FIELD RESEARCH SOFTWARE

FIELD LAYOUT

HarvestMaster™

Field Research Software™

Field Layout

Reference Guide

P/N 22672-XX

Introduction

FRS Field Layout is designed to assist researchers in defining the location of a research field within a larger field. FRS Field Layout utilizes GPS signals to define and mark the four corners of the field. The user can then navigate to each corner of the field so it can be marked. FRS Field Layout also lets the user measure distance between any two points to verify location and accuracy. Once a field map has been generated, FRS Field Layout creates individual plots within the field boundary that has been defined.

FRS Field Layout also lets the user input an offset so that the base line of a field can be projected a set distance from a known boundary such as a road or fence. Accuracy of the defined field map is determined by the accuracy of the GPS receiver being used.

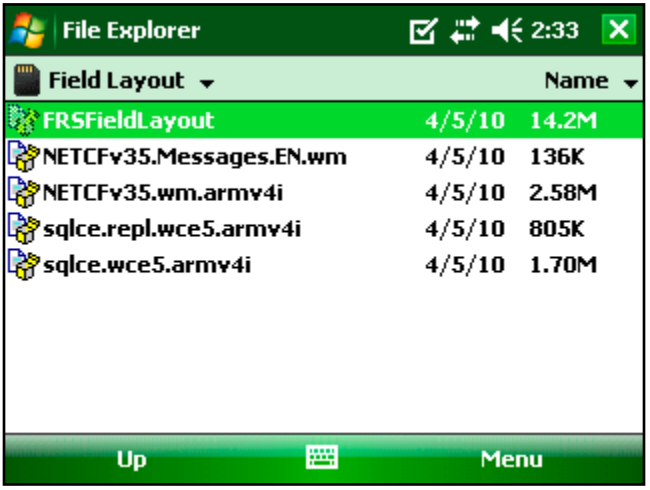
The software is set up to be used in either portrait or landscape mode.

Installing FRS Field Layout on a Handheld Computer

Complete the following steps to install FRS Field Layout on your handheld.

1. At ***www.harvestmaster.com*** go to ***Support > Downloads > FRS Suite.***
1. Download, save, and then run "Field-Layout-extract.exe" on your desktop PC.
2. Highlight and copy all extracted CAB install files.
3. Connect handheld to desktop PC.
4. In ActiveSync, click ***Explore***.
5. Go to ***My Windows Mobile-Based Device*** > ***Storage.***
6. Paste the five files extracted and copied earlier to this location.
7. On the handheld, go to ***Start*** > ***Programs*** > ***File Explorer***. In the upper left corner, tap ***My Documents.*** Tap ***Storage*** from the drop down menu.

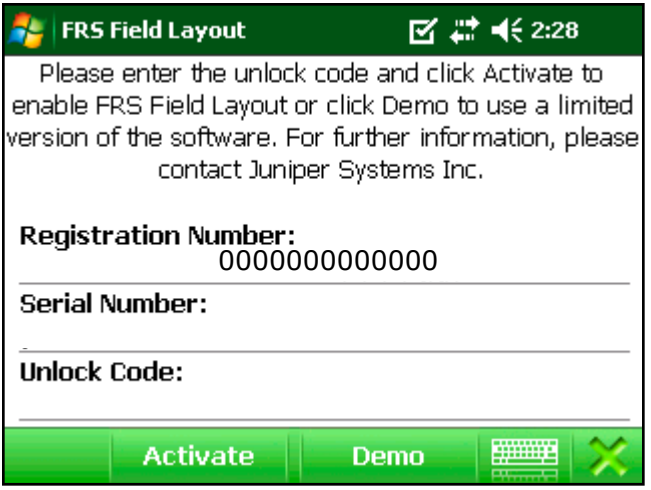
8. The five files you downloaded should be visible. First tap each of the NETCF and sqlce files to install them. Then install FRSFieldLayout.



Registering the Software

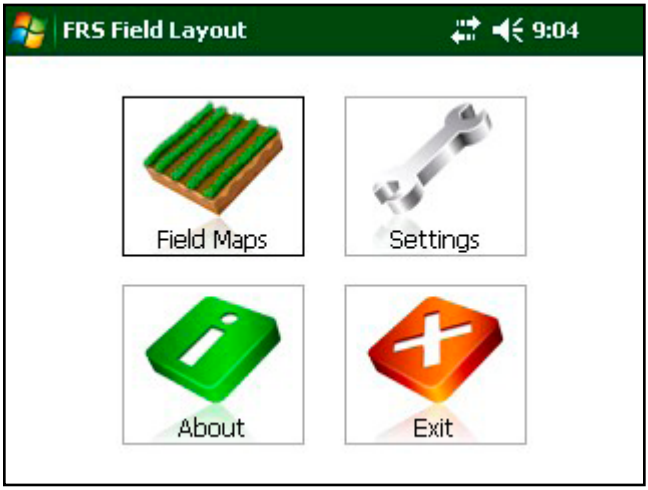
Complete the following steps to register the software on the handheld.

1. Go to ***Start*** > ***Programs*** > ***FRS FieldLayout.***
2. The screen displays your Registration Number and space for a serial number and an Unlock Code.



3. Go to ***www.harvestmaster.com/register***.
4. Use the registration number and the serial number to obtain an Unlock Code. The software serial number is located on the registration card that shipped with the software.
5. On the handheld, enter the serial number and unlock code.
6. The next screen will ask if you want to configure your GPS receiver. Tap ***No*** and ***Exit***.

Main Menu



Field Maps—Create or edit field map dimensions and mark GPS coordinates.

Settings—Set up GPS device, choose units of measure.

About—Check version and registration of the software.

Settings

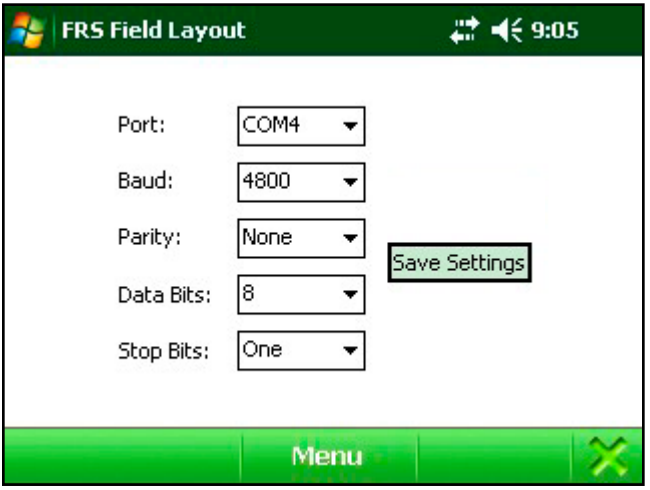
GPS Settings—Tap the ***Settings*** icon then tap ***GPS Setup*** button to open the GPS settings screens.

To begin using FRS Field Layout a GPS receiver outputting NMEA data strings on a valid com port must be defined.

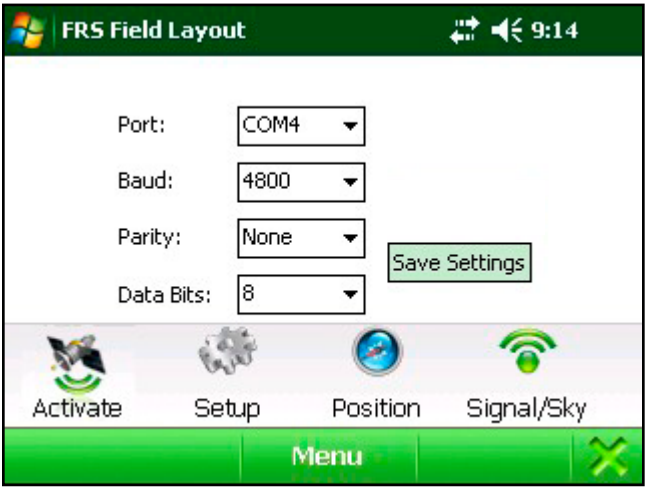
The NMEA strings that need to be enabled are GGA, GSA, GSV, and RMC or VTG (either will work).

GPS Menus

To see the GPS options, tap ***GPS Setup*** in the ***Settings*** screen.



Tap ***Menu*** to display the GPS options.



Activate/Deactivate GPS receiver.

Setup—Configure GPS Settings for the receiver.

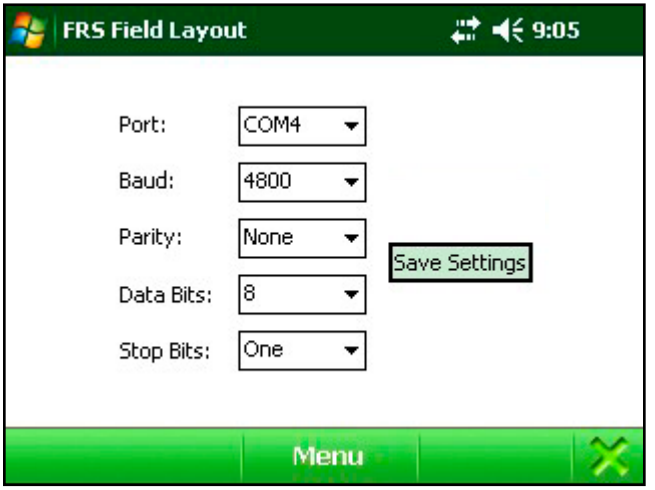
Position—Displays information about GPS signal quality.

Signal/Sky—Shows what satellites are being used and relative position in the sky.

NEMA—Shows the combined electrical and data specification for communication between GPS receivers.

To view or select more menu items using a stylus swipe the menu area horizontally left or right so the menu scrolls across the screen.

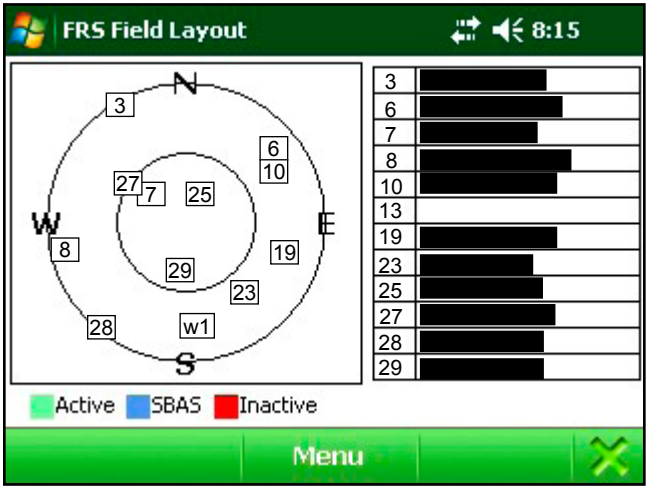
GPS Setup Screen



Change settings to match your GPS receiver. Once you have the settings correct select ***Save Settings***. In the ***Menu*** select ***Position*** and then ***Activate GPS***. When the Position Screen shows valid GPS values you are connected.

See the GPS owner's manual for correct settings.

Sky Plot GPS Screen



The Skyplot displays the approximate locations of the visible GPS satellites. Your position is located at the center of the inner circle. The outer circle represents the flat or horizon of where you are standing. The inner circle represents the area above you, this circle has a 60 degree incline from the outer circle.

When a satellite rises above the horizon, the GPS receiver can then receive a positioning signal from the satellite. The satellite then appears in the skyplot section of the GPS screen. GPS readings are more accurate when the satellites are more scattered across the sky.

The GPS status screen also displays a bar graph showing the relative satellite signal strengths. Each satellite is assigned an SV number (space vehicle or satellite vehicle number). These numbers appear to the left of their corresponding signal strength bars. A boxed number indicates which particular

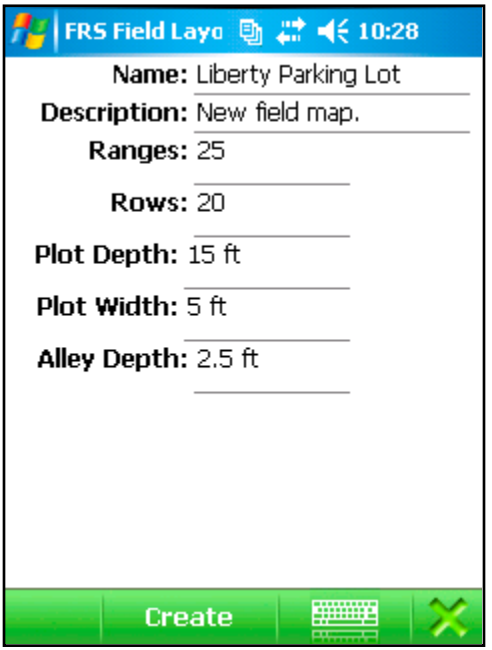
satellite is being used to determine the GPS position.

Note: Only active satellites are displayed on the bar graph, but all viewable satellites are displayed in the Skyplot.

Maps

Note: The documentation will now show the screen in portrait, though landscape works as well.

Prior to laying out a field the information about the field must be set first.



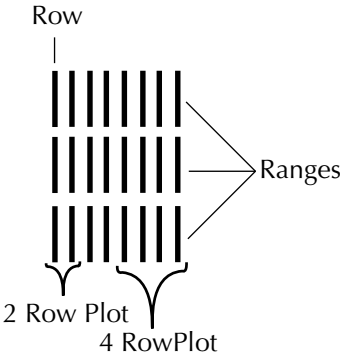
New map information

Name—Give field unique name.

Description—Help user describe field.

Ranges—Corresponds to the number of ranges within a given field. Range numbering begins with the bottom left corner of a field and proceeds upward.

Rows—Corresponds to the number of plots or rows running within a field. Row numbering begins with the bottom or lower left corner of a field.



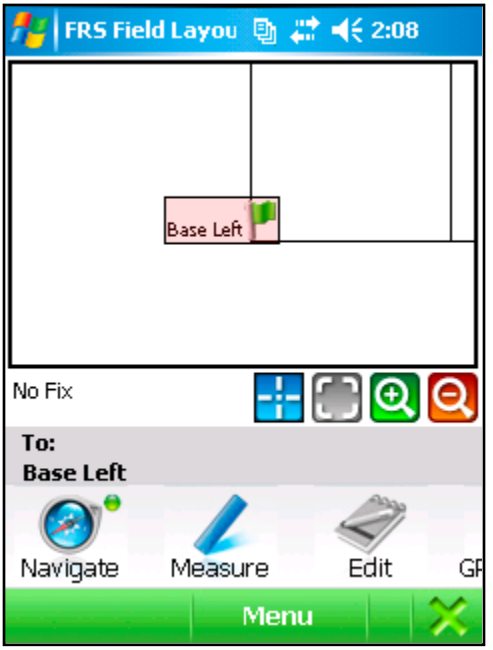
Plot Depth—Planted row length plus alley width (center to center).

Plot Width—Row/Plot width make sure this corresponds to the ***Rows*** enter previously.

Assume 30 inch rows.
1 Row = 2.5 ft.
2 Row Plot = 5 ft.
4 Row Plot = 10 ft.
Alley Depth—Not used in any calculation.

After you have entered all the information tap ***Create*** and your map information will be stored.

Menu for Create/Edit Map



Navigate—Select a corner and follow direction needle and distance measurements.

Measure—Distance from chosen points.

Edit—Modify field information.

GPS Setup—Access all GPS menu options.

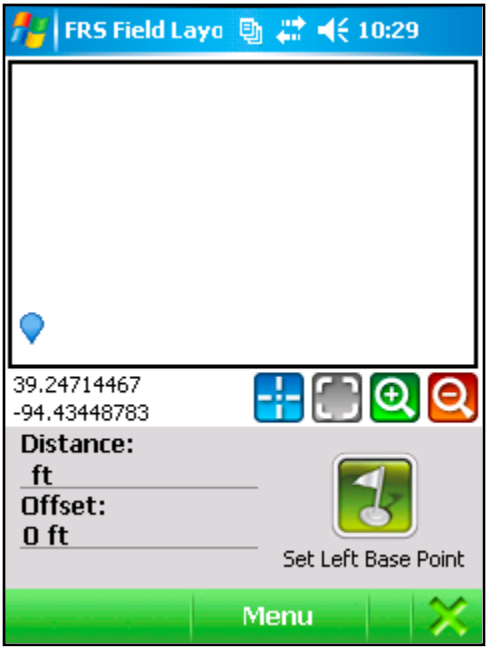
—Center screen on selection.

—Fit everything on screen.

—Zoom in.

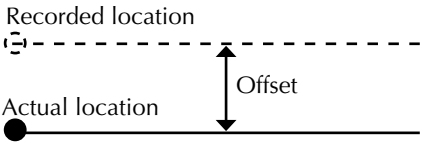
—Zoom out.

Setting Base Points

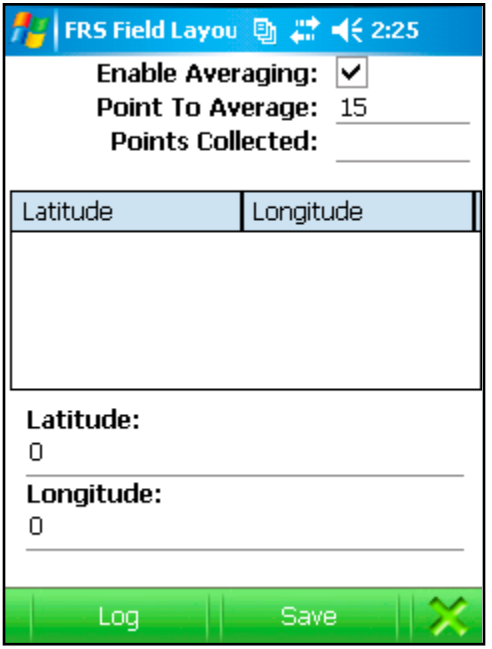


Walk to the location of the lower corner of you field (Range 1/Row 1) then tap ***Set Left Base Point***. Anytime you see a blue bubble it represents the current GPS location. If an offset is desired, set the offset value and stand next to the permanent feature such as a road or fence.

Example of Offset



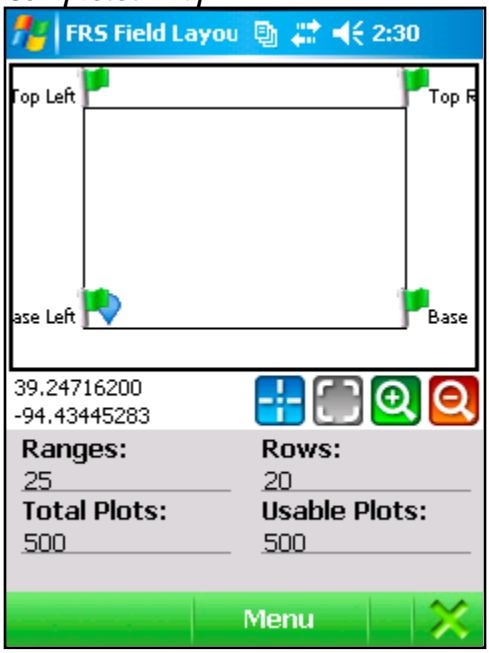
Distance—Distance to right base point. Will only be visible after the left base point is set.



The above screen will open next. It is recommended that you enable averaging this will increase the accuracy of the GPS data collected. The more data points that are averaged the better the accuracy of the base point. Tap ***Log*** and wait until all points are collected and averaged then tap ***Save***.

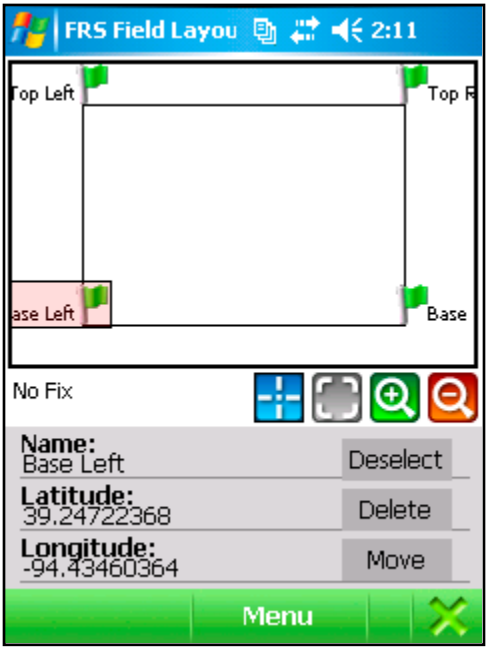
Once the left base point has been saved walk towards the right base point in a straight line. After walking part of the way to the right base point stop and tap ***Set Right Base Point*** icon. The above screen will appear for logging the coordinates for the right base point. The right base point is calculated using the left base point and the current location of the GPS. With the left and right base point set the top left and top right base points will be calculated.

Completed map



This is an example of a completed map. All four base points are indicated by the flags. The current position of the GPS is marked by the blue bubble.

Edit Base Corner



If the left base point is selected several options are available.

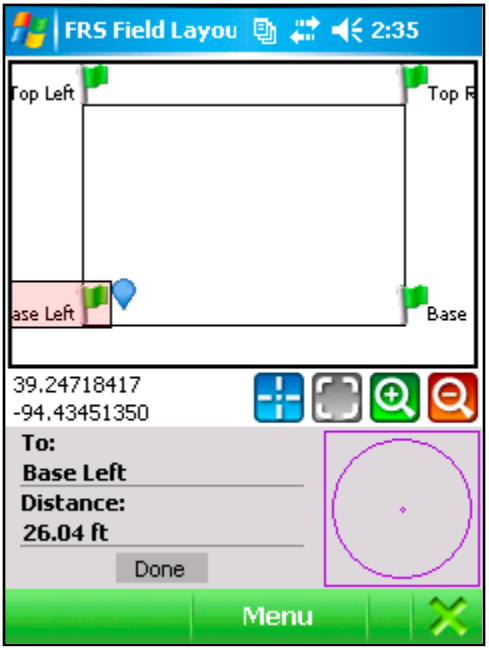
Deselect—Base point is deselected.

Delete—All four base points are deleted.

Move—New location for base point at current GPS location.

Note: If another point is selected, ***Deselect*** is the only option available.

Navigate to other points

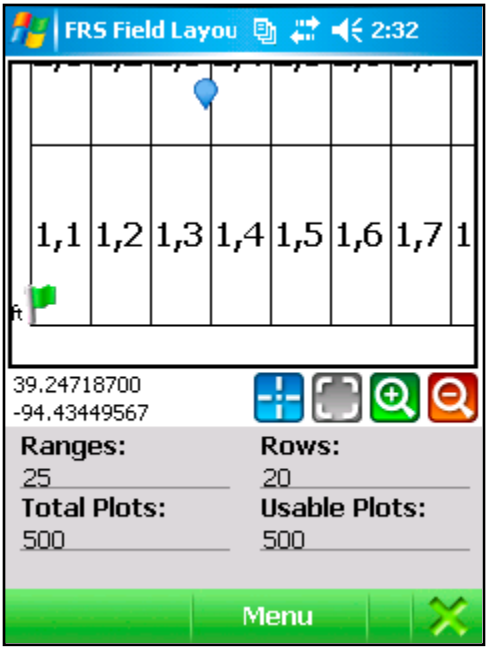


Tap ***Menu*** at the bottom of the screen, then tap ***Navigate***. Select a point on the screen to see distance from current position to the selected point. As you walk towards the selected point the Compass Bearing shows the direction and distance to the point.

At the point, physically mark it with a flag or stake. Use the Distance and Compass Bearing to locate the remaining corners.

Remember the Blue Bubble represents the current GPS location.

Spatial Screen



Tap  or  to zoom in and out on the map. When zoomed in the spatial map is visible. If plots need to be marked for filler, walk to bad area and tap on plot where blue bubble is then mark ***Plot Filler***.

After marking ***Plot Filler***, ***Usable Plots*** will decrease.

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