MobileMapper Field & Office Software

Getting Started Guide

SPECTRA PRECISION LIMITED WARRANTY TERMS AND CONDITIONS

PRODUCT LIMITED WARRANTY - Subject to the following terms and conditions, Spectra Precision warrants that for a period of one (1) year from date of purchase this Spectra Precision product (the "Product") will substantially conform to Spectra Precision's publicly available specifications for the Product and that the hardware and any storage media components of the Product will be substantially free from defects in materials and workmanship.

PRODUCT SOFTWARE - Product software, whether built into hardware circuitry as firmware, provided as a standalone computer software product, embedded in flash memory, or stored on magnetic or other media, is licensed solely for use with or as an integral part of the Product and is not sold. If accompanied by a separate end user license agreement ("EULA"), use of any such software will be subject to the terms of such end user license agreement (including any differing limited warranty terms, exclusions, and limitations), which shall control over the terms and conditions set forth in this limited warranty.

SOFTWARE FIXES - During the limited warranty period you will be entitled to receive such Fixes to the Product software that Spectra Precision releases and makes commercially available and for which it does not charge separately, subject to the procedures for delivery to purchasers of Spectra Precision products generally. If you have purchased the Product from a Spectra Precision Authorized Distribution Partner rather than from Spectra Precision directly, Spectra Precision may, at its option, forward the software Fix to the Spectra Precision Authorized Distribution Partner for final distribution to you. Minor Updates, Major Upgrades, new products, or substantially new software releases, as identified by Spectra Precision, are expressly excluded from this update process and limited warranty. Receipt of software Fixes or other enhancements shall not serve to extend the limited warranty period.

For purposes of this warranty the following definitions shall apply: (1) "Fix(es)" means an error correction or other update created to fix a previous software version that does not substantially conform to its Spectra Precision specifications; (2) "Minor Update" occurs when enhancements are made to current features in a software program; and (3) "Major Upgrade" occurs when significant new features are added to software, or when a new product containing new features replaces the further development of a current product line. Spectra Precision reserves the right to determine, in its sole discretion, what constitutes a Fix, Minor Update, or Major Upgrade.

WARRANTY REMEDIES - If the Spectra Precision Product fails during the warranty period for reasons covered by this limited warranty and you notify Spectra Precision of such failure during the warranty period, Spectra Precision will repair OR replace the nonconforming Product with new, equivalent to new, or reconditioned parts or Product, OR refund the Product purchase price paid by you, at Spectra Precision's option, upon your return of the Product in accordance with Spectra Precision's product return procedures then in effect.

HOW TO OBTAIN WARRANTY SERVICE - To obtain warranty service for the Product, please contact your local Spectra Precision Authorized Distribution Partner. Alternatively, you may contact Spectra Precision to request warranty service at +1-303-323-4100 (24 hours a day) or e-mail your request to support@spectraprecision.com. Please be prepared to provide:

- your name, address, and telephone numbers
- proof of purchase
- a copy of this Spectra Precision warranty
- a description of the nonconforming Product including the model number
- an explanation of the problem

The customer service representative may need additional information

from you depending on the nature of the problem.

WARRANTY EXCLUSIONS AND DISCLAIMER - This Product limited warranty shall only apply in the event and to the extent that (a) the Product is properly and correctly installed, configured, interfaced, maintained, stored, and operated in accordance with Spectra Precision's applicable operator's manual and specifications, and; (b) the Product is not modified or misused. This Product limited warranty shall not apply to, and Spectra Precision shall not be responsible for, defects or performance problems resulting from (i) the combination or utilization of the Product with hardware or software products, information, data, systems, interfaces, or devices not made, supplied, or specified by Spectra Precision; (ii) the operation of the Product under any specification other than, or in addition to, Spectra Precision standard specifications for its products; (iii) the unauthorized installation, modification, or use of the Product; (iv) damage caused by: accident, lightning or other electrical discharge, fresh or salt water immersion or spray (outside of Product specifications); or exposure to environmental conditions for which the Product is not intended; (v) normal wear and tear on consumable parts (e.g., batteries); or (vi) cosmetic damage. Spectra Precision does not warrant or guarantee the results obtained through the use of the Product, or that software components will operate error free.

NOTICE REGARDING PRODUCTS EQUIPPED WITH TECHNOLOGY CAPABLE OF TRACKING SATELLITE SIGNALS FROM SATELLITE BASED AUGMENTATION SYSTEMS (SBAS) (WAAS/EGNOS, AND MSAS), OMNISTAR, GPS, MODERNIZED GPS OR GLONASS SATELLITES, OR FROM IALA BEACON SOURCES: **SPECTRA PRECISION IS NOT RESPONSIBLE FOR THE OPERATION OR FAILURE OF OPERATION OF ANY SATELLITE BASED POSITIONING SYSTEM OR THE AVAILABILITY OF ANY SATELLITE BASED POSITIONING SIGNALS**.

THE FOREGOING LIMITED WARRANTY TERMS STATE SPECTRA PRECISION'S ENTIRE LIABILITY, AND YOUR EXCLUSIVE REMEDIES, RELATING TO THE SPECTRA PRECISION PRODUCT. EXCEPT AS OTHERWISE EXPRESSLY PROVIDED HEREIN, THE PRODUCT AND ACCOMPANYING DOCUMENTATION AND MATERIALS ARE PROVIDED "AS-IS" AND WTHOUT EXPRESS OR IMPLIED WARRANTY

OF ANY KIND, BY EITHER SPECTRA PRECISION OR ANYONE WHO HAS BEEN INVOLVED IN ITS CREATION, PRODUCTION, INSTALLATION, OR DISTRIBUTION, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, TITLE, AND NONINFRINGEMENT. THE STATED EXPRESS WARRANTIES ARE IN LIEU OF ALL OBLIGATIONS OR LIABILITIES ON THE PART OF SPECTRA PRECISION ARISING OUT OF, OR IN CONNECTION WITH, ANY PRODUCT. BECAUSE SOME STATES AND JURISDICTIONS DO NOT ALLOW LIMITATIONS ON DURATION OR THE EXCLUSION OF AN IMPLIED WARRANTY, THE ABOVE LIMITATION MAY NOT APPLY OR FULLY APPLY TO YOU.

LIMITATION OF LIABILITY - SPECTRA PRECISION'S ENTIRE LIABILITY UNDER ANY PROVISION HEREIN SHALL BE LIMITED TO THE AMOUNT PAID BY YOU FOR THE PRODUCT. TO THE MAXIMUM EXTENT PERMITTED BY APPLICABLE LAW, IN NO EVENT SHALL SPECTRA PRECISION OR ITS SUPPLIERS BE LIABLE FOR ANY INDIRECT, SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGE WHATSOEVER UNDER ANY CIRCUMSTANCE OR LEGAL THEORY RELATING IN ANYWAY TO THE PRODUCTS, SOFTWARE, AND ACCOMPANYING DOCUMENTATION AND MATERIALS, (INCLUDING, WITHOUT LIMITATION, DAMAGES FOR LOSS OF BUSINESS PROFITS, BUSINESS INTERRUPTION, LOSS OF DATA, OR ANY OTHER PECUNIARY LOSS), REGARDLESS OF WHETHER SPECTRA PRECISION HAS BEEN ADVISED OF THE POSSIBILITY OF ANY SUCH LOSS AND REGARDLESS OF THE COURSE OF DEALING WHICH DEVELOPS OR HAS DEVELOPED BETWEEN YOU AND SPECTRA PRECISION. BECAUSE SOME STATES AND JURISDICTIONS DO NOT ALLOW THE EXCLUSION OR LIMITATION OF LIABILITY FOR CONSEQUENTIAL OR INCIDENTAL DAMAGES, THE ABOVE LIMITATION MAY NOT APPLY OR FULLY APPLY TO YOU.

PLEASE NOTE: THE ABOVE SPECTRA PRECISION WARRANTY PROVISIONS WILL NOT APPLY TO PRODUCTS PURCHASED IN THOSE JURISDICTIONS (E.G., MEMBER STATES OF THE EUROPEAN ECONOMIC AREA) IN WHICH PRODUCT WARRANTIES ARE THE RESPONSBILITY OF THE LOCAL SPECTRA PRECISION AUTHORIZED DISTRIBUTION PARTNER FROM WHOM THE PRODUCTS ARE ACQUIRED. IN SUCH A CASE, PLEASE CONTACT YOUR LOCAL SPECTRA PRECISION AUTHORIZED DISTRIBUTION PARTNER FOR APPLICABLE WARRANTY INFORMATION.

OFFICIAL LANGUAGE - THE OFFICIAL LANGUAGE OF THESE TERMS AND CONDITIONS IS ENGLISH. IN THE EVENT OF A CONFLICT BETWEEN ENGLISH AND OTHER LANGUAGE VERSIONS, THE ENGLISH LANGUAGE SHALL CONTROL.

REGISTRATION - To receive information regarding updates and new products, please contact your local Spectra Precision Authorized Distribution Partner or visit the Spectra Precision website at www.spectraprecision.com/register. Upon registration you may select the newsletter, upgrade, or new product information you desire.

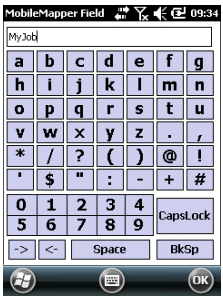
Table of Contents

Introduction to MobileMapper Field & MobileMapper Office

MobileMapper Field and MobileMapper Office are two complementary software programs designed for general-purpose GIS mobile applications.

MobileMapper Field is the field program running on Microsoft Windows Mobile or Windows Embedded Handheld. MobileMapper Field allows you to:

- Log features in the field and enter their attributes
- Revisit features and update their attributes
- Define new categories of features (i.e. layers) and assign as many types of attributes as necessary for future projects.
- View background maps to help you more easily spot features in the field.
- Collect raw data in the background to enhance the accuracy of the collected positions at the office. This requires the purchase of the Post-processing option for MobileMapper Field, as well as the exclusive use of MobileMapper Office to later process your field data.



MobileMapper Field integrates a large virtual keyboard to make data entry easier in the field. When enabled, this keyboard appears automatically on the screen every time you tap inside a user-editable data field.

The MobileMapper Field keyboard is a good alternative to the Microsoft operating system's smaller on-screen keyboard. It can however be disabled if the smaller Microsoft virtual keyboard is more suitable in your case of use.

MobileMapper Field supports the built-in e-compass. See *Enabling/Disabling the E-Compass on page 61*.

MobileMapper Office is dedicated to office work, in coordination with, and support of MobileMapper Field. MobileMapper Office allows you to:

- View the data collected in the field as Map jobs in a more convenient way than in the field.
- Automatically search for the reference raw data that match your field raw data and download them to your computer.
- Post-process the reference and field raw data to determine more accurate positions for all your features.
- Perform quality tests on the post-processing
- Display background maps
- Create new categories of layers for future projects

- View your features on Google Earth
- Export data to standard formats (csv, kml, gpx).
- Convert existing projects to get their results on different coordinate systems.

Installing MobileMapper Field

This section describes how to install MobileMapper Field from the CD provided, using an office computer.

If Windows XP (or older OS version) is used on your computer, you first need to install Microsoft Active Sync on your office computer.

If Windows Vista or Windows 7 is used, you don't normally need to install an additional program on your computer. However, if the installation of the MobileMapper Field software fails, you will have first to install Windows Mobile Device Center and then resume the installation of MobileMapper Field.

The latest versions of ActiveSync and Device Center can be downloaded from http://www.microsoft.com/en-us/download/details.aspx?id=14 for Windows Mobile Device Center and http://www.microsoft.com/en-us/download/details.aspx?id=15 for ActiveSync.

If you are upgrading MobileMapper Field, Spectra Precision recommends you first uninstall the previous version of MobileMapper Field from the receiver using **Start**, **Settings**, **System**, **Remove Programs**.

Installation Procedure

- For **MobileMapper 100 or 120**:
  - Place the receiver on the docking station
  - Connect the docking station to your office computer using the USB data cable provided.
- For **MobileMapper 10** (or **MobileMapper 6**): Connect the receiver to your office computer using the USB data cable provided.
- Turn on the receiver.
- **MobileMapper 100 or 120**: To prevent the risk of corrupting the registry during installation, all running processes and background services, including the GNSS Service must be stopped first. To stop the GNSS Service, run GNSS Toolbox, click on **Turn Off GNSS** and tap on the **Yes** button.
- Insert the MobileMapper Field CD in your office computer. This automatically starts the setup file stored on the CD.
- Click on the **Install MobileMapper Field** option. This starts the MobileMapper Field Setup Wizard.
- Click **Next>**.
- Keep the default settings and just click **Next>** (for MobileMapper 6, see NOTE below).

- Confirm installation by clicking **Next>** again. The wizard starts copying the Spectra Precision Required Data files to the receiver. At the end of this phase, a message window appears asking you to check your mobile device screen to see if additional steps are needed to complete the installation.
- The receiver asks you to confirm the location where to install Spectra Precision Required Data.CAB ("Device" is the default choice). Choose "Device" (recommended).
- Tap **Install** at the bottom of the screen. The CAB file is being installed.
- Go back to your computer and click **OK** to close the message window and proceed. The installer on the computer then runs the same sequence as the previous one, this time to copy the MobileMapper Field installation files to the receiver.
- Again, a message on the computer tells you to check the receiver screen. Click **OK** then **Close** to complete the installation on the computer side.
- As previously, the receiver asks you to choose the location where to install the MobileMapper Field files. Choose the same location as before for the Spectra Precision Required Data.CAB file (i.e. "Device"), and then tap **Install**.

  Wait until the installation is complete. The receiver then re-boots automatically. Once re-booted, the MobileMapper Field option can be seen on the Home screen.

NOTE: Because MobileMapper 6 has only 89 Mb of internal memory, use a different procedure to install MobileMapper Field:

- Run the normal installation procedure, as described above, but do not install Spectra Precision Required Data.CAB when required to do so. Instead, skip this step and simply install MobileMapper Field.
- Once installation is complete, copy Spectra Precision Required Data.CAB from your computer (C:\Program Files\Field Software\MobileMapper Field\) to an SD card.
- Insert the SD card in the receiver.
- Launch Required Data.CAB from the SD card and install it in the internal memory.

Entering the Activation Code

You will not be able to use MobileMapper Field until you enter an activation code. This code can be seen on the adhesive label placed on the MobileMapper Field CD box. This code was generated from your receiver serial number. To enter the activation code:

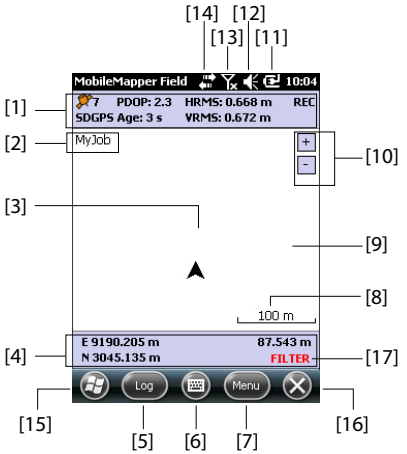
- Tap on the “MobileMapper Field” line on the Home screen. A message is displayed showing the serial number of your receiver and a blank activation code field.
- Type your activation code in the blank field.
- Tap **OK** to validate the code entry. If the “serial number/ activation code” pair matches, then MobileMapper Field is normally started right after tapping **OK**.

Getting Started With MobileMapper Field

Launching MobileMapper Field

Tap on **MobileMapper Field** on the Home screen. The main MobileMapper Field window is described below.

Description of the MobileMapper Field Main Window



- **[1]**: From left to right, by column (these information lines will not appear until the receiver can determine its own position):
  - **Column #1**:

    Number of satellites currently used in position computation.

    Status of position computation; see table below.

Status	Operating Mode	Receivers
DGPS	Conventional Differential GPS using corrections from a beacon or a base.	MobileMapper 100/120, ProMark 100/120, ProMark 200/ 220
SDGPS	SBAS Differential	All: MobileMapper 6, MobileMapper 10, MobileMapper 100/120, ProMark 100/ 120, ProMark 200/ 220
FLOAT	RTK, subfoot accuracy	MobileMapper 100/120, ProMark 100/120, ProMark 200/220
FIXED	RTK, centimeter accuracy	MobileMapper 100/120, ProMark 100/120, ProMark 200/220

With the **Enable voice guidance** option enabled (see **Menu**, **Options**, **Voice** tab), a vocal message will be issued when a position solution is available, and then every time the position status changes.

– **Column #2**:

Current value of PDOP.

Age of corrections in all differential modes.

– **Column #3**: Current values of HRMS and VRMS.

– **Column #4**: "REC" if the raw data logging option is unlocked and active.

- **[2]**: Name of the currently open job.
- **[3]**: This symbol shows your current position. The arrow points in your last walking direction.
- **[4]**: Current 3D position of the receiver (no coordinates displayed if the receiver has not determined its position yet).
- **[5]**: Log button. Use this button to log features. The button is grayed until GPS positions are computed and a layer is added to the open job. You can use either the on-screen Log button or the left-hand "–" context-sensitive key on the keyboard to access the Log function.
- **[6]**: Button used to show or hide the Microsoft keyboard.
- **[7]** Menu button. Gives access to the MobileMapper Field function menu. You can use either the on-screen Menu button or the right-hand "–" context-sensitive key on the keyboard to show or hide the function menu.

Menu Option	Function
Pause	Use this option to pause the current feature logging.
Stop	Use this option to stop the current feature logging.
Layers...	Use this option to add, modify or remove layers.
Find...	Use this option to find a feature previously logged in the open job.
Go To...	Use this option to let the receiver guide you to the selected target (a feature name or any coordinates).
Initialize...	Gives access to two RTK initialization functions (On the Fly, From Known Point). Usable only when the receiver can operate in RTK.
Zoom In	Increases the scale of the map view by one step.
Zoom Out	Decreases the scale of the map view by one step.
Job	Gives access to job-related functions: New, Open (and Properties if a job is already open).
Options	Allows you to access the following settings: Units, Antenna, Recording, Map, View, E-compass, Filter, External Devices, Voice and Keyboard.

Menu Option	Function
Status	Gives access to three tabs describing the current GPS reception status, in digital (Position) or graphical (Satellites, Signal) form. (In fact the GNSS Status function from the GNSS Toolbox.)
About	Displays the installed version of MobileMapper Field.
Exit	Quits MobileMapper Field.

- **[8]**: Current zoom setting. The current value of scale is provided, based on the currently selected unit.
- **[9]**: Area showing a map of the working site (map screen). Tapping anywhere within this area will return the horizontal coordinates of the tapped point (expressed in the coordinate system used in the job). Tap **ok** to close the window providing these coordinates.
- **[10]**: Zoom in/out buttons
- **[11]**: Battery status
- **[12]**: Volume setting
- **[13]**: Phone status
- **[14]**: Connectivity status.
- **[15]**: Microsoft Windows button; Used to switch between the Microsoft Start screen and the MobileMapper Field application when MobileMapper Field is running.
- **[16]**: Takes you to the Microsoft Home screen by minimizing the MobileMapper field window. Tap on the MobileMapper Field icon () at the bottom of the screen to return to MobileMapper Field.
- **[17]**: The “FILTER” warning appears in red characters whenever the current PDOP is greater than the max. permitted value. The max. PDOP value can be set in **Menu**>**Options**, **Filter** tab. When “FILTER” is displayed, no data collection is possible (**Log** button greyed). An abnormally high PDOP is usually due to a too low number of satellites used.

Dragging the Map on the Screen

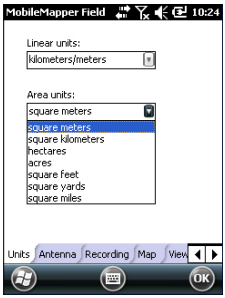
Use one of the following two methods.

- For receivers having an ESC key, press this key to move the arrow symbol representing your current position back to the center of the map screen. Following this action, the whole screen is updated to reflect the map shift.
- Drag the stylus in the desired direction.

Because some receivers have no ESC key (e.g. MobileMapper 10), a routine is implemented bringing your current position

back to the center of the screen after 15 seconds of idle time on the map screen.

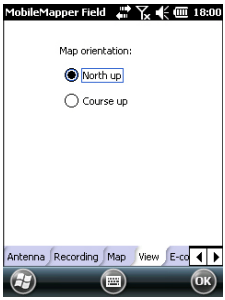
Setting General Parameters



1. Tap **Menu>Options...**. A new screen is displayed on which you can choose the measurements units:
   - **Linear units**: Choose between kilometers/meters, miles/feet or miles/US feet.
   - **Area units**: Choose between square meters, square kilometers, hectares, acres, square feet, square yards or square miles.
2. Tap on the **Antenna** tab and then enter the vertical distance you will maintain between the top of the receiver (where the GPS antenna is) and the ground while executing the job.

   This value has to do with your own size since you will be holding the receiver in your hand throughout the job.

   Enter the distance value according to the selected linear unit. This setting makes sense only for 3D jobs. It can be ignored for 2D jobs.



3. Tap on the **View** tab located at the bottom of the screen. A new screen is displayed allowing you to orientate the map:
   - **North Up**: Map orientation is fixed. The top of the map screen will always give the North direction.
   - **Course Up**: Map orientation will change as you walk. The map will rotate in order to have your course always orientated upward on the map screen. This option cannot be used if a georeferenced background map is displayed.
4. Tap on the **Filter** tab and then enter the maximum permitted PDOP value. No features can be collected when the PDOP exceeds this value (default: 100). A good geometry of satellites usually gives PDOP values less than 5.
5. At the bottom of the screen, scroll the list of tabs to the right until you can see the **Keyboard** tab. Use this tab to enable or disable the large on-screen keyboard. The large keyboard is only available for use within the MobileMapper Field application. Only the Microsoft smaller keyboard can be used when working from within the operating system.
6. For background maps (**Map** tab), see *Adding Background Maps on page 22*.
7. Tap **OK** to validate all your choices.

Minimizing the MobileMapper Field Window

Tap ⊗ in the upper-right corner of the map screen.

To re-open the MobileMapper Field window, either tap on "MobileMapper Field" on the Home screen or the icon at the bottom of the Home screen.

Minimizing the MobileMapper Field window has no effect whatsoever on software operation. The receiver will safely continue to collect raw data or features while the window is minimized.

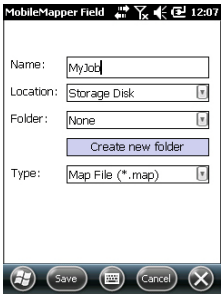
Quitting MobileMapper Field

Use the **Menu**>**Exit** option to quit the program.

Caution! Tapping in the upper-right corner of the screen only minimizes the MobileMapper Field window and so does not fully exit the program.

Creating a New Job

During your First MobileMapper Field Session



After entering the activation code, MobileMapper Field displays the map screen.

Because it is the very first time you are using the software, there is no job open In MobileMapper Field. Follow the instructions below to create one:

1. Tap **Menu**>**Job**>**New...**
2. Enter the following parameters:
   - **Name**: Enter a name for your job using the Microsoft virtual keyboard, or the large MobileMapper Field keyboard,if enabled.
   - **Location**: Choose the storage medium where to store the job file. You can choose between “Main memory” or “Storage Card” (if there is an SD or micro-SD card inserted in the receiver). With MobileMapper 100 or 120, a third option is available (physically located in the resident memory and named “Storage Disk”).
   - **Folder**: Choose a folder where to store the job file you are creating.

     The **None** option stands for either the “My Documents” folder in the main memory, the root folder of the storage card or, for MobileMapper 100 or 120, the “Storage Disk” folder in the main memory. Any other option available from the drop-down menu can only be a sub-folder of the “My Documents” folder in the main memory, the root folder of the storage card or, for MobileMapper 100 or 120, the “Storage Disk” folder in the main memory.

     If you want to use a subfolder where to store your job files, tap **Create New Folder**. You can only create subfolders in the “My Documents” folder, on the storage card, or in the “Storage Disk” folder.

     NOTE: “Storage Disk” has a higher storage capacity than “MyDocuments” (located in the Main Memory).
   - **Type**: For the job file format, choose between “Map files (*.map)”, the native MobileMapper Field format and “DXF File (*.dxf)”, which is a standard format for vector files.

     A *.map job is just an “envelope” text file containing the definition of the coordinate system used as well as the filenames of all the layers that are part of the job (layers are held in separate files; see below).

The features you will log through that job will be saved to the corresponding layer files. Each layer consists of the following five files: <layer_name>.prj, <layer_name>.shp, <layer_name>.shx, <layer_name>.dbf, <layer_name>.drw,

In contrast, a DXF job consists of the following files:

One dxf file: The job file in itself. Each newly logged entity will be saved to that file, whatever the layer from which it proceeds.

One <job_name>.prj file: Contains the description of the coordinate system used in the job

One <job_name>.dfs file: Lists the names of the layers attached to the job as well as the attributes defined in these layers.

<job_name>_<layer_name>.drw files (one or more): Each of these drw files contains the full definition of a layer (visual representation and attributes).

Both Map and Dxf jobs may also use *.mnd and *.mnu files. These are auxiliary files containing mandatory attributes (*.mnd) and menu strings for menu-type attributes (*.mnu).

3. Tap **Save** to create the job file. What you then get on the screen depends on the format (map or dxf) you chose for the job. See *Creating New Layers on page 15* for more details.

   It's only after you are finished with the layers to be incorporated in your job and you have defined a coordinate system for the job that you will see the name of the job in the upper-left corner of the map screen,

Subsequent Uses of MobileMapper Field

The next time you launch MobileMapper Field, the program will open the job you last opened in the previous session.

If this job is no longer present in the receiver, then a message will warn you that the program has been unable to open the job. You will then have to create a new job (see also *Using Templates To Create New Jobs on page 13*) or open an existing one.

Opening an Existing Job

- Tap **Menu**>**Job**>**Open...**. By default, MobileMapper Field browses all the folders in search of all the *.map jobs stored in the receiver. A new window then opens listing all these jobs.

To list all the DXF jobs stored in the receiver, select the DXF extension from the **Type** combo box.

Note that MobileMapper Field can also support ESRI's AXF database format for GIS data. After you have downloaded one of these files to your receiver, you can open it with MobileMapper Field and add or modify entities the same way as you would in an open MAP or DXF job. You cannot however create a new AXF file with MobileMapper Field. You cannot either add or remove layers to/from an AXF job.

