

GNSS Quick Start

Reference Guide for FieldGenius GNSS Rover Setup and Workflows.

MicroSurvey
FieldGenius 11

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Part 1 - Create a New Project

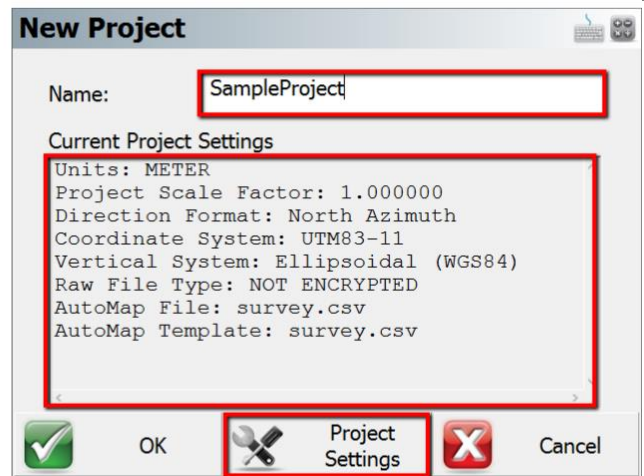
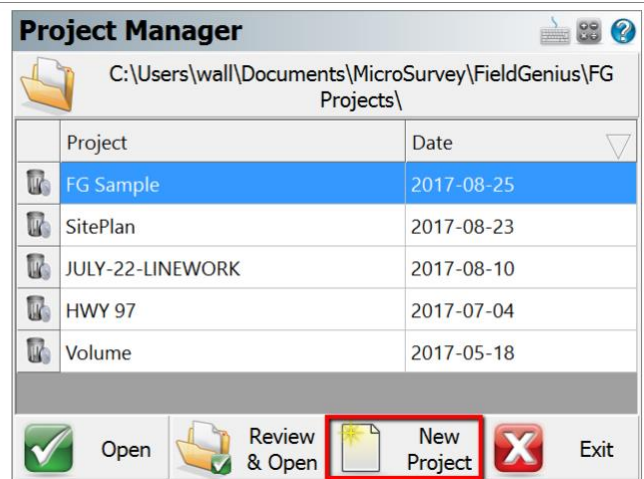
The Project Manager in FieldGenius is used to open, create, and delete projects.

Create a New Project

- From the Project Manager choose “New Project”

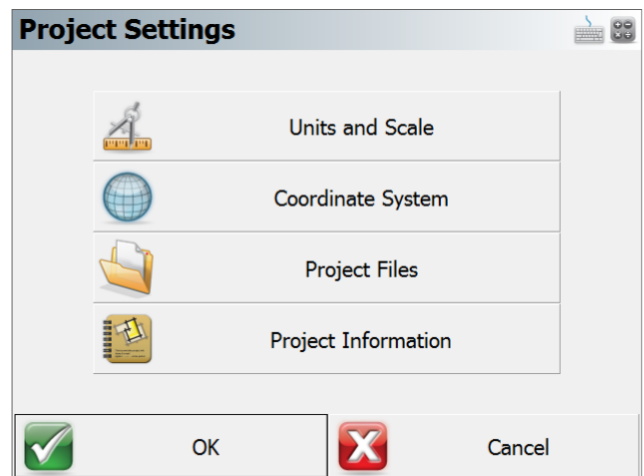
Configure New Project

- Enter a name for your project
- Review the Project Settings
- Modify the Project Settings if required



Project Settings

A FieldGenius project is created with some default settings. It is important to set the defaults to suit your most frequent requirements. These defaults typically will only need to be configured once.



Units and Scale

The Distance and Angle Unit must be set when a project is created and cannot be modified once created.

Distance Unit

Choose from Meters, International Feet, or US Survey Feet.

Distance Format

Choose from Decimal or Fractional format if the distance unit is set to International Feet or US Survey Feet. Meters are always decimal.

Distance Precision

Choose distance precision for decimal format.

Angle Unit

Choose from Degrees, Gons, or Radians.

Angle Format

Choose from DDD°MM'SSs", DDD°MM.m' or DDD.d° format if the angle unit is set to Degrees. Gons and Radians are always decimal.

Angle Precision

Choose angle display precision.

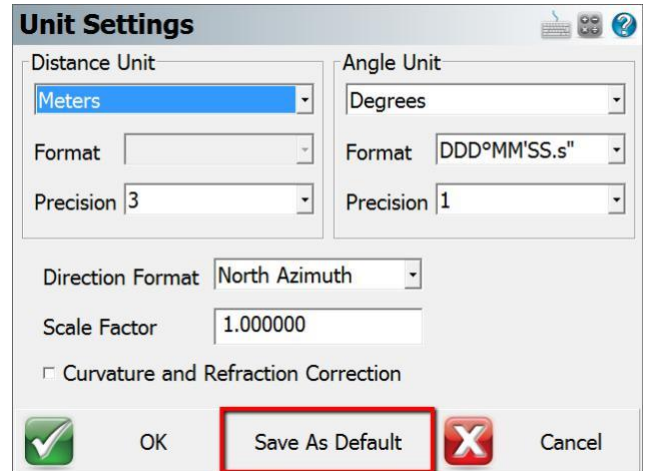
Direction Format

Choose from North Azimuth, South Azimuth or Bearing for direction input/output format.

Scale Factor

The Scale Factor value is applied to:

- Distances measured with a Total Station to compute scaled coordinates. Raw values are not affected.
- Distances entered for COGO calculations.
- Distances computed from COGO calculations; the inverse of the scale factor is applied.

The image shows a 'Unit Settings' dialog box with a title bar containing a question mark icon. The dialog is divided into two main sections: 'Distance Unit' and 'Angle Unit'. In the 'Distance Unit' section, 'Meters' is selected in a dropdown menu, with 'Format' set to an empty field and 'Precision' set to '3'. In the 'Angle Unit' section, 'Degrees' is selected in a dropdown menu, with 'Format' set to 'DDD°MM'SS.s"' and 'Precision' set to '1'. Below these sections, 'Direction Format' is set to 'North Azimuth' and 'Scale Factor' is set to '1.000000'. There is an unchecked checkbox for 'Curvature and Refraction Correction'. At the bottom, there are four buttons: a green checkmark icon, 'OK', 'Save As Default' (which is highlighted with a red rectangular border), and a red 'X' icon followed by 'Cancel'.

Use the **Save As Default** option to permanently set the current settings as default values for future projects.

Coordinate System

Coordinate system settings can be modified after a project is created, however setting the most suitable default eliminates the need to change it for each project.

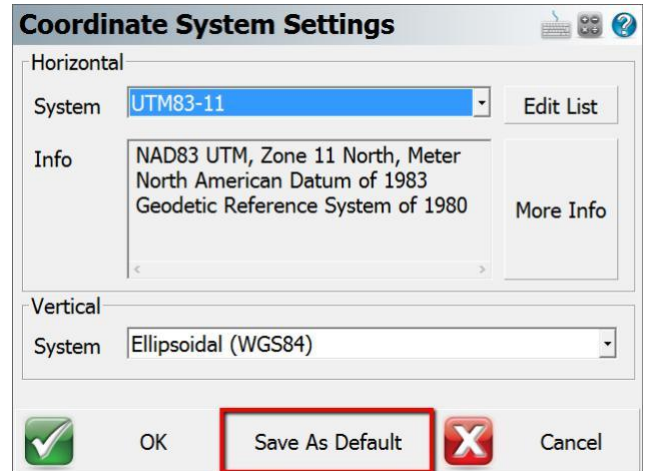
Horizontal System

Choose the horizontal projected coordinate system for your project from a list of coordinate systems.

