

Advantage FAQ

Question When I'm doing an RTK survey, is it more precise to take a few measurements per occupation instead of just one measurement?

Background When configuring an RTK rover configuration, you can choose which criteria the receiver will follow to take a measurement. When you instruct the receiver to take more than one measurement (position) during an RTK survey, you are implicitly telling the receiver that the antenna will remain stationary during the entire occupation. This removes the "velocity" variables out of the position computation. With less unknowns to solve for, the receiver can minimize the "short-term position noise" thus improving the precision of the measurement.

Note: When doing, for example, a topographic survey, the improved precision achieved from taking five measurements over one measurement may not be required and could decrease the productivity of the RTK survey. It may only be useful to take a few measurements on a point that is exceptionally important such as, for example, a property corner or survey monument.

Answer Yes your points are more accurate if you take more than one position per point during an occupation.

The following description is divided into three sections.

The first section, titled *1 Changing a Configuration Set*, describes how to edit an already existing RTK-rover-configuration set on your SR530 to take more than one measurement during an occupation.

The second section, *2 Configuring a Hot-Key*, demonstrates how to configure one of the user-definable function keys (**F7-F10**) to easily access where to change the number of measurements the receiver makes per occupation.

The third section, *3 Using the Newly Configured F7 Hot-Key*, explains how to use the newly configured **F7** hot-key to change the number of measurements.

Note This FAQ is written for people using System 500 firmware version 4.0 or higher. If you are using an older version, you may not see the same screen displays presented in this FAQ.



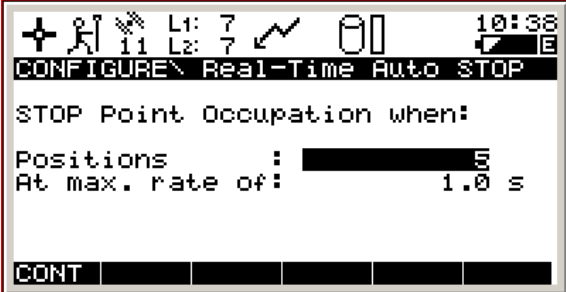
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1 Changing the Configuration Set


Description In this section, we will edit an already existing RTK rover configuration set and change the number of positions measured from one to five. Normally for most RTK surveys, one measurement per point is sufficient. **Note:** We chose five measurements arbitrarily.

Step	Action	Display
1	<p>From the Main\ menu on the SR530 receiver:</p> <ul style="list-style-type: none"> Use the up/down arrow buttons to highlight 6 Configure. Press the F1 (CONT) button. <p>This takes you to the "CONFIG SET\ " screen.</p>	
2	<p>In the "CONFIG SET\ " screen:</p> <ul style="list-style-type: none"> Use the up/down arrow buttons to highlight the RTK rover Config Set. Press the F3 (EDIT) button. <p>Note: On this receiver, the RTK rover configuration set is called "RTKROV". You may have named your Config set differently.</p> <p>This takes you to the "CONFIGURE\ Operation Mode" screen.</p>	
3	<p>In the "CONFIGURE\ Operation Mode" screen:</p> <ul style="list-style-type: none"> In the "Mode" field, use the left/right arrow buttons to select Advanced. Press the F6 (LIST) button. <p>This takes you to the "Set-up for rover" screen.</p>	

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Step	Action	Display
4	<p>In the “Set-up for rover” screen:</p> <ul style="list-style-type: none"> Use the up/down arrow buttons to highlight Occupation Settings. Press the F1 (CONT) button. <p>This takes you to the “CONFIGURE\ Occupation Settings” screen.</p>	
5	<p>In the “CONFIGURE\ Occupation Settings” screen:</p> <ul style="list-style-type: none"> Set the fields to look like the display on the right: <p>Occup Mode: Normal Auto Occupy: NO Auto Stop: YES STOP R-TME: Positions Auto Store: YES END Survey: Manual</p> <ul style="list-style-type: none"> Press the F3 (R-TME) button. <p>This takes you to the “Configure Real-Time Auto STOP” screen.</p>	
6	<p>In the “Configure Real-Time Auto STOP” screen:</p> <ul style="list-style-type: none"> Change the “Positions” field to whatever number of positions you wish to take. In this example 5 positions has been entered. Press the ENTER button to complete the data entry. Press the F1 (CONT) button. <p>This returns you to the “Set-up for rover” screen.</p>	

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Step	Action	Display
7	<p>In the "Set-up for rover" screen:</p> <ul style="list-style-type: none"> Press the F3 (STORE) button to store the changes. <p>This returns you to the MAIN\ menu screen.</p>	 <p>The screenshot shows a monochrome display with a menu titled 'CONFIGURE\ RTKROV'. The menu items are: 'Set-up for rover', 'Coding', 'Real-Time <In/Out>', 'Logging', 'Occupation Settings', and 'ID Templates'. At the bottom of the screen, there are two buttons: 'CONT' and 'STORE'. The 'STORE' button is highlighted with a white background.</p>