To list all the AXF jobs stored in the receiver, select the AXF extension from the **Type** combo box.

- After you have found the job you wish to open, tap on its name in the list. This opens the job and takes you to the map screen where you can see the features already logged in the different layers.

Viewing the Properties of the Open Job

- Tap **Menu**>**Job**>**Properties**. MobileMapper Field then displays a two-tab window. The first tab provides the job's name, type and location (folder). The second one views the properties (projection and datum) of the coordinate system used in the job.
- Tap **OK** (or press ESC on MobileMapper 100/120 or MobileMapper 6) to return to the map screen.

Using Templates To Create New Jobs

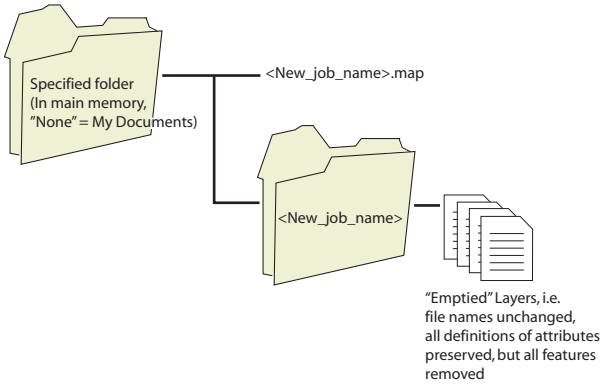
When creating a new job in a given format (MAP or DXF) while a job of the same format is currently open, once you have named that new job and specified in which folder to save it, MobileMapper will prompt you to use the open job as a template for the new job. What does that imply if you choose "Yes"?

- For a MAP job:

  MobileMapper Field will create a "<new_job_name>" folder in the specified folder to which all the layers found in the template job will be copied.

  The copied layers will be emptied (i.e. all features deleted) so that you can start collecting new features from scratch using these layers, which are now fully part of the new job.

  Remember that each of the copied layer will keep exactly the same name, and same attributes, as the one from which it is derived. (see also diagram below):



- For a DXF job: MobileMapper Field will duplicate all the files relevant to the job to the specified folder and will empty the created DXF file (no more entity found in this job). If the new DXF job is created in the same folder, then only a new empty DXF file will be created since in this case all the other files can be shared smoothly by the original and duplicate jobs.

If you don't want to use the open job as a template, choose "No". You will then have to define manually the coordinate system used as well as each of the layers that are expected to be part of the job (new or already existing ones for map jobs, new ones necessarily for dxf jobs).

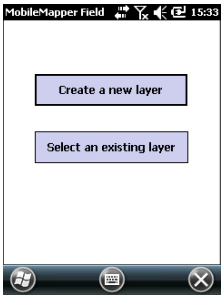
Creating New Layers

Introduction

Creating a layer consists of defining a specific profile for features you would like to log in the field. The layer creation process will be different depending on whether you chose "MAP" or "DXF" for the job format:

- MAP format: Each layer is held in an individual file. The layer format can be either "SHP", "MIF" or "CSV".
  - An SHP layer can only contain a single type of feature. When creating a new layer, you should first indicate if it is created to hold 2D/3D point, 2D/3D line or 2D/3D polygon features.
  - A MIF layer can contain any type of feature (point, line or polygon).
  - A CSV layer can only support point features.
- DXF format: Each layer consists of a drw file created in the same folder as the DXF job file. A layer attached to a DXF job can contain any type of feature (point, line or polygon).

Attaching Layers to a Map Job

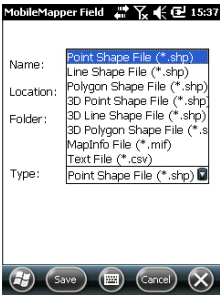


Here are the two different contexts in which you can create a new layer to be attached to a Map job:

- With a job open in the current MobileMapper Field session, you tap **Menu**>**Job**>**New...** to create a new *.map job for which the program will ask you directly to add new layers, either by creating new ones or by selecting existing ones.
- With a job open in the current MobileMapper Field session, you tap **Menu**>**Layers...** and then you tap on the **Add** button.

From the screen displaying the **Create a new layer** button, do the following:

1. Tap the **Create a new layer** button.
2. Enter the following parameters:
   - **Name**: Enter a name for the layer using the virtual keyboard (10 characters max.). The name of the layer should depict the type of features you will collect with this layer (e.g. Points, Lines, Areas, etc.).



- **Location**: Choose the storage medium where you want to store the layer. You can choose either "Main memory" or "Storage Card" (if there is an SD, or micro-SD card inserted in the receiver). With MobileMapper 100 or 120, a third option is available (physically located in the resident memory and named "Storage Disk").
- **Folder**: Choose a folder where you want to store the layer you are creating. This choice should be made in conjunction with the choice of the storage medium (see **Location**).

  The **None** option stands for either the "My Documents" folder or the "Storage Disk" folder in the main memory, or the root folder on the storage card. All other options available in the drop-down menu will be subfolders of the "My Documents" folder or the "Storage Disk" folder in the main memory, or the root folder on the storage card.

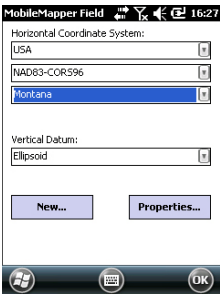
  It is a good idea to store your layers in the same storage medium and folder as the open job so that all the files created for the job be found at the same location.

  If you want to use a specific folder where to store your layers, first create it using File Explorer. You can only create new folders in the "My Documents" folder, in the "Storage Disk" folder or on the storage card.
- **Type**: Choose the type and/or format of the layer you want to create:

  SHP layer: Depending on your choice the layer will hold 2D/3D points, 2D/3D lines, or 2D/3D polygons.

  MIF layer (can hold any type of feature).

  CSV layer (point feature type only).



3. Tap the **Save** button to proceed. If you are defining the second or next layers, go directly to step 5. If you are defining the first layer in the open job, the program will first ask you to define a coordinate system for the job:
   - First field: Choose the country you are working in. You may also choose a worldwide system such as UTM or Worldwide Geodetic System.
   - Second field: The number of options available in this field depends on the selected country. Select the datum that is suitable for your job.

     See also *Coordinate Systems on page 42*.
   - Third field: The number of options available in this field depends on the selected country. Choose a

projection that is suitable for your job. Select Latitude/Longitude for no projection.

- Fourth field: Choose a vertical datum in which to express the Z coordinate.

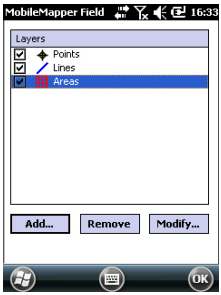
  "Ellipsoid" (no geoid used) and "EGM84" (global earth geoid model) are the two default options. Other geoids may be prompted in this field after you have downloaded them to the receiver from the Internet via the link found on the MobileMapper Software CD.

4. Tap **OK**.
5. The program now asks you to define the properties of the layer. The table below summarizes the different properties you should define for the layer, according to its type.

Properties	2D or 3D Point	2D or 3D Line	2D or 3D Polygon	Mif layer	Csv layer
Symbol	•			•	•
Color		•	•	•	
Style		•		•	
Fill			•	•	
Attributes	•	•	•	•	•
Label	•	•	•	•	•
Scale	•	•	•	•	•

For more information on layer properties and how to define attributes, see *Layer Properties on page 18*.

6. Tap **OK** when you are finished with the properties of the layer. A message then asks you whether you want to add a new layer.



Warning! After you have tapped **OK**, the definition of a layer can still be modified using the **Modify** button. However its list of attributes is then frozen: None of the existing attributes can be deleted or modified and you are not allowed to add a new one. If you need to change the attributes in a layer, the only possible solution is delete the layer and re-create it from scratch.

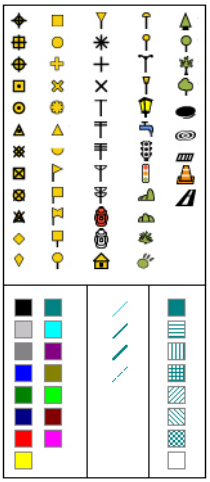
7. Add as many layers as necessary, using the above procedure.

Adding Layers into a DXF Job

The procedure is quite similar to attaching a layer to a Map job. Among the similarities are first the prior necessity to define a coordinate system for the job and second, the availability of the same viewing options and attributes for the features you will log through a given layer (see *Adding Existing Layers to a Map Job on page 21* for the details).

But unlike Map jobs, DXF jobs cannot use or re-use layers that are external to the job. With DXF jobs, you can only create one or more new layers within the job, right after defining the coordinate system. Another difference lies in the absence of an assumed feature geometry in a layer, which means all types of features, whether points, lines or polygons, can be logged in the layer.

Layer Properties



Symbol

57 different symbols are available to represent a point feature on the map screen.

Color

15 different colors are available to represent a line feature or the contour of a polygon feature on the map screen.

Style

The line style (thin, medium, thick or dash) is used to represent a line feature on the map screen.

Fill

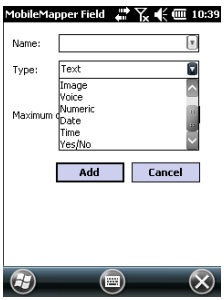
Eight different patterns are used on the map screen to fill the area covered by a polygon feature.

Attributes

Attributes are an important part of a layer since they are designed to hold specific information (other than position) that you want to collect for each feature.

The number of attributes you can create in a layer is limited to 50.

Each attribute is defined by a name (10 characters max.) and a type.



You may decide to make an attribute a “mandatory” parameter to describe any feature you will log in the layer. This means the operator won’t be able to complete the logging of a feature until the mandatory attribute has properly been defined. Any type of attribute may be made mandatory.

There are eight different attribute types of attributes, as summarized below.

Attribute Type	Purpose	Additional Information Needed
Text	Entering comment, etc.	Maximum number of characters.
Menu	Choosing an option (menu item) that suits the attribute for the visited feature.	All possible menu items for this attribute.

Attribute Type	Purpose	Additional Information Needed
Image	Attaching a picture taken with the built-in camera to the visited feature.	-
Voice	Recording voice comment	-
Numeric	Entering a number.	Max. number of digits and decimal places.
Date	Entering the current logging date (mm/dd/yy).	-
Time	Entering the current logging time (hh:mm:ss)	
Yes/No	Choosing "Yes" or "No" in response to the statement suggested by the attribute name for the visited feature.	-

NOTE: For best quality voice recording, see *Handheld Platform for MobileMapper 120, ProMark 120 & ProMark 220 Getting Started Guide, Voice Setting*. No particular setting is required for MobileMapper 10 (voice recording quality is good by default).

Some useful attributes with preset names are displayed for each layer type (see table below). It's up to you whether or not to create them.

Attribute Name	Attribute Type	Point Layer	Line Layer	Polygon Layer	MapInfo layer
Picture	Image	•	•	•	•
Sound	Voice	•	•	•	•
Satellites	Text	•			•
PDOP	Text	•			•
Status	Text	•			•
HRMS*	Text	•			•
VRMS**	Text	•			•
Length	Numeric		•		•
Perimeter	Numeric			•	•
Area	Numeric			•	•

*: HRMS stands for the estimated horizontal error

**: VRMS stands for the estimated vertical error

As opposed to the attributes you have to enter manually ("user-set" attributes), these useful attributes with preset names are automatically added by MobileMapper Field (software-set attributes) after the feature has been logged.

For example, using "Satellites", "PDOP", "Status", "HRMS" and/or "VRMS" allows the program to automatically assign the current value of each of these attributes to a point you are

logging. “Status” refers to the position computation mode used at that time.

Also, using “Length” allows the program to automatically assign the length of a line as one of its attributes. The length of the line is computed as you walk along the line. The result of the computation only appears after you have stopped logging the line, when you review all its attributes. The same is true with the “Perimeter” and “Area” attributes for a polygon.

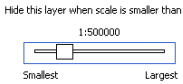
Adding attributes to a layer:

- From the **Attributes** tab of the layer properties window, tap the **Add...** button.
- Enter a name for the attribute using the virtual keyboard.
- Select a type for this attribute.
- If this attribute will be a mandatory one to describe the logged features, enable “Mandatory”.
- If applicable, set the additional one or two parameters.
- Tap on the **Add** button. This takes you back to the **Attributes** tab where is now listed the attribute you have just created.
- Resume the previous six steps until all the attributes have been created.

Label

This setting is used to select the label you want to see on the map screen, next to the features collected through that layer. The label can only be one of the attribute values pertaining to the feature. Choosing “None” means there won’t be any label displayed.

Scale

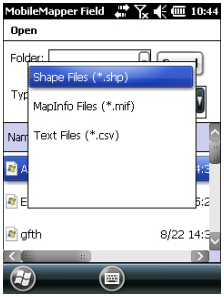


This setting is used to display or hide the layer on the map screen, depending on the current scale value used. The scale property of the layer operates as a threshold, which will order the layer to be hidden if the scale value on the map screen is less than this threshold.

Showing/Hiding Features on the Map Screen

- Tap **Menu**>**Layers...**
- Enable or clear the check box placed before each layer name to respectively show or hide the layer on the map screen. Showing a layer means showing all the features logged in that layer.

Adding Existing Layers to a Map Job



- Open the job in which to add layers, using **Menu**>**Job**>**Open...**.
- Tap **Menu**>**Layers**. A new window opens listing all the layers currently attached to the map.
- Tap on the **Add...** button
- Tap on the **Select an existing layer** button
- Tap in the **Type** field and select "*.shp", "*.csv" or "*.mif". MobileMapper Field browses all the folders in search of all the layers of that type stored in the receiver.
- Select the file you want to add to the job as a layer. This opens a new window showing the viewing options, attributes and scale defined for this file.
- Tap **OK**. This takes you back to the screen showing all the layers attached to the job, including the new layer you've just selected.
- Tap **OK** to return to the map screen. The new layer is now available for feature logging.

  NOTE 1: Adding an existing layer to a new job as the first layer in this job will cause the layer's coordinate system to definitively become the coordinate system attached to the new job.

  NOTE 2: Attempting to add a layer that is incompatible with the coordinate system used by the job will cause a warning message to be displayed. You can however override the message and ask MobileMapper Field to add this layer. In this case, be aware that the layer will contain positional information based on different coordinate systems. It will be your responsibility to identify which coordinate system is used in the description of each feature.

  NOTE 3: "Type_M" SHP files created with third-party equipment or software may be added to a map job as a layer. You will be able to collect data using this layer but you won't be able to access the "M" field specific to that type of layer.

Adding Background Maps

Background maps can be displayed on the map screen to help you better locate the different features found in the working area. Two types of background maps are supported:

- Background maps in vector format (OSM files)
- Background maps in raster format (ecw, bmp, gif, tif, jpg or jp2 files)

In order to be used in MobileMapper Field, a background map must be properly georeferenced.

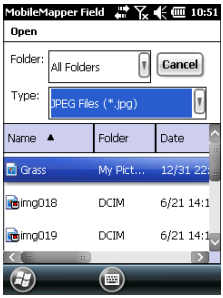
OSM files are "naturally" georeferenced due to their very nature. (To create an OSM file go to http://www.openstreetmap.org/, follow the instructions to extract the portion of map you need for your job, and then download it to your receiver.)

With a raster map, georeferencing may have been done earlier using a third-party tool or it can be done, using one of the two procedures below, after defining it as a background map in MobileMapper Field:

1. You know the coordinates of the reference points used to georeference the image. You will have to tap successively on each of these points on the map. For each point, you will have to enter its coordinates.
2. You go to the field and stand successively on each reference point used to georeference the image. (You should choose reference points that can easily be spotted both on the map and in the field.) You will have to tap successively on each of these points on the map. Each time, the receiver will automatically fill in the corresponding fields on the screen with the computed coordinates of your current location.

MobileMapper Field may accept several background maps, each holding a different geographical area. All logged features will always appear over the background map.

- Tap **Menu**>**Options** and then on the **Map** tab.
- Tap on the **Add...** button



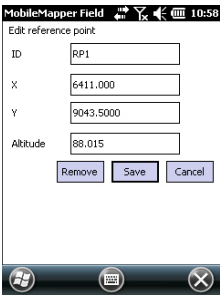
- Tap in the **Type** field and select the format of the file containing the background map:
  - ECW Enhanced Compression Wavelet (ecw)
  - Bitmap (bmp)
  - GIF (gif)
  - GeoTIFF (tif)
  - JPEG (jpg)
  - JPEG2000 (jp2)
  - Open StreetMap (osm)

  MobileMapper Field then browses all the folders in search of all the image files stored in the receiver meeting the current **Type** selection.
- Tap on the name of the image file you want to add. This automatically adds the file to the list of background maps. A message will warn you if you are attempting to add an already georeferenced background map that uses a coordinate system different from the one used in the open job. If the image file needs georeferencing, MobileMapper Field will first invite you to make this georeferencing (see the procedure explained below).

  In contrast, adding a background map in OSM format will never raise a warning message because, although originally in WGS84, the OSM file will be transformed to be always matching the coordinate system of the open job.

  Like layers, each of the added background maps can be shown or hidden on the map screen. Set accordingly each of the check boxes placed before the names of the background maps (cleared= hidden, ticked= shown).
- Tap **OK** to return to the map screen. Note that the map screen will show the background map(s) only after the receiver can compute a position. Remember you may also have to press the ESC button (MobileMapper 100 or 120) so that the map screen can show the location of the first logged feature.

Georeferencing an Image File



Georeferencing an image file means defining at least three reference points giving the position of the image in space.

Defining a reference point means entering its precise X-Y-Z or Lat-Lon-Height coordinates depending on the coordinate system used in the currently open job.

The larger the number of reference points you define, the more evenly distributed these points over the entire image, the better the georeferencing of the image.

To georeference an image, do the following after adding it to the list of available background maps:

- Select the name of the background map from the list.
- Tap on the **Modify** button.
- Find the point on the image for which coordinates are known. Adjust the zoom setting and drag the stylus on the image if necessary.
- Tap on the point location and then enter its ID and coordinates. If you are currently standing at that location and the receiver delivers a valid GPS position, you don't need to enter any coordinates. The receiver will do that for you.
- Tap **Add** to enter and complete the definition of this point.
- Resume the previous three steps until all the reference points have been defined. Each point on the map is represented by a red circle. If this happens, you can always delete a bad point by double-tapping on it and then tapping on the **Delete** button.
- Tap **OK** to complete the georeferencing process. This takes you back to the screen showing the list of background maps.

More about Background Maps

- The background map will be displayed only when it is geographically close to the computed GPS position and the zoom is set properly.
- For large background maps, you may have to zoom in several times before the map screen can start viewing details of the background map.
- If a background map is not properly georeferenced, the background map will never appear on the map screen, and the reference points you incorrectly created on the background map will all be deleted. Try again, this time with correct point location and coordinates.

- **It is highly recommended to place the original image file used to create the background map in the same folder as the job file using it. Observing this rule will simplify the download procedure.**
- When georeferencing an image, the original image file is unchanged and three new files are created:

Created files	Designation
<image filename>.prj	Coordinate system used
<image filename>.xxw	Auxiliary data. “xx” in the extension stands for the first two letters in the extension of the original image file (e.g. “JP” for a jpg file)
<image filename>.<image file extension>.ref.txt	Coordinates of reference points and coordinate system used.

When the original image file is in TIF format, some of these three files may not be created.

Logging New Features

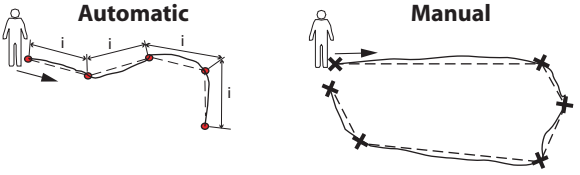
Introduction

For each new feature you log in the field, MobileMapper Field allows you to set the following parameters, just before it actually starts logging the feature:

- On the **Layer** tab, you can choose:
  - The name of the layer corresponding to the feature you want to log (from the list of layers found in the job).
  - For MIF layers, and for those contained in a DXF job, the geometry (i.e. point, line or polygon) of the feature. This field is preset for CSV layers (points exclusively) and for SHP layers.
- On the **Settings** tab, you can set:
  - The position averaging time at the end of which the coordinates of a point feature will be logged. The longer the averaging time, the better the precision you get for each of your points. This implies staying still on the point throughout the averaging time.
  - The automatic or manual vertex logging mode for a line or polygon feature:

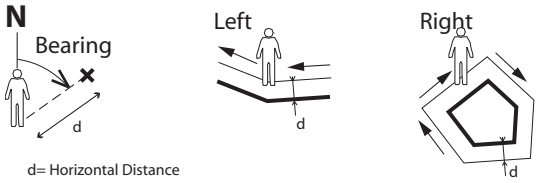
    In **Automatic** mode, the receiver automatically picks up the position of each of the points (●) as you keep walking along the feature. The logging rate *i* is preset and represents either the time elapsed or the distance traveled.

    In **Manual** mode, you stop at each of the vertices (✖), on which the receiver computes a position averaged over *n* seconds

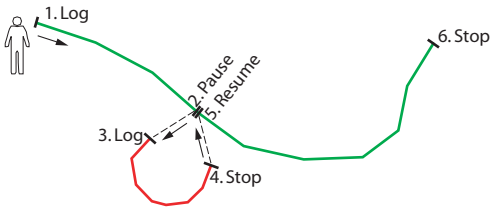


Continuous lines show actual paths traveled. Dotted lines show features, as logged.

- On the **Offset** tab, you can set:
  - The bearing, horizontal distance and vertical offset if you wish to offset a point feature.
  - The direction (left or right), horizontal distance and vertical offset if you wish to offset a line or polygon feature.

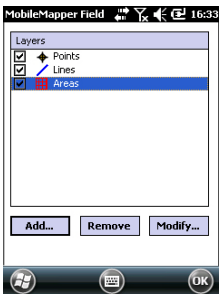


MobileMapper Field also allows the logging of two features to be run concurrently (“double logging”). This can be done through the appropriate use of the Pause/Resume/Stop functions. Double logging is useful to reduce both the time spent logging features and the distance walked in the field.



MobileMapper Field allows you to delete a logged feature directly from the map screen showing the location of this feature.

Prerequisites



- The receiver is on and MobileMapper Field running.
- A Map job is used, which contains three SHP layers: a point layer named “Points”, a line layer named “Lines” and a polygon layer named “Areas”. All layers are set to be seen on the map screen.
- The units used have been set to meet your requirements.
- The reception status is good (number of satellites>6, PDOP<3). Especially for MobileMapper 6 and MobileMapper 10, optimum position accuracy is achieved in real time after waiting about five minutes of good

reception status. Then you can start collecting your first feature.

Logging a Point Feature

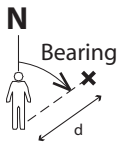
- Stand near the point you want to log.
- Tap **Log** (or press the "–" key underneath). A menu appears listing all the layers in the job.
- Tap on the point layer name ("Points" in our example).
- Tap on the **Settings** tab and check or change the averaging time expressed in seconds. As the last chosen averaging time is prompted by default, you may not have to view this tab every time you log a new point feature.
- To log the point with an offset, tap on the **Offset** tab and enter the following parameters (for no offset, just check that the horizontal distance and vertical offset are 0 on this tab and proceed to the next step):
  - **Bearing**: This field is filled automatically either from the GPS compass, the E-compass if this option is activated in **Menu**> **Options**> **E-compass**, at the time you access the **Offset** tab, or from the range finder, if there is one (see below).

    If the E-compass is used, a valid measurement will be made if you take care to hold the receiver horizontally in the direction of the point feature, before you start logging the feature.

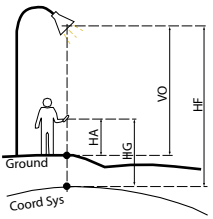
    If neither the E-compass nor a range finder is used, then the GPS compass can provide this value by default. A valid measurement will be made if you take care to steadily walk in the direction of the point feature before you start logging the feature.
  - **Horizontal Distance** field: Distance to the point feature.

    If a range finder is used, tap on the **Read Range Finder** button once the range finder can provide valid measurements. This action will automatically fill in the **Bearing** and **Horizontal Distance** fields.

    If no range finder is used, type an estimate of the horizontal distance directly in the field using the keyboard. The better you estimate the distance, the better the collected position.
  - **Vertical offset** field: Height deviation from the physical location of the feature to the ground, positive if above the ground, negative otherwise (see illustration).



d= Horizontal Distance



HF = HG - HA + VO

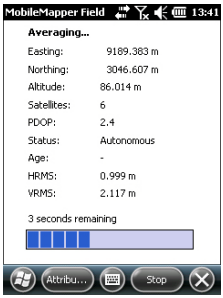
Where:

HF: Feature height expressed on coordinate system used (computed)

HG: GNSS height (measured)

HA: Antenna Height above ground (user set)

VO: Feature height above ground (vertical offset, user-set)



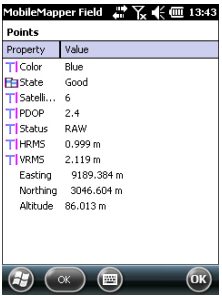
- Tap **OK**. MobileMapper Field instantly starts averaging the point position, as indicated in the progress bar at the bottom of the screen. The screen also provides a detailed report of the current GPS status as the point position is being averaged (coordinates of computed position, number of satellites used, PDOP value, computation mode, age of corrections if applicable, HRMS and VRMS). Don't forget to hold the receiver still throughout the averaging time.

  There are basically two methods for completing the point logging sequence at this stage:

  1. Either you wait until the averaging time is up and then you enter the value of each attribute (1st method). See also *Entering Values for Attributes on page 32*)
  2. Or you start entering the values of the attributes as soon as MobileMapper Field starts averaging the point position (2nd method). This is the fastest method, especially if the averaging time is 10 seconds or more and/or there is a large number of user-set attributes for the point).To use this method, just tap the **Attributes** button in the lower bar, and then enter the value of each attribute.

     When you are finished with entering the attribute values, depending on the requested averaging time and how long it took you to set the attribute values, MobileMapper Field will either return to the **Averaging...** screen (You were faster than the preset averaging time entering values of attributes) or it will directly switch to the attributes list (You were slower than the preset averaging time entering values of attributes).

  NOTE: While the point position is being averaged. you are also allowed to shorten the averaging time if needed by tapping on the **Stop** button located in the lower bar. You will then need to confirm this request by tapping **Yes**.



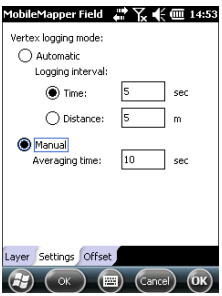
- When the averaging time is up (and you have entered all the attribute values if you have used the 2nd method), MobileMapper Field shows the complete list of attributes assigned to the point, the user-set attributes first, then the software-set attributes, if any. The averaged position of the point always appears at the bottom of the list (this position may be regarded an an unconditional, software-set attribute). If you have used the first method, you should now enter the value of each "manual" attribute (see *Entering Values for Attributes on page 32*).

  NOTE: The "Autonomous" position computation mode will be reported as "RAW" in the list of properties.
- Tap **OK** to return to the map screen, which now shows the location of the point according to the representation defined in the layer properties.

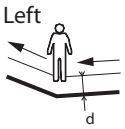
  NOTE: If some attributes are mandatory and you haven't set them yet when you tap **OK**, MobileMapper Field will first ask you to set them in their order of appearance in the list of attributes before returning to the map screen.

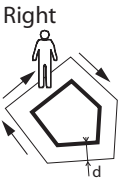
Logging a Line or Polygon Feature

- Stand at the beginning of the line or polygon you want to log.
- Tap **Log** (or press the "–" key underneath). A menu appears listing all the layers in the job.
- Tap on the desired layer name ("Lines" or "Areas" in our example).
- Tap on the **Settings** tab and check or change the vertex logging mode. As the last chosen mode is prompted by default, you may not have to view this tab every time you log a new line or polygon feature. Choose one of the options below:
  - **Automatic**: Selecting this option means the receiver will automatically log points along the line or polygon at regular intervals of time or distance. Enter the desired value for this interval, either in seconds or meters.
  - **Manual**: Selecting the option means you are only interested in logging the vertices of the line or polygon, and not points regularly distributed along the feature. Enter the position averaging time, in seconds, that you wish to spend on each vertex.



- To log the line or polygon with an offset, tap on the **Offset** tab (otherwise skip this step) and enter the following parameters (for no offset, just check that the horizontal distance and vertical offset are 0 on this tab and proceed to the next step):



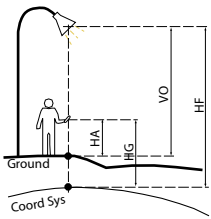


d= Horizontal Distance

– **Direction**: this parameter tells the program whether the real feature is on your left or right.
– **Horizontal Distance** field: Horizontal distance perpendicular to the line or polygon feature.

  If a range finder is used to measure this distance, tap on the **Read Range Finder** button once the range finder has got a valid measurement. This will automatically fill in the field.

  If no range finder is used, type an estimate of the horizontal distance directly in the field using the keyboard. The better you estimate the distance, the better the collected positions.



HF = HG - HA + VO

Where:

HF: Feature height expressed on coordinate system used (computed)

HG: GNSS height (measured)

HA: Antenna Height above ground (user set)

VO: Feature height above ground (vertical offset, user-set)

– **Vertical offset** field: Height deviation from the physical location of the feature to the ground, positive if above the ground, negative otherwise (see illustration).

- Tap **OK**. MobileMapper Field instantly starts logging the feature.

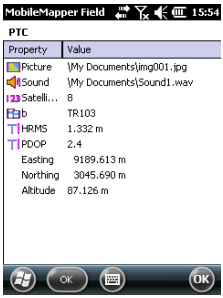
  If you have selected the automatic vertex mode, start walking along the feature. You will then see a line being drawn on the screen as you walk.

  If you have selected the manual vertex mode, the receiver will assume you are standing on the first vertex and so it will log this vertex according to the chosen averaging time. You will then have to walk to the next vertex and then select **Menu**>**Resume** to log the position of the second vertex, etc.
- When you arrive at the end of the feature, tap **Menu** and select **Stop**. MobileMapper Field then automatically switches to the attribute list.
- Define each attribute for the line or polygon (see *Entering Values for Attributes on page 32*).

  NOTE: Like point features, you can enter the values of attributes for a line or polygon not only at the end of the feature logging sequence, but also at any time while walking along the line or polygon. This can be done by tapping on the **Attributes** button located in the lower bar.
- Tap **OK** to return to the map screen, which now shows the location and shape of the feature according to the representation defined in the layer properties.

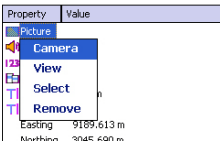
  NOTE: If some attributes are mandatory and you haven't set them yet when you tap **OK**, MobileMapper Field will first ask you to set them in their order of appearance in the list of attributes before returning to the map screen.

Entering Values for Attributes



Depending on the type of the attribute, you will have to perform the following:

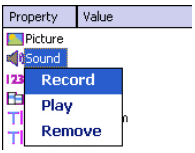
- For a text attribute, type your text using the virtual keyboard and then tap **OK**.
- For a numeric attribute, type your number using the virtual keyboard and then tap **OK**.
- For an image attribute, the following menu is displayed:



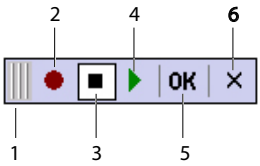
  - **Camera**: Runs the camera utility so you can take a picture. For more information on using the built-in camera, see *HandHeld Platform for MobileMapper 120, ProMark 120 and ProMark 220 Getting Started Guide, Using the Camera*, *MobileMapper 10 Platform Getting Started Guide* or *MobileMapper 6 Platform Getting Started Guide*.

    NOTE: Picture attributes are saved as JPG files in the same folder as the layer they belong to. The file naming convention used is *Img#.jpg* where # is the picture number (1, 2, 3, etc.). The picture number is ascribed in chronological order, with no reference to any other file.
  - **View**: Allows you to view the picture assigned to the attribute.
  - **Select**: Allows you to display a slide show of all the pictures taken so you can choose which one to assign to the attribute.
  - **Remove**: Allows you to disconnect the selected jpg file from the picture attribute. This does not delete the picture itself, which is still present in the slide show.

- For a voice attribute, the following menu is displayed:



– **Record**: Opens the recorder bar from which you can start, then, stop recording a voice message as an attribute of the current feature.



1: Drags the recorder bar.
2: Starts voice recording.
3: Pauses voice recording.
4: Plays back voice recording.
5: Stops voice recording.
6: Closes the recorder bar

– **Play**: For check purposes, select this function to play back the voice message you've just recorded (equivalent to "4" button on recorder bar)
– **Remove**: Select this function to delete the existing voice message. You will use this function when you wish to record a new voice message for the current feature.

NOTE: Voice attributes are saved as WAV files in the same folder as the layer they belong to. The file naming convention used is *Sound#.wav* where # is the record number (1, 2, 3, etc.). The record number is ascribed in chronological order, with no reference to any other file.

- For a "Yes/No" attribute, the default choice is "No". Tap on the attribute name to change the setting and then tap **OK**.
- For a date attribute, the current date is automatically assigned (software-set attribute). To change the date, tap on the **Date** attribute and select the new date from the displayed calendar and then tap **OK**.
- All other software-set attributes are assigned automatically by MobileMapper Field.

Using the Pause/ Resume Function

While logging a line or polygon, you may want to pause data logging because external events require that you do so or you want to start the logging of a second feature (double logging feature) (see *Double Logging on page 34*). Follow the instructions below.

- Tap **Menu**>**Pause** to pause data logging.
- Later when you are ready to resume data logging, go back to where you left the line or polygon, tap **Menu**>**Resume** to continue the data logging as you walk along the feature.

Double Logging

While logging a line or polygon, you may want to log another feature found along the way, whether a point, a line or a polygon. Follow the instructions below.

- Tap **Menu**>**Pause** to pause the data logging of the feature in progress.
- Move to the second feature you want to log.
- Tap **Log**, select the layer of the second feature, make the necessary settings and log this feature as you would in the usual case.
- Tap **Menu**>**Stop** when you are finished with the logging of the second feature.
- Go back to where you left the first feature.
- Tap **Menu**>**Resume** to continue with the logging of the first feature.
- Tap **Menu**>**Stop** when you are finished with the logging of the first feature.

More about Feature Logging

- The number of point features that can be logged in a session is only limited by the memory capacity of the storage medium used.
- Up to 10,000 points can be logged in a single line or polygon.
- When logging a long line or polygon, MobileMapper Field will automatically save the data to a temporary file every 10 minutes of data logging.

  If a power failure occurs while logging a line or polygon, the feature is automatically saved before the power failure. Because line and area features are saved automatically every 10 minutes of actual logging, if a power failure occurs unexpectedly and you have been logging a line or polygon feature for the last 15 minutes, then most probably only the first 10 minutes of the feature will be saved. If that happens, do the following:

  - Insert a fresh battery or connect the receiver to an external power supply.
  - Turn the receive back on and launch MobileMapper Field. This will re-open the last job open.
  - Quit MobileMapper Field. Only from this this moment can the job file be dowloaded to your computer with the last logged feature (line or polygon) fully restored.

- If MobileMapper Field fails to save a feature because there is not enough memory left, you can still delete unnecessary files and try again. Follow the instructions below when this happens.
  - Minimize MobileMapper Field
  - Run File Explorer
  - Delete unnecessary files
  - Return to MobileMapper Field and stop logging the feature. The feature will normally be saved if enough memory space has been cleared.

Repeating Attributes

The **Repeat Attributes** function lets the receiver automatically duplicate the attributes from your last logged feature to the next one (mandatory attributes, if any, will also be duplicated). This will however be possible only if the next feature you want to log is of the same type as the feature you have just logged.

Follow the instructions below to use the **Repeat Attributes** function:

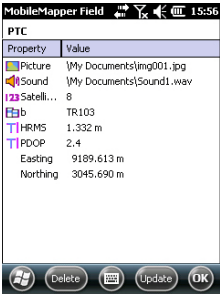
- Go to a feature, log this feature and enter all its attributes, as is normally done.
- Go to the next feature. After having tapped **Log** and made sure the same type of feature is selected, you will see the **Repeat Attributes** option appear at the bottom of the screen.
- Enable this option and tap **OK** to start collecting the feature data. When the receiver has finished collecting the data, the screen will display the position and attributes of the feature. Note that all the feature attributes are exactly those of the previous feature, which is precisely what you wanted to get.
- Just tap **OK** to complete the collection of the feature and proceed to the next one.

The **Repeat Attributes** function will help you work faster when logging a series of similar features presenting the same attributes. For example, the function will be useful if you are

collecting a row of trees of the same variety, same age, same health status, etc.).

Warning! The Repeat function does not apply strictly to Date & Time attributes. In fact the “repeated” Date & Time attribute will be set automatically to the current values of Date & Time and not to the values assigned to the Date & Time attribute of the previous feature.

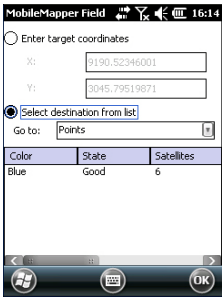
Deleting Features

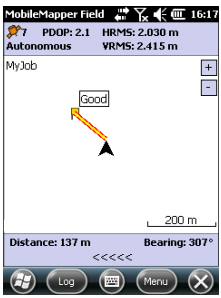


For some reason or other, you may want to delete a feature, whether a point, a line or a polygon. This is possible from the map screen showing the location of the feature:

- Through zoom and drag operations, adjust the view of the map screen in order to see the location of the feature.
- Tap on the feature. This opens a new window showing the properties of the feature.
- Tap on the **Delete** button shown in the lower bar. The feature is deleted from the corresponding layer, after prior confirmation, and its location removed from the map screen.

Going Back to a Feature





- Tap **Menu**>**Go To**.... The receiver allows you to go back to a feature according to one of the following two methods:
  1. **Enter target coordinates**: Choose this option if you want to go back to a point feature for which you know the coordinates (latitude/longitude or Easting/Northing (X/Y) depending on the coordinate system used in the map file). After you have entered the two coordinates, tap **OK**. This takes you back to the map screen.
  2. **Select destination from list**: Choose this option if you want to go back to a feature stored in the open map.

     First of all, you have to select the layer the feature belongs to. Use the **Go to** drop-down menu to make this choice. As a result, the screen lists all the features contained in that layer. Features are listed from the nearest to the farthest from your current location. Select the desired one simply by tapping on its name. This takes you directly back to the map screen.

  Whatever the method used, you can now see, on the map screen, a yellow/red segment connecting your current position to the feature.

  For a line or polygon, MobileMapper Field will draw a segment between your current position and the point in the line or polygon the nearest to you.

  In the lower bar, you can read the distance and the bearing to the feature.
- Walk in the direction indicated on the screen until you reach the feature.

  If the voice guidance is activated (see **Menu>Options**, **Voice** tab), right/left instructions as well as the distance to the feature will be issued at regular intervals of time as vocal messages.

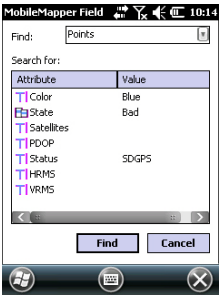
Editing a Feature

When the map screen displays the feature you want to edit and you know which changes need to be made to its attributes, do the following.

- Tap on the feature symbol.
- When you see a bold orange line surrounding the feature, release the stylus. The program then displays the list of attributes pertaining to the feature.
- Edit the attributes that need changes and then tap **OK**. In the case of a point feature, you are also allowed to update its position by tapping on the **Update** button located in the lower bar. Before tapping on this button, make sure you are located exactly over this point as this will launch a new position averaging sequence for your receiver's current position.

Find Feature Function

MobileMapper Field allows you to search for a particular feature you logged in a map. MobileMapper Field will ask you to indicate the layer it belongs to, and optionally, the known value of one or more of its attributes. As a result, MobileMapper Field will list all the features meeting your requirements.



- Tap **Menu**>**Find...**. MobileMapper Field displays one of the layers present in the map as well as the names of the different attributes attached to that layer.
- In the **Find** field, select the layer type of the feature you are searching for.
- Optionally, tap on each of the attributes for which you want to define a specific search criterion and then enter it.
- Tap on the **Find** button to start the search. MobileMapper Field will list all of the features in the map which meet the search requirements.

  From this list you select the desired feature and see where this feature is located on the map screen. In addition, by selecting **Menu**>**Go To...**, MobileMapper Field will give you the option of navigating to this feature.

Recording GPX Data

Understanding GPX Data Recording in MobileMapper Field

MobileMapper Field allows you to save all the instantaneous positions computed by your receiver to a GPX file. Here are a few key points that will help you understand how the GPX data logging function operates in your receiver:

- As soon as GPX data recording is enabled, every single position computed is unconditionally saved to a “gpx.gpx” file stored in *\My Documents\Ashtech*. The recording rate is therefore 1 second. Each position is saved as a distinct waypoint, irrespective of whether this position is part of the point, line or polygon feature you are currently collecting.
- As long as GPX data recording goes on, all instantaneous positions are saved as waypoints belonging to the same track segment.
- GPX data recording may be interrupted either by intentionally disabling this function during a working session or by quitting MobileMapper Field. If you re-enable the function during the same working session, or if you-re-start MobileMapper with the function enabled, then the next positions computed by the receiver will be saved as waypoints belonging to a new track segment.
- The gpx.gpx file is an endlessly concatenated file. It should be transferred to your office computer whenever needed. Starting a new GPX file implies that the current one should be deleted.
- GPX data collection is job-independent. Changing job during a working session has not impact whatsoever on the recording function.
- A sample of GPX file format is given below.

gpx.gpx

```
<?xml version="1.0" encoding="utf-8"?>
<gpx version="1.1"
    creator="MMField - ashtech.com"
    xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
    xmlns="http://www.topografix.com/GPX/1/1"
    xsi:schemaLocation="http://www.topografix.com/GPX/1/1 http://www.topografix.com/GPX/1/1/gpx.xsd"
    >
    <trk>
        <trkseg>
            <trkpt lat="47.29896885" lon="-1.50903992">
                <ele>87.590</ele>
                <time>2012-08-27T07:21:42Z</time>
            </trkpt>
            <trkpt lat="47.29896888" lon="-1.50903988">
                <ele>87.590</ele>
                <time>2012-08-27T07:21:43Z</time>
            </trkpt>
            <trkpt lat="47.29896893" lon="-1.50903997">
                <ele>87.589</ele>
                <time>2012-08-27T07:21:44Z</time>
            </trkpt>
            <trkpt lat="47.29896897" lon="-1.50903990">
                <ele>87.590</ele>
```

Coordinates are always expressed in longitude, latitude and elevation, regardless of the coordinate system used in the open job. The time of computation is also provided for each position.

Enabling GPX Data Recording

- Go to **Menu**>**Options**, **Recording** tab.
- Enable the **Record GPX** option and tap **OK**. GPX data recording starts immediately.

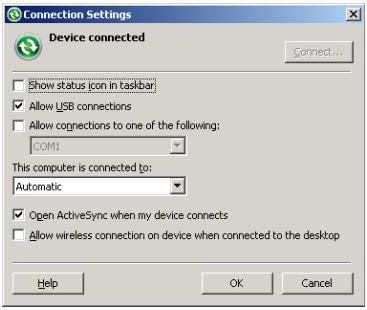
Disabling GPX Data Recording

- Go to **Menu**>**Options**, **Recording** tab.
- Disable the **Record GPX** option and tap **OK**. GPX data recording stops immediately.

Upload/Download Functions

Using the USB data cable provided with your receiver, you can exchange data between the receiver and your office computer.

With Windows 7 or Vista running your computer, no particular settings are required. With Windows XP (or older), use the following settings in ActiveSync to make the connection automatic at receiver power up:



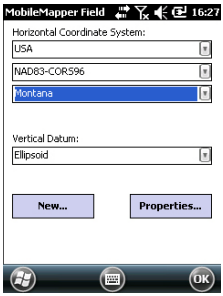
Use the procedure below to copy files from one unit to the other:

- MobileMapper 100 or 120:
  - Place the receiver on the docking station
  - Connect the docking staon to your office computer using the USB data cable.
- MobileMapper 10:
  - Connect the receiver to your office computer using the USB data cable.
- Turn on the receiver.
- Wait until the connection is active.
- Do the following, depending on the OS used in your computer:
  - (Vista) In the auto-run window that opens, choose the option to explore the mobile device
  - (Windows XP or older) In the ActiveSync window, click **Explore**.
- From either of these windows, you can copy any file from the receiver to any folder on your office computer, or the other way around, using the usual copy, paste and browse functions.

Coordinate Systems

When creating a new DXF job or when creating a layer as the first layer in a new *.map job, MobileMapper Field asks you to define a coordinate system.

Choosing a Coordinate System



Proceed in this order:

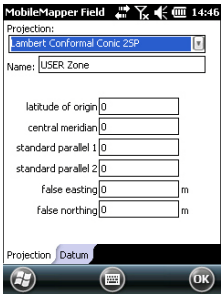
1. Choose the World Geodetic System or the country where your field operations will take place
2. In the field just underneath, choose the datum used
3. In the field just underneath, choose the projection used.
4. Choose the vertical datum in the last field. The default possible choices are:
   - **Ellipsoid**: Each altitude or height value is simply determined with respect to the selected ellipsoid (second field above).
   - **EGM84**: Each altitude or height value is still initially determined with respect to the selected ellipsoid but a correction is applied to that value. The correction is read from the EGM84 geoid (Earth Geoid Model 1984, a global geoid model) and is specific to the computed horizontal position.

   Other geoid models may be downloaded to the receiver via the MobileMapper Software CD from our website. Once downloaded, they are made available as possible choices in the **Vertical Datum** field.

The **Properties...** button at the bottom of the screen allows you to view the properties of the selected datum and projection.

The **New...** button at the bottom of the screen allows you to create a user system (datum + projection).

Defining a User System



- Tap on the **New** button.
- Select the type of projection you wish to use in your coordinate system. Depending on that choice, you will have to enter a certain number of parameters.

  Remember every time you create a new projection and you have to enter the latitude and longitude of origin, or the central meridian, these must be expressed in degrees with eight decimal places (ddd.dddddddd). On the other hand, false eastings and false northings should always be expressed in meters, even if a different unit has been selected in the **Units** field on the same screen.
- After you have named and defined your new projection and datum, just tap **OK** to save the new system and choose it as the system used in the current job. This will take you back to the coordinate system selection screen on which you will now be able to see how the new USER coordinate system has been defined (new projection and datum names displayed in the second and third fields respectively).

Viewing the Properties of the Coordinate System Used in a Job

- Tap **Menu**>**Job**>**Properties**.
- Tap on the **Coordinate System...** tab. The screen now shows the non-editable settings for the coordinate system used in the map. Tap on the **Properties** button to read the details of the datum and projection used in the coordinate system.

Post-Processing Option and MobileMapper Office

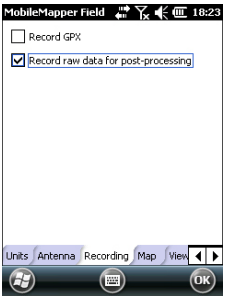
Unlocking the Post-Processing Option in the Receiver

When you purchase the post-processing option, Spectra Precision delivers an activation code specific to your receiver so you can unlock this option in the receiver. Follow the instructions below the first time you want to use the post-processing option:

- Tap **Menu>Options**.
- Tap on the **Recording** tab.
- Enable the **Record raw data for post-processing** option.
- Tap **OK**. A new screen is displayed showing the serial number of your receiver and a blank activation code field.
- Type the activation code provided by Spectra Precision in the blank field.
- Tap **OK** to validate the code entry. If the "serial number/ activation code" pair matches, then the option is unlocked instantaneously. The receiver will start logging raw data as soon as the reception conditions are good. Remember also that the **Record raw data for post-processing** setting remains unchanged through all the subsequent power cycles of the receiver, until you decide to change it.

Logging Raw Data

Here are a few key points that will help you understand how the raw data logging function operates in your receiver.



- A raw data file is created per job. It is saved in the same folder as the job file.
- With the **Record raw data for post-processing** option on, raw data logging will start automatically when enough satellites are received (>3). Raw data logging is effective when "REC" is displayed in MobileMapper Field's status bar (see *Getting Started With MobileMapper Field on page 6*).

  NOTICE. It is a good practice to wait about 1 minute from the time at least 4 satellites are received and the PDOP is less than 3 before you start logging your first feature. (You don't need to be static during this wait time). The amount of extra raw data will advantageously be used in MobileMapper Office to secure the post-processing of your features.

- **MobileMapper 100 or 120** raw data files are named as follows:

  xnnnnsyy.ddd

Where:

Parameters	Description
x	"A" for A-files (Auxiliary Coordinate files), or "G" for G-files (ATOM raw data files)
nnnn	Last four digits of the receiver serial number
s	Session number (A, B, C,... X). Incremented every time a new working session is created on the same day.
yy	Last two digits of year ("08" for 2008)
ddd	Day number in year (1-366)

NOTE: The auxiliary coordinate file created during a working session uses the same naming convention. Only the prefix is different ("A" instead of "G").

- **MobileMapper 10** and **MobileMapper 6** raw data files are named as follows:

  nnnnyymmddss.grw

Where:

Parameters	Description
nnnn	Last four digits of the receiver serial number
yy	Last two digits of year ("08" for 2008)
mm	Current month number (1-12)
dd	Current day number (1-31)
ss	Session number, starting from 00. May consist of more digits, if necessary.
grw	File extension

NOTE: The coordinates file created during a working session uses the same naming convention. Only the extension is different ("crw" instead of "grw").

- During raw data collection, even if you are not logging any feature but just moving from one feature to another, remember you should keep holding the receiver at an angle of 45° above the horizontal.
- Never switch the receiver to suspend mode while collecting raw data (this would end raw data collection). If you want to save battery power while collecting data, you may turn off the screen backlight. However, if you are also using the e-compass while collecting raw data, remember the backlight setting must be left unchanged. It must stay as was set when you last calibrated the e-compass.
- Always collect raw data for at least 10 minutes, including for those projects where GIS feature collection can be completed in less time. Remember the more you collect

raw data for a given project, the better the results of the post-processing will be.

- Coming back to **Menu**>**Options**, **Recording** tab after starting logging raw data allows you to read the name and path of the raw data file being created. This information appears underneath the **Record raw data for post-processing** option.
- A warning message will pop up if the memory goes low while collecting raw data.

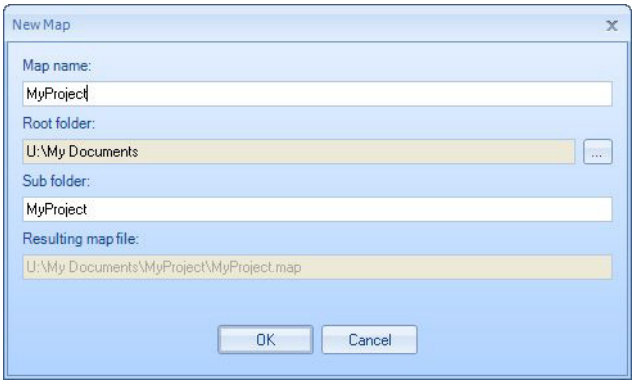
Installing MobileMapper Office Software

- Insert the installation CD in your computer. Wait until the welcome screen is displayed.
- Click on **Install MobileMapper Office**. The installation program starts analyzing the configuration of your computer.
- The installation program may ask you to install one or several Microsoft applications on your computer. If this happens, please accept. These are:
  - Microsoft .NET Framework 2.0
  - Microsoft Visual C++ Runtime Libraries
  - Microsoft Windows Installer 3.1
- The installation program then installs MobileMapper Office.
- At the end of the installation, click Finish to quit the installation programMobileMapper Office is automatically launched.

Post-Processing With Mobile-Mapper Office Software

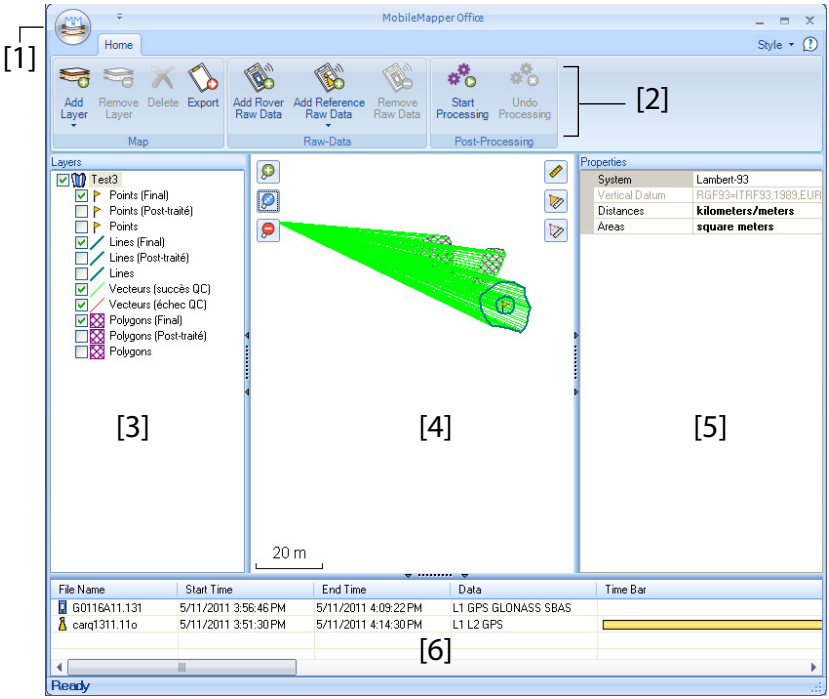
- Using the data transfer procedure (see *Upload/Download Functions on page 41*), copy the following field data files from the receiver to a folder of your choice on the computer:
  - *.map files
  - *.shp files
  - img*.jpg files
  - sound*.wav files
  - G* (MobileMapper 100 or 120) or *.grw (Mobile-Mapper 10 or MobileMapper 6) raw data file.
  - A* or *.crw file relevant to the downloaded G* or *.grw file respectively.
- Run MobileMapper Office on your computer.

  The program first displays a window allowing you to quickly create a new project (a map file).



Just give your project a name and indicate where to store it and the program will automatically create the file structure for the project. If you want to open an existing project, click **Cancel** and then use button [1] below to select **Open** and browse your computer for the existing project. Next time you launch MobileMapper Office, the last opened project will automatically re-open.

The MobileMapper Office main window looks like this:

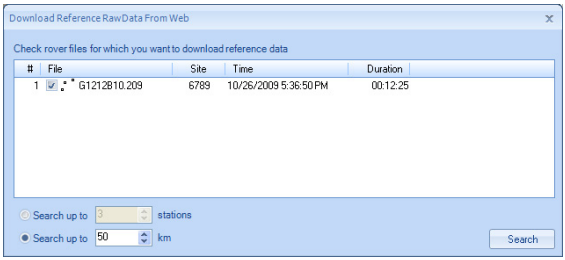


The different areas are described below:

- [1]: Open/Create Map button
- [2]: Menu bar
- [3]: MAP filename and Layers list
- [4]: Map screen showing the content of the open project, Also includes zoom buttons on the left and distance/angle/area tool buttons on the right.
- [5]: Depending on what is currently selected in area [3], [4] or [6], this area shows project properties (coordinate system and units used), layer attributes and appearance, or raw data file properties (observation time span, etc.). When selecting a feature on the map screen, the sound and image attributes pertaining to the feature can be heard and viewed by clicking on the three dots button after the file path in the corresponding field. Clicking on this button will start your computer's default editor used for respectively WAV and JPG files.

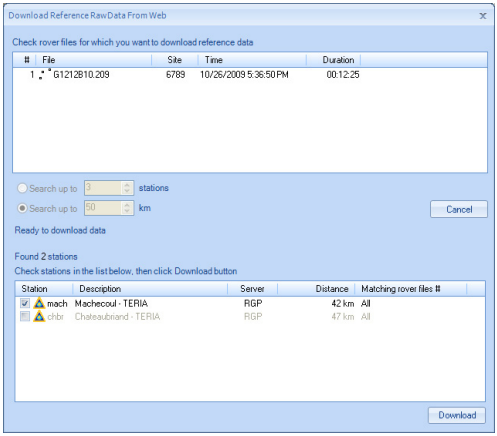
– [6]: Observation times covered by the raw data files added to the project. A blue bar stands for a receiver raw data file, and a yellow bar, for a base raw data file.

- Click  and select **Open**. Browse to the folder containing your field data files.
- Select the Map file and click **Open**. MobileMapper Office shows the content of the project in areas [3], [4] and [5] (see screen above).
- Click on **Add Rover Raw Data**. Select the raw data file corresponding to the project (from the same folder as previously) and click **Open**. MobileMapper Office imports the *G or GRW file and then shows the file properties in areas [5] and [6].
- Assuming you are working with a third-party reference station, click successively on **Add Reference Raw Data** then **From Web** (your computer is supposed to have an Internet connection). A new window then opens in which you have to indicate how you wish to search for the reference station you will use for post-processing your project.



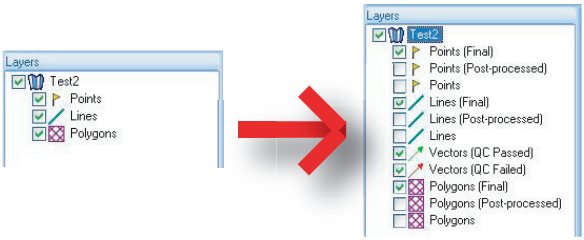
- Choose one of the following two search criteria:
  – **Search up to x stations**: Specify a preset number of stations you want to list before choosing one. All the listed stations will be the closest to your working area, but there is no range limit for these stations.
  – **Search up to x km**: Specify a limit of distance between your working site and the stations. The shorter the distance, the better the raw data from the station, but the smaller the number of stations that can potentially be used.

- Click **Search**, then wait until the search is complete. At the end of the search, MobileMapper Office lists the stations meeting the search request.
- Select the most suitable reference station, mainly according to the distance (baseline) to that station.



- Click **Download**. MobileMapper Office imports the base raw data and then show its properties in areas [5] and [6].

  NOTE: Spectra Precision does not guarantee 100% quality results when using raw data files from reference stations that are situated beyond 200 km (125 mi) from your working area. It is also important to check that the downloaded base data offer at least the same type of raw data as the rover. If for example, the rover data are GPS/GLO L1 data, then the base data should be at least GPS/GLO L1 data. The post-processing may otherwise be degraded to a certain extent.
- Click on **Start Processing**. MobileMapper Office post-processes the different files present in the project. Below is an example of what can be seen in the Layers pane at the end of the post-processing step:



For each layer (<Layer_name>) present in the project MobileMapper Office has created two extra layers:

– **<Layer_name> (Final)**: This layer is viewed by default. It shows all the features of the **<Layer_name>** layer, namely those that have just been post-processed, for which you can now see the refined positions on the map screen, and also those not impacted by the post-processing, whose positions are unchanged compared to what they are in the initial **<Layer_name>** layer.

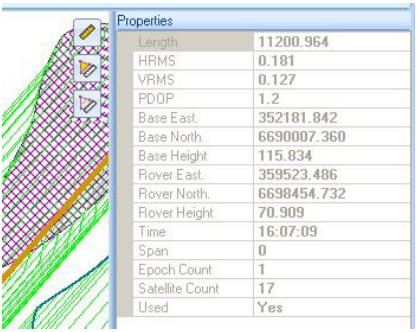
– **<Layer_name> (Post-processed)**: This layer is not viewed by default. It only contains the features that were actually post-processed. You may choose to only view this layer if you wish to focus on the sole post-processed features.

  (The “initial”<Layer_name> layer is also hidden by default.You may want to view this layer to see all the features as they were before the post-processing step.)

MobileMapper Office has also added two different vector layers to the project. Each vector describes the conditions in which the baseline between each post-processed point and the base station used has been determined. The resulting components of the vector are also provided. The two vector layers are:

- **Vectors (QC Passed)** (in green): The vectors pertaining to that layer meet all the quality control parameters defined on the **Options** tab (see *Quality Control in Post-Processing on page 52*).
- **Vectors (QC Failed)** (in red): None of the vectors pertaining to that layer meets the quality control parameters defined on the **Options** tab. If the layer is empty (no red vectors), then that means all the points were post-processed successfully.

Each vector can be edited individually. Just select one on the map screen and the properties of the vector will then appear In the right-hand pane (see example below).



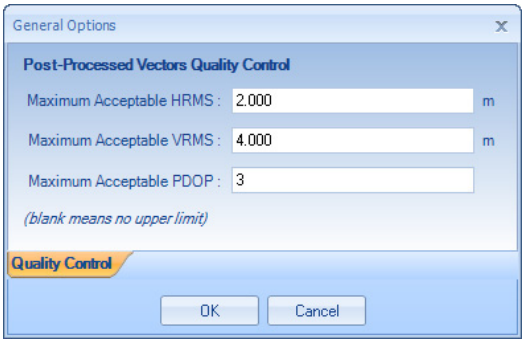
All new layers have been created –and can be found– in the same folder as those initially found in the project.

NOTE: DXF and AXF job files, MIF and CSV layers are not supported in this version of MobileMapper Office.

Quality Control in Post-Processing

You can place a quality control filter through which MobileMapper Office will rate the post-processing results according to your own requirements. Following the post-processing of your project, MobileMapper Office will associate the resulting vectors to two different layers: one containing the vectors that passed the quality control (green vectors), and a layer containing those that failed (red vectors).

- Click  and then on the **Options** button located in the lower-right corner of the pop-up window.
- Enter your three quality control settings, i.e. the maximum permitted values for HRMS, VRMS and PDOP. (see screen example below).



- Click **OK** to confirm your filter settings.

  All the vectors for which the HRMS, VRMS and PDOP are less than those specified here will pass the quality control whereas all the others, if any, will fail.

  Note that the quality control filter is applicable to all the projects you open in MobileMapper Office, until you modify the filter settings. To remove the filter, you just need to set the three fields blank and click **OK**.

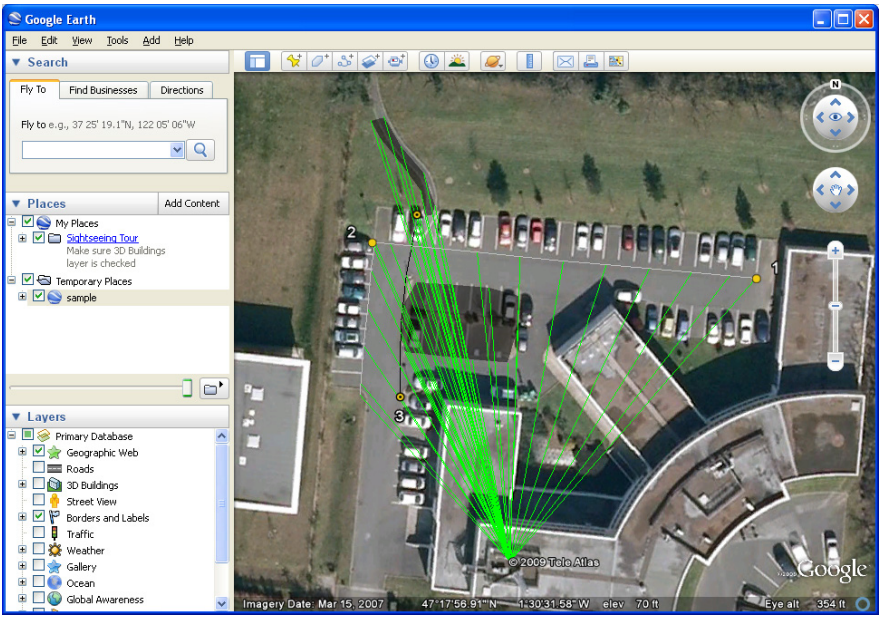
  Note also that the PDOP characterizes each point when it was logged (the PDOP is re-calculated by MobileMapper Office, based on the content of the job file). In contrast, the HRMS and VRMS are part of the post-processing results and characterize the post-processed positions.

Export Function

MobileMapper Office can export the visible layers from the open project to three different formats:

- GPS exchange format (*.gpx). ALl the selected layers will be merged into a single gpx file. Point features will be converted into waypoints, lines and polygons into tracks.
- Google Earth format (*.kml). All the selected layers will be merged into a single kml file.

  Opening a kml file from the Google Earth initial view will cause the Earth representation to be gradually rotated and zoomed in to show the exact location of the features held in the kml file.



- ASCII format (*.csv). Each selected layer will result in a separate csv file.

Follow the instructions below to export layers:

- Open your project.
- Make visible the layers you want to export (turn on the corresponding check boxes). As background maps will not be exported, they can stay visible in the project.
- Click on  and then select the format and destination of the file(s) generated by the Export function.
- Click **Save** to complete the Export sequence.

Re-Project Function

MobileMapper Office can convert the entire content of a project into another project, with all the original coordinates converted to another coordinate system.

- Open the project you want to convert
- Click  and then select **Reproject As**.
- Define the coordinate system in which to convert the entire project. This definition includes the choice of the

linear unit used to express all the coordinates (meters, feet or survey feet), then click **OK**.

- Then name the resulting project (this will automatically define a subfolder for this new project) and click **OK**. Wait until the conversion is complete. MobileMapper Office then shows the newly created project.

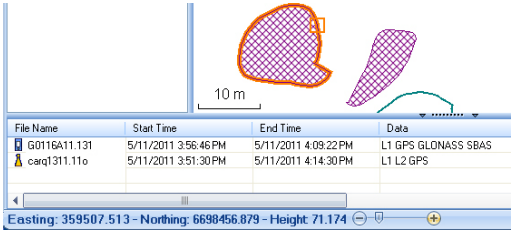
More About MobileMapper Office

- **Undo Post-processing**: If the post-processing results do not meet your expectations, you can reverse to the original SHP files by selecting the **Undo Processing** command.
- **Zoom settings**: In addition to the zoom buttons in the menu bar and on the map screen, MobileMapper Office offers another useful way of adjusting the zoom setting. Double-click on a feature in the map screen. This takes the feature to the center of the map screen. You can then adjust the zoom setting around the feature, which stays at the center of the screen, using the mouse wheel (turn forward to zoom in, turn backward to zoom out).
- **Viewing the background map**: Background maps are seen as layers in the project. Use **Add Layer**>**Select Existing**. In the Open dialog box, choose "Raster file" as the file type and then select the background map file. MobileMapper Office supports the following raster formats: bmp, gif, tif, jpg, jp2 and ecw. Select a raster file and click **Open**.

  If this is the first layer inserted in the job, MobileMapper Office will ask you to define the coordinate system used. At this point, you can choose the linear unit used in the coordinate system (meters, feet or survey feet).

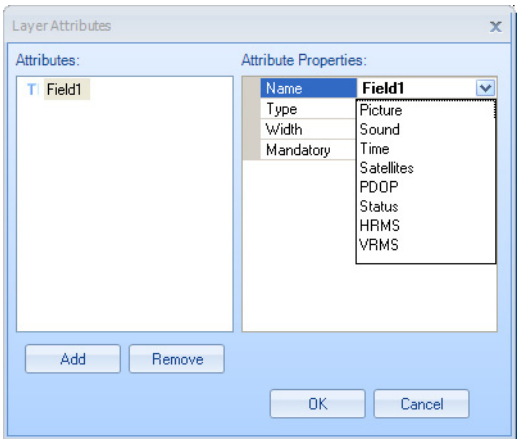
  If a layer already exists in the project when you import a raster layer, there may be a message warning you about the coordinate system used by the background map, if not exactly the same as the one used in the layer. You may choose to go on anyway if the two systems are not very different. If you accept a background map using a very different coordinate system, its resulting location on the map screen will be inaccurate.
- **Status Bar**: The status bar is located at the bottom of the main window. Whatever the feature selected on the map screen, the status bar displays the coordinates of the selected point.

  For a line or polygon feature, the status bar additionally shows a sliding bar allowing you to move the cursor on the map screen from one point to the next or previous point using respectively the "plus" or "minus" button at the two ends of the sliding bar.



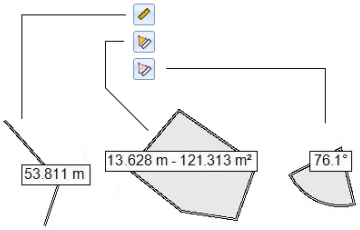
The location of the cursor on the sliding bar is representative of the position of the selected point in the line or polygon.

- **Layer Editor**: MobileMapper Office also allows you to edit SHP files in a way much similar to MobileMapper Field's Edit/Create Layer function.
  - When creating a new layer from scratch in MobileMapper Office, a new window will open (see below) asking you to define attributes for the new layer. If you are familiar with creating attributes in MobileMapper Field, using this window will be no problem.



  - Selecting a layer in the left-hand pane allows you to read or change the visual aspect of all the features pertaining to that layer (features shown in the central pane, if any) and read the details of each of its attributes in the right-hand pane.
  - Selecting a feature in the central pane allows you to read the values of its attributes in the right-hand pane.

- **Measuring distances, angles and areas on the map screen**: Use the three icons in the right-upper corner. The upper one is for distances, the second one for areas and the lower one for angles.



For each tool, the first click on the icon will activate the tool and change the cursor shape. The second click will turn off the tool and the cursor will recover its initial shape. You may also press the right-hand mouse button to deactivate the tool.

Distance measurement:

– Click on the first point from where to start the distance measurement.

– Click on the second point defining the first measured segment. Any new click on the map will create a new segment from the previous point. From the second point, the indicated distance value stands for the total distance measured from the start point.

– Anticipate the end of measurement by double-clicking on the last point. This will freeze the distance measurement.

– Click on  to quit the distance measurement tool.

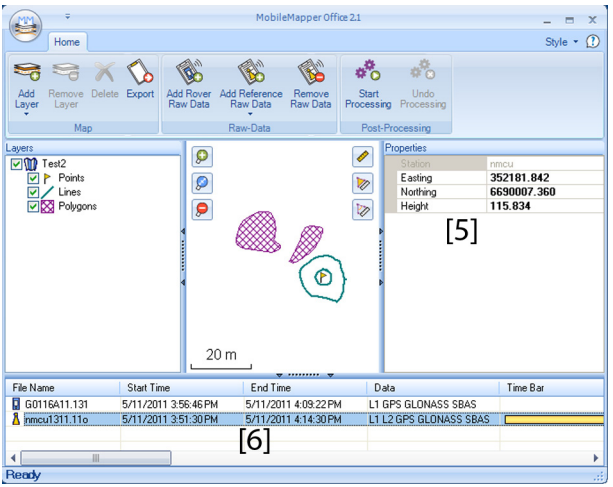
Area measurement: Same as distance measurement. The area measurement is effective only after you have defined three points on the map. The value of perimeter is also provided.

Angle measurement:

– Click successively on the first then on the second point defining the segment providing the reference direction. The tool then draws the angle measured and gives its current value as you move the mouse cursor on the map screen. If you click anywhere, the tool freezes on the angle defined by this last click and gives its value.

– Click on  to quit the angle measurement tool.

- **Deleting a Feature**: Select a feature on the map screen that you want to delete, and then click on the **Delete** button in the menu bar. Click **Yes** to confirm that you want to delete this feature.
- **Adding base raw data from a file**: This function is convenient when the useful base raw data files have already been downloaded from the Internet or if they come from a reference station that is not connected to the Internet. In either case, click on **Add Reference Raw Data**>**From File** and select the base raw data files.
- **Editing the Coordinates of the Base Station Used**: You may need to edit the coordinates of the base station before starting the post-processing. As shown on the screen below, just click in the row (in the lower panel ([6]) containing the base data file. You can then edit the base coordinates in the right-hand panel ([5])



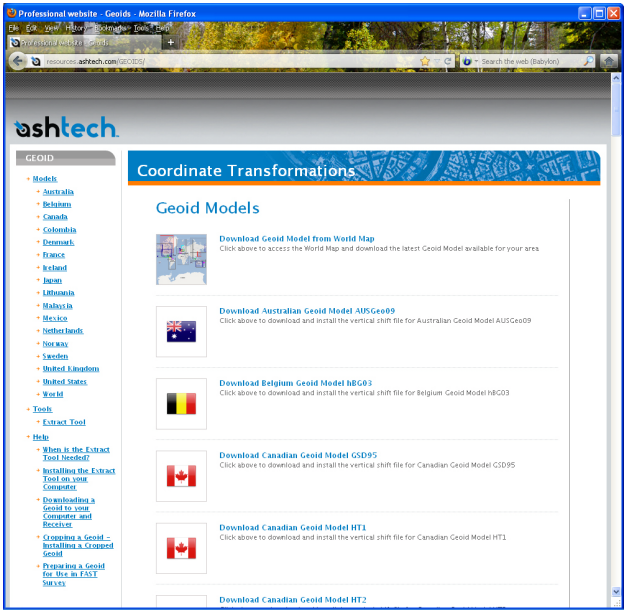
- **Removing a layer from a map**: Select the layer in area [3] on the screen and press the Del key or click on **Remove Layer**.
- **Shortcuts**: From Windows Explorer, double-clicking a map file (*.map) will directly open the file in MobileMapper Office. All the files that can potentially be layers in MobileMapper Office can be dragged & dropped in the open map file (equivalent to selecting **Add Layers**>**Select Existing**)

Installing Geoids

Spectra Precision makes available a collection of geoids for use in many countries around the world. This collection is hosted on the Spectra Precision website and is regularly updated.

To download a geoid, use the link **Geoids (models & tools)** in the welcome menu of your application software CD.

In absence of the CD, you can still list and download the available geoids using your web browser to connect to the following URL: http://resources.ashtech.com/GEOIDS.



After a new geoid has been downloaded to your computer, run the downloaded “install.exe” file to install the new geoid on your computer (for use in your office software), and your receiver (for use in your field software) if it is currently connected to the computer via ActiveSync and the docking station.

Installing the geoid on the receiver will be only postponed if it’s not currently connected to the computer. Installation will be run automatically when later you connect the receiver to the computer via the docking station and ActiveSync.

Through the above URL, you can also install the **Extract Tool** on your computer (see bottom of the menu on the left).

Use this tool to limit the geographical extent of the selected geoid to your working area. This may be useful to reduce the space occupied by the geoid file on your receiver.

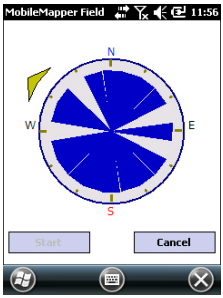
The extracted geoid (also a *.geo file) should then be copied to **My Device \Program Files\Geoids Data** on the receiver.

E-Compass & External Device

Enabling/Disabling the E-Compass

- Tap **Menu>Options**.
- Tap on the right-arrow button several times until you unveil the **E-compass** tab.
- Tap on the **E-compass** tab.
- Set the **Use electronic compass to determine orientation** button to enable or disable the E-compass. The compass calibration is described in the section below.

Calibrating the E-Compass



Calibrating the E-compass is a two-step process during which you are asked first to rotate the receiver anticlockwise in horizontal position and then turn the unit upside down until a beep is heard.

This procedure should be run with the receiver powered from its internal batteries rather than an external power source.

- Tap on the **Calibrate** button.
- Read the instructions and then tap on the **Start** button.
- Wait until the arrow outside of the compass starts rotating slowly clockwise. Rotate the receiver anticlockwise in order to maintain the arrow in your direction. You will have to perform three to five rotations until the inside of the compass is completely dark blue. Try to be as accurate as possible as this will speed up the calibration process.

  Note that the arrow momentarily stops every 30 degrees or so before continuing its rotation.
- When the inside of the compass is all dark blue and after the arrow has come back to the South direction, a message asks you to proceed with the last step of the calibration.
- Tap **ok** in the message window and turn the receiver upside down on a horizontal surface. Wait a few seconds until a beep can be heard.
- Put the receiver the right way up. A message on the screen indicates that the calibration is complete and successful.
- Tap **ok** in the message window. This takes you back to the **E-compass** tab of the **Options** screen.
- Tap **OK** to return to the map screen.

Recommendations for E-Compass Calibration

The E-compass being a very sensitive sensor, Spectra Precision recommends you adhere to the following recommendations.

- Calibration should always be performed:
  - Outdoor, not indoor.
  - On a flat horizontal surface, not in your hands.
  - In the same operating conditions (i.e. same backlight level, with/without SD card) as those you will work in later when you collect your data.

    For screen backlight, this means the two options controlling the backlight function on the **Battery Power** tab of the **Settings** window must be cleared for the calibration phase, but also as long as you need to use the e-compass.
- During calibration, make sure all compass sectors become dark blue.
- Always recalibrate the E-compass in the following cases:
  - After changing the batteries.
  - Whenever you suspect the E-Compass to deliver incorrect values.

E-Compass Vs. GPS Compass

In fact, the receiver has two compasses:

- The *e-compass*. which can be used by MobileMapper Field.
- The *GPS compass*, **which is the default compass used by MobileMapper Field when the e-compass is not activated**. (The GPS compass information is a by-product of the GPS position computation.)

Follow the recommendations below to know which compass should be used, depending on what you are doing:

- Measuring bearings with the E-compass requires that the receiver be held in horizontal position. On the other hand, the GPS sensor requires that the receiver be held at an angle of 45° from the horizontal. A good compromise is therefore to orientate the receiver 20 to 25° from the horizontal. If the bearing measurement is most important to you, you can temporarily place the receiver horizontal until you get a valid bearing measurement.

- Using the E-compass is recommended for static occupations. The GPS compass is recommended in kinematic.
- E-compass readings stabilize after a few seconds. When logging a point after a walking period, please hold the receiver horizontally and wait a few seconds before starting logging.

Setting an External Device

- Tap **Menu>Options**.
- Tap on the right-arrow button several times until you unveil the **External Devices** tab.
- Tap on the **External Device**s tab.
- Tap on the **Connect** button.
- Select the device used from the **Device type** field.
- Set the virtual port number (**Port**) and baud rate (**Baud rate**) used to let your receiver communicate with this device.
- Tap **OK** to enter your settings and return to the map screen.

Index

English

MobileMapper Field & Office Software

Getting Started Guide

Contact Information:

SPECTRA PRECISION DIVISION
10355 Westmoor Drive,
Suite #100
Westminster, CO 80021, USA
www.spectraprecision.com

Rue Thomas Edison
ZAC de la Fleuriaye, BP 60433
44474 Carquefou Cedex, FRANCE