

6 Basic Surveying with TPS

Introduction


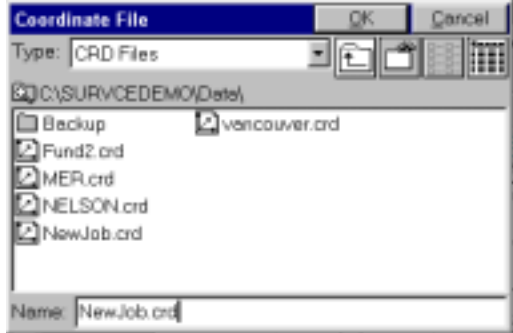
In this chapter we will explore how to get started with Carlson SurvCE using a Leica total station and understand how to use many of the common survey tasks.

At the end of this workbook you will be comfortable using the Leica TPS1100 instrument with Carlson SurvCE and the following survey tasks:

Overview

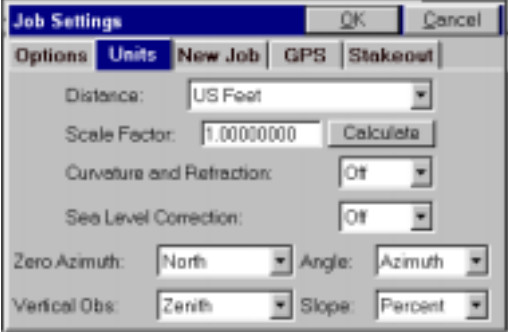
Section	Topic
6.1	Job Settings and Instrument setup
6.2	Occupying a Point
6.3	Collecting Data
6.3.1	Sideshot / Traverse
6.3.2	Zoom Icons
6.3.3	Data Collection Icons
6.3.4	Recording Data
6.4	Moving to the Next Station
6.5	Staking out a Point
6.6	Using Robotics

6.1 Instrument Setup

Step	Action	Display
1	<p>When SurvCE starts, this screen appears:</p> <p>In this example, we will create a new job.</p> <ul style="list-style-type: none"> Press the Select New / Existing Job button. <p>This will take you to the "Coordinate File" screen.</p>	
2	<p>In the "Coordinate File" screen:</p> <ul style="list-style-type: none"> Enter the name of this new job. <p>In this example we have called the job <i>NewJob.CRD</i></p> <ul style="list-style-type: none"> Press the OK button to accept the new job name. <p>This will take you to the "Job Settings" screen.</p>	

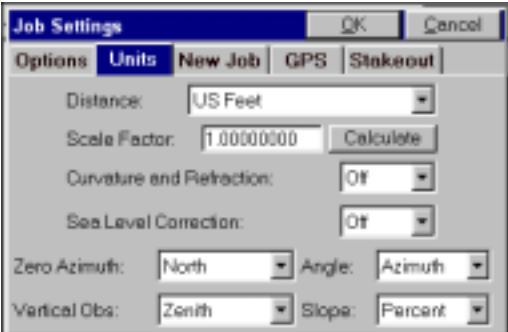
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6.1 Instrument Setup, Continued

Step	Action	Display
3	<p>The "Job Settings" screen will always open to the Units tab.</p> <ul style="list-style-type: none"> Set your working preferences for this new job. Press the OK button to return to the main menu. <p>Note: All settings can be globally set from the Job Menu tab, Press the 2 Job Settings button.</p> <p><i>Refer to Carlson SurvCE Reference Manual for detailed explanation.</i></p>	

Units and Options tabs

Below is a brief explanation of the possible settings in these two screens.

Notes	Display
<p>In the Units Screen:</p> <p>Curvature and Refraction: Leica instruments compute these coefficients.</p> <ul style="list-style-type: none"> Always select Off. <p>Sea Level Correction:</p> <ul style="list-style-type: none"> If you select Off; Distance measurements are not reduced and remain GROUND measurements. If you select On; Distance measurements are reduced from GROUND to GRID. 	