Section Summary

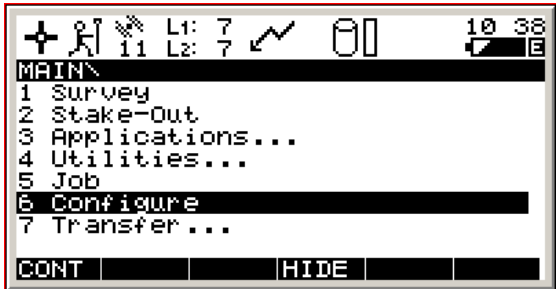

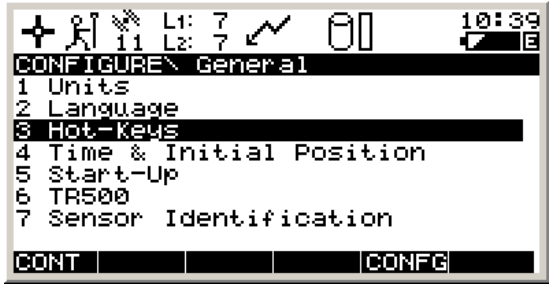
The RTK configuration set has now been changed so that the receiver will take five measurements at each occupation instead of one.

This has improved precision but not efficiency. Not all measurements will benefit from having the precision increased at the cost of an increase in occupation time. In the next section we will configure the SR530's **F7** button to grant us easy access to the "CONFIGURE\ Occupation Settings" screen as seen in *Step 5* above. Once completed we will be able to jump back on forth between collecting five positions or collecting just one.


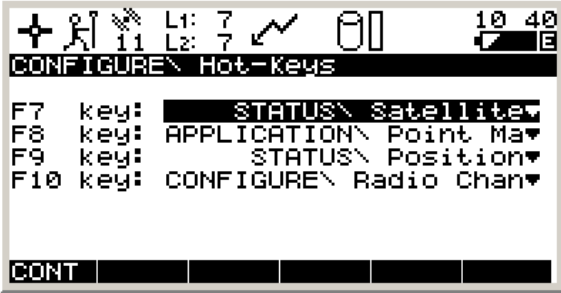
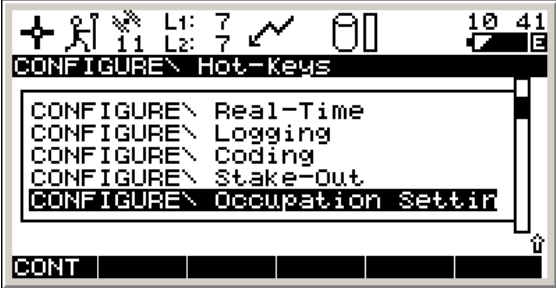
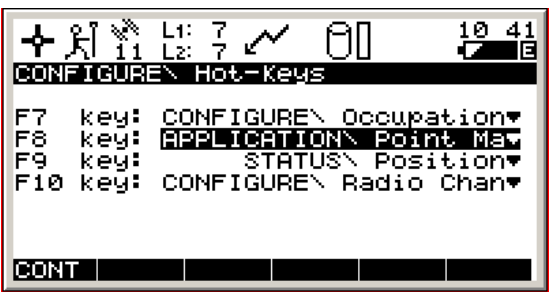
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2 Configuring a Hot-Key

Description This section describes how to assign a user-definable hot-key to quickly access the “CONFIGURE\ Occupation Settings” screen. This will enable the user to rapidly change the number of measurements the receiver will make per occupation without having to go through the entire process of editing a configuration set.

Step	Action	Display
1	<p>To configure a hot-key, from any menu:</p> <ul style="list-style-type: none"> Press the CONFIG button. <p>This takes you to the “CONFIGURE\” screen.</p>	 <p>The screenshot shows the MAIN menu with the following options: 1 Survey, 2 Stake-Out, 3 Applications..., 4 Utilities..., 5 Job, 6 Configure (highlighted), and 7 Transfer... The bottom of the screen shows CONT and HIDE buttons.</p>
2	<p>In the “CONFIGURE\” screen:</p> <ul style="list-style-type: none"> Use the up/down arrow buttons to highlight 3 General. Press the F1 (CONT) button. <p>This opens the “CONFIGURE\ General” screen.</p>	 <p>The screenshot shows the CONFIGURE\ Rtkrov.cnf menu with the following options: 1 Survey, 2 Operation, 3 General (highlighted), and 4 Interfaces. The bottom of the screen shows CONT, STORE, and CONFG buttons.</p>
3	<p>In the “CONFIGURE\ General” screen:</p> <ul style="list-style-type: none"> Use the up/down arrow buttons to highlight 3 Hot-Keys. Press the F1 (CONT) button. <p>This takes you to the “CONFIGURE\ Hot-Keys” screen.</p>	 <p>The screenshot shows the CONFIGURE\ General menu with the following options: 1 Units, 2 Language, 3 Hot-Keys (highlighted), 4 Time & Initial Position, 5 Start-Up, 6 TR500, and 7 Sensor Identification. The bottom of the screen shows CONT and CONFG buttons.</p>

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Step	Action	Display
4	<p>In the "CONFIGURE\ Hot-Keys" screen:</p> <ul style="list-style-type: none"> Use the up/down arrow buttons to highlight a hot-key field to configure. <p>In this example we will be modifying the F7 key. You may choose any of these four function keys to configure.</p> <ul style="list-style-type: none"> Press the  button. <p>This accesses the "CONFIGURE\ Hot-Keys" screen's list box.</p>	
5	<p>In the "CONFIGURE\ Hot-Keys" screen's list box:</p> <ul style="list-style-type: none"> Use the up/down arrow buttons to highlight CONFIGURE\ Occupation Settin. Press the F1 (CONT) button. <p>This returns you to the "CONFIGURE\ Hot-Keys" screen.</p>	
6	<p>In the "CONFIGURE\ Hot-Keys" screen:</p> <p>Here you can continue configuring the remaining hot keys or finish and return to the Main\ menu. To return to the MAIN\ menu,</p> <ul style="list-style-type: none"> Press the F1 (CONT) button. <p>This returns you to the MAIN\ menu.</p>	

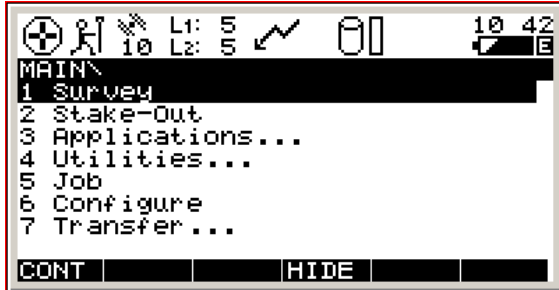

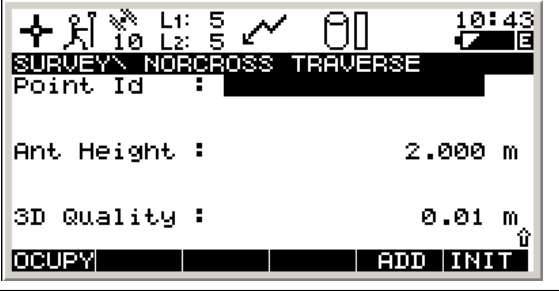
Section Summary

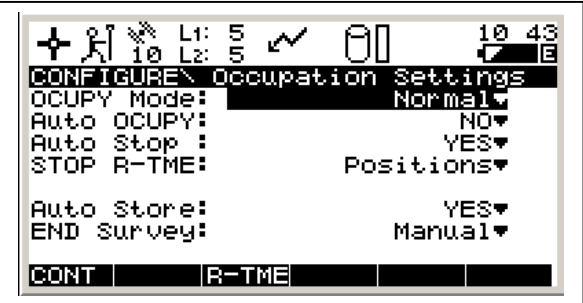
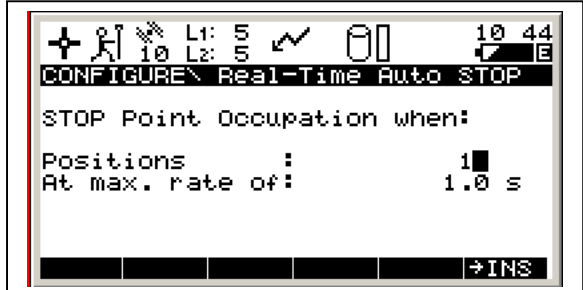
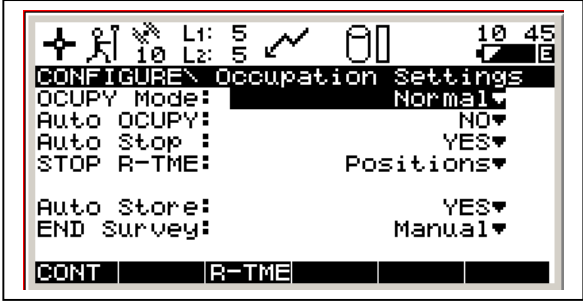
You have just configured the F7 hot-key to access the "CONFIGURE\ Occupation Settings" screen.


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3 Using the Newly Configured F7 Hot-Key

Procedure We just assigned the **F7** key in the previous section to allow us quick access to the “CONFIGURE\ Occupation Settings” screen. The steps below explain how to use the newly configured **F7** key to change the number of measurements during a single occupation from five to one.

Step	Action	Display
1	<p>To start an RTK survey. From the MAIN menu:</p> <ul style="list-style-type: none"> Use the up/down arrow buttons to highlight 1 Survey. Press the F1 (CONT) button. <p>This takes you to the “SURVEY\ Begin” screen.</p>	 <p>The screenshot shows the MAIN menu with the following options: 1 Survey, 2 Stake-Out, 3 Applications..., 4 Utilities..., 5 Job, 6 Configure, and 7 Transfer... The '1 Survey' option is highlighted. At the bottom, there are buttons for 'CONT' and 'HIDE'.</p>
2	<p>In the “SURVEY\ Begin” screen:</p> <ul style="list-style-type: none"> Select the RTK rover configuration, job, coordinate system, and antenna. Press the F1 (CONT) button. <p>This takes you to the “Survey\” screen.</p>	 <p>The screenshot shows the SURVEY\ Begin screen with the following configuration: Config Set: RTKROV, Job: NORCROSS TRAVERSE, Coord Sys: WGS84 Geodetic, and Antenna: AT502 Pole. At the bottom, there are buttons for 'CONT' and 'CSYS'.</p>
3	<p>In the “Survey\” screen:</p> <p>This is the screen you would normally see when you’re about to begin measuring in an RTK survey. This is where we will change the number of measurements per point.</p> <ul style="list-style-type: none"> Press the F7 hot-key that you configured in section 2 <i>Configuring a Hot-Key</i>. <p>This takes you immediately to the “CONFIGURE\ Occupation Settings” screen.</p>	 <p>The screenshot shows the SURVEY\ NORCROSS TRAVERSE screen with the following settings: Point Id, Ant Height: 2.000 m, and 3D Quality: 0.01 m. At the bottom, there are buttons for 'OCCUPY', 'ADD', and 'INIT'.</p>

Step	Action	Display
4	<p>In the “CONFIGURE\ Occupation Settings” screen:</p> <ul style="list-style-type: none"> Press the F3 (R-TME) button. <p>This takes you to the “CONFIGURE\ Real-Time Auto STOP” screen.</p>	 <pre> + 10 L1: 5 10 43 + 10 L2: 5 CONFIGURE\ Occupation Settings OCUPY Mode: Normal Auto OCUPY: NO Auto Stop : YES STOP R-TME: Positions Auto Store: YES END Survey: Manual CONT R-TME </pre>
5	<p>In the “CONFIGURE\ Real-Time Auto STOP” screen:</p> <ul style="list-style-type: none"> Change the number of positions from 5 to 1. Press the ENTER button. <p>This completes the data entry and allows you access to the continue button.</p> <ul style="list-style-type: none"> Press the F1 (CONT) button. <p>This returns you to the ‘CONFIGURE\ Occupation Settings’ screen.</p>	 <pre> + 10 L1: 5 10 44 + 10 L2: 5 CONFIGURE\ Real-Time Auto STOP STOP Point Occupation when: Positions : 1 At max. rate of: 1.0 s +INS </pre>
6	<p>In the ‘CONFIGURE\ Occupation Settings’ screen:</p> <ul style="list-style-type: none"> Press the F1 (CONT) button. <p>This returns you to the “SURVEY\” screen.</p>	 <pre> + 10 L1: 5 10 45 + 10 L2: 5 CONFIGURE\ Occupation Settings OCUPY Mode: Normal Auto OCUPY: NO Auto Stop : YES STOP R-TME: Positions Auto Store: YES END Survey: Manual CONT R-TME </pre>

Step	Action	Display
7	<p>In the "SURVEY" screen:</p> <p>You are now ready to continue surveying. Now each occupation will only have one position taken. This is the usual number of measurements required for a typical RTK survey.</p>	

Section Summary

This section described how you would use the newly configured hot-key in the field to change the number of measurements per occupation from five to one.

What you have learned in this FAQ

You have learned that you can increase the precision of your RTK surveyed points by increasing the number of measurements during an occupation. Then you learned how to change the RTK rover configuration to increase the number of measurements per occupation. You then learned how to configure a hot-key to allow you easy access to the "CONFIGURE\ Occupation Settings" screen. Finally you learned how to use the newly configured hot-key in the field.

Additional Information

To learn more about editing a configuration set:

Follow this link to the Advantage **RTK Quick Guide**:
http://www.leicaatl.com/support/gps/Technical_papers/RTKQuickGuide.pdf

Or Read *Chapter 5 Configuring the Receiver* of the **Technical Reference Manual**. The Technical Reference Manual can be found on your current System 500 Firmware CD.
