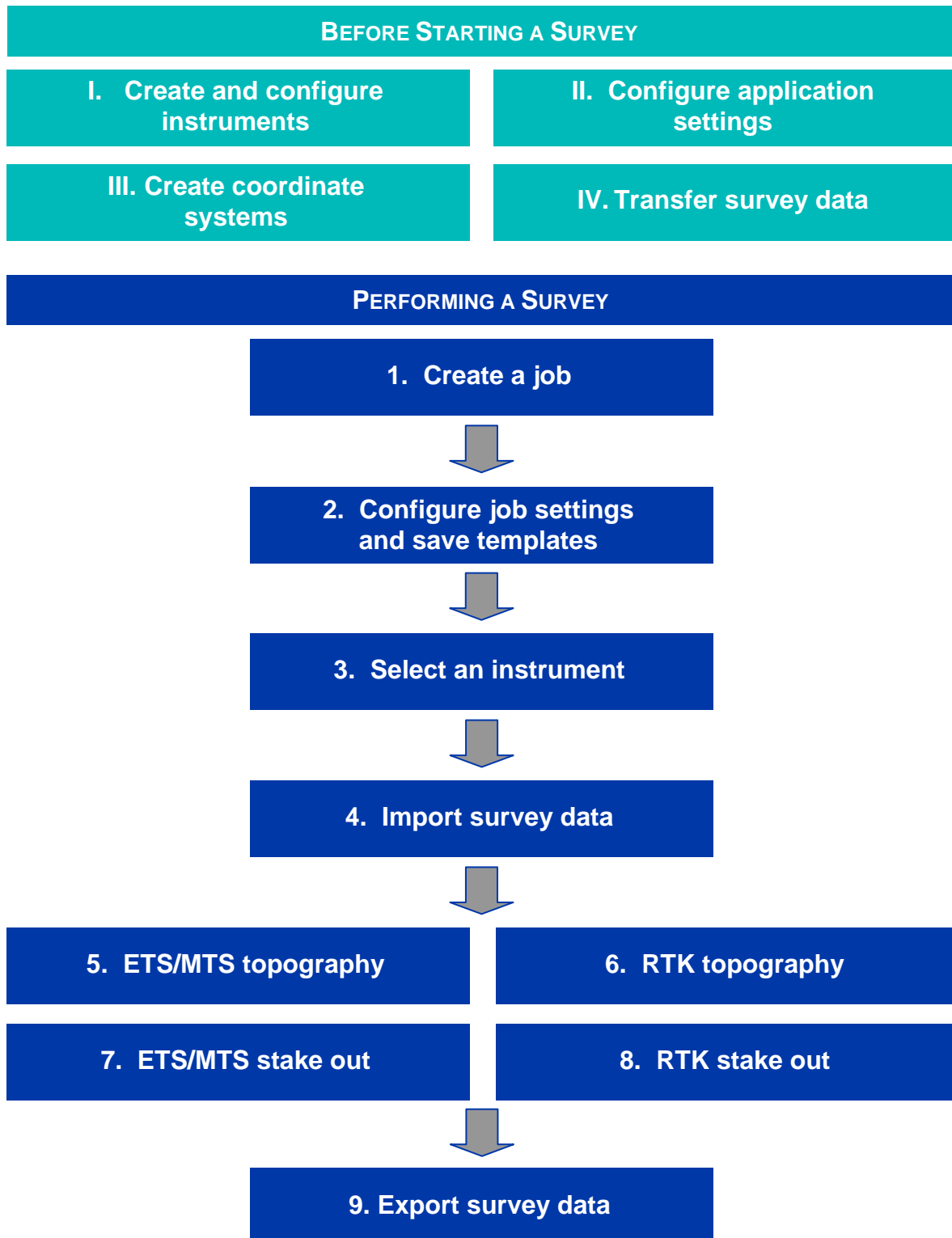


Quick Reference Guide

Welcome to the *SDR+ Professional Edition Quick Reference Guide*, which provides a brief overview about how to work with SDR+ Professional Edition software. The workflow diagram below shows the basic procedure for carrying out an SDR+ job from start to finish, using the Topography and Stake Out survey operations. A set of instructions for each workflow step is included in the sections that follow.

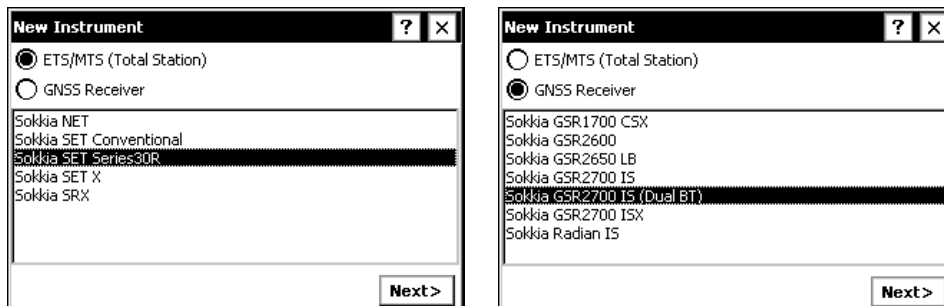


Before Starting a Survey

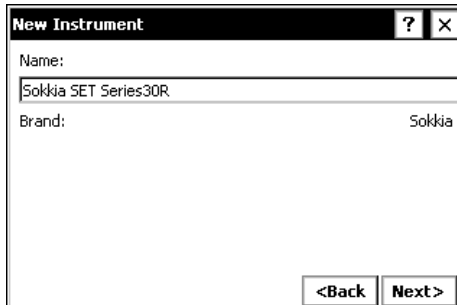
I. Create and Configure Instruments

Before you can use survey instruments in SDR+, they must first be defined by creating instrument profiles and entering the required configuration settings through the *Instrument Manager* screen. After you set up the profiles, you typically do not need to use the screen again, unless you are creating new profiles or editing settings. This section provides instructions for creating and configuring profiles for receivers, electronic total stations (ETS instruments) and motorized total stations (MTS instruments) and GNSS receivers.

1. Select **Survey > Instrument**.
2. In the *Select Instrument* screen, tap [Manager] and then in the *Instrument Manager* screen, select **New > Instrument**.
3. In the *New Instrument* wizard, select the instrument type: ETS/MTS (Total Station) or GNSS (GNSS Receiver), and then choose the applicable model.

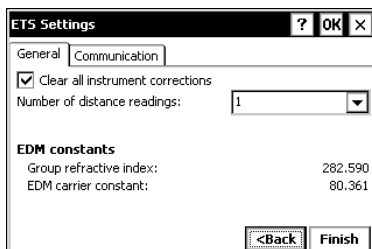


4. Tap **Next>**. In the second *New Instrument* screen, enter a name for the instrument in the **Name** field or leave the default. If you are using many of the same instrument type, it is recommended that you enter a descriptive name.

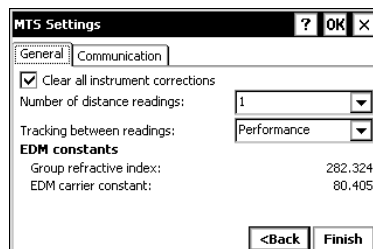


5. Tap **Next>**. The options in the *Settings* screen will vary, based on your instrument type.
6. Select the *General* tab and apply the general instrument settings.

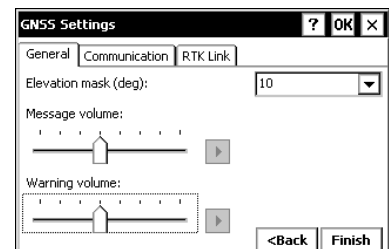
For ETS instruments



MTS instruments:



For GNSS receivers:



IMPORTANT FOR TOTAL STATIONS: For best results, we recommend that you clear the settings on your instrument so that SDR+ receives raw, uncorrected observations from the total station. This will also help to prevent double corrections on observations. To clear the settings on the instrument, select the **Clear all instrument corrections** check box in *ETS Settings* screen or the *MTS Settings* screen. If you leave the check box cleared, ensure that the prism constant and other correction settings

are correctly applied on the total station. For details about how SDR+ applies corrections, refer to the *SDR+ Professional Edition User Guide*.

For MTS instruments: The **Tracking between readings** field lets you select how the EDM mode should be set for distance measurements while tracking the target between readings in Stake Out.

Recommended: Set the field to Performance for maximum tracking performance. Select Accuracy for distance accuracy performance while tracking.

7. Select the **Communication** tab and enter the communication settings for your data collector.

Most data collectors support a variety of serial port connections (including Bluetooth wireless technology connections) as defined by the data collector's instruction manual. On the Allegro CX, the following ports may be used:

- COM1: Serial connection from COM1 to your instrument.
- COM2: Serial connection from COM2 to your instrument.
- COM6: Bluetooth wireless technology connection to your instrument.

The **Baud rate** for all receivers is set automatically.

For ETS/MTS instruments:

The screenshot shows the 'ETS Settings' dialog box with the 'Communication' tab selected. The 'Connected at:' field is set to 'Sokkia SET Series30R'. The 'Connection:' dropdown is set to 'Serial'. The 'Port:' dropdown is set to 'COM6'. The 'Baud rate:' dropdown is set to '2400'. There are 'Advanced', '< Back', and 'Finish' buttons at the bottom.

For GNSS receivers:

The screenshot shows the 'GNSS Settings' dialog box with the 'Communication' tab selected. The 'Connected at:' field is set to 'Sokkia GSR2700 IS (Dual BT)'. The 'Connection:' dropdown is set to 'Serial'. The 'Port:' dropdown is set to 'COM6'. The 'Connection settings:' field is set to 'Automatic'. There are '< Back' and 'Finish' buttons at the bottom.

8. If you are configuring a total station: You are finished instrument configuration. Tap [Finish].

If you are configuring GNSS receivers: Select the **RTK Link** tab and enter the settings for the RTK link that your receiver will be using to send or receive RTK corrections, and then tap [Finish]. The available options will be based on the type and configuration of the receiver that you are using.

- **Receiver with UHF radios:** Regardless of whether you are using an external or internal radio, you can set up the receiver as a base or as a rover.

The screenshot shows the 'GNSS Settings' dialog box with the 'RTK Link' tab selected. The 'RTK link device:' dropdown is set to 'UHF radio (External)'. The 'Correction format:' dropdown is set to 'RTCMV3'. The 'Connection:' dropdown is set to 'Serial'. The 'Connection settings:' field is set to 'COM2, 9600, 8, None, 1, None'. There is an unchecked checkbox for 'Store observations as positions'. There are '< Back' and 'Finish' buttons at the bottom.

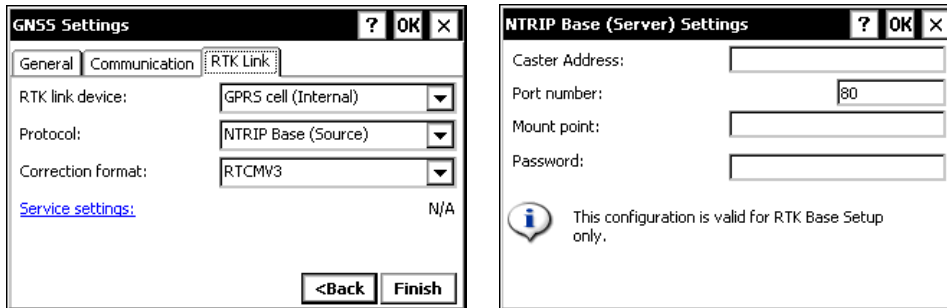
The screenshot shows the 'GNSS Settings' dialog box with the 'RTK Link' tab selected. The 'RTK link device:' dropdown is set to 'UHF radio (Internal)'. The 'Correction format:' dropdown is set to 'RTCMV3'. The 'Connection settings:' field is set to '9600'. There is an unchecked checkbox for 'Store observations as positions'. There are '< Back' and 'Finish' buttons at the bottom.

To initialize the settings:

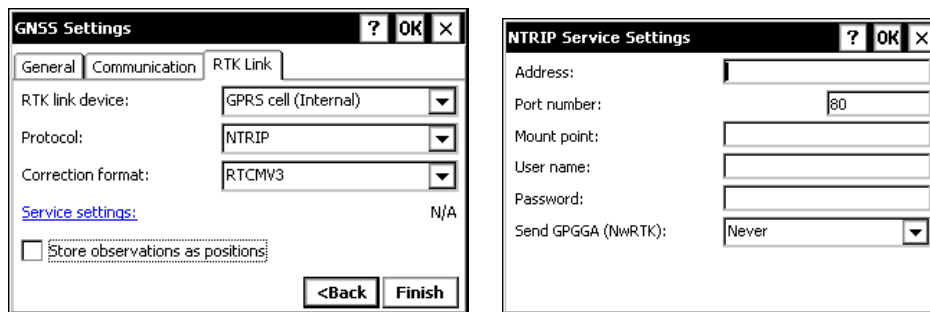
- ⇒ **If you set up the receiver as a base:** Select the **RTK Base Setup** operation on the **Survey** menu and complete the setup to start the broadcast.
- ⇒ **If you set up the receiver as a rover:** Select the preferred operation from the **Survey** menu and complete the **New RTK Session** setup. You can then begin collecting data.
- **Receiver with GSM/GPRS cell devices for internet connectivity:** If configuring the program and the receiver to work with internet-capable devices, contact site providers of the NTRIP or TCP/IP corrections or the reference station site administrators for account credentials. You will need the information for the following screens.

- Receiver with internal GSM/GPRS internet connectivity:

⇒ To configure the base receiver for reference station connections: Select NTRIP Base Source from the Protocol list, then tap the [Service settings](#) link and enter base reference station details in the *NTRIP Base (Server) Settings* screen.

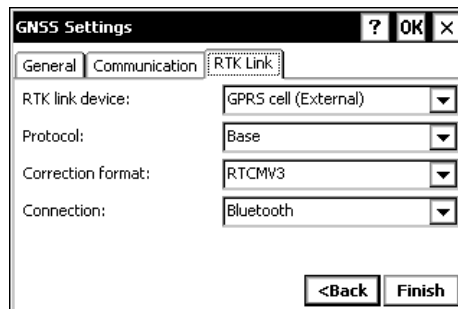


⇒ To configure the receiver as a rover: Select NTRIP or TCP/IP from the Protocol list and then the Correction format that is used by the base. Tap the [Service settings](#) link and enter your account credentials in the *NTRIP or TCP/IP Service Settings* screen.

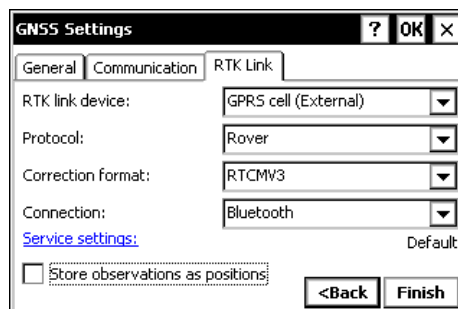


- Receiver with external GSM/GPRS device for internet connectivity:

⇒ To configure the receiver as a base: Select Base from the Protocol list, the Correction format that you want the receiver to broadcast, and Bluetooth as the Connection type.



⇒ To configure the receiver as a rover: Select Rover from the Protocol list, the Correction format that is used by the base receiver, and Bluetooth for the Connection type. Enter the NTRIP or TCP/IP credentials on the external RTK device (for example, using *GSR NetLink* software).



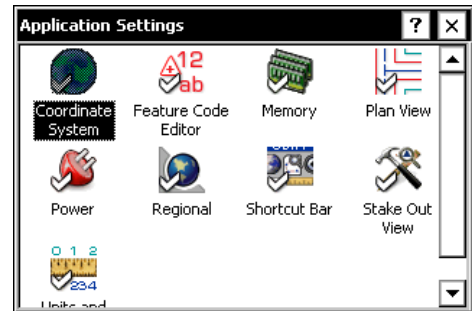
To initialize settings for a **base** receiver, select **Survey > RTK Base Setup**. To initialize settings for the **rover** receiver, select an operation from the **Survey** menu and complete the *New RTK Session* setup.

IMPORTANT: When setting up multiple receivers, make sure that all use the same correction format.

II. Configure Application Settings

Application settings control the presentation or the behavior of SDR+, regardless of whether a job is open or closed. The settings are uniformly applied to all jobs and the data in the jobs and may be customized for your preferences (for example, you can choose the symbols with which to represent your job data in *Plan View*). Once configured, the application settings are not frequently changed, although they may be modified at any time. Application settings can be opened by selecting **Tools > Application Settings**.

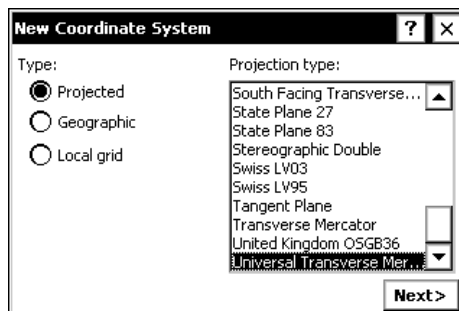
- Coordinate System
- Feature Code Editor
- Memory
- Plan View
- Power
- Regional
- Shortcut Bar
- Stake Out View
- Units and Format



III. Create Coordinate Systems

You may need to create a new coordinate system, depending on whether the coordinate system that you will be using in your job has been set up in SDR+. If not available in the *Select Coordinate System* screen:

1. Select **Tools > Coordinate System** and in the *Coordinate System Manager* screen, select **New > Coordinate System**.
2. Choose the coordinate system **Type** by selecting **Projected**, **Geographic**, or **Local grid**.

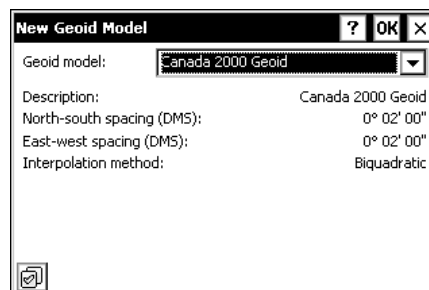
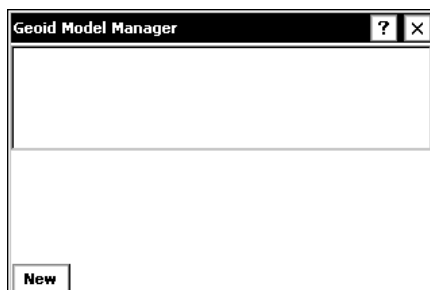


3. If the system is Projected, select the map projection from the **Projection type** list, then select **Next>**.

Note: If you are using a receiver, the coordinate system selected must be related to WGS84 in order for valid coordinates to be calculated.

To use your own parameters with a coordinate system, copy the system and then modify the copied coordinate system.

4. Follow the onscreen instructions for your coordinate system and tap [**Finish**] to complete the wizard.
5. To use a geoid with the coordinate system, the applicable grid file must be copied to the **SDR+\Grids** folder on the device. Then in the *Coordinate System Manager*, select **Manage > Geoid Models**.
6. In the *Geoid Model Manager*, tap [**New**], then select the geoid model in the *New Geoid Model* screen.



7. Apply the model to the selected coordinate system using the **Geoid Model** list in the *Coordinate System Manager*.

IV. Transfer Survey Data

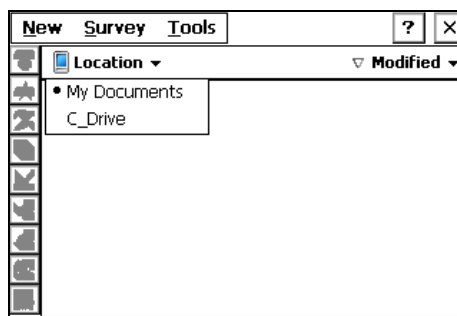
The final step to complete before you start conducting your survey is to transfer any survey data that you will be using throughout your survey, if any, onto your data collector. Do this by connecting your data collector to your PC and transferring the coordinate file(s) using Microsoft ActiveSync.

Note: Any files that are transferred must be stored in either the “My Documents” folder or the “C_Drive” folder. Files located in folders outside of these directories cannot be imported into SDR+.

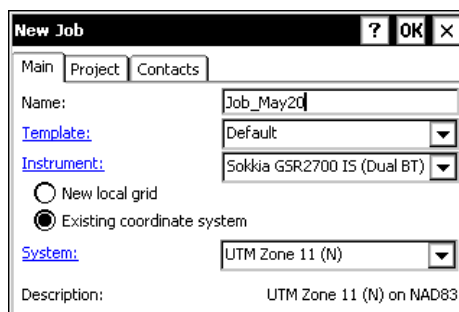
Performing a Survey

1. Create a Job

1. In the *Job List* screen (the main screen that displays when you open SDR+), press and hold the stylus on the **Location** filter to choose the directory in which to store the job. The default is **My Documents**. However, the **C_Drive** will keep your job, even if a cold reset occurs on the controller.



2. Select **New > Job**.
3. Enter job details in the *Main* tab of the *New Job* screen.

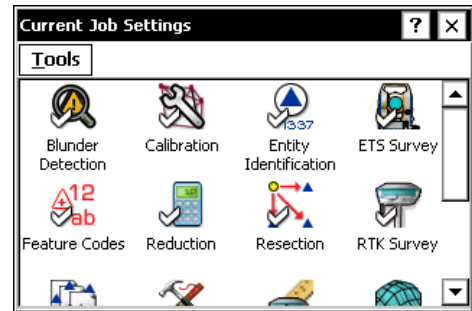


- **Name:** Enter a descriptive job name in the **Name** field.
 - **Template:** Use the preferred job settings template, or tap the link to review and/or edit the settings for a selected template.
 - **Instrument:** Use the preferred instrument profile, or tap the link to review and/or edit the profile for the selected instrument.
 - **New local grid/Existing coordinate system:** Select **New local grid** to conduct the survey on a flat grid surface. You can calibrate the survey later (with **Survey > Calibrate** if using a receiver, or by using the *Coordinate System Manager*). Select **Existing coordinate system** to use a predefined coordinate system.
 - **System:** Tap to open the *Coordinate System Manager*, where you can create and/or modify coordinate systems.
4. In the *Project* tab, enter a **Project** name, **Location**, and **Comments** about the job.
 5. In the *Contacts* tab, enter the contact information of the **Surveyor** and their **Company**, and the **Client** and their **Company**.
 6. Tap [OK] to complete the new job setup.

2. Configure Job Settings and Save Templates

Job settings are a set of configurable options that are specific to each individual job and can vary between jobs. Job settings may be customized for each new job or configured using job templates. After creating and opening a job, open the job settings by selecting **Tools > Job Settings** from the main menu.

- Blunder Detection
- Calibration
- Entity Identification
- ETS Survey
- Feature Codes
- Reduction
- Resection
- RTK Survey
- Set Collection
- Stake Out
- Static/Kinematic
- Surface Model
- Survey Notification
- Traverse Adjustment

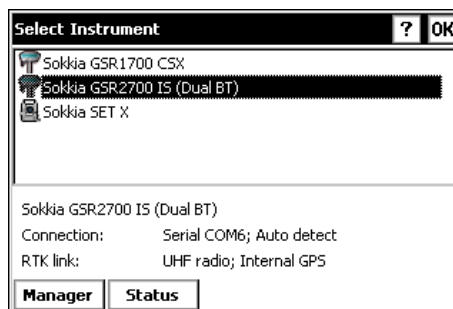


Select the appropriate job settings icon to review the job settings, and if necessary, to modify them to suit your survey specifications. When you finish, you can save the settings to a job template to use in future surveys by selecting **Tools > Save Current Settings**. Once you complete customizing the job settings, you can select the preferred instrument default and then start your survey.

3. Select an Instrument

When you start a survey, select the instrument that you will be using. Once you start working with an instrument, it will remain as the default selection for new jobs until you change the default using the *Select Instrument* screen.

1. Select **Survey > Instrument**.

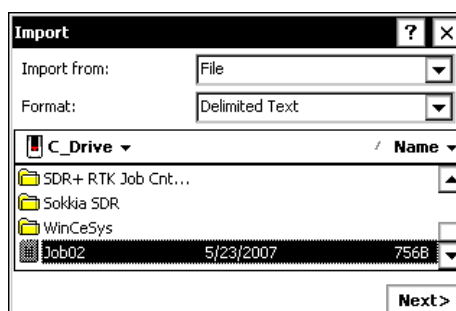


2. Highlight the preferred instrument from the list of defined instruments. Review the selected instrument's configuration summary at the bottom of the screen.
3. Select [**Status**] to connect to the instrument and verify the settings.
4. Complete the selection by selecting [**OK**]. The instrument can now be used in your survey.

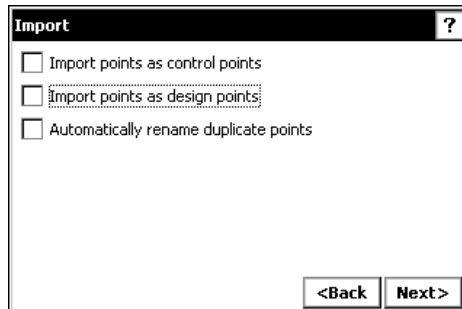
4. Import Survey Data


Once you have sourced a series of control points or design points for a survey (see Section IV *Transferring Survey Data* on page 6), import them into the job so that you can occupy them in your survey work.

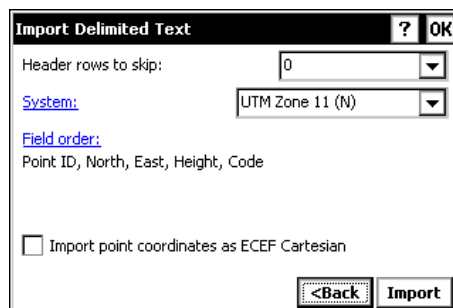
1. Select **Tools > Import**.
2. In the *Import* screen, select "File" from the **Import from** list.



3. Select the format of the import file from the **Format** list.
4. From the list, select the folder in which the file is saved, and then select the file.
5. Select **Next>**. Apply the preferred import formats. The import screen specific to the type that you selected will open. For example, the following examples will use Delimited text:



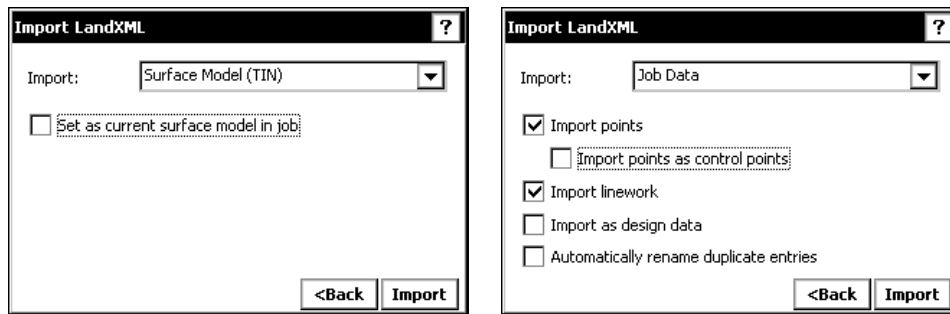
- **Import points as control points:** Select to flag the points as control points. These points will appear with the imported control point  icon in *Job Review*.
 - **Import points as design points:** Select to automatically add the imported points to the *Stake Out List*.
 - **Automatically rename duplicate points:** Select for duplicate points to be automatically re-named. Leave the check box cleared to be prompted for an action each time SDR+ encounters a duplicate point during the import.
6. Select **Next>**. The options displayed will vary according to the import format you chose.
 - **Delimited Text import format:** Apply the preferred settings and then select [**Import**] to finish:



- ⇒ **Header rows to skip:** Choose the number of header rows to skip in the import file.
 - ⇒ **System:** Use the default job coordinate system, or select another from the list. Tap the link to open the *Coordinate System Manager* to review or edit settings.
 - ⇒ **Field order:** Tap to update the format of the imported file's contents in the *Delimited Field Order* screen.
 - ⇒ **Import point coordinates as ECEF Cartesian:** If preferred, select to convert the imported coordinates to the selected coordinate system if it has an ellipsoid definition associated with it. The coordinates will be read as ECEF Cartesian (XYZ) (referencing the associated system's datum), and then converted and stored using the selected system's ellipsoid (the coordinates will **not** be stored as ECEF Cartesian coordinates in the job).
- **SDR20/33 POS import format:** Choose the applicable coordinate system from the **System** list. Tap the link to use the *Coordinate System Manager* (for example, to create or modify a system).



- **LandXML import format:**




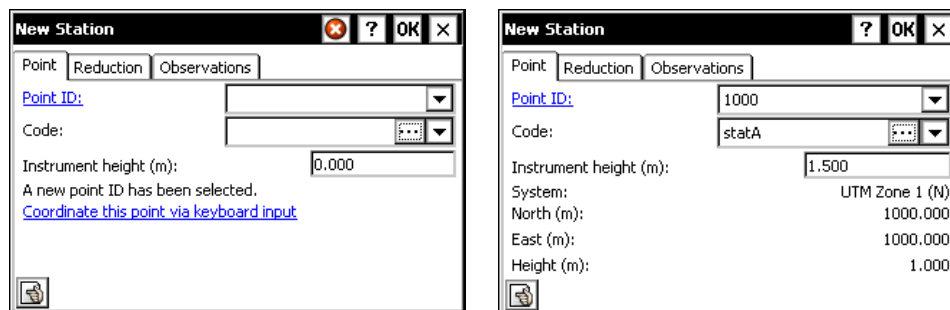
- ⇒ To import the file as a single entity, select Surface model from the **Import** list. To apply the file as the job's current surface model (for example, the file will be visible in the *Plan View*), select the **Set as current surface model in job** check box.
- ⇒ To import specific data from the file, select Job Data from the **Import** list, and then choose which items to import and how to handle any duplicates. Data imported as design data will be automatically added to the **Stake Out List**.

7. Select [**Import**] to complete the import. Select [**X**] to close the *Import Complete* screen and review details in the open job using the **View** menu.

5. Start Topography with Total Stations

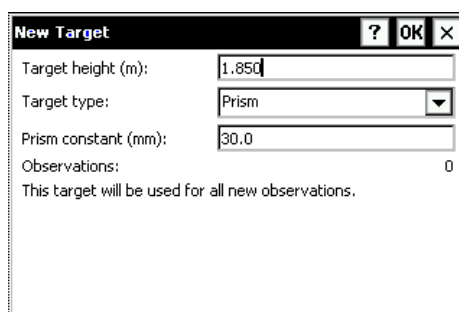
If you are using an electronic total station (ETS) or a motorized total station (MTS) for your survey, complete the following steps before measuring to unknown points from new stations. There are several ways to achieve this, some of which are outlined in the steps below.

1. Select [**Read**]  or select **Survey > Topography**. For most controllers, the default read key is F5.
2. In the *New Station* screen, define the new station point. For a new point, enter its coordinates by tapping [Coordinate this point via keyboard input](#). The input data will display in the screen's fields.

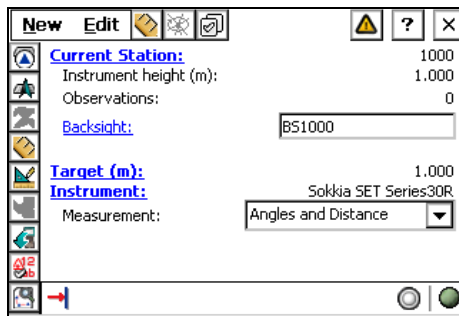


Tip: Once you have collected job data, including a set of points observed and saved from a station, you can use *ETS Survey Settings* to set the default Point ID as the last observed point. In this case, when you start a survey operation, the point details will display in the screen by default.

3. In the *New Target* screen, define the current target.

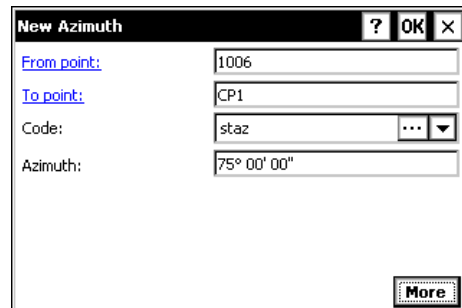
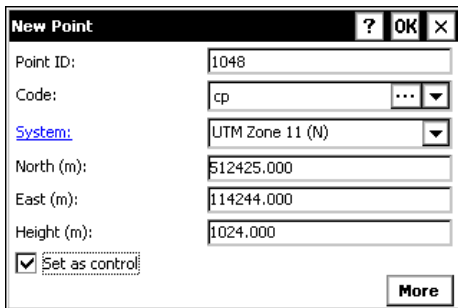


- Depending on your survey scenario, enter the backsight coordinating information accordingly in the *ETS Setup* screen:




Scenario 1: Coordinated backsight point

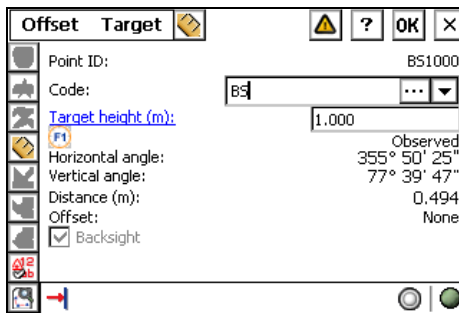
Scenario 2: Known azimuth from your station to a backsight point



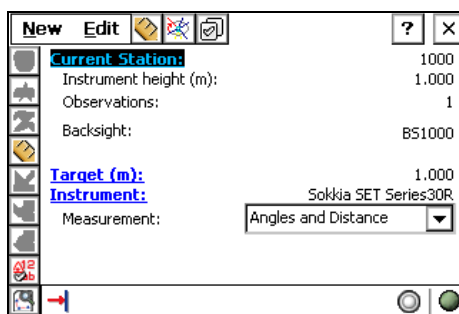
In the *ETS Setup* screen, select **New > Point** and create your backsight point.

In the *ETS Setup* screen, select **New > Azimuth** and enter the azimuth to your backsight point.

- Sight to the backsight point, and then select **[Read]** . The observation read screen will open with the measurement results displayed and the **Backsight** checkbox set to read-only. Confirm all details, and then select **[OK]** to save the backsight observation.




- Sight to the foresight point and in the *Setup* screen, sight to the next foresight point, and repeat the steps take readings and save observed points, confirming all details in the observation screen (for example, feature code and target height). The **Observations** field will update with each foresight that you save.

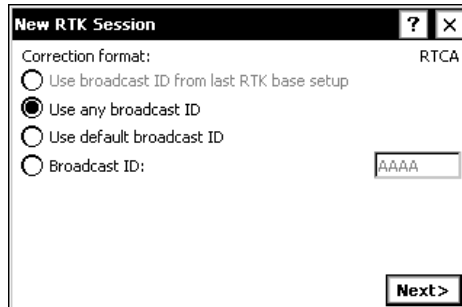


- Repeat the step to observe and save observations at all points of interest until you complete your topography survey. When you are finished, review your work in the open job using the **View** menu.

6. Start Topography with Receivers

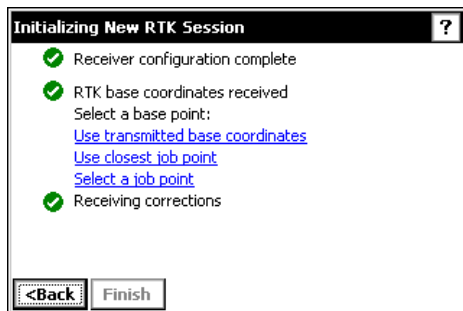
When working with rover receivers, you do not need to connect the data collector to your base station to start work. To start collecting data with your rover and SDR+, complete the *New RTK Session* setup:

1. Select **[Read]** , or select **Survey > Topography**. For most controllers, the default read key is F5.
2. In the *New RTK Session* screen, enter the **Broadcast ID** for the base station from which you want to receive corrections. Typically, you would select **Use any broadcast ID**.



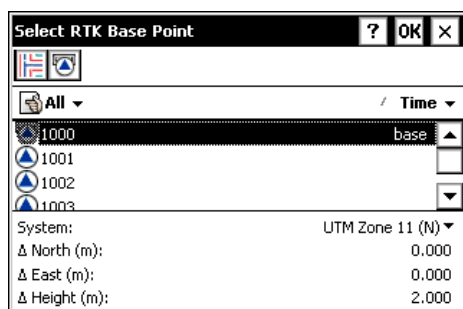
3. Select **Next>**. Selecting your base point will vary depending on whether you have entered the known base point in the job or if you are using the base position as calculated by the receiver.

Using a known base point:

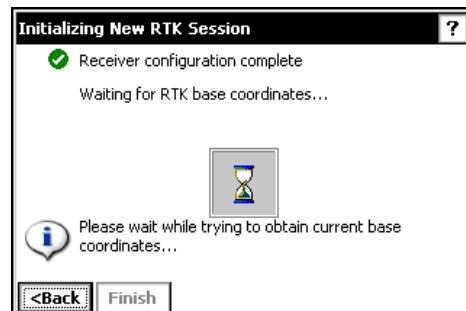


With [Use Transmitted base coordinates](#) lets you use the current base coordinates. However, SDR+ will automatically select the base station point based on the proximity of the broadcast position to existing job points.

To use a different point, tap [Select a job point](#) to select an existing base point from the *Select RTK Point* screen.

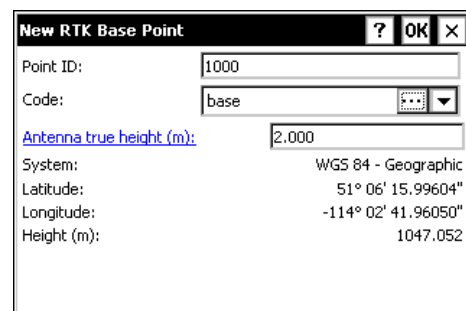


Using the base GPS calculated position:

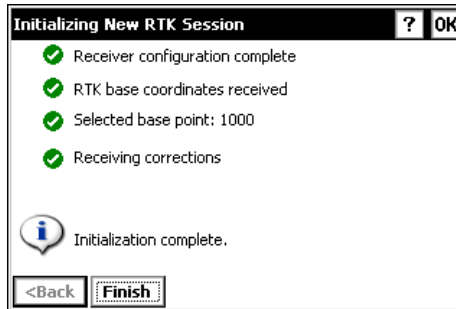


Once the base point coordinates have been received, SDR+ will display the coordinates in the *New RTK Base Point* screen.

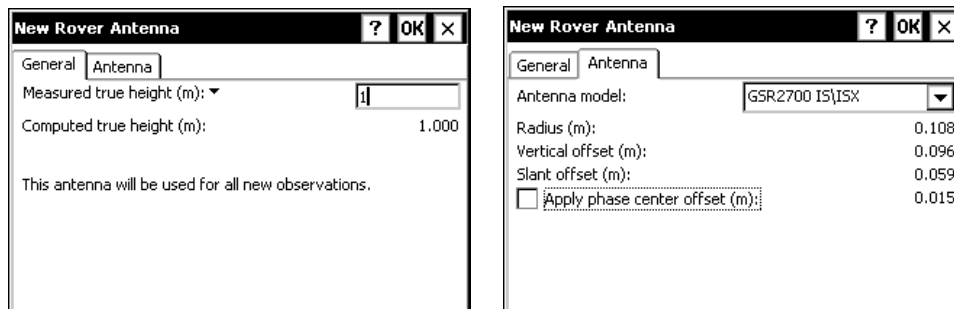
Enter a base point name and then antenna height and select **[OK]**.




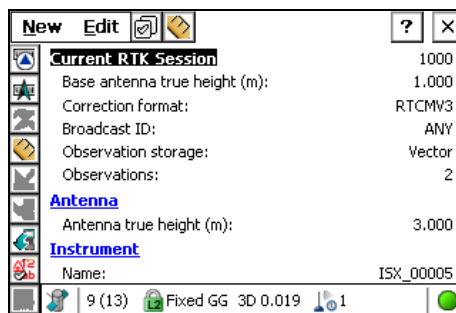
- In the *Initializing New RTK Session* screen, select [Finish].




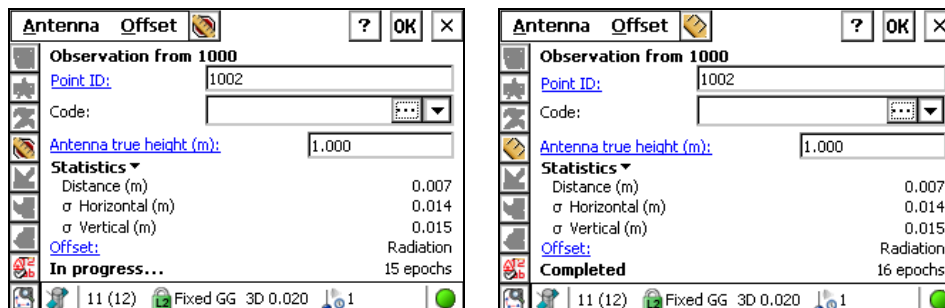
- In the *New RTK Session* screen, select [OK]. In the *New Rover Antenna* screen, select the antenna measurement type and enter the height of your rover antenna. In the *Antenna* tab, ensure that the rover antenna type is correct.




- When the *RTK Setup* screen opens, the session is initialized. When you hear the receiver emit “RTK fixed” you can begin observing at points of interest. To record an observation at a point of interest, navigate to a point of interest, and then select [Read] .



- Wait for the predefined number of epochs to accumulate (if observations are set to end by epoch), or tap [Stop Reading]  to manually end the observation.

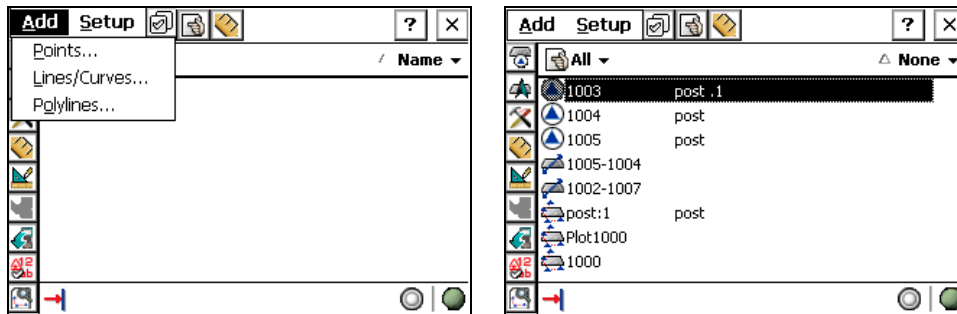


- Confirm observation details. For each observation, always confirm that the **Point ID**, feature **Code**, and **Antenna** details are what you want to use. Save the point by tapping [OK] and return to the *Setup* screen.
- Navigate to the next point and tap [Read]  to begin recording the observation, then tap [OK] to save it.
- Repeat the steps to save readings at all points of interest to finish your topography survey.
- Review your work in the open job using the **View** menu.

7. Start Stake Out With Total Stations

To stake out design points and linear entities using total stations, follow these steps:

1. Select **Survey > Stakeout**. The *Stake Out List* screen will open, showing any existing design points that were previously added or added from importing survey data.

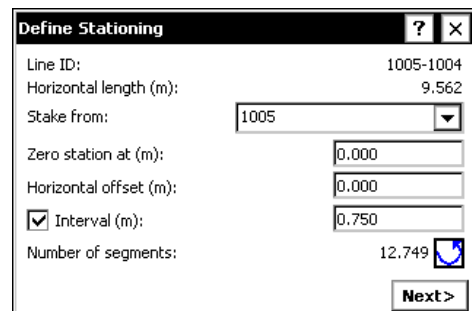


2. Add items to the *Stake Out List* by using the **Add** menu commands. The *Select Points* screen, the *Select Linework* screen, and the *Select Polylines* screen will allow you to select items in list view or plan view mode (linework includes lines, arcs, and spirals). You can also enter entities on-the-fly, if necessary.
3. Select the entity that you want to stake and then tap **[Read]** . If you selected a point, a read prompt screen will open (go to step 5). If you selected a linear entity, enter the required stationing details in the *Define Stationing* wizard and *Stake* screen:

In the first *Define Stationing* screen, enter horizontal stationing distances, including the stake distance interval along the linear entity, if necessary.

Tap the roundup button to round up interval distances to an even number.

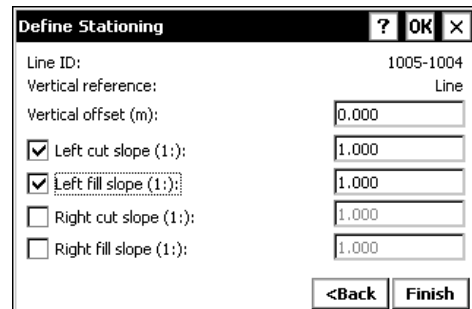
Tap **Next>**.



In the second *Define Stationing* screen, enter the vertical offset distance, if necessary.

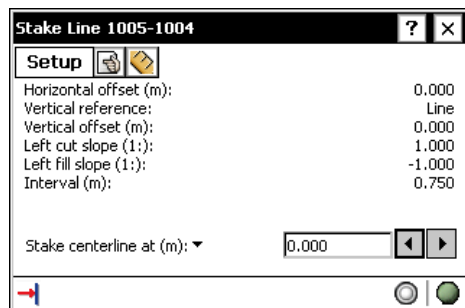
If staking slopes along the linear entity, enter the preferred cut and/or file slope distances.


Tap **[Finish]**.

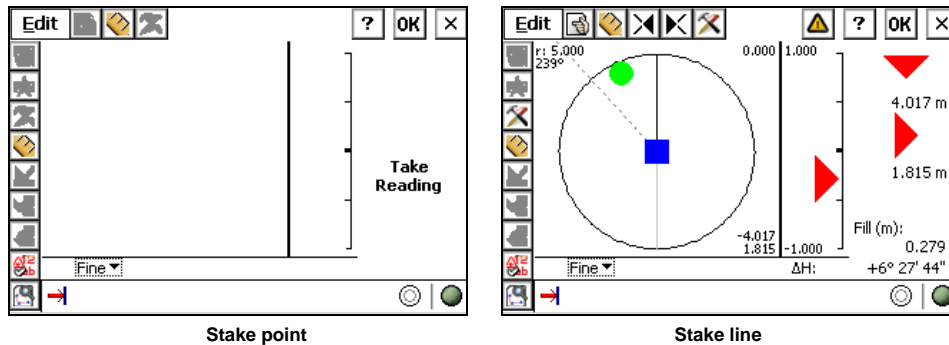
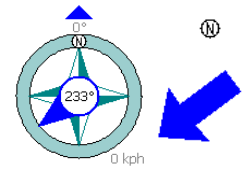



In the *Stake* screen, use the **Stake** list and buttons to select the location at/on which to stake along the linear entity.

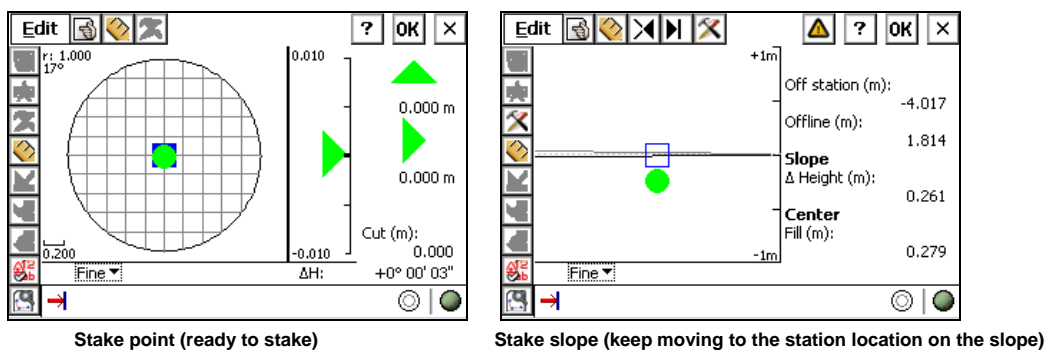
Tap **[Read]** .




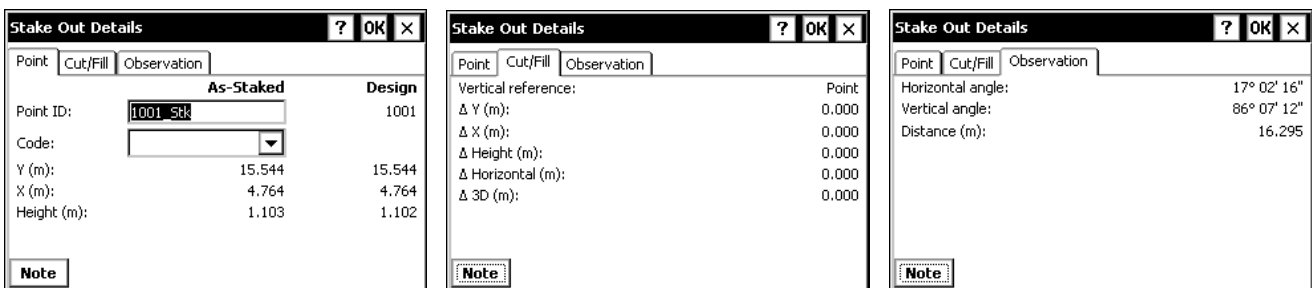
- When staking points, locate the target, and then select **[Read]**  in the *Stake Out View*. For linear items, the view screen will open, automatically indicating your current position (the green circle ●) along the linear entity. SDR+ will update your position as you navigate to the design location (the blue square ■).
With an MTS, the navigation pane on right side of the screen will include a compass rose and arrow (see example at right) when you are at the furthest distance from the point or station of interest.



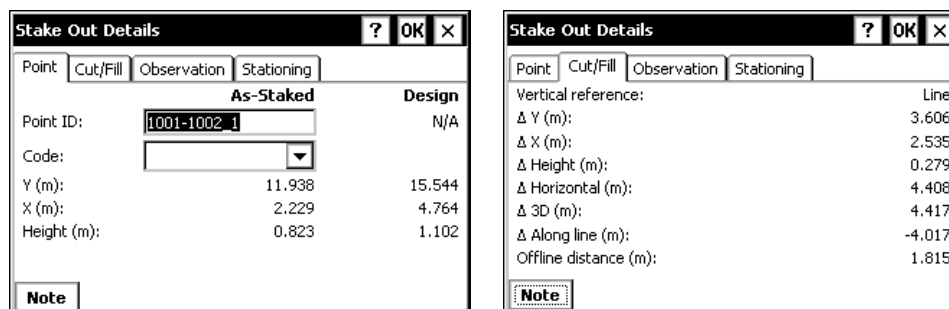
- Navigate to the design point location, referring to the screen's directional indicators, and continue taking readings with **[Read]**  until the target position is over the design location. With the MTS, if you still need to navigate to the station after a reading, tap the navigation graphic to re-initiate navigation mode.
- When you are finally within stake out tolerances, take a final reading (refer to the distances under the green arrows). A grid will show when the position is within the Fine view threshold.

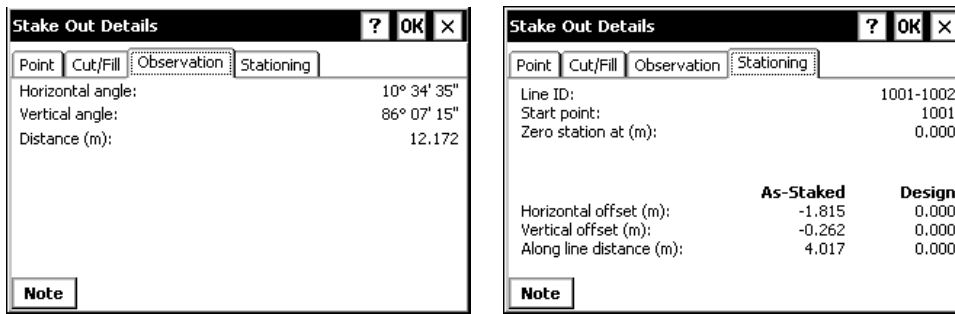


- For each observation, select **[Details]**  to review the current position in the *Stake Out Details* screen. Tap **[Note]** to create a static file combining all information and to save the file to *Job Review*.





Stake Out Details for point





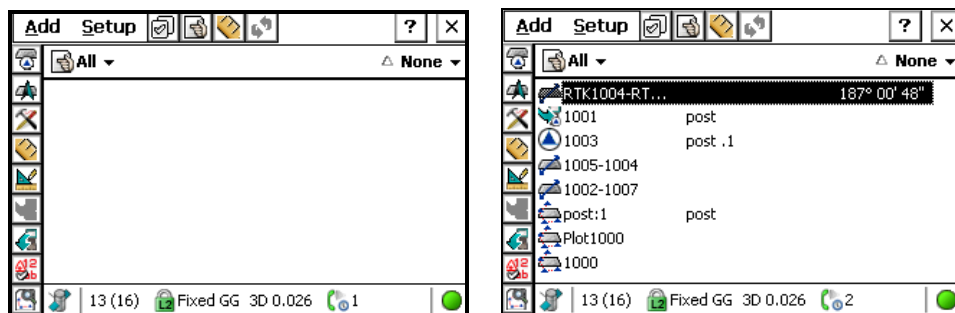
Staked point for linear entities (lines, arcs, spirals, polylines, etc.)


8. When satisfied with the current position in the *Stake Out View* screen, save the observation to an as-staked point: **For Points:** Select [OK]. **Linear items:** Select [Stake]  to automatically save the observed location and then to select the next location along the linear entity.
9. When you return to the *Stake Out List* screen (for example, after staking a point), the next item in the list will be highlighted. Select [Read]  to stake the next item and repeat the steps until you finish staking all entities from the current station. Review your work using the **View** menu in the open job.

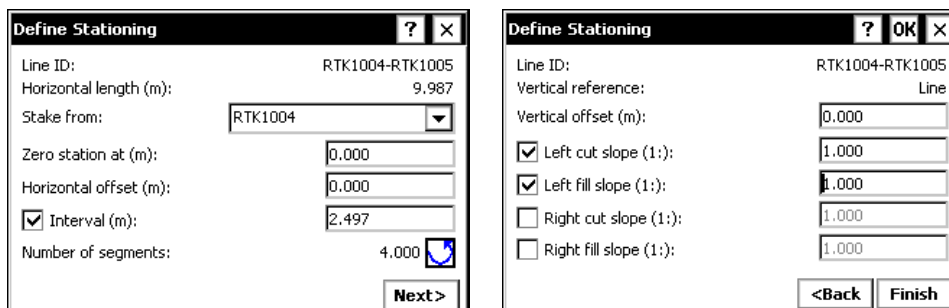
8. Start Stake Out with RTK Receivers


To stake out design points and linear entities using a receiver, follow these steps:

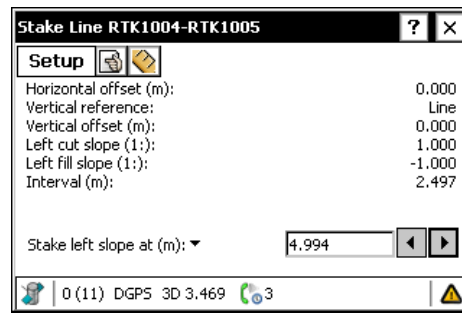
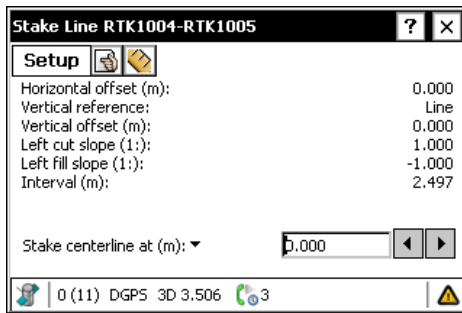
1. Select **Survey > Stakeout**. The *Stake Out List* screen will open. The list may show existing design items that were added previously or items that were added from importing survey data.



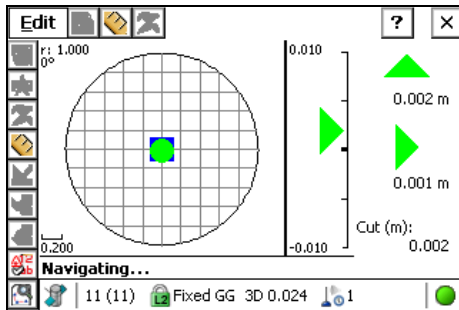
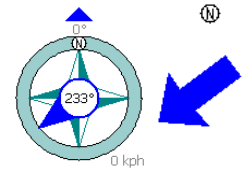
2. Tap the **Add** menu to add items to the *Stake Out List*. The *Select Points* screen, the *Select Linework* screen, and the *Select Polylines* screen will allow you to select items in list view or plan view mode (linework includes lines, arcs, and spirals). You can also enter entities on-the-fly, if necessary.
3. Select the entity that you want stake, and then tap [Read] . If you selected a point, go to step 6.
4. If you selected a linear entity, enter the preferred horizontal and vertical stationing distances in the *Define Stationing* screens, and then select [Finish].



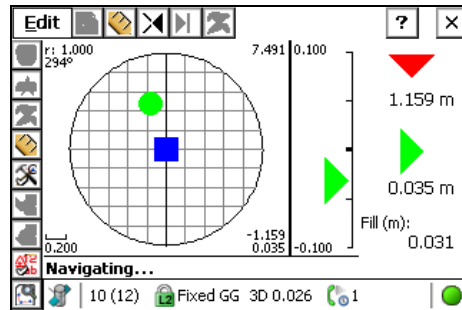
- In the *Stake* screen, tap the **Stake** list arrow or buttons to select the location at/on which to stake along the linear entity, and then tap **[Read]** .





- In the *Stake Out View* screen, navigate until your current position (the green circle ●), is over the design location (the blue square ■). SDR+ will update your position as you move to the design location. When you are at the furthest distance from the point or station, the navigation pane on right side of the screen will include a compass rose and arrow (see example at right).
When you are within the Fine view threshold, the main view will display a grid.

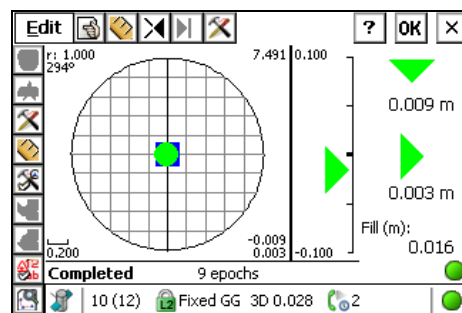
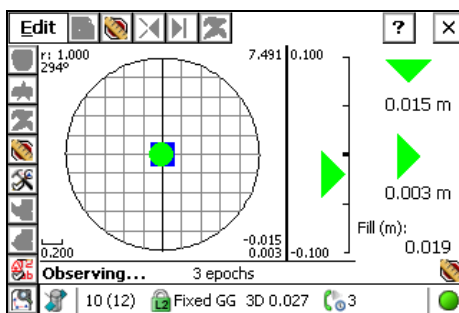



Stake out point: Target is centered on design point.



Navigating to station along the center line.

- When your position is at the design location, tap **[Read]**  to record an observation. Epochs will be recorded in the same manner as in topography. Wait until the required number of epochs is read, or use **[Stop reading]**  to end the observation manually. The status at the bottom of the screen will switch from **Observing...** to **Completed**. For example, the screens below show the complete observation at a station along the center line.



- If preferred, tap [Details]  in the *Stake Out View* screen after a reading to review the current position in the *Stake Out Details* screen. Tap [Note] to create a static file combining all information and to save the file to *Job Review*.


Stake Out Details			Stake Out Details			Stake Out Details		
Point	Cut/Fill	Observation	Point	Cut/Fill	Observation	Point	Cut/Fill	Observation
As-Staked			Design					
Point ID:	st1010_58		Vertical reference:		Point	Distance (m):		0.001
Code:			Δ North (m):	0.002		σ horizontal (m):		0.018
North (m):	5665592.970	5665592.972	Δ East (m):	-0.001		σ vertical (m):		0.016
East (m):	706866.727	706866.726	Δ Height (m):	-0.001		Observation mode:		Average position
Height (m):	1047.706	1047.705	Δ Horizontal (m):	0.002		Epochs:		9 fixed, 0 float
			Δ 3D (m):	0.003		Duration:		00:09
Note			Note			Note		

Stake Out Details for point

Stake Out Details				Stake Out Details			
Point	Cut/Fill	Observation	Stationing	Point	Cut/Fill	Observation	Stationing
As-Staked				Design			
Point ID:	RTK1004-RTK1005			Vertical reference:		Line	
Code:				Δ North (m):		0.010	
North (m):	69553.955	69553.964		Δ East (m):		0.015	
East (m):	679196.228	679196.243		Δ Height (m):		0.016	
Height (m):	287.134	287.150		Δ Horizontal (m):		0.018	
				Δ 3D (m):		0.024	
				Δ Along line (m):		-0.010	
				Offline distance (m):		0.015	
Note				Note			

Stake Out Details				Stake Out Details			
Point	Cut/Fill	Observation	Stationing	Point	Cut/Fill	Observation	Stationing
Distance (m):			127.087	Line ID:			RTK1004-RTK1005
σ horizontal (m):			0.014	Start point:			RTK1004
σ vertical (m):			0.022	Zero station at (m):			0.000
Observation mode:			Average position				
Epochs:			16 fixed, 0 float				
Duration:			00:16				
Note				Note			

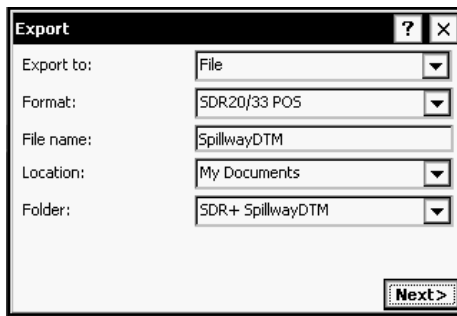
Stake Out Details for linear entities

- Tap [OK] to return to the *Stake Out View*. If don't want to save the observation, take another reading. If you are satisfied with the as-staked position, save the observation in the *Stake Out View* by selecting [OK]. For points, the *Stake Out List* will display for you to select the next item for stake out. For linear entities, select [Stake]  in the observation read screen to stake and save the location as a staked point and then to automatically select the next location along the linear entity.
- If you did not define intervals, navigate the preferred distance along the linear entity for the next reading. You will return to the *Stake Out List* when you complete staking all defined stations along the linear entity.
- Repeat until you finish staking all design entities from the current station, then exit the *Stake Out List* and review your work in the open job using the **View** menu.

9. Export Survey Data

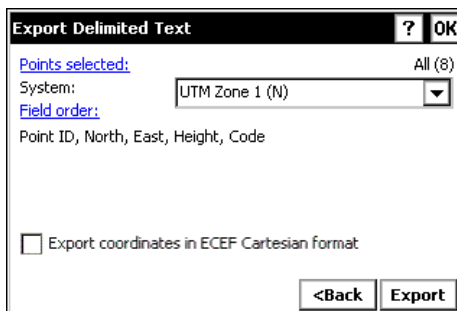
When you have completed your survey, you will typically need to transfer the coordinates and feature codes of your job to a PC for further use. Using the SDR+ export functionality, you can export your data to several data formats compatible with third party software programs. Before you export your data, verify that the coordinate system settings are consistent with the projection, units, and precision that you need. You can change the coordinate system settings for export in the *Coordinate System Settings* section of *Job Settings*.

1. Select **Tools > Export**. The *Export* screen will open for you to format the export.

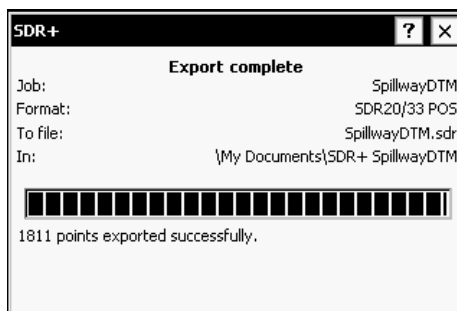


- **Export to:** Select File.
 - **Format:** Select the preferred export format.
 - **File name:** Name the exported file.
 - **Location:** Select a location for the exported file.
 - **Folder:** Select a folder in which to store the exported file. The default is the current job folder.
2. Tap **Next>/[Export]**. The program will complete the export, or display an additional formatting screen specific to the export format that you selected.

For example, for the Delimited text export format, if you see the **Export coordinates in ECEF Cartesian format** check box, you may use this option to convert the coordinates (*applies to points only*). Job point coordinates will be exported as ECEF Cartesian coordinates using the selected export coordinate system's ellipsoid. If the export system is a local grid system, this option will not be available.



3. Tap **[Export]** to export the data file. The program will display an export progress screen, which will show the success or failure of the export, as well as the number of items exported.



4. Tap **[X]** to close the *Export complete* screen.

When ready, you can copy the exported file from your data collector to a PC by establishing an ActiveSync connection between the devices, and then copying the files.