Use the **Edit List** option to add or remove coordinate systems from the list of favorites. Use the steps outlined below to add a coordinate system to the list.

Vertical System

Choose the vertical datum for your project from a list of available options. The list will always contain Ellipsoidal (WGS84) and all available geoid models. See the [Appendix](#) for more information about Geoid Models.



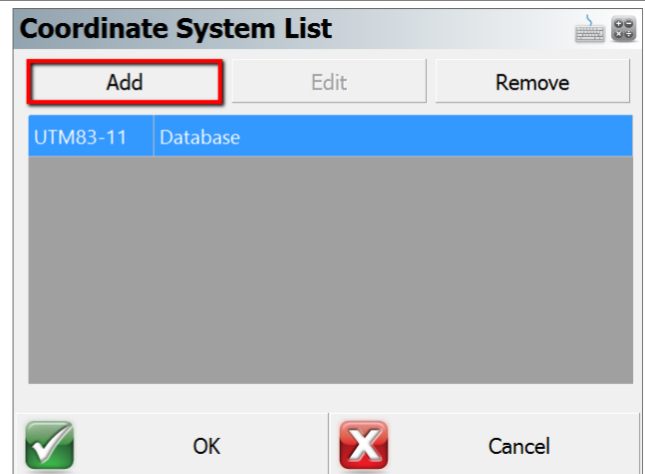
*Use the **Save As Default** option to permanently set the current settings as default values for future projects.*

Add Coordinate System to List

Pick **Edit List** to edit the Coordinate System list, then:

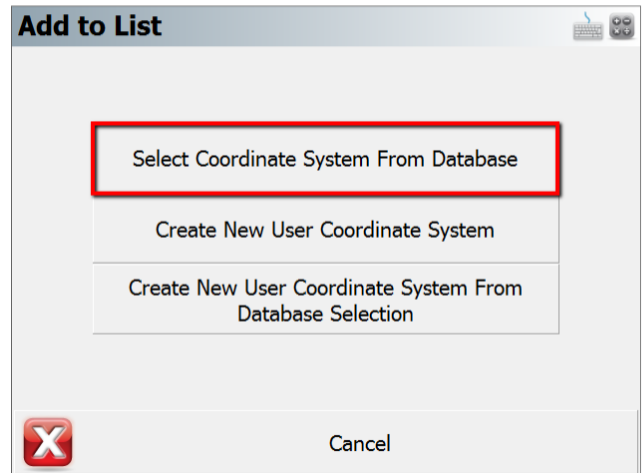
Add New Coordinate System

- From the Coordinate System List choose "Add"



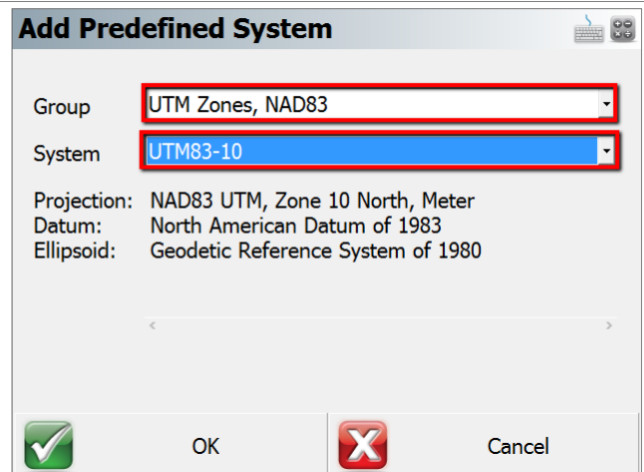
Select Method

- Choose “Select Coordinate System From Database” to add a predefined coordinate system



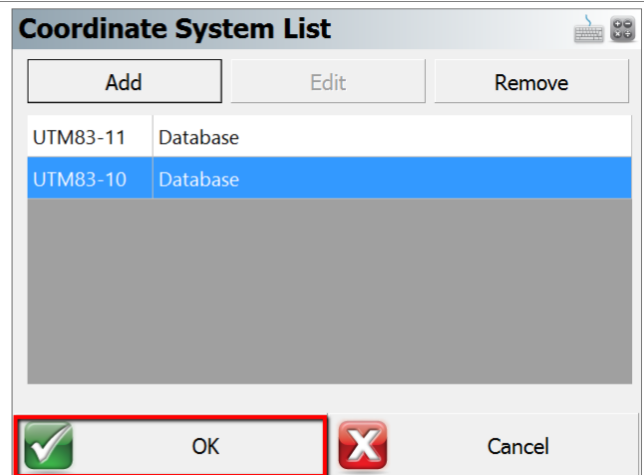
Select System

- Choose the appropriate group that applies to the coordinate system
- Choose the coordinate system from the group



Add to List

- Pick “OK” to add the coordinate system



Project Files

Each FieldGenius project is made up of multiple files, some of which can be copied from templates and/or another project. For many users, it may not be necessary to change any of these options when creating a new project.

Active Raw File

The active raw file is used to write all measured observation values in real time. It is possible to have many raw files associated with a project, for example a new file for each day on a site. The **Generate New Name** button can be used to append the date and time string to the project name.

The raw file can be **Encrypted** so only MicroSurvey desktop software can read the files. The encryption toggle is retained until manually changed.

An existing raw file can be copied from another project and optionally point coordinates generated from that raw file.

Project Automap

Automap libraries contain predefined point descriptions with associated point symbols, color, layer, linework and DTM properties. FieldGenius includes a sample Automap file to demonstrate the system (survey.csv). It is suggested to create a template that can be used for all projects, or a few templates for different categories of projects. See the [Appendix](#) for more information about Automap libraries.

Feature File

Adding a feature file to a project allows GIS feature and attribute collection for points and figures. See the [Appendix](#) for more information about feature files.

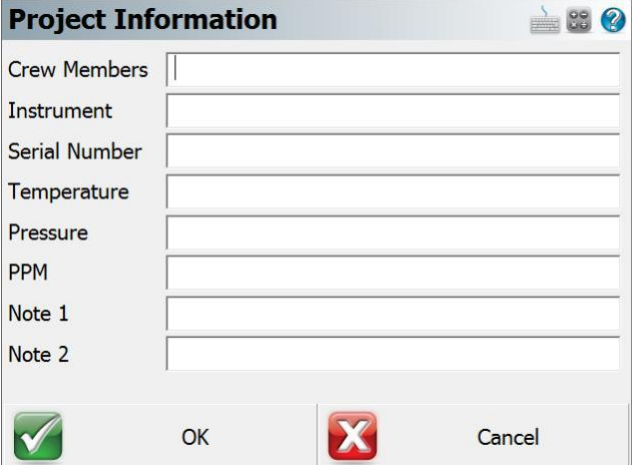
Project Files Descriptions

FieldGenius projects are folders containing at least 7 files as described below.

ProjectName.cdx	Index file of coordinate database
ProjectName.dbf	Coordinate database
ProjectName.ini	Project Settings and Information
ProjectName.raw or ProjectName.rae	Raw measurement observations, encrypted raw files have a rae extension. Note: Projects can have multiple raw files.
ProjectName _figures.cdx	Index file for the figures database
ProjectName _figures.dbf	Figures database
ProjectName _automap.csv	Automap Library for the project



Project Information

The Project Information dialog is used to record information relevant to the project. This information is simply for record keeping.



The image shows a software dialog box titled "Project Information". It contains several input fields for recording project details. The fields are labeled on the left and have corresponding empty text boxes on the right. At the bottom, there are three buttons: a green checkmark icon, the text "OK", a red 'X' icon, and the text "Cancel".

Field Label	Input Field
Crew Members	<input type="text"/>
Instrument	<input type="text"/>
Serial Number	<input type="text"/>
Temperature	<input type="text"/>
Pressure	<input type="text"/>
PPM	<input type="text"/>
Note 1	<input type="text"/>
Note 2	<input type="text"/>

Buttons:  OK  Cancel

Part 2 – First Time Rover Setup

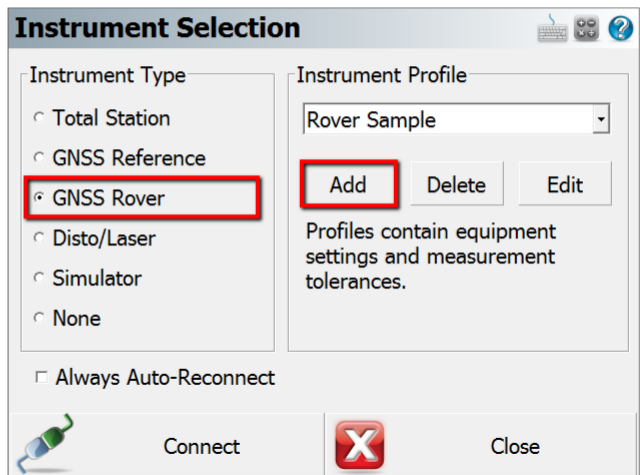
FieldGenius instrument profiles contain settings specific to each instrument. When selecting an instrument profile and connecting to the instrument, all these settings are automatically inherited.

Create Instrument Connection Profile (Rover)

To create a new GNSS Rover profile:

Add a New Profile

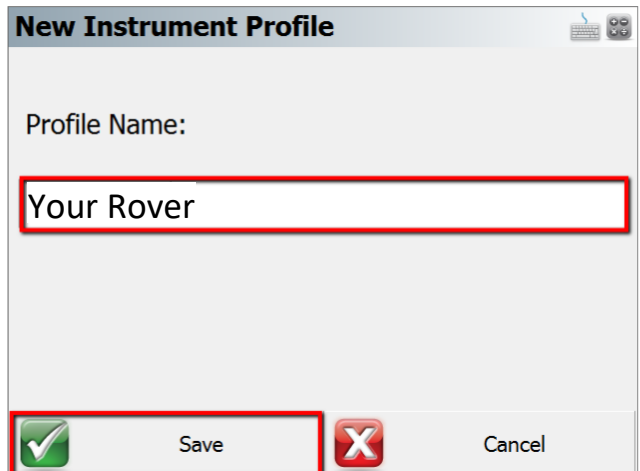
- From the Instrument Selection dialog pick the GNSS Rover instrument type
- Pick “Add” to create a new profile



The **Instrument Selection** dialog box shows the **Instrument Type** list with **GNSS Rover** selected. In the **Instrument Profile** section, the **Add** button is highlighted with a red box. The **Instrument Profile** dropdown shows "Rover Sample". Below the buttons, it states: "Profiles contain equipment settings and measurement tolerances." At the bottom, there are **Connect** and **Close** buttons.

Enter Name and Save

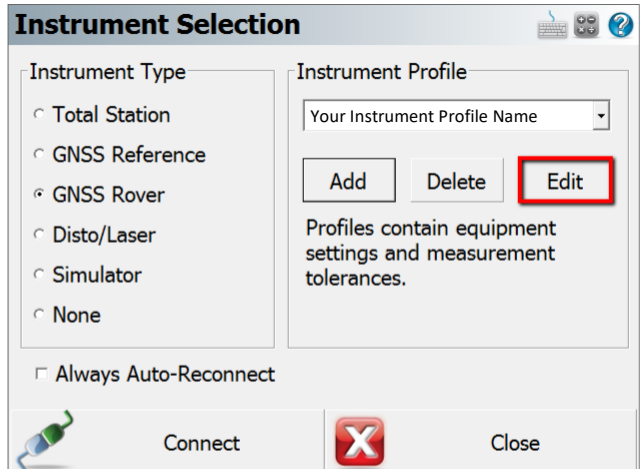
- Enter a name for your profile
- Pick “Save”



The **New Instrument Profile** dialog box has a **Profile Name:** label and a text input field containing "Your Rover", which is highlighted with a red box. At the bottom, the **Save** button (with a green checkmark icon) is highlighted with a red box, along with the **Cancel** button.

Edit Profile

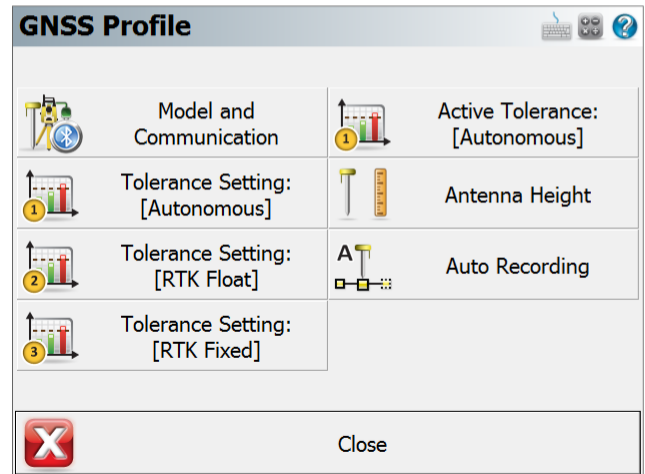
- With the new instrument profile selected, pick “Edit” to edit the profile



The **Instrument Selection** dialog box shows **GNSS Rover** selected in the **Instrument Type** list. In the **Instrument Profile** section, the **Edit** button is highlighted with a red box. The **Instrument Profile** dropdown shows "Your Instrument Profile Name". Below the buttons, it states: "Profiles contain equipment settings and measurement tolerances." At the bottom, there are **Connect** and **Close** buttons.

Profile Setup

- Choose the profile component to configure



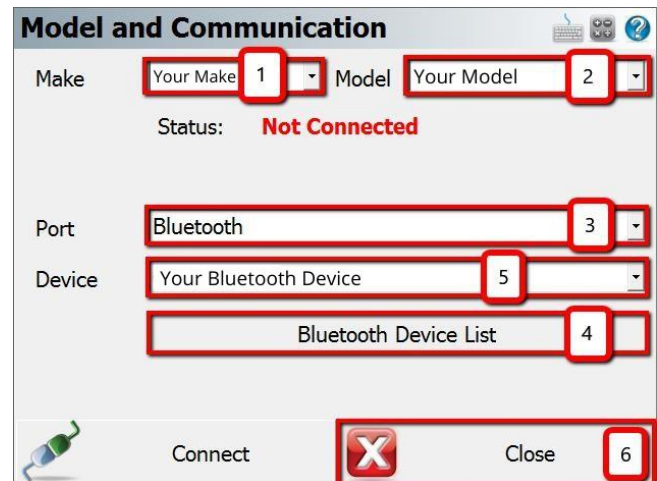
The GNSS Profile dialog box contains the following components:

- Model and Communication**: A tab icon with a blue circle and a white 'X'.
- Active Tolerance: [Autonomous]**: A dropdown menu.
- Tolerance Setting: [Autonomous]**: A dropdown menu.
- Antenna Height**: A text input field.
- Tolerance Setting: [RTK Float]**: A dropdown menu.
- Auto Recording**: A checkbox.
- Tolerance Setting: [RTK Fixed]**: A dropdown menu.
- Close**: A button with a red 'X' icon.

Model and Communication

The main component of the instrument profile is the instrument driver itself, which is specified by picking the make and model of the device.

- Pick the Make from the list
- Pick the Model from the list
- Choose the connection Port
- Open the Bluetooth Device List and search for the Bluetooth device
- Ensure the new Device is selected
- Pick Close to configure other components of the profile, the selections will be saved on Close



The Model and Communication dialog box contains the following components:

- Make**: A dropdown menu with 'Your Make' selected.
- Model**: A dropdown menu with 'Your Model' selected.
- Status**: A text label showing 'Not Connected'.
- Port**: A dropdown menu with 'Bluetooth' selected.
- Device**: A dropdown menu with 'Your Bluetooth Device' selected.
- Bluetooth Device List**: A list box showing 'Bluetooth Device List'.
- Connect**: A button with a green plug icon.
- Close**: A button with a red 'X' icon.

Tolerance Settings Concepts

FieldGenius can be configured with three tolerance settings that determine the minimum requirements that must be met for storing a position when the tolerance setting is active. The user can change the active tolerance setting to suit the conditions and/or actions.

Tolerance Setting: [Autonomous] / [RTK Float] / [RTK Fixed]

The three tolerance settings each have a default description and various options configured for specific conditions. The available options may vary between GNSS receivers.

Real Time Settings

Configure the minimum requirements for real time positioning.

Post Process Settings

Configure Raw Data Logging settings based on satellite availability.

Action Settings

Configure tolerance override ability, automatic skipping of statistics screen, and automatic point storing.

Tolerance 3	
Description	RTK Fixed
<input checked="" type="checkbox"/> Real Time	
Observations	5
Solution	RTK Fixed
Elevation	10°
PDOP	4.00
Satellites Computed	5
StdDev Horizontal	0.030m
<div> OK </div>	

Active Tolerance

The active tolerance is used when measuring points to determine if minimum requirements are met and which actions will take place. It is a method of ensuring quality standards are met.

Select Tolerance	
	Autonomous
	RTK Float
	RTK Fixed
<div> Cancel </div>	

Antenna Height

The antenna height dialog allows the user to change the measured height of the receiver, and specifics about the receiver:

Model

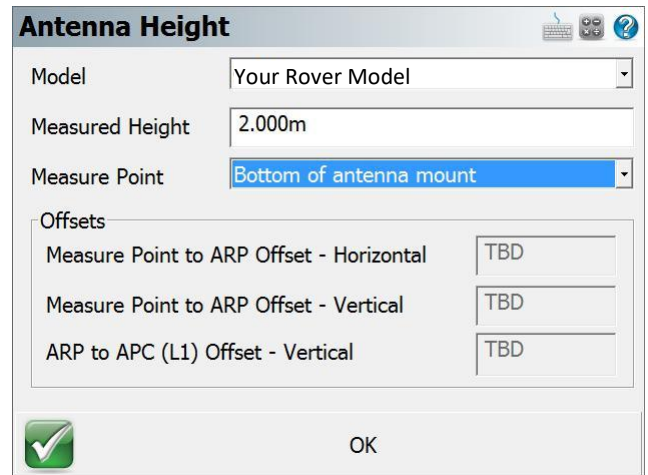
The preconfigured offsets information of the receiver is stored under the model name, pick “User Defined” to manually enter the offset values.

Measure Point

Available options vary between receivers.

Offsets

Generally, the preconfigured or user-definable values are displayed, for some receivers this information is provided by the firmware once connected.



The **Antenna Height** dialog box contains the following fields:

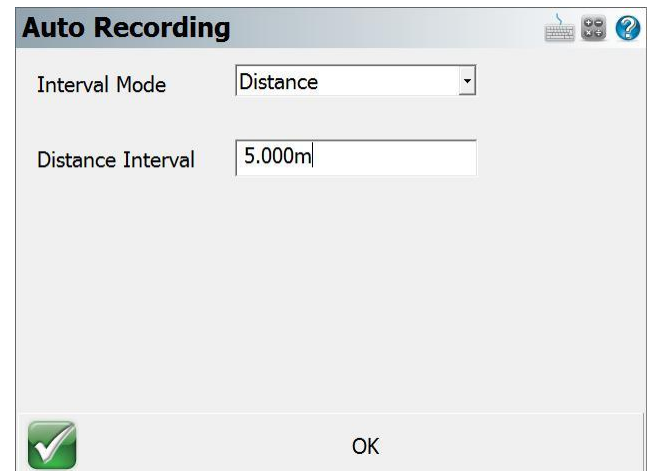
- Model:** A dropdown menu showing "Your Rover Model".
- Measured Height:** A text input field containing "2.000m".
- Measure Point:** A dropdown menu showing "Bottom of antenna mount".
- Offsets:** A section containing three rows:
 - Measure Point to ARP Offset - Horizontal:** A text input field containing "TBD".
 - Measure Point to ARP Offset - Vertical:** A text input field containing "TBD".
 - ARP to APC (L1) Offset - Vertical:** A text input field containing "TBD".

At the bottom left is a green checkmark icon, and at the bottom right is an "OK" button.

Auto Recording

Auto recording settings are stored for each instrument profile.

Auto recording intervals can be set by distance or time. These settings will automatically be used with the Auto Record measure mode.



The **Auto Recording** dialog box contains the following fields:

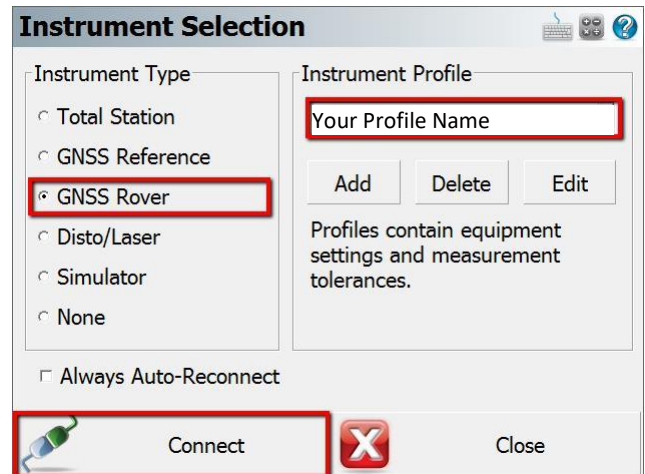
- Interval Mode:** A dropdown menu showing "Distance".
- Distance Interval:** A text input field containing "5.000m".

At the bottom left is a green checkmark icon, and at the bottom right is an "OK" button.

Part 3 - Connect and Configure Correction Link

Connect to Instrument

To connect to an instrument, pick the predefined profile and choose “Connect”.



The **Instrument Selection** dialog box contains two main sections. On the left, under **Instrument Type**, there is a list of radio buttons: **Total Station**, **GNSS Reference**, **GNSS Rover** (which is selected and highlighted with a red box), **Disto/Laser**, **Simulator**, and **None**. On the right, under **Instrument Profile**, there is a text input field containing **Your Profile Name** (also highlighted with a red box). Below this field are **Add**, **Delete**, and **Edit** buttons. A note states: "Profiles contain equipment settings and measurement tolerances." At the bottom left, there is a checkbox for **Always Auto-Reconnect**. At the bottom right, there are three buttons: a **Connect** button with a green plug icon (highlighted with a red box), a red **X** button, and a **Close** button.

Configure Correction Link

When connecting to a GNSS Rover device, the Link Configure dialog will be displayed following successful connection. Available options will vary depending on the device type selected.

Device Settings

Device Type

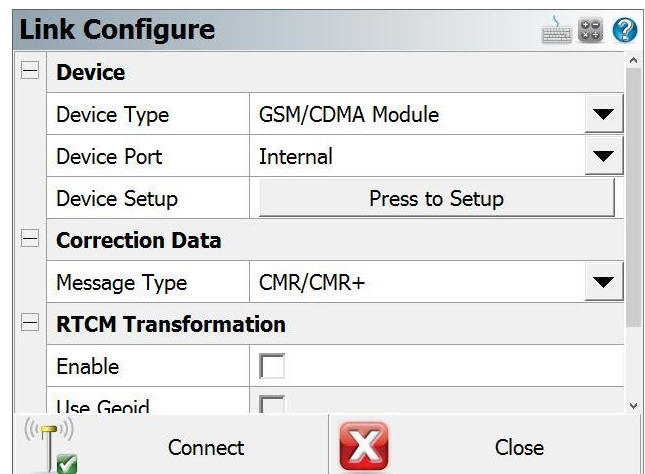
Select the appropriate Correction Link device type, such as GSM Module, UHF Radio Module, Data Collector Internet, or Other Device.

Device Port

Select the appropriate Port when multiple options exist.

Device Setup

Setup the parameters for the Radio or Modem connection.



The **Link Configure** dialog box is divided into three expandable sections. The **Device** section includes **Device Type** (set to GSM/CDMA Module), **Device Port** (set to Internal), and a **Device Setup** button labeled **Press to Setup**. The **Correction Data** section includes **Message Type** (set to CMR/CMR+). The **RTCM Transformation** section includes **Enable** and **Use Genid**, both of which are currently unchecked. At the bottom, there are three buttons: a **Connect** button with a green checkmark and antenna icon, a red **X** button, and a **Close** button.

For radio corrections, choose the radio make and model from the pull-down and set the channel or frequency, the radio will be programmed by FieldGenius to the channel or frequency selected (on some models).

For NTRIP or Network corrections, enter your internet and server credentials here.

Correction Data Settings

Message Type

The message type is used in determining what data streams are sent from the reference station to the rover. They can be RTCM, CMR or a proprietary format.

RTCM Transformation Settings

To receive horizontal and vertical coordinate system information from your network, enable RTCM Transformation messages.

Part 4 – Program Options and Interface

Configuring Program Options

Program options are designed to help the user get the most out of FieldGenius. Options relevant to GNSS workflows are summarized. Program Options are accessed through:

MAIN MENU – Settings – Options

Interface Options

Map Color

Set the background of the map screen to white or black.

Map Orientation

Set map orientation North or South.

Arc Resolution

Set the number of segments for drawing arcs on the map.

Text Size (Info/Grid)

Set the size of text displayed on information screens.

Show Scale Bar

Toggle Scale Bar display on the map screen.

Scrollbar Width

On some devices, it is possible to change the width of scrollbars to improve touch experience.

The screenshot shows the 'Options' dialog box with the 'Interface' section expanded. The settings are as follows:

Option	Value
Map Colour	White
Map Orientation	North
Arc Resolution	10
Text Size (Info/Grid)	Small
Show Scale Bar	<input checked="" type="checkbox"/>
Scrollbar width	Default

Below the Interface section, the 'User Input' and 'Point Attributes' sections are partially visible. At the bottom are 'OK' and 'Cancel' buttons.

User Input Options

Keypad Text Colour

Set the colour of the text on the virtual keypad.

Keypad Background Colour

Set the colour of the background on the virtual keypad.

Extended Edit Boxes

Set behavior of the virtual keypad popping up. Recommended settings are Single Click for devices without a keyboard, Double Click for devices with a keyboard.

Menu Shortcuts

Toggle display of menu shortcuts for faster navigation with a keyboard.

Instrument Toolbar

Toggle which side of the screen the instrument toolbar will be displayed on. Left-handed users may prefer the left side of the screen.

The screenshot shows the 'Options' dialog box with the 'User Input' section expanded. The settings are as follows:

Option	Value
KeyPad Text Color	
KeyPad Background Color	
Extended Edit Boxes	Double Click
Menu Shortcuts	<input type="checkbox"/>
Instrument Toolbar	Right Side

Below the User Input section, the 'Point Attributes' and 'Map Configurations' sections are partially visible. At the bottom are 'OK' and 'Cancel' buttons.

Point Attributes Options

Coordinate Order

Select the coordinate order for display and ASCII Import/Export.

Alphanumeric IDs

Setting to allow Alphanumeric Point IDs.

Alphanumeric Case Sensitive

Setting to check if Point ID is unique when storing a point. When enabled a1 and A1 are handled as different values. This setting does not apply to coordinate imports.

Point ID Range – Minimum

Enter a minimum value for a Point ID. Can be used to ensure Points are stored within a specific range.

Point ID Range – Maximum

Enter a maximum value for a Point ID. A blank value will allow any maximum.

Point ID Intervals

Auto-increment Point IDs by this interval.

LandXML Export – Prefix IDs

Prefix Point ID with description during LandXML Export.

New Description Prompt

Toggle whether to prompt to create a new Automap entry when using a point description that is not in the project's Automap library.

Time Stamp Saved Points

Toggle to write a time stamp in the raw file when points are stored.

Write Notes to Raw Files

Toggle to write text notes in the raw file if entered for a point.

The screenshot shows the 'Options' dialog box with the 'Point Attributes' section expanded. The settings are as follows:

Option	Value
Coordinate Order	N, E, H
Alphanumeric IDs	<input checked="" type="checkbox"/>
Alphanumeric Case Sensitive	<input checked="" type="checkbox"/>
Point ID Range - Minimum	1
Point ID Range - Maximum	999999
Point ID Interval	1
LXML Export - Prefix IDs	<input type="checkbox"/>
New Description Prompt	<input checked="" type="checkbox"/>

At the bottom of the dialog, there are three buttons: a green checkmark icon, the text 'OK', and a red 'X' icon followed by the text 'Cancel'.

Map Configurations Options

Show ID / Description / Elevation

Select the Point attributes to display on the map screen.

Level of Detail

Toggle smart filter of Point information based on zoom level.

Text Size (Map View)

Text size of Point information on the map screen.

Map Position Select

Toggle ability to tap on the screen to store a point or other options from the Map Select Toolbar.

Map Point / Line / DXF Select

Select which types of objects can be selected on the map screen.

Map Configurations	
Show ID	<input checked="" type="checkbox"/>
Show Description	<input type="checkbox"/>
Show Elevation	<input type="checkbox"/>
Level of Detail	<input checked="" type="checkbox"/>
Text Size (Map View)	7
Map Position Select	<input type="checkbox"/>
Map Point Select	<input checked="" type="checkbox"/>
Map Line Select	<input checked="" type="checkbox"/>

OK Cancel

GNSS Options

EP+ Records

Toggle the format of the EP record written to the raw file. The standard EP record contains a combined horizontal RMS value, while the EP+ record contains RMS values for Northing and Easting. EP+ records are required when seeding positions with regards to L-band correction services.

Post Processing Tagging

Start and End times of GNSS measurements can be written to the raw file as comments. These values are required for post processing raw data with Effigis OnPOZ (EZSurv) software. **NOTE:** End times are captured when the user picks the **Store Position** button on the GNSS Measurement dialog.

Leap Seconds (GPS-UTC)

Some receivers report UTC time instead of GPS time. When writing Start and End times for GNSS measurements, the Leap Seconds value will be applied to the UTC time to ensure GPS time is recorded. **NOTE:** This value will change over time and is the responsibility of the user to ensure it is current. This value only applies to those receivers that report UTC time.

Prompt Raw Logging

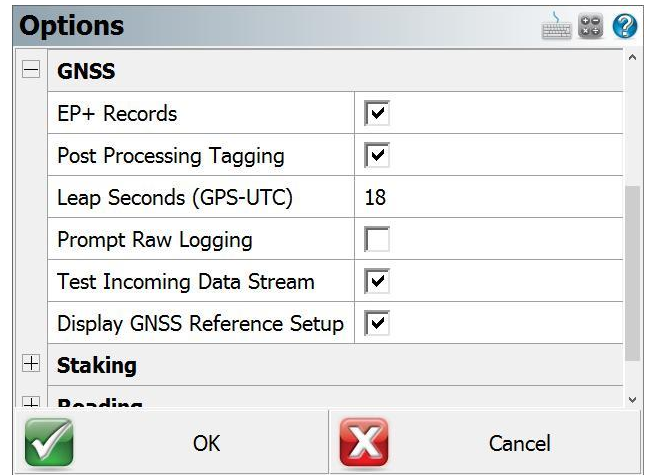
Raw data logging on most receivers must be manually initialized. A prompt can be displayed at connection time to remind the user to start raw data logging on the receiver.

Test Incoming Data Stream

Some GNSS receivers automatically connect to the previous correction link. FieldGenius can test for incoming corrections at connection time to eliminate the Link Configure step.

Display GNSS Reference Setup

When connecting to a reference receiver, a prompt can be displayed to remind the user of the steps to take to complete a reference setup.



Staking Options

Tolerance

The distance tolerance where staking residuals will be shown as green text versus red text.

Orientation – GNSS

Choose the Staking direction orientation.

Compass Switch Threshold

The distance from a point where the Compass will automatically switch to a grid display.

Attached User ID

Value to add to Point ID when storing Staked Points.

Line Mode

Method to use for calculating navigation distances.

Cut and Fill Slope (X:1)

Slopes to use for Slope Staking.

DTM Staking

Surface name for Surface Staking.

Fade Staked-Out Points

Option to display staked points differently on the screen.

Display Point Staking Screen

Toggle to show the Point Staking Screen when choosing the Point to stake.

Display Stake Results Screen

Toggle to show the results of the Point Stake. This screen will always display if the results are outside of tolerance settings.

Store Stake Point

Prompt to store Staked Point.

Show Staked-Stored Points

Option to show Staked-Stored Points on the map screen.

Use Stake List

Toggle to use a staking list to stake a predetermined list of points.

Find Next Nearest

Toggle to automatically let FieldGenius search for the next nearest point to stake and suggest the Point for the next position to stake.

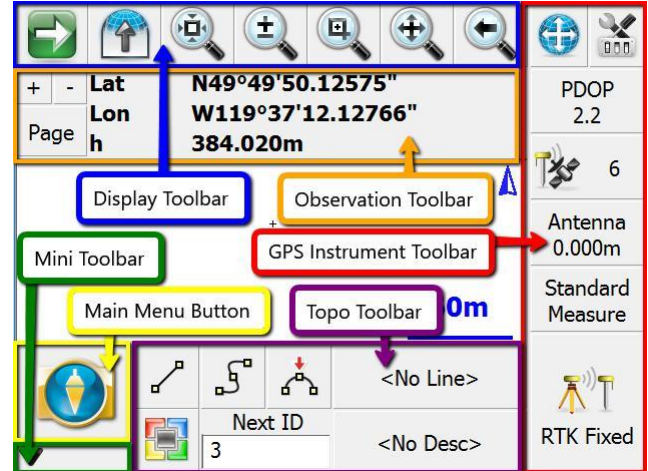
Options	
Staking	
Tolerance	0.030m
Orientation - Total Station	Instrument ▼
Orientation - GNSS	North (Cardinal) ▼
Compass Switch Threshold	4.000m
Attached User ID	
Line Mode	Auto ▼
Robotic Prism Tracking	<input checked="" type="checkbox"/>
True Instrument Mode	2D (HA + VA) ▼
	OK
	Cancel

Toolbars

The FieldGenius interface consists of multiple toolbars that display important information, in some cases the toolbars are also context sensitive.

Display Toolbar

The display toolbar at the top of the map screen features zoom and pan controls, and other display related features. There are two pages for this toolbar., the left-most button toggles the two pages.



Observation Toolbar

The observation toolbar shows information about the current position. Display size can be modified with the + and – buttons, while the Page button cycles through multiple pages of information. The second button on the display toolbar toggles the display of the observation toolbar.

+	-	Lat	N49°49'50.27814"
		Lon	W119°37'12.01511"
Page		h	384.057m

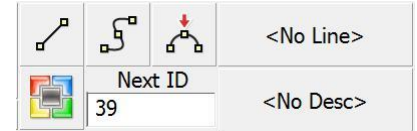
GNSS Instrument Toolbar

The instrument toolbar displays position information and provides access to settings and measure modes.

	<ul style="list-style-type: none"> - Auto-Center Button – Single Tap centers display on the current position. Double Tap sets a continuous auto-pan. - Instrument Settings Button – Opens the GNSS Settings screen which provides access to instrument specific settings.
PDOP 2.1	<ul style="list-style-type: none"> - PDOP Button – Displays the position DOP values. Tap to cycle through PDOP, HDOP, VDOP, and position Standard Deviation values.
5	<ul style="list-style-type: none"> - Satellite Plot Button – Displays the number of satellites used for the current position solution. Tap to open the sky plot or to access the satellite list.
Antenna 0.000m	<ul style="list-style-type: none"> - Antenna Height Button – Displays the current antenna height set and provides access to the Antenna Height dialog.
Standard Measure	<ul style="list-style-type: none"> - Measure Mode Button – Displays the current measurement mode and provides access to the Measure Modes screen to select a measure mode.
RTK Fixed	<ul style="list-style-type: none"> - Measure Button – Displays the current solution type and is used to begin a position measurement.

Topo Toolbar

The Topo Toolbar features figure toggles to draw linework, displays the active figure name, the active description, the Next Point ID and features a user-definable button which by default is mapped to the Point Coordinate Database.

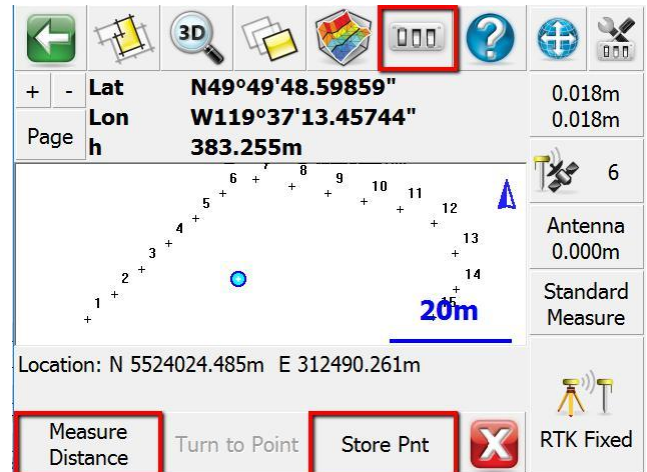


Mini Toolbar

The Mini Toolbar can be used to maximize the map screen size by hiding any/all unwanted toolbars. 

Map Select Toolbar

The Map Select Toolbar is a context-sensitive toolbar that can be used to Store a Point at a position picked on the map or measure a distance on the map between two picked positions. The [Map Configuration Options](#) can be accessed from the second page of the Display Toolbar to turn ON/OFF the ability to select a position on the map.



Point Toolbar

The Point Toolbar is displayed when a point is selected on the map screen.

Shortcuts on the top row of this toolbar are [Points List](#), [Inverse Tool](#), [Store New Point](#), [Edit Point](#), [Delete Point](#), [Offset Tool](#) and [Drawing Tool](#).

Shortcuts on the second row are: [Zoom to Point](#), [Stake Point](#), [Previous Point ID](#), [Next Point ID](#), and [Close](#).

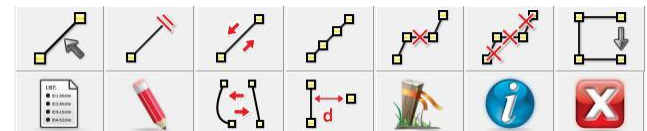


Line Toolbar

The Line Toolbar is displayed when a line or arc figure is selected on the map screen.

Shortcuts on the top row of this toolbar are: [Set Figure Current](#), [End Figure](#), [Reverse Direction](#), [Partition Figure](#), [Delete Segment](#), [Delete Figure](#), and [Close Figure](#).

Shortcuts on the second row are: [Open Figure List](#), [Drawing Tool](#), [Convert Line to Spline](#), [Offset Tool](#), [Stake Figure](#), [Figure Information](#), and [Close](#).



Part 5 - Measure Modes and Workflows

Standard Measurement, Offset Measurement and Staking workflows will be summarized.

Standard Measurement

General Procedure is as shown in the table below.

Start Measurement

- With “Standard Measure” mode set, pick the Measure button to start measuring the current position

Lat N49°49'50.24467"
Lon W119°37'11.99260"
h 382.041m

PDOP 2.1

Antenna 2.000m

Standard Measure

RTK Fixed

Confirm Measurement

- Active Tolerance mode determines number of observations
- RMS values are shown
- “Store Position” button is available once tolerance criteria are met

GNSS Measurement

Solution: **RTK Fixed**
Satellites: **9**
PDOP: **2.20**

Real Time
Status: **Accepted**
Horizontal StdDev: **0.008m**
Vertical StdDev: **0.008m**

Post Process
Status:
Total Time:

Store Position Cancel

Store Position

- Confirm the Point Description and Antenna Height
- Enter any additional information as required
- Store the Point

Store Point

Point ID 475

Description List

Northing 38207.056m

Easting 12509.767m

Elevation 201.907m

Antenna Hgt 2.000m

Store As GNSS Point

Review Measurement
GIS Attributes
Advanced
Enter Note

Store Pnt Cancel

Measurement Procedure Overview

The measurement process works like this:

FieldGenius will only begin collecting measurement data if all your tolerances are met. During the measurement process, you might see that certain tolerances are not being satisfied, which is normal. FieldGenius will continue monitoring the measurement data and will accept measurements that pass the mask criteria.

Once the tolerances have been met, the position status will change to an **Accepted** position. Prior to accepting the position, the user can look at the RMS values for the computed position and determine if they wish to accept or reject the measurement. Picking **Cancel** will exit the measure function without storing any data. Picking **Store Position** will accept the position and store it in the database. The Antenna Height can be changed on the Store Point screen.

Transformation parameters are applied to the GNSS position prior to storing the point.

If the current tolerance settings are not met, FieldGenius can switch from Real Time mode to Post Process mode to collect static data for that point for later post processing back in the office. This switch from Real Time mode to Post Process mode can occur automatically or manually, depending on the Post Process tolerance settings. The duration of the Post Process measurement is specified in the tolerance settings and depends on the minimum number of satellites tracked during the entire Post Process session.

NOTE: The [Action Settings](#) of the active tolerance setting can be configured to skip over the GNSS Measurement statistics screen and the Store Point screen.

Offset Measurement

FieldGenius features a GNSS offset functionality to calculate an offset from the current position based on a direction and distance offsets. The direction may be determined from two observations.

General Procedure is as shown in the table below.

Start Measurement

- With “Offset Measure” mode set, pick the Measure button to start the Offset Measurement

Measure Current Position

- Pick the “Measure” button to measure the current position

Confirm Measurement

- Active Tolerance mode determines number of observations
- RMS values are shown
- “Continue” button is available once tolerance criteria are met

The screenshot displays the FieldGenius software interface during an Offset Measurement. The top panel shows the main menu with various navigation and measurement tools. The 'RTK Fixed' button is highlighted in a red box. The middle panel shows the 'GNSS Offset Measurement' dialog, which includes fields for Northing, Easting, Elevation, SD H, and SD V. The 'Measure' button is highlighted in a red box. The bottom panel shows the 'GNSS Measurement' dialog, which displays the solution status as 'RTK Fixed' and provides real-time and post-process status information. The 'Continue' button is highlighted in a green box.

GNSS Offset Measurement

Measure

Offset

Direction: 0°00'00" Direction

Horizontal Distance: 0.000m Start Point

Vertical Distance: 0.000m

Store Point Close

GNSS Measurement

Solution: **RTK Fixed**

Satellites: **9**

PDOP: **2.20**

Real Time

Status: **Accepted**

Horizontal StdDev: **0.008m**

Vertical StdDev: **0.008m**

Post Process

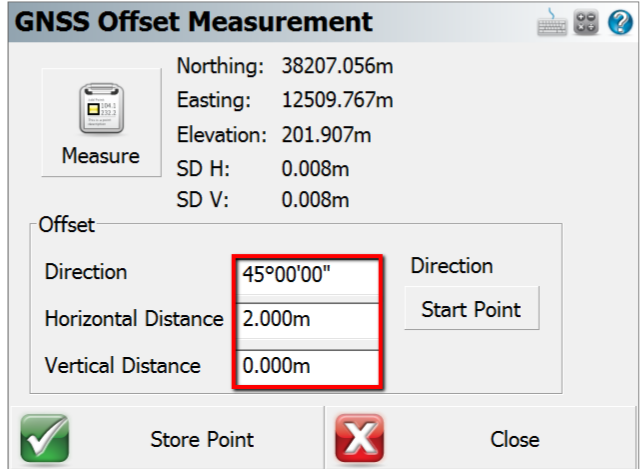
Status:

Total Time:

Continue Cancel

Enter Offset Values

- Enter Direction or use the “Start Point” button to measure the first point of a direction reference line. After measuring the first reference point, the button will change to “End Point” to measure the second point.
- Enter Horizontal and Vertical Distance Offsets
- Pick “Store Point”



GNSS Offset Measurement

Measure

Northing: 38207.056m
 Easting: 12509.767m
 Elevation: 201.907m
 SD H: 0.008m
 SD V: 0.008m

Offset

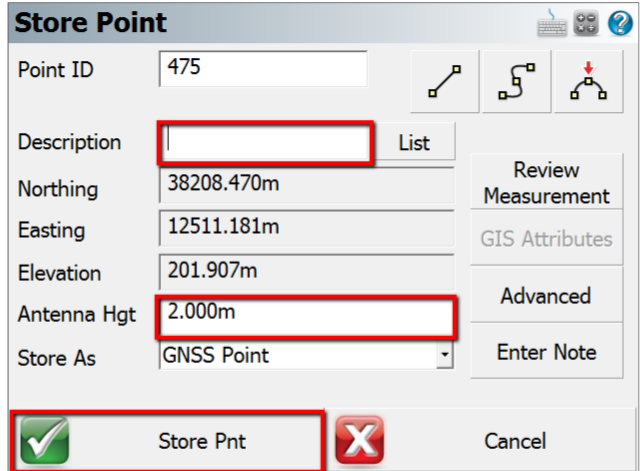
Direction: 45°00'00"
 Horizontal Distance: 2.000m
 Vertical Distance: 0.000m

Direction
 Start Point

☒ Store Point
 ☐ Close

Store Position

- Confirm the Point Description and Antenna Height
- Enter any additional information as required
- Store the Point



Store Point

Point ID: 475

Description:

Northing: 38208.470m
 Easting: 12511.181m
 Elevation: 201.907m
 Antenna Hgt: 2.000m
 Store As: GNSS Point

☒ Store Pnt
 ☐ Cancel

List
 Review Measurement
 GIS Attributes
 Advanced
 Enter Note

Point Staking

Selecting a Point to Stake

Option 1

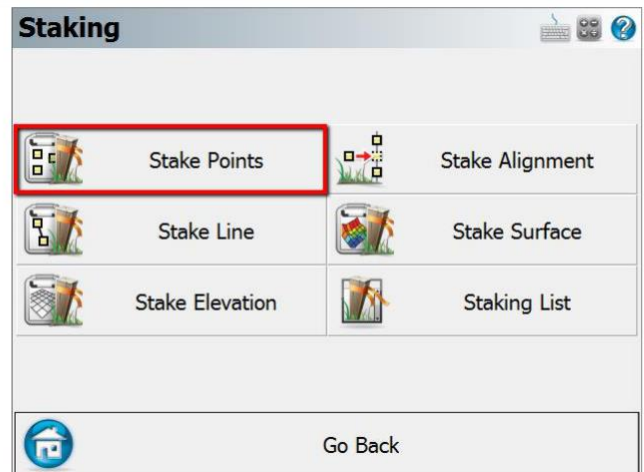
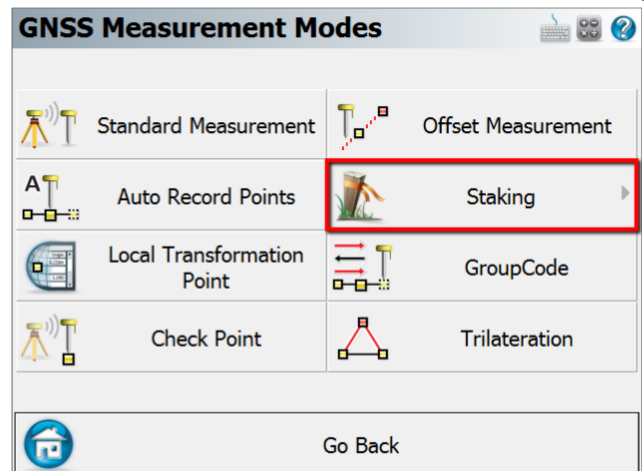
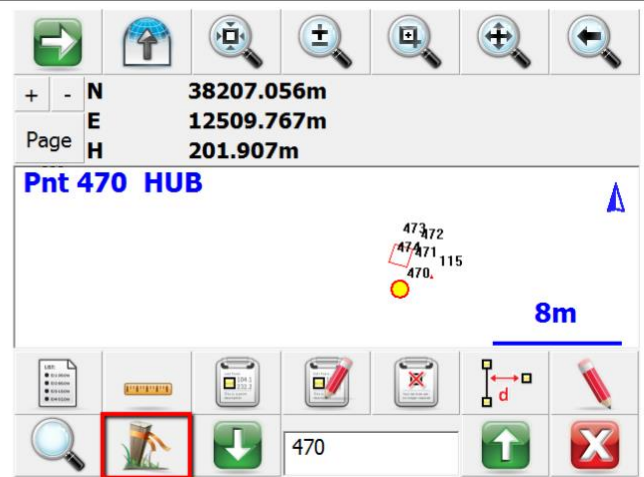
- Select the Point on the Map Screen
- Pick the Staking Button

Option 2

- Choose “Staking” from the Measurement Modes menu

Option 2, Cont'd

- Choose “Stake Points”



NOTE: The Staking Menu is also available from the Main Menu.

Point Staking Screen

NOTE: This screen may not always be displayed, depending on the [Display Point Staking Screen](#) setting.

On this screen:

1. The Point ID for the Point that will be staked.
2. Controls for selecting the next point to stake.
3. Offset values from the point coordinates. NOTE: The Multi-Offset Mode will prevent the Point ID from advancing when a point has been staked.
4. Stake the Point when ready.

The screenshot shows the 'Point Staking' interface. Callout 1 points to the 'Point ID' field containing '470'. Callout 2 points to the 'Prev' and 'Next' buttons, with 'Next' being the 'Nearest' option. Callout 3 points to the 'Design Point Offset' section, which includes fields for Direction (0°00'00"), Northing (981.160m), Easting (1058.903m), Distance (0.000m), and Elevation (94.003m). Callout 4 points to the 'Stake Point' button, which is accompanied by a green checkmark icon. Other visible elements include a 'Staking List' button, a 'Multi-Offset Mode' icon, and a checkbox for 'Do not show this screen again'.

Staking Interface

The main Staking Interface provides a lot of

1. Pick this button to change the View Direction. The default is stored as the [Orientation – GNSS](#) setting.
2. The Staking Toolbar provides access to:
 - a. Staking Method – Toggle between Grid, Compass, or Map View.
 - b. Staking Information – Displays the Point Coordinates of the Point.
 - c. Observation Toolbar – Toggles the display of the observation toolbar.
 - d. Next Point – Select the Next Point to stake, from a variety of options.
 - e. Staking Options – Opens the [Staking Options](#) to configure any of the Staking options.
 - f. Close – Close the Staking Interface.
3. The Measure Button starts a measurement

The screenshot shows the 'Staking Interface'. Callout 1 points to the 'Viewing North (Cardinal)' header. Callout 2 points to the 'Point 470, Desc HUB' status bar. Callout 3 points to the 'RTK Fixed' status indicator. The interface displays large text for 'S 0.756m', 'W 2.005m', and a third value '0.096m' with a triangle icon. On the right, there are status indicators for 'PDOP 2.2', 'Antenna 2.000m', and 'RTK Fixed'. A toolbar at the bottom contains various icons for navigation and measurement.

Point Staking Results

When a point has been measured, the Point Staking Results screen is displayed if the [Display Stake Results Screen](#) setting is enabled. If the tolerance settings are not met, then the Staking Results are always displayed.

1. Save Point and Raw Data – Stores the staked point in the coordinate database and writes the measurement observation values to the raw file.
2. Save Raw Data – Only writes the measurement observation values to the raw file.

The screenshot shows the 'Point Staking Results' screen. It displays a '!!! WARNING !!!' message: 'TOLERANCE EXCEEDED'. Below this, it shows 'Delta: 0.034m' and 'Tolerance Setting: 0.030m'. Another '!!! WARNING !!!' message follows. The design point information is listed: 'Design Point: 470 HUB', 'Cut (-)/Fill (+): 0.096m', 'Elevation Design: 94.003m', and 'Observed: 93.907m'. At the bottom, there are three buttons: 'Save Point and Raw Data', 'Save Raw Data', and 'Cancel'.

Appendix

Additional Resources for FieldGenius.

Online Manual

A version of the complete FieldGenius manual is available online at:

<http://s3.microsurvey.com/fieldgenius/Help/Default.htm>

Movies

A selection of instructional videos for FieldGenius are available online at:

<http://helpdesk.microsurvey.com/index.php?/Knowledgebase/Article/View/149>

Helpdesk

Contact MicroSurvey Support through the MicroSurvey Helpdesk at:

<http://helpdesk.microsurvey.com/>

Geoid Models

MicroSurvey provides a collection of geoid models for FieldGenius, files and instructions are available at:

<http://helpdesk.microsurvey.com/index.php?/Knowledgebase/Article/View/479>

Grid Shift Files

MicroSurvey provides a collection of grid shift files for FieldGenius, files and instructions are available at:

<http://helpdesk.microsurvey.com/index.php?/Knowledgebase/Article/View/499>

Tutorials

[Base and Rover Setup](#)

[Line Staking](#)

[Area Calculations](#)

[Volume Calculations](#)

Automap Libraries

The Automap system is used in MicroSurvey field and office software:

<http://helpdesk.microsurvey.com/index.php?/Knowledgebase/Article/View/1306>

<http://helpdesk.microsurvey.com/index.php?/Knowledgebase/Article/View/1350>

<http://helpdesk.microsurvey.com/index.php?/Knowledgebase/Article/View/1543>

Feature Files

Feature List Editor Download <http://s3.microsurvey.com/fieldgenius/Utilities/FeatureListEditor.exe>

GIS Attributes Movies <http://helpdesk.microsurvey.com/index.php?/Knowledgebase/Article/View/149#Attributes>