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6.1 Instrument Setup, Continued

Important Note:



Units cannot be changed after Job Settings have been set!

Notes	Display
<p>In the Options Screen:</p> <ul style="list-style-type: none"> Select preferences for: <p>“Prompt for Point Notes”: Select for a prompt after every measurement.</p> <p>“Auto Load Map”: Select if you are using a .DXF file.</p> <p>“Auto Save Map”: Select when you are using and creating linework.</p> <p>“Use Control File”: Select if you are using a Control file. This must be .CRD file.</p>	



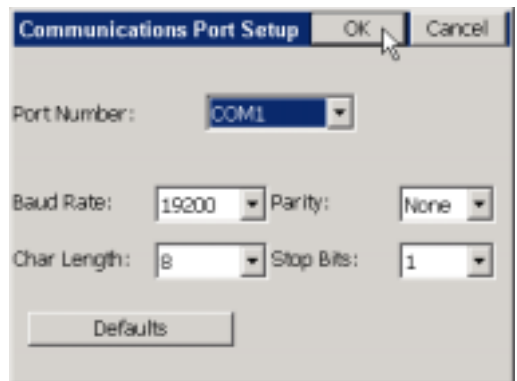
Setting up for
SurvCE

Continuing with Instrument Setup for SurvCE.

Step	Action	Display
4	<p>From the SurvCE main menu:</p> <ul style="list-style-type: none"> Press the Equip tab. Press the 1 Instrument button. <p>This will take you to the “Instrument” selection screen.</p>	


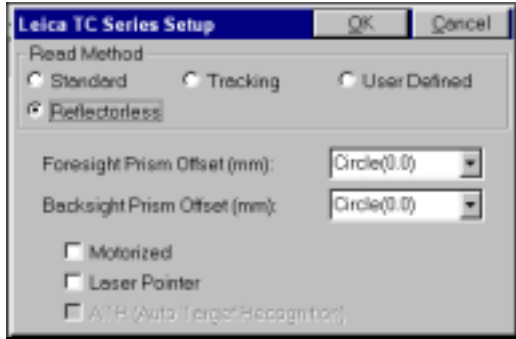
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6.1 Instrument Setup, Continued

Step	Action	Display
5	<p>In the "Instrument" screen:</p> <ul style="list-style-type: none"> Select Leica TPS Series as the instrument choice. <p>This option is used for the following instruments:</p> <ul style="list-style-type: none"> TPS1100 TPS700 TPS300 <ul style="list-style-type: none"> Press the OK button. <p>This will take you to the "Equip" menu.</p>	
6	<p>In the "Equip" menu:</p> <ul style="list-style-type: none"> Press the 4 Comm Setup button. <p>This takes you to the "Communications Port Setup" screen.</p>	
7	<p>In the "Communication Port Setup" screen, the parameters should be set to the following:</p> <p>Port Number: COM 1. Baud Rate: 19200. Parity: None. Char Length: 8. Stop Bits: 1.</p> <ul style="list-style-type: none"> Press the OK button to accept these values. <p>This will take you to the "Equip" menu.</p>	

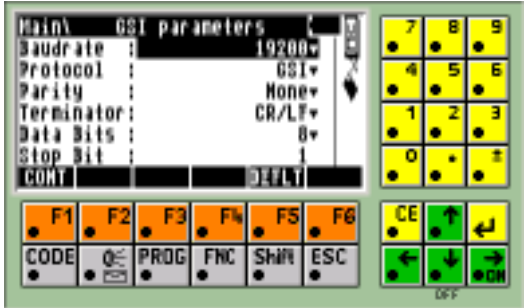
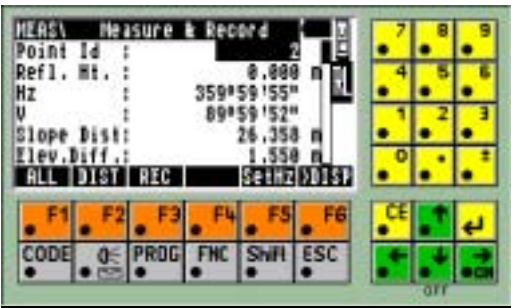
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6.1 Instrument Setup, Continued

