

# **SMS Mobile User Manual**

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# SMS Mobile Help

## SMS Mobile Help

This help document will guide you through the basic operation of the Mobile software.

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## Getting Started

### Requirements to Install SMS Mobile

SMS Mobile requires that your mobile device be running Windows Mobile 5.0 to 6.5.3 as its OS and have a touch screen interface. We do not support the Windows CE OS. Any device that can run Windows Mobile 5 to 6.5.3 has adequate memory and specifications to run SMS Mobile.

### Starting SMS Mobile for the First Time

To start SMS Mobile after it is installed on your mobile device, go to the START menu and select the SMS Mobile icon or go to PROGRAMS, and then scroll down till you see the SMS MOBILE name and icon and select it. SMS Mobile will now begin to start. If you are starting clean with no setup data export from the desktop software, you will be prompted to select a location to create your SMS Mobile Project(s) in. By default it is recommended to use the internal storage memory of your mobile device instead of an external memory card, thus using the default of "Application Data Directory" is preferred. Press OK to continue. Now you will be prompted to enter in a name for your new Mobile Project. Press OK when you are done. SMS Mobile will now complete its start up and you should see the main start screen.

### Registering SMS Mobile

SMS Mobile requires an unlock code to provide full functionality. When first install SMS Mobile is in trial mode and will only provide full functionality for 30 calendar days or 5 actual usage days. Once either trial time expires you will not be able to use any of the Field Operations to collect or edit data. The rest of the application will continue to function though.

To register SMS Mobile you must call or email in your registration information. Please note that you must have SMS Mobile installed on your mobile device before we can register and unlock it. To begin the registration process call the Ag Leader Software Support Group at (515) 232-5363 and select the Software Support option and then the SMS Mobile option or email into

smsunlocks@agleader.com. You will need to gather the following information to provide over the phone or via email :

- Your Name and Address
- Activation code - Located on the back of the DVD case that your SMS CD came in
- Device Identification - Found by starting SMS Mobile and going to SETUP, then REGISTRATION

Once you have provided the information above you will be provided with an unlock code that you can enter by selecting the REGISTER SOFTWARE button on the REGISTRATION screen. Press OK once the code is entered and you should now be unlocked. Once you have a unlock code it will remain valid to use on your specific mobile device and for the current version of the software. If change mobile devices this unlock will not be valid and if the software version changes (i.e. a new major version of the software is released) you will need a new unlock code. You are allowed one unlock per purchased copy of the software.

### **Setting up a GPS Receiver**

When you first start SMS Mobile, it will automatically try and detect and select a connected GPS receiver. Serial connections via the 9-pin port will detect the fastest, CF or SD card GPS receivers will take a little longer, and Bluetooth (BT) GPS receivers will take the longest to detect initially. BT GPS receivers also must be first configured and connected to your mobile device before they can be detected and SMS Mobile can not automatically connect them for you. This requires you to manually connect to your BT GPS receiver before you try and detect it with SMS Mobile. All other receiver types should be automatically detected for you by SMS Mobile because they are physically connected to your mobile device but this depends on your device's GPS settings and also does not apply to internal GPS receivers.

- The automatic GPS detection can take as much as a minute to complete and during this process you are locked out of many functions until a valid GPS source is found. Please be patient while your GPS source is being detected. After the GPS is detected the first time, future detections should occur much faster since SMS Mobile keeps track of the last used GPS receiver and will start the search there at startup.

To connect your mobile device to a BT GPS receiver, first turn your BT receiver ON (usually these units have a power LED to verify this), then on your mobile device go to the START menu, then SETTINGS, then CONNECTIONS, and then select the BLUETOOTH icon. Make sure the "Turn on Bluetooth" option is checked. Then select the DEVICES tab and select the "Add New Device..." option. After a short period of time you should see a listing for the receiver displayed on the screen by its detected name. Select this name and then press the NEXT button in the lower right hand side of the screen. Now enter a Passcode that was provided with your receiver and if in doubt the number is usually "0000". Once the passcode is accepted you can give the BT GPS a unique name (the default name should be fine though) and then you want to check the option called "Serial Port". Press the FINISH button once done. Now you will be returned to the Bluetooth screen. Close the keyboard at the bottom and then select the COM Ports tab. Select the "New Outgoing Port" option. Now select the BT GPS receivers name from the list and press NEXT. Select a COM port from the provided list (it is recommended to select port 5-9 to help ensure you don't have a conflict with one of your other physical ports. Then make sure to uncheck the "Secure Connection" option. Press the FINISH button. Press the OK button in the top right corner of the screen. You now have completed configuration of your BT GPS receiver and SMS Mobile can now automatically detect and use it.

If you are using a serial, CF, SD, or internal GPS unit the auto detection of your GPS that SMS Mobile tries may not actually find your GPS receiver. Follow these general steps if you are using one of these types of receivers and you are having trouble connecting:

- Serial/CF/SD GPS receivers - On your mobile device select the START menu, then SETTINGS, then the SYSTEM tab. Now select the GPS icon. On the PROGRAMS tab make sure that the port is set to GPD1. On the ACCESS tab if the manage GPS option is UNCHECKED you do not need to make any other settings. If this option is CHECKED then on the HARDWARE tab you MUST set the port that your GPS is connected to and the baud rate it is outputting position data at. If you don't set this then your GPS will not be detected properly by SMS Mobile (it will say it has detected it as a "Shared" GPS receiver but you won't get any position data from it).
- Internal GPS receiver - If your Mobile device has GPS built in then you more than likely to have to make some settings changes or at least verify them first. On your mobile device select the START menu, then SETTINGS, then the SYSTEM tab. Now select the GPS icon. On the PROGRAMS tab make sure that the port is set to GPD1. On the ACCESS tab make sure the manage GPS option is CHECKED. Your internal GPS receiver should now automatically be detected. If you have problems then you may need to figure out which port your internal GPS is connected to and manually set this on the PROGRAMS tab or the HARDWARE tab.

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## SMS Mobile User Interface

### Start Screen

This is the screen that comes up by default after you start SMS Mobile. From this screen you have access to all the functionality of SMS Mobile from creating/logging data, to exporting, to setting up management items. The screen is broken up into button bars that allow access to specific items in each of their categories. The following items are the key areas available on this screen and their function:

#### **Projects**

Allows the selection of an SMS Mobile Project exported from the SMS desktop software or created as a new project in SMS Mobile. Projects can be deleted, their names edited, or you can just view stats on a project.

#### **Field Operations**

Allows the selection of the available field operations where you can log or create data. Current Field Operations are Boundary, Soil Sampling, Crop Scouting, Coverage Logging, and General Logging.

#### **Review**

Allows the user to view a summary of data they have in the Mobile project, view a map of data in the Mobile project, or export data contained in the Mobile project.

#### **Setup**

Allows the configuration of SMS Mobile from GPS settings to management items to general logging settings.

### **Menu Buttons**

Two menu buttons are provided at the bottom of the screen. The **Large Bars/Small Bars** button allows you to enlarge or shrink the size of the selections bars described above. The **Menu** button allows access to all the functions available on the Start Screen, even some that don't have icons to select such as functions related to Projects.

### **Hardware Keys/Buttons**

Depending on the device that you are running SMS Mobile on, there more than likely are hardware keys that can be used as inputs for the software instead of having to use the touch screen.

These keys can be programmed to different functions but by default the directional keypad (up/down/left/right arrows) will allow you to move up/down or left/right in menus and on the Start Screen. When in a operating mode, the left/right keys either allow you to scroll the toolbar left or right or if in Manual GPS simulation mode they will allow you to manually turn the vehicle icon. The up/down keys though will show/hide the Toolbar vs the Tooltips display and in simulation mode will speed up or slow down the vehicle. The ENTER key will allow you to make a selection in a MENU and in an operating mode it will allow you to select the main ACTION button without making a selection on the screen.

### **Operating Mode Layout**

#### **Map**

Displays your selected data. Up to 4 layers of data can be displayed at a time. **Zoom In/Out** buttons are displayed at all times on the map in the upper left and right corners. The bottom edge of the map can display the map scale, GPS stats, and the main Action button. A **Toggle Navigation View** button is shown in the lower left hand side of the screen when a navigation related tool is selected, which will allow you to switch between the normal map view and a dedicated navigation view.

#### **Status Bar**

Displays information based on the currently selected tool such as its name and function or spatial stats such as area, length, count. An icon indicating GPS state is also displayed on this bar as well as a manual control button to hide/show the map toolbar.

#### **Map Toolbar**

Displays the available tools as buttons than can be selected. The Toolbar can be customized to display only the tools you desire and also filters itself to only show the tools that are actually available for the currently selected tool.

#### **Map Tooltips**

Displays any tooltips that have been selected to display. Up to two tooltips can be setup for display at a time. The Tooltips are shown in the space where the Map Toolbar is shown and only one or the other can be displayed at one time. To toggle the display of the Tooltip items you can select the Hide/Show button on the far right side of the Status bar line, press up/down on the 4-way directional pad or select the MENU item and then TOOLBAR and HIDE.

The source for tooltip values is dependent on the map layer and the operating mode. If the source is set to the Edit Layer on a map then the values come from the last logged value. If the source is one of the Reference layers then the source for the values is the object value at the current location.

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## Setting Up Mobile

Setup of SMS Mobile can either be done from SMS Basic/Advanced, Case IH AFS Software, or New Holland PFS software v9.0 or you can manually create setup information in SMS Mobile manually or by importing files. The preferred method for ease of use and consistency with your desktop system is to create and manage your setup as much as possible from the desktop software. Please see the instructions for DEVICE SETUP in SMS/AFS/PFS software for more details on the process of creating a setup for SMS Mobile from the desktop software.

If you need to create your setup in the field you can go to the SETUP area and define Growers, Farms, Fields, Products, People (operators), Vehicles, Implements, Containers, Pests, and Marks. A key feature of SMS Mobile is that you can create almost all of the management items on fly when you are entering an operating mode or when changing/starting a new dataset. This means you have easy access to making additions when you need them.

You can also import spatial files into the system either for reference or editing or also to help generate Grower, Farm, Field, and Product management items if that information is contained in the import files. See the section below on [Importing Data](#).

### Grower/Farm/Field/Resource Tracking Setup

These management items can all be created, edited, deleted in SMS Mobile. They can also be setup in SMS Desktop software and exported out to SMS Mobile. Setup for these items is fairly straight forward and nearly identical to the setup provided in SMS desktop software for these items.

### Product Setup

Products can be created, edited, or deleted in SMS Mobile. They can also be exported from SMS Desktop Software to SMS Mobile or imported from a Shape file.

To make selection of "favorite" products easier, products in the product list with a check by their name will be listed at the top of the product list when assigning management items during creation of a new dataset when entering an operating mode. They will be separated from the entire list of products for easier selection of a commonly used product.

### Pest Setup

Pests can be created, edited, or deleted in SMS Mobile. They can also be exported from SMS Desktop Software to SMS Mobile or imported from a Shape file.

When creating Pests, you will be required to pick a Pest Type for a new pest.

To make selection of "favorite" pests easier, pests in the pest list with a check by their name will be listed at the top of the pest list when assigning pests. They will be separated from the entire list of pests for easier selection of a commonly used pest.

### Operations Setup

There are a number of setup options related to operations. It should be noted that in this release of SMS Mobile that new operations and new attributes can NOT be created in SMS Mobile, they can only be created in SMS desktop software and exported out to SMS Mobile.

- **Definitions Tab** - Allows you to setup, for operations that are editable, what attributes are assigned to be created/logged with that operation and what attributes will be visible when creating/logging data. For example the Soil Sampling operation has numerous default attributes that are only useful once you have gotten lab results back, so by default when taking samples these attributes (i.e Soil pH, Soil OM, etc) are hidden by default. You can also define whether an attribute will used a default global value by default or whether it will load the last entered value for that attribute.
- **Field Conditions Tab** - Allows the selection of additional attributes that you would like to collect when creating/logging data that aren't defined with a specific operation that you want to consistently record or they might be an attribute that you need to collect for a special reason but not all of the time. An example would be to select attributes related to scouting such as Sky Conditions, Tillage Type, and Air Temperature. When you select Field Condition attributes they will then be available to set/log for any operating mode and be appended to the list of default attributes that are available for the operating mode/operation.
- **Instances Tab** - Allows the creating/editing of Operational Instances in SMS Mobile. This is useful for activities such as soil sampling and scouting where you may be returning to a location multiple times during a crop season and you want to keep your data separated by an operational instance such as Spring Sampling vs Fall Sampling.
- **Export Tab** - Allows the selection of management item properties that you would like to export for each operation you have in SMS Mobile in addition to the logged attribute values. Examples are Operator (people) Name, Vehicle SN, Grower Custom ID, etc.

### Sensor Setup

Data can be logged from external sensors using this setup. Sensor configurations can be created, edited, or deleted in SMS Mobile. Sensor configurations can be setup for all operating modes except for the Boundary mode.

Predefined sensor models are provided for easy configuration of sensors. Sensors from Dualem, Geonics, Holland Scientific, Minolta, NTech, and Veris are currently available. A Custom Sensor model is also available that allows you to define a sensor that isnt provided in the list and that outputs data in an ASCII text format that SMS Mobile can parse to acquire data to log.

Unique sensor configurations can be setup for the same sensors but for use in specific operating modes or situations where you only need a particular attribute to be logged from a sensor.

To define a custom sensor you must specify how the information it provides is organized and how SMS Mobile should interpret it. The following parameters must be set for a custom sensor configuration:

- **Define Sensor Header to Parse** - This setting identifies what text strings from a custom sensor contain the data you wish to log. So an example might be an ASCII text string formatted as \$, 123.5, South, XYZ. In this example you want to log 123.5, South, and XYZ and to do that you must define the header as "\$," in this entry. SMS Mobile will then know to look for those two characters in sensor readings to find the data to log.
- **String Delimiter** - This setting defines the formatting of the ASCII text string to be parsed, i.e. how each attribute in the string is separated from each other. Options are commas, spaces, and tabs.
- **String Terminator** - This settings defines how each ASCII string output by the sensor ends and thus defines the start of the next string that is output from the sensor.
- **Logging Type** - This setting defines how often the sensor will output data. Trigger Type should be used when the sensor outputs a single reading on-demand. The Continuous Type should be used when the sensor outputs readings automatically and constantly without any user control. When Continuous is selected and the sensor is used in any operating mode except for Coverage Logging then a Sensor button will appear on the map that will allow you to take a reading for the currently selected object in the edit layer.

### Marks Setup

There are 8 possible marks that can be setup and used in SMS Mobile. The marks each have a unique button that is shown in the Map Toolbar when a Mark is checked as active. Mark Names can be edited and the custom name will log with your data when a Mark is selected. When displayed on the map Marks will use a standard set of mark icons, the same as is used in SMS desktop software; they will NOT use the Mark button icon when display on the map.

As a general note, Marks only log a single mark per selection, they do not log continuously when selected. Each press of a Mark button or selection from the MENU will only log one mark.

### General Setup

General Setup provides a number of settings and options for the display and logging of data in SMS Mobile.

- **General Tab**
  - Measurement System - Sets the default measurement systems, either English or Metric units.
  - Font Size - Allows the selection of Small, Medium, or large font size to be used in various places in SMS Mobile such as selection trees
  - Auto Select Field by Location - This option is checked by default and when unselected will not auto select a field based on your location. Instead the user will be prompted to manually select their field or select from a list of the closest fields to your current location.
- **Map Display**
  - Show Large Map Size - Select this option to display a larger map area in all operating modes. When this option is selected the map will cover the Windows Mobile task bar at the top of the screen.
  - Map Redraw Rate - This selection drives how often the on-screen map updates the information it displays. This can be set to once or twice per second.

- Point Data Display Type - This selection drives how point datasets set as a reference layer are displayed in the map. You can either display data as points or smart rectangles.
- Default Logging Color - This is the default color that will be used when logging/creating data that does not currently have a legend attribute set and or the values being logged/created don't match any legend range values that you might have currently set.
- **Logging 1 Tab**
  - Logging Interval - Allows the selection of a logging interval from a fixed list ranging from 10 times per second to once every 60 seconds . This setting only affects the logging in the Coverage logging Mode. The logging interval in other operating modes is based on a logging interval distance set on the Logging 2 Tab and the mapping update rate set on the Map Display Tab.
  - Min Travel Distance - This distance is the minimum distance that must be traveled before a point will be logged in the Coverage Mode in conjunction with the logging interval.
  - Default Swath Width - This is the default swath width that will be used in the Coverage Logging mode.
  - Coverage Overlap Level - This option regulates the performance of the Virtual Implement Switch (VIS) in the coverage logging mode. Three options are provided: Average Overlap, Minimum Overlap, and Maximum Overlap.
- **Logging 2 Tab**
  - Default Observation Diameter - This is the default diameter that will be used to create an observation region when you select the Add Region button when the Start Scouting tool is running. This only applies to the Scouting Mode.
  - Auto Close Polygons by Distance - This option when selected will stop the creation or logging of a new polygon or line if you drive or draw into the set radius of the start point of the object. The radius distance can be set as well. This option only applies to operating modes that provide polygon or line creation tools.
  - Polygon/Line Logging Interval - This option defines one of the parameters used to control when vertices will be logged for a polygon or line. In conjunction with the map redraw rate, as long as you have traveled the distance selected with this option a vertex will be logged. Because of these logging parameters, you will NOT be guaranteed to get a vertex every X distance that was selected but it will be close.
- **Navigation Tab**
  - Compass Radius - This distance controls the radius shown on the Navigation view for the outer compass circle. This radius also drives the size of the target circle, which is a third of the compass radius.
  - Stop Radius - This distance controls the radius at which the navigation view changes to a stop state.
- **About Tab** - Displays various stats and details on the current install of SMS Mobile, the mobile device and OS, and available memory.

### **Attributes/Properties Setup**

These items allow you to view what attributes and properties are available in the database. In addition you can edit the default display unit for each attribute or property to fit you specific needs.

## Registration Setup

Provides information on currently installed version, device ID, unlock status, and ability to register the mobile software.

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## Importing Data

Data can be manually imported into SMS Mobile without going through any other software. Currently ESRI Shape files or a limited set of image files with world files can be imported. See [Dataset Maintenance](#) for more details.

To import files follow these steps:

1. Select the SETUP bar or MENU item and then select DATASET MAINTENANCE.
2. You will then be prompted to select a specific field to import data to.
3. You can import data either as a reference or editable dataset, as a Farm Background, a Field Background, or as a Field Level boundary. Select one of the available tabs that represent these different types.
4. Once you have selected where you want to import the data to, press the IMPORT or ADD button on the tab you chose, and then select the file from the available files that will be listed.
5. You may then be prompted to select an Operation to import data as and also see if that operation has any required attributes to be imported.
6. Now you will be prompted to assign columns in the import file to attributes in the Mobile database. Select an import column and then you will be prompted to select whether you are importing the column as an attribute or a management item.
7. Lastly you need to set the rest of the management items for the import data, such as Product and Instance.

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## Logging Data

Data can be logged with SMS Mobile a number of different ways. 5 different operating modes are currently available for logging spatial data. Select one of the links below for details on a specific operating mode:

[Boundary Mode](#)

[Soil Sampling Mode](#)

[Coverage Mode](#)

[General Logging Mode](#)

[Scouting Mode](#)

## Using Sensors to Log Data

External sensors can be connected to your mobile device and SMS Mobile to record attribute values from sensors in real-time.

The first step is to create a sensor configuration(s) to define your sensor(s) that will be connected to SMS Mobile. Create your configuration(s) via the Setup menu and Sensor Setup.

When starting any operating mode, if you have configured a sensor(s) for that operating mode, when you start the operating mode and get to the step where you can edit the attribute default values you will now see an extra tab called Sensors. On the Sensors Tab you can select the

sensor(s) that are available that you would like to log data from. You **MUST** select a sensor on this tab to log attribute values from it. Attributes assigned to that sensor will be automatically added to your logged/created data for you.

Once in an operating mode, sensor values will be logged based on the way the operating mode creates/logs data or the type of sensor. So for example in the Coverage Logging mode sensor values will be logged automatically whenever logging is enabled. In the General Logging mode though logging will only occur when an object is selected and either the sensor provides a value (trigger type) or the user selects the Sensor icon that is displayed on the map (continuous type).

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## Navigation View

When a tool is active that provides navigation functionality, such as the Navigate to... tools or Take Samples, a button will display in the lower left hand side of the map view. Selecting this button will toggle to a dedicated navigation view.

The Navigation View provides a visual interface to help you navigate to a target location, such as a field boundary or a soil sampling site. The view consists of a target circle, a compass circle, and various stat displays to help you navigate to your target. The Target circle will rotate around the edge of the compass circle until you are within the set radius of the compass circle. Also the Target circle will change colors to help indicate how far you are from being offline from the target, so if its red then you not on a heading that will get you to the target. If the color is green then you are within a few degrees of the proper heading to line up with the target circle. The goal is to line up your heading of travel so that the Target circle is green and then to drive towards the target. Once you are within the compass radius then the target circle will start to move inside of the compass circle. Now keep driving until the compass arrow and direction are lined up within the Target circle. Once you reach the STOP radius that is set, you will stop getting navigation and the screen will change to indicate a STOP state. At that point you have reached your target and you should stop.

The stats that are displayed in the top left and right corners of the view can be toggled between available stats. To do this press the text on the screen and a different stat will appear. You can display distance to target, time to target, heading to target, and the position of the target. The text under the compass arrow can be toggled between a direction of travel or a travel heading.

At any time you can toggle back and forth between the map and navigation views by pressing the Navigation View Toggle button.

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## Exporting Data

Any spatial data in the SMS Mobile Project except for Backgrounds can be exported out in the ESRI Shape file format. Exports contain all attributes that are contained in the data and also properties that can be edited by the user.

To export follow these steps:

1. Select the REVIEW bar or go to the MENU and select REVIEW. Then select EXPORT.
2. You will then be prompted to select an export option, either by date range or by manual selection.

3. If you select by Date Range then only datasets that have been created or edited in the Mobile Project between the dates you selected will be exported. Once you export using a date range SMS Mobile will automatically keep track of the last date you exported and will automatically update the date range so the next time you export you get a new range. You will get a listing of the datasets that will be exported and you can manually remove datasets that you don't wish to export.
4. If you select manual selection then you will be allowed to manually select a dataset(s) to export.
5. Once you have selected your export method and accepted the datasets to export you will be prompted with the formatting options for the export date.
6. First you will be allowed to select the management item properties that you wish to include with your export data. Examples are Grower Name, Field Name, Product Name, Operator Name, etc. Defaults are provided but you can add or remove properties as you desire.
7. You will now be prompted to select a merge level for your datasets and the export file format. You can select Field, Operation, or Dataset. When Field is selected all your datasets that have been selected for export will merge by field, so you will get an export file per unique field. If you select Operation then you will get a single file per unique operation. And if you select Dataset then you will get individual export files for each unique dataset. Currently you can only export files in the ESRI Shape file format.
8. Lastly, you will be allowed to select a location to save your export files to. Your options are on the internal storage of the mobile device or on a removal storage card connected to the device. Where ever you select to export to, a "MOBILE EXPORT" folder will be created and your files will be stored there. The naming of the export files is based on the merge level options you selected above and the content of the files and should provide enough detail to clearly know what type of data is contained in the export files.

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## Reviewing Data

### Dataset Summary

This tool allows you to select a dataset(s) and view stats and tabular summary information for the dataset and its attributes, properties, and individual values. If you have less than 100 individual objects in a dataset you can view the raw values for each object in the dataset for each of the attributes it contains. Otherwise you get a summary view of all the data contained in the dataset(s) via minimum, maximum, average, and total values for each attribute in the dataset(s). No map is shown here, just summary and stats type information.

### Dataset Viewer

This tool allows you to select any available dataset(s) in your SMS Mobile project and view a map of it. You can NOT edit the selected data, this is strictly for viewing purposes. You can though select objects on the map and perform a query which generates basically the equivalent of the Dataset Summary described above but only for the specific data you have selected on the map.

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## Troubleshooting

### You aren't getting GPS:

1. Verify your GPS receiver is cabled securely to the 9-pin serial connection, plugged firmly into the SD or the CF card slots, or make sure you have established a connection to your Bluetooth receiver and its powered on.
2. If you are on the start screen go to the SETUP menu and select GPS. Now press the SELECT RECEIVER button and either let the software auto-search or press the SEARCH FOR GPS DEVICES button. Once a receiver is detected and displayed then you can press OK until you exited the GPS SETUP and returned to the main screen.
3. If you are in a operating mode, first press the spot on the screen where the GPS Status icon should be or press the MENU button, then GENERAL and GPS STATUS. Now press the SELECT RECEIVER button and either let the software auto-search or press the SEARCH FOR GPS DEVICES button. Once a receiver is detected and displayed then you can press OK until you exited the GPS SETUP and returned to the current operating mode.
4. If the above steps do not result in detection of your GPS receiver, please do the following based on what type of GPS receiver you are connecting to:
  - Serial/CF/SD GPS receivers - On your mobile device select the START menu, then SETTINGS, then the SYSTEM tab. Now select the GPS icon. On the PROGRAMS tab make sure that the port is set to GPD1. On the ACCESS tab if the manage GPS option is UNCHECKED you do not need to make any other settings. If this option is CHECKED then on the HARDWARE tab you MUST set the port that your GPS is connected to and the baud rate it is outputting position data at. If you don't set this then your GPS will not be detected properly by SMS Mobile (it will say it has detected it as a "Shared" GPS receiver but you wont get any position data from it).
  - Internal GPS receiver - If your Mobile device has GPS built in then you more than likely to have to make some settings changes or at least verify them first. On your mobile device select the START menu, then SETTINGS, then the SYSTEM tab. Now select the GPS icon. On the PROGRAMS tab make sure that the port is set to GPD1. On the ACCESS tab make sure the manage GPS option is CHECKED. Your internal GPS receiver should now automatically be detected. If you have problems then you may need to figure out which port your internal GPS is connected to and manually set this on the PROGRAMS tab or the HARDWARE tab.

**SMS Mobile closes or locks up without warning:**

1. This more than likely is due to either missing files or not enough memory.
2. If you have your SMSMOBILEDATA folder installed to an external memory card then more than likely the problem is with how your mobile device handles external file connections. It is recommended at this point to move your SMSMOBILEDATA to the internal memory of your mobile device.
3. The other issue could be that you have run out of application memory. Each application running on the Windows Mobile OS is only allowed 32 MB of operating memory. So it is critical that you not have many if any other applications running on the mobile device when running SMS Mobile. Many devices have a base application memory of 64MB and some of this is used by the OS which leaves you an even smaller amount to run your application, i.e. you may not always have a full 32MB of RAM to work with. In cases where you do have the full 32 MB of RAM and still run out this is due to the size of the

dataset layers you have selected to map which may be taking up large amounts of memory, such as images. Trying setting a layer you have set to an Image to None and see if your performance and stability improves.

4. In either case above or general situation where the mobile device is "locked" up, if you can manually close/stop SMS Mobile you can preform a device reset by holding down the power button until the device resets or you get an option on the screen to reset the device. If this fails then as a last resort remove the battery from the device then re-insert it and power back up.

# Boundary Mode

SMS Mobile allows you to create or edit field boundaries. This includes what we call Field Level boundaries or Dataset Level Boundaries. Field Level boundaries are tied directly to a Field Management Item and are used for auto management selection, spatial sorting, etc. Dataset Level boundaries are regular datasets that are saved in the Management tree as a Boundary operation and they are not used for any sorting, etc.

To create/edit a boundary follow these steps:

1. Select the FIELD OPERATION bar or MENU item and then select BOUNDARY.
2. The next step depends on if you have GPS, field boundaries, and if you are close to or within a field boundary. If you don't have GPS, a field boundary you are in or close to then you will be prompted to manually select your Grower, Farm, Field. If you are within range of a Field Level boundary(s) but not inside of one you will be prompted with a list of the closest fields or given the option to manually select a Grower/Farm/Field. If you are within an existing Field level boundary then it will be automatically selected.
3. Once you have selected a field, either automatically or manually, you will be prompted to select a boundary type to create or edit. You can edit a Field Level boundary but you can't create one directly. You can create a new Boundary level dataset or edit an existing one. In SMS Mobile when you create a new Dataset Level Field boundary and then save it you will also have the option to save it as the new Field Level boundary.
4. If you selected either of the edit options you will now be taken to the Boundary mode editor to being editing. If you selected the create a new boundary option you will now be prompted to select the management items for your new boundary dataset, after which you will be taken to the Boundary mode editor.
5. You can now go to the MENU or Map Toolbar and select to Add a Polygon, Freehand Polygon, or Circle.
6. Once you have created an object you can then edit it using the move tool, divide by line or polygon, or by adding another object that intersects the existing object. You can also use the Merge tool to merge multiple objects that are selected.
7. Once you are satisfied with your boundary you can then save it by selecting the SAVE option from the menu or from the Map toolbar. You can also just select CLOSE from the MENU, and if you haven't saved manually yet, you will be prompted to save.

When creating or editing a boundary you can add Marks or Landmark Notes.

# Coverage Logging Mode

SMS Mobile allows you to log coverage data, based on a swath width that you select. This is useful for activities such as logging tillage operations or basic hybrid/variety mapping (single product). Coverage logging data is currently saved as the Site Verification operation only. Coverage logging data is actually logged as points but includes attribute information for swath, distance, and duration so accurate coverage data can be calculated and displayed.

To improve coverage logging quality, the Virtual Implement Switch (VIS) is provided as an option for this mode. If you have a field boundary defined for your field when you enter this mode you will be provided and option to Enable or Disable the VIS. The VIS automatically turns off coverage logging based on whether you are inside the field boundary and also based on area you have already covered insider the field boundary. This eliminates the need to manually Stop or Pause logging when in a covered area or when you drive outside the field. In addition the VIS will also automatically reduce your swath width based on uncovered or overlapping area. The VIS can be disabled in the operating mode at anytime.

To log coverage data follow these steps:

1. Select the FIELD OPERATION bar or MENU item and then select COVERAGE LOGGING..
2. You will now be prompted to select either to create a new dataset or open an existing dataset.
3. The next step depends on if you have GPS, field boundaries, and if you are close to or within a field boundary. If you don't have GPS, a field boundary you are in or close to then you will be prompted to manually select your Grower, Farm, Field. If you are within range of a Field Level boundary(s) but not inside of one you will be prompted with a list of the closest fields or given the option to manually select a Grower/Farm/Field. If you are within an existing Field level boundary then it will be automatically selected.
4. If you selected to add to or edit an existing dataset you will now be prompted with a tree of available datasets that can be selected for the selected Field above and that are site verification datasets.
5. You will now be prompted to select the management items for your new site verification dataset, after which you will be taken to the Coverage Logging mode editor.
6. You will now be prompted with the default attributes that are currently available and the current default values for each. All logged points that are created will get these attributes and their values. These values can be edited now before you continue. You can NOT add attributes though from here. Attributes can only be added from the OPERATIONS setup. Press OK to continue.
7. Now you will be prompted with an option to map related datasets. Related datasets are other load/regions that are related to the new dataset you are creating or an existing dataset you have selected to add to. An example would be that you have logged multiple days of coverage data in the same field and you have multiple datasets with different products. Selecting the option to map all related datasets will show the other datasets on your map plus the new data you are logging. The other benefit is that this does not use up an additional map layer slot. Press OK to continue.

8. The last step before entering the operating mode, which is only available if you have a set field boundary, is the settings for the Virtual Implement Switch (VIS). Select whether you want to Enable or Disable the VIS and how you want it to handle holes inside your field boundary. Click OK to continue.
9. You will now enter the Coverage Logging mode editor. To begin logging coverage data, select LOG COVERAGE from the MENU or from the map toolbar.
10. To begin logging data you now select the START button in the right corner of the map, press the ENTER key on your mobile devices keypad, or press the ACTION menu and select START. Once selected the START icon and selections will change to PAUSE.
11. To stop logging select CANCEL. Save does not need to be selected in this mode because data is automatically saved as it is logged.

NOTE: Coverage data can not be edited or undone once logged. To remove data you must go to Dataset Maintenance and deleted the entire dataset or edit it in the desktop software.

# General Logging Mode

SMS Mobile allows you load, create, or edit generic data such as points, lines, or polygons. This mode of operation is commonly used for logging/creating things like tile lines, crop scouting, crop plans, or any other general type of data that is needed that isn't covered by one of the other operating modes.

To create a general logging dataset follow these steps:

1. Select the FIELD OPERATION bar or MENU item and then select GENERAL LOGGING..
2. You will now be prompted to select either to create a new dataset or open an existing dataset.
3. The next step depends on if you have GPS, field boundaries, and if you are close to or within a field boundary. If you don't have GPS, a field boundary you are in or close to then you will be prompted to manually select your Grower, Farm, Field. If you are within range of a Field Level boundary(s) but not inside of one you will be prompted with a list of the closest fields or given the option to manually select a Grower/Farm/Field. If you are within an existing Field level boundary then it will be automatically selected.
4. If you selected to add to or edit an existing dataset you will now be prompted with a tree of available datasets that can be selected for the selected Field above and that are site verification, generic, or crop plan datasets.
5. You will now be prompted to select the management items for your new dataset, after which you will be taken to the General Logging mode editor.
6. You will now be prompted with the default attributes that are currently available and the current default values for each. All logged points that are created will get these attributes and their values. These values can be edited now before you continue. You can NOT add attributes though from here. Attributes can only be added from the OPERATIONS setup. Press OK to continue.
7. You will now enter the General Logging mode editor. The General Logging mode provides the most options and tools for collecting/creating/editing spatial data in SMS Mobile. You can create/log points, lines, and polygons in this mode.
8. To begin logging/creating data go to the ADD menu and select one of the available tools or select the tool from the map toolbar.
9. All of the ADD tools generally function the same in that the ACTION tools allow you to add objects/vertices of an object one at a time or they can log automatically as you drive. Select the action button in the right corner of the map, press the ENTER key on your mobile devices keypad, or press the ACTION menu and select the first action item to start logging or add a point/vertex.
10. To stop logging/creating data select STOP, which will complete the object you are creating, unless you are logging/adding points. The new object you just created will automatically be selected.
11. In this mode you must select the SAVE item to save your data, it is not saved automatically. So either manually select SAVE from the MENU or from the toolbar. If

you haven't saved yet you will get prompted if you would like to save before closing the mode editor.

# Crop Scouting Mode

SMS Mobile allows you to load, create, or edit crop scouting regions. This mode of operation is used to log the conditions and state of your crop. You can also log Pests that you observe in your field and document information about those pests. Only polygon areas can be created to document your scouting regions/observations. Observations can be made on the fly by manually creating observation regions (using tools in the ADD Menu or toolbar) or by generating pre-defined regions that you will specifically scout. The following details the process of creating a pre-defined scouting dataset but please note that you DO NOT have to create pre-defined regions to using the scouting mode, you can manually add regions as you observe them.

To create scouting observation regions using the wizard tools follow these steps:

1. Select the FIELD OPERATION bar or MENU item and then select CROP SCOUTING.
2. You will now be prompted to select either to create a new dataset or open an existing dataset. If you don't have any existing Scouting datasets then you will automatically move to the next step.
3. The next step depends on if you have GPS, field boundaries, and if you are close to or within a field boundary. If you don't have GPS or a field boundary you are in or close to, then you will be prompted to manually select your Grower, Farm, Field. If you have GPS and are within range of a Field Level boundary(s) but not inside of one you will be prompted with a list of the closest fields or given the option to manually select a Grower/Farm/Field. If you have GPS and are within an existing Field level boundary then it will be automatically selected.
4. If you selected to add to or edit an existing dataset you will now be prompted with a tree of available datasets that can be selected for the selected Field above and that are also scouting datasets.
5. You will now be prompted to select the management items for your new scouting datasets(s), after which you will be taken to the Crop Scouting Mode editor.
6. You will now be prompted with the default attributes that are currently available and the current default values for each. All observation sites that are created will get these attributes and their values. These values can be edited now before you continue. You can NOT add attributes though from here. Attributes can only be added from the OPERATIONS setup. Press OK to continue.
7. You will now enter the Crop Scouting Mode editor. Now select CREATE SCOUTING OBSERVATIONS from the MENU or from the Map Toolbar.
8. You will now be prompted to select the source area to use to generate your observations from. You can either use your Field Level boundary, your current selection on the map, or one of reference layers you currently have mapped. Press OK once you make your selection.
9. Now you will be prompted to select the method to use to create the observations. You can select to create observation grids or polygon regions.
10. Now you will be prompted to select the parameters for generating the observations grid if you selected that option or if you selected the option to generate polygon regions go to step 12. Once you have entered the parameters you desire for the grid press the OK button.

11. Now you get the opportunity to verify the observation regions that will be created and adjust as needed. At this point you see a preview of the observations but you can also use the provided ROTATE GRID or SHIFT GRID tools to rotate and shift the sample grids to position them as you choose. Press OK when you are satisfied with the samples that will be created.
12. You will now be prompted with an option to merge polygons that are small with other larger polygons (if you selected the option to Create Sample Grids). If you want to automatically merge the small polygons check the option and then select the percentage of the area to merge by. This percentage is based on the original grid size you selected.
13. The last step in this wizard, which is optional, is to auto-fill an attribute with sequential values. You can CANCEL this step if you don't want to auto-fill values for an attribute and finish the creation of your observations.
14. You will now be returned to the map and you should see the samples that you just created, labeled by FEATURE ID.

NOTE: Additional observation regions can be added to the observations that are created via the CREATE SCOUTING OBSERVATIONS wizard. Observations can also be manually selected and deleted.

To start scouting or re-scout already defined observation regions follow these steps:

1. Enter the Crop Scouting Mode.
2. Now either follow the steps above to create a new scouting dataset or you will have a dataset selected that you previously created, exported from the desktop software, or imported manually into SMS Mobile.  
NOTE: These steps can still be used even if you don't have predefined regions. You can use these steps to manually add observations using the ADD REGION tool which will add an observation region based on the default observation diameter. Just follow the steps below and the only difference is that you won't get guidance to any regions because you won't have any.
3. Once you have a scouting dataset, select the START SCOUTING tool from the MENU or select it from the Map Toolbar.
4. You will now be prompted to select a method to be guided to your observations regions. You can either select to be navigated by object/sample order or by the closest object/sample to your current position. Please note that even though you select one of these navigation options you can still manually add new observation regions manually using the ADD REGION button or Action Menu selection.
5. You will now return to the map and a line will be displayed to the first observation region to navigate to as well as there will be a crosshair placed on the center of the observation region. The observation region that is the current navigation target will also be selected. You will also have several action buttons available depending on the state of your data; Add Region, Edit Selection, Next Item, and Cancel. You will also see a heading and distance displayed in the Status bar indicating the navigation to the currently selected observation region.
6. As you are driving to an observation region that is currently selected you will be able to add observations. A new observation region can be added on the fly by selecting the ADD REGION tool but an area can only be added as long as no part of it touches any other observation region. When you drive inside of a selected grid or region type observation

region the ADD REGION tool will change to an EDIT ATTRIBUTES tool and will allow you to edit the attribute values for the observation region. When you select the EDIT ATTRIBUTES tool and press OK on edit attribute values dialog that observation region you were editing will be marked as "scouted". What this means is that as you increment through the other observation regions, you will only be guided to observations that have not been scouted already. You can reset this though by selecting the RESET OBSERVATIONS tool which will mark all observation regions as un-scouted.

7. When adding or editing an observation region you have access to set values for the attributes assigned to the scouting operation(s) and also to add Pest observations to your dataset. When you add Pests to your dataset you will be actually adding a new dataset that is specific to the Pest you add and the type of pest it is. You will not see this as separate layers in SMS Mobile though. Only if you export the scouting data or sync with SMS desktop software will you see the data split up per Scouting Operation and Pest. Whenever you edit this data in SMS desktop or SMS Mobile though all the related scouting data will be combined back into one dataset that you can edit. So what you see in the editor in SMS Mobile is what we call Scouting – All Observations which is special dataset made up of all the observations you collect together, no matter what Pest (or even no pest) that they are.

NOTE: NO PEST is a selection that should be used to document addition scouting data that isn't Pest related but you want to track. NO PEST will actually create your data as a Scouting – General operation which allows you to document things such things as weather damage, nutrient deficiency, etc.

8. So when editing the values for an observation you can set the general scouting attribute values which are generally items that should be available to all scouting information, like Crop Growth Stage or Crop Height and then you can add Pest specific information to document very specific items you need to document for an observation region.

# Soil Sampling Mode

SMS Mobile allows you to load, create, or edit soil sampling datasets. Soil Sampling data can either be points, grids, or polygon regions. SMS Mobile not only provides the tools to create soil sampling locations but it also provides tools for helping you navigate to each sample and take it.

To create a soil sampling dataset follow these steps:

1. Select the FIELD OPERATION bar or MENU item and then select SOIL SAMPLING.
2. You will now be prompted to select either to create a new dataset or open an existing dataset.
3. The next step depends on if you have GPS, field boundaries, and if you are close to or within a field boundary. If you don't have GPS, a field boundary you are in or close to then you will be prompted to manually select your Grower, Farm, Field. If you are within range of a Field Level boundary(s) but not inside of one you will be prompted with a list of the closest fields or given the option to manually select a Grower/Farm/Field. If you are within an existing Field level boundary then it will be automatically selected.
4. If you selected to add to or edit an existing dataset you will now be prompted with a tree of available datasets that can be selected for the selected Field above and that are also soil sampling datasets.
5. You will now be prompted to select the management items for your new soil sampling dataset, after which you will be taken to the Soil Sampling mode editor.
6. You will now be prompted with the default attributes that are currently available and the current default values for each. All sample sites that are created will get these attributes and their values. These values can be edited now before you continue. You can NOT add attributes though from here. Attributes can only be added from the OPERATIONS setup. Press OK to continue.
7. You will now enter the Soil Sampling Mode editor. Now select CREATE SAMPLES from the MENU or from the Map Toolbar.
8. You will now be prompted to select the source area to use to generate your samples from. You can either use your Field Level boundary, your current selection on the map, or one of reference layers you currently have mapped. Press OK once you make your selection.
9. Now you will be prompted to select the method to use to create the samples. You can select to create points, grids, or polygon regions.
10. Now you will be prompted to select the parameters for generating the samples based on the method you selected above. Once you have entered the parameters you desire press the OK button.
11. Next you get to verify the samples that will be created. At this point you see a preview of the samples but you can also use the provided ROTATE GRID or SHIFT GRID tools to rotate and shift the sample grids to position them as you choose. Press OK when you are satisfied with the samples that will be created.
12. You will now be prompted with an option to merge polygons that are small with other larger polygons (if you selected the option to Create Sample Grids). If you want to automatically merge the small polygons check the option and then select the percentage of the area to merge by. This percentage is based on the original grid size you selected.

13. The last step in this wizard, which is optional, is to auto-fill an attribute with sequential values. By default SAMPLE ID will be selected and this tool allows you to generate values for all samples automatically based on a scheme you define such as "Sample 1, Sample 2, Sample 3, etc". You can CANCEL this step if you don't want to auto-fill values for an attribute and finish the creation of your samples.
14. You will now be returned to the map and you should see the samples that you just created, labeled by Feature ID.  
NOTE: Point samples can be added to the samples that are created via the CREATE SAMPLES wizard. Samples can also be manually selected and deleted.

To take samples follow these steps:

1. Enter the Soil Sampling Mode.
2. Now either follow the steps above to create a new sampling dataset or you will have a dataset selected you previously created, exported from the desktop software, or imported manually into SMS Mobile.
3. Once you have a sampling dataset, select the TAKE SAMPLES tool from the MENU or select it from the Map Toolbar.
4. You will now be prompted to select a method to be guided to your sample sites. You can either select to be navigated by object/sample order or by the closest object/sample to your current position.
5. You will now return to the map and a line will be displayed to the first sample site to navigate to as well as their will be a crosshair placed on the center of the sample site. The sample site that is the current navigation target will also be selected. You will also have several action buttons available depending on the state of your data; Add Point, Edit Selection, Next Item, and Cancel. You will also see a heading and distance displayed in the Status bar indicating the navigation to the currently selected sample site.
6. As you are driving to a sample site that is currently selected you will be able to add points. When you drive within 30 feet of a sample point or you drive inside of a selected grid or region type sample site the ADD POINT tool will change to an EDIT ATTRIBUTES tool and will allow you to edit the attribute values for the sample site. When you select the EDIT ATTRIBUTES tool and press OK on edit attribute values dialog that sample you were editing will be marked as "sampled". What this means is that as you increment through the other sample sites, you will only be guided to sample sites that have not been sampled already. You can reset this though by selecting the RESET SAMPLES tool which will mark all samples as un-sampled.

# Dataset Maintenance

Dataset Maintenance allows you to import, view, and delete datasets that are assigned to a Field. It also allows management of backgrounds assigned at the Farm and Field levels as well as Field level boundaries ( which are used for spatial sorting and auto field selection).

Dataset Maintenance in general works only on a specifically selected Field at a time. To change fields select MENU, then CHANGE FIELDS. This allows you to change fields without opening and closing Dataset Maintenance. The only exception to this is when importing as described below where you can import multiple Fields from one file during an import.

## Importing Data

Currently only ESRI Shape files or image files (JPEG, PNG, Bitmap only) with world files can be imported into SMS Mobile via Dataset Maintenance. Images can only be imported as Farm or Field Backgrounds as well and not as normal Datasets.

It should also be noted that you can also import management items from an imported Shape file. Grower, Farm, Field, and Product can all be imported along with your spatial data in the import file by assigning columns with the management items to the corresponding management item type in SMS Mobile during the import process. This is extremely useful if you have a shape file that contains all your field boundaries for example along with their names since importing this way will allow you to import all the fields at once all allow them to be properly created as their own unique fields in SMS Mobile.

To import data follow these steps:

1. Select the SETUP bar or MENU item and then select DATASET MAINTENANCE.
2. You will then be prompted to select a specific field to import data to.
3. You can import data either as a reference or editable dataset, as a Farm Background, a Field Background, or as a Field Level boundary. Select one of the available tabs that represent these different types.
4. Once you have selected where you want to import the data to, press the IMPORT or ADD button on the tab you chose, and then select the file from the available files that will be listed.
5. You may then be prompted to select an Operation to import data as and also see if that operation has any required attributes to be imported.
6. Now you will be prompted to assign columns in the import file to attributes in the Mobile database. Select an import column and then you will be prompted to select whether you are importing the column as an attribute or a management item.
7. Lastly, you need to set the rest of the management items for the import data, such as Product and Instance.

## Viewing Data

All datasets, backgrounds, and field level boundaries can be viewed, one at a time, in Dataset Maintenance by selecting the VIEW button or MENU item once you have selected the specific data you want to view. The VIEW will show you the spatial objects in for the selected data using

a single legend color just to show you generally what the data looks like. You can also see some general stats on the selected data.

### **Deleting Data**

All datasets, backgrounds, and field level boundaries can be deleted from SMS Mobile via Dataset Maintenance. Once you delete data it is gone forever so be very careful when deleting data that you don't delete data that you didn't have an export for or hadn't synced/imported into SMS desktop software.

### **Set as Field Boundary**

A Dataset that is a Boundary operation type can be selected in the Dataset tree and then this option can be selected from MENU, then DATASET, then SET AS FIELD BOUNDARY and the selected boundary dataset will replace the current Field Level boundary for the current field.

### **Backgrounds**

Backgrounds can be moved up or down in the list of available backgrounds to ensure that by default the first background selected is the one you normally want to see as a map layer. This is done by selecting a background from the list of assigned backgrounds and then selecting MENU, then MOVE UP or MOVE DOWN to adjust the position. In addition, backgrounds that aren't currently assigned to a Farm or Field can be deleted by selecting MENU, then BACKGROUNDS, and then DELETE UNUSED.

# Dataset Viewer

SMS Mobile allows the viewing of any data that is available in SMS Mobile, including data that was exported from the desktop, imported, or created in Mobile. You can also select spatial objects and perform queries. Editing of any type is not allowed in the Dataset Viewer though.

The Dataset Viewer is a quick and easy way to review data you have already collected without opening that data in its normal operating mode, and thus potentially editing that data by accident.

# Misc

Ag Leader Field PC hard keys:



Application Manager Button - Opens the application manager where you can see what applications are running, manually shut them down, or see how much memory is currently in use.



Context Menu Button - Opens or closes the current menu for the current dialog.



Enter Button - Accepts the current selection or performs an action.



4-Way Directional Pad - Allows the navigation of menus, toolbars, etc.



Home Button - Opens the Windows Mobile home screen.