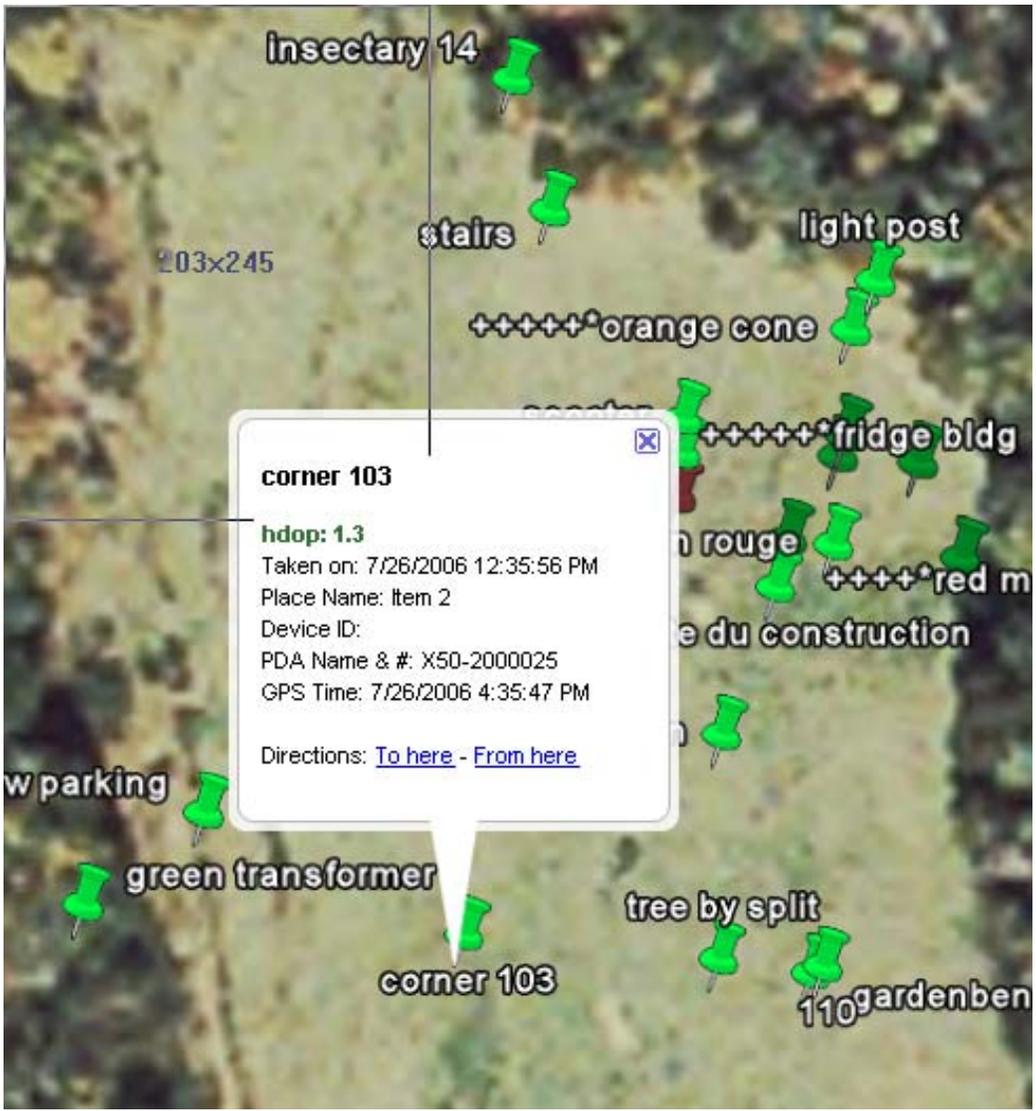
“**Truncate “Comment” field to 8 characters**” leaves first 7 letters from Comment field in exported point name.

“**Do not use comments as names**” forces to assign empty exported point names.

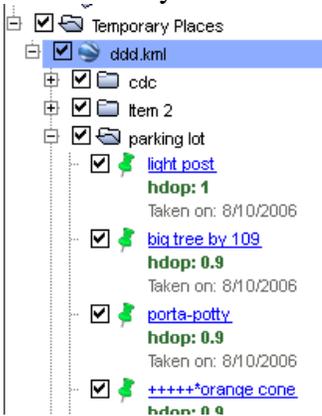
“**Use all possible information in point description**” adds additional information to point description like PDA ID, time of entering point etc.

“**Colorize pinpoints by "Selection" field value**” uses alternate method for point’s presentation.

### Appearance in Google Earth

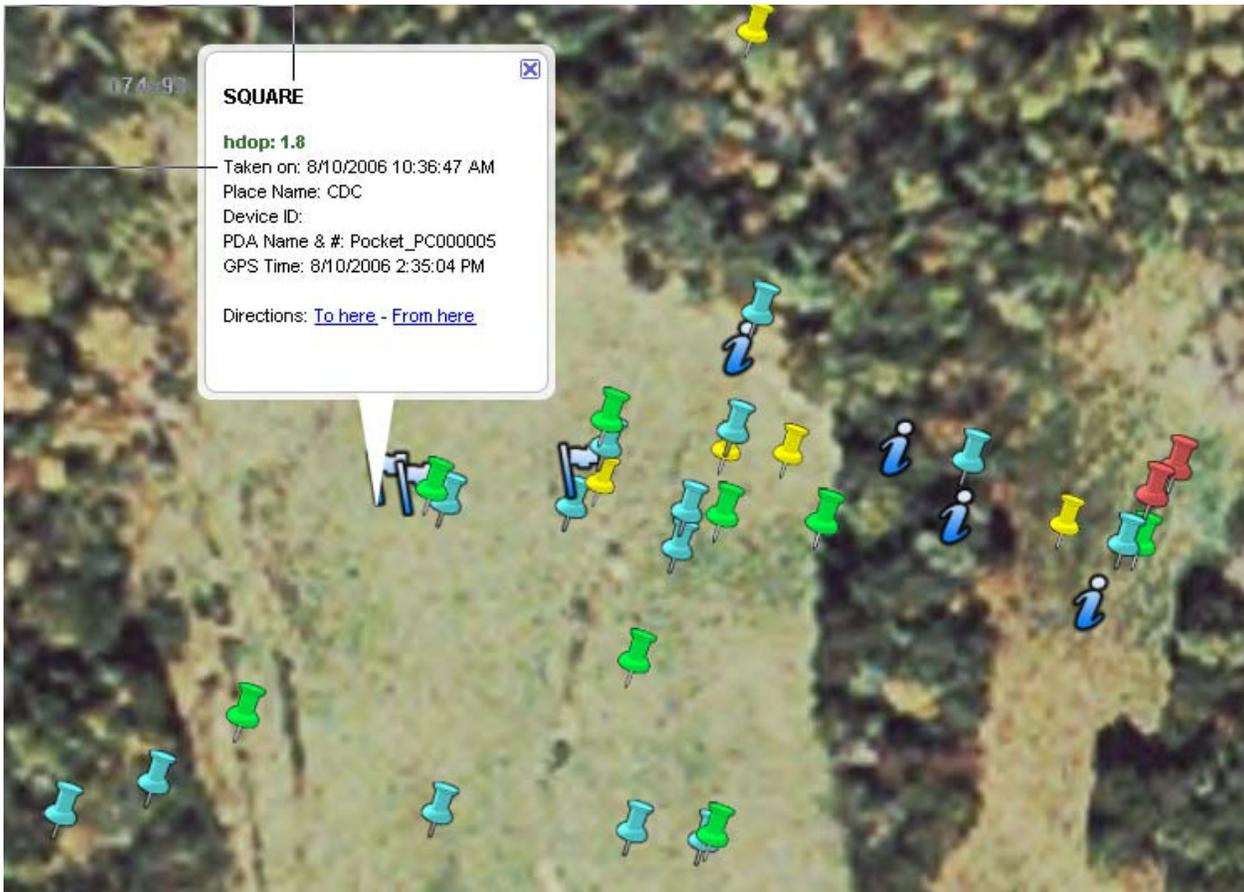


Colors of pushpins depend on value of hdop, if  $hdop > 10$ , it will be a red color, if  $hdop < 2.5$ , then green, otherwise – yellow. These colors appear on point label for hdop value.



Folder structure as it appears when “Place names as folders” checked.

## Appearance in Google Earth, alternate



Colorizing and using of signs is different when “**Colorize by selection**” is checked. Color and appearance depends on [Selection](#) status and some other properties.

Points which have non-zero “Exclude” appear as blue flag, with non-zero “Include” as “i” signs, main selected points as green pushpins, additional as yellow, alternative as red and all others as blue.