Step	Action	Display
8	<p>In the Equip tab menu:</p> <ul style="list-style-type: none"> Press the 2 Setup button. <p>This will take you to the “Leica TC Series Setup” screen.</p>	
9	<p>In the “Leica TC Series Setup” screen:</p> <p>Select the instrument settings you would like to use in the “Leica TC Series Setup” screen.</p> <ul style="list-style-type: none"> “Read Method”: Select the EDM mode you are using. Select the prism offset for Foresight and Backsight. “Motorized”: Check the box if your instrument has motors. For example, the TPS700 Auto. “Laser Pointer”: Check the box if you have a reflectorless instrument and you want the laser point on all the time. “ATR”: Check the box if your instrument has automatic target recognition capabilities. Press the OK button to store your settings. <p>Next you will need to confirm your instrument settings.</p>	

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6.1 Instrument Setup, Continued

Step	Action	Display
10	<p>On your Leica Total Station menu screen:</p> <ul style="list-style-type: none"> Set the instrument communication parameters to be the same as in SurvCE. <p>TPS1100 (From the main menu: 5 Configuration, 2 Communication, 1 GSI Parameters).</p> <p>TPS700 (Menu – Shift + Prog, 3 All Settings, 4 PC communications).</p> <p>Baudrate: 19200. Protocol: GSI. Parity: None. Terminator: CR/LF. Data Bits: 8. Stop Bit: 1.</p>	
11	<p>The instrument must be in the MEAS\ screen to function correctly.</p> <p>Of course the instrument must be leveled with compensators on!</p> <p>You are now ready to survey with your Leica TPS instrument using Carlson SurvCE! See the following sections.</p>	


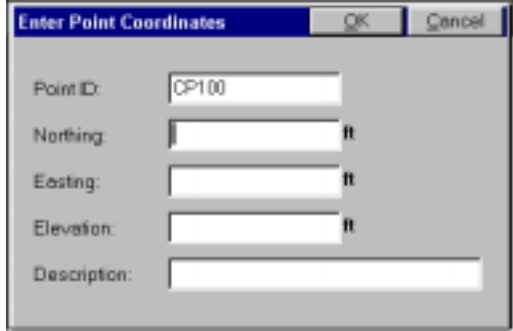
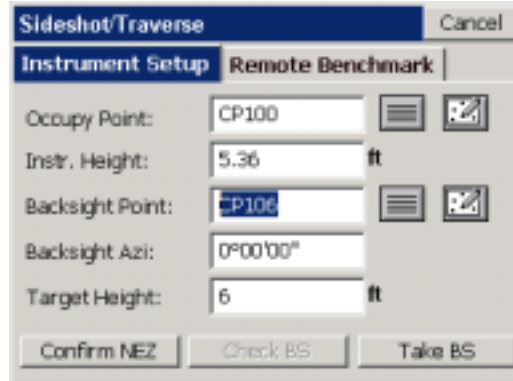
Summary

You have finished reading the steps and notes that describe how to configure SurvCE to work with your Leica total station. It is now time to start Surveying.

End of Instrument Setup

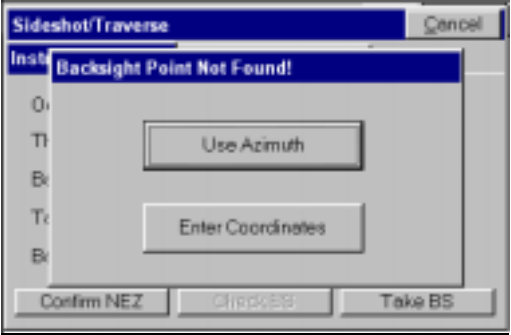
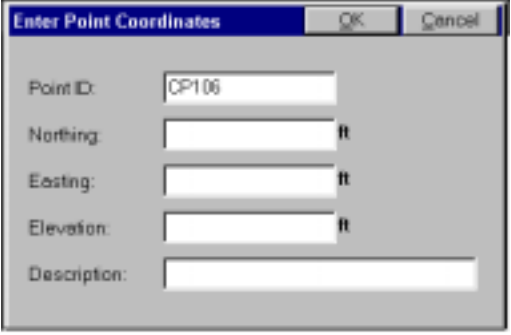
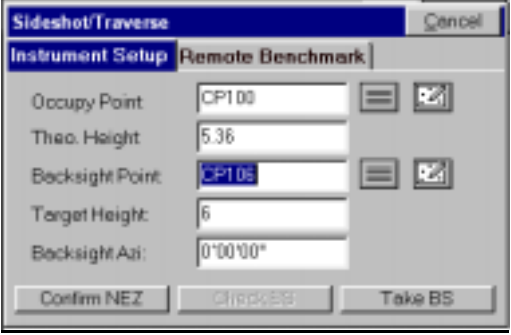
6.2 Occupying a Point

Instrument Orientation The following steps describe how to orient the instrument by choosing the station setup point and the backsight point before starting a survey.

Step	Action	Display
1	<p>From the SurvCE main menu screen:</p> <ul style="list-style-type: none"> • Press the Surv tab. • Press the 1 Sideshot/Traverse button. <p>This will take you to the “Enter Point Coordinates” screen.</p>	 <p>The screenshot shows the 'JOB:NewJob' screen with a menu bar containing 'File', 'Equip', 'Surv', 'COGO', and 'Road'. The 'Surv' tab is active. Below the menu bar is a grid of buttons: '1 Sideshot/Traverse' (highlighted), '6 Building Face Survey', '2 Stakeout Points', '7 Remote Elevation', '3 Stakeout Line/Arc', '8 Resection', '4 Offset Stakeout', '9 Set Collection', and '5 Elevation Difference', '0 Set Review'.</p>
2	<p>In the “Enter Point Coordinates” screen:</p> <ul style="list-style-type: none"> • Enter the Station “Point ID”. • Enter the “Northing”. • Enter the “Easting”. • Enter the “Elevation”. • Enter the “Description”. <p>Press the OK button</p> <p>This records the point and opens the “Instrument Setup” screen.</p>	 <p>The screenshot shows the 'Enter Point Coordinates' dialog box with fields for 'Point ID' (CP100), 'Northing', 'Easting', 'Elevation', and 'Description'. There are 'OK' and 'Cancel' buttons at the top right.</p>
3	<p>In the Instrument Setup screen:</p> <ul style="list-style-type: none"> • Enter the “Instr. Height”. • Enter the “Target Height”. • Enter the “Backsight Point”. <p>This will take you to the “Backsight Point Not Found!” screen, if the backsight point is unknown.</p>	 <p>The screenshot shows the 'Sideshot/Traverse' dialog box with the 'Instrument Setup' tab selected. Fields include 'Occupancy Point' (CP100), 'Instr. Height' (5.36 ft), 'Backsight Point' (CP100), 'Backsight Azi' (0°00'00"), and 'Target Height' (6 ft). There are 'Confirm NEZ', 'Check BS', and 'Take BS' buttons at the bottom.</p>

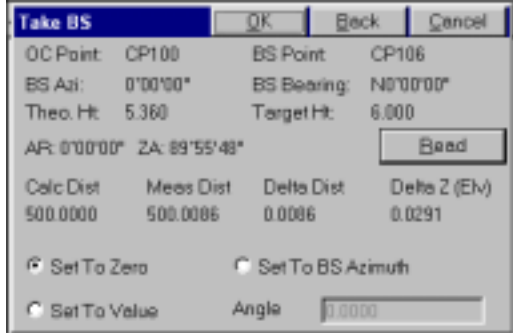

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6.2 Occupying a Point, Continued

Step	Action	Display
4	<p>If the Backsight Point is unknown, the user is prompted to Use Azimuth or Enter Coordinates.</p> <p>For this example:</p> <ul style="list-style-type: none"> Press the Enter Coordinates button. <p>This will take you to the “Enter Point Coordinates” screen.</p>	
5	<p>In the “Enter Point Coordinates” screen:</p> <ul style="list-style-type: none"> Enter the Coordinates for your backsight point. Press the OK button to record the point. <p>This will take you to the “Instrument Setup” screen.</p>	
6	<p>In the “Instrument Setup” screen:</p> <p>The user has two options to confirm orientation before starting a Survey:</p> <ol style="list-style-type: none"> Confirm NEZ – for station and backsight. Take BS – to take a measurement to the backsight. <ul style="list-style-type: none"> Press the Take BS button. <p>This takes you to the “Take BS” screen.</p>	

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6.2 Occupying a Point, Continued

Step	Action	Display												
7	<p>In the "Take BS" screen:</p> <ul style="list-style-type: none"> • Press the Read button to measure to the BS. • Confirm this measurement. • Set the HZ circle, one of three ways: <ol style="list-style-type: none"> 1. Set To Zero. 2. Set To BS Azimuth, from coordinates. 3. Set To Value, input an Angle. • Press the OK button to store orientation and to start the Survey. <p>This will take you to the "SS/TRAV" screen.</p>	 <p>The screenshot shows the 'Take BS' screen with the following data:</p> <table border="1"> <tr> <td>OC Point: CP100</td> <td>BS Point: CP106</td> </tr> <tr> <td>BS Azi: 0°00'00"</td> <td>BS Bearing: N0°00'00"</td> </tr> <tr> <td>Theo. Ht: 5.360</td> <td>Target Ht: 6.000</td> </tr> <tr> <td>AR: 0°00'00"</td> <td>ZA: 89°55'48"</td> </tr> <tr> <td>Calc Dist: 500.0000</td> <td>Meas Dist: 500.0086</td> <td>Delta Dist: 0.0086</td> <td>Delta Z (Elev): 0.0291</td> </tr> </table> <p>Options at the bottom include: <input checked="" type="radio"/> Set To Zero, <input type="radio"/> Set To BS Azimuth, <input type="radio"/> Set To Value, and an Angle input field set to 0.0000.</p>	OC Point: CP100	BS Point: CP106	BS Azi: 0°00'00"	BS Bearing: N0°00'00"	Theo. Ht: 5.360	Target Ht: 6.000	AR: 0°00'00"	ZA: 89°55'48"	Calc Dist: 500.0000	Meas Dist: 500.0086	Delta Dist: 0.0086	Delta Z (Elev): 0.0291
OC Point: CP100	BS Point: CP106													
BS Azi: 0°00'00"	BS Bearing: N0°00'00"													
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Calc Dist: 500.0000	Meas Dist: 500.0086	Delta Dist: 0.0086	Delta Z (Elev): 0.0291											
8	<p>In the "SS/TRAV" screen:</p> <p>You are ready to collect Data.</p> <p>When starting the survey, the graphics screen is opened and is scaled to show the Instrument and BS point.</p> <p>You will also see the icons showing location of the instrument and BS.</p>	 <p>The screenshot shows the 'SS/TRAV' graphics screen with a scale bar of 490 ft. It displays the instrument location (I) and the backsight point (BS) location (CP106). The screen also shows various icons and data fields at the bottom, including 'Pt: CP106 Desc: RC HT: 6' and 'AR: ZA: SD'.</p>												

Summary

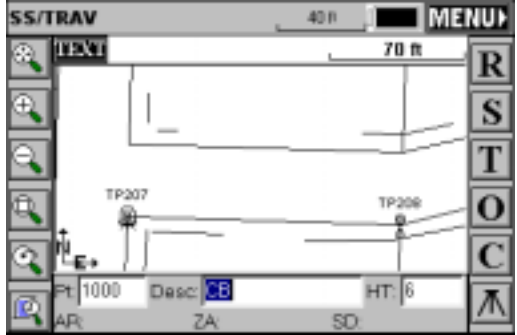

This section explained orientation of the instrument and the different methods of selecting the station setup point and the Backsight point at the beginning of a survey.

End of Occupying a Point

6.3 Collecting Data

6.3.1 Sideshot/ Traverse

Sideshot / Traverse The following describes the Sideshot / Traverse screen icons as well as steps necessary to collect topographic measurements.







Description	Display
<p>Shown here is the graphic display of the Sideshot / Traverse routine.</p> <p>In the graphic screen you will find icons used to view and manipulate the graphic display, shown below. These are not available in TEXT view.</p>	
<p>Shown here is the TEXT display of the Sideshot / Traverse routine.</p> <p>The two screens, GRAPHIC and TEXT, operate identically when reading and recording measurements.</p> <p>Once you are familiar with screen icons, start collecting data.</p>	

End of Sideshot/Traverse

6.3 Collecting Data, Continued

6.3.2 Zoom Icons













Zoom Icons The Zoom functions are:

Icon	Description
	Zoom Extents: Zoom to the extents of the map, showing all points and objects.
	Zoom In: Zoom in 25% of current screen view.
	Zoom Out: Zoom out 25% of current screen view.
	Zoom Window: Zoom in to user-definable rectangular area on screen.
	Zoom Previous: Zoom to the previous view - maximum up to 50 stored.
	View Point Options: User can select which point information is to be displayed on the screen, and how the point is displayed.

End of Zoom Icons

6.3.3 Data Collection Icons

Data Collection Icons The following icons are available in either the Graphic or Text screens for commands needed to collect data.


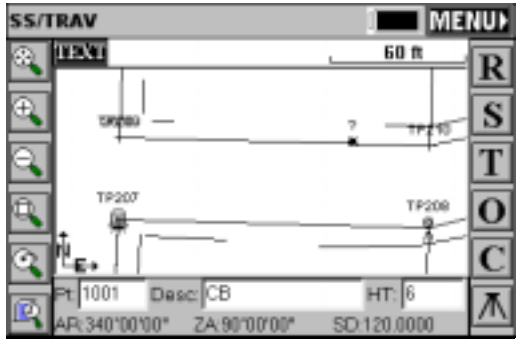
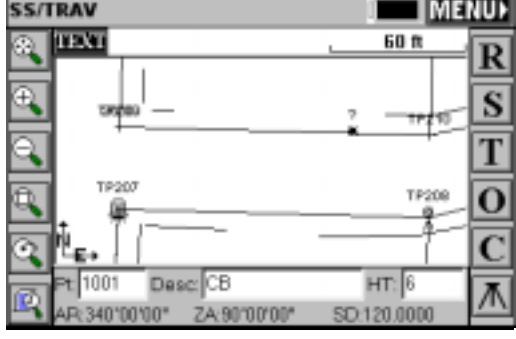
GRAPHIC	Description	TEXT
	READ takes a measurement and displays data on the screen.	
	S-Shot or Store takes a measurement and stores information. It also stores any measurements from READ.	
	Traverse sets the next traverse occupy point.	
	OFFSET allows calculation of offset by one of three methods available.	
	CONFIGURE allows user to change instrument and measurement settings including prism selection and EDM modes.	
	BACKSIGHT allows user to change instrument setup and robotic instrument settings.	

End of Data Collection Icons

6.3 Collecting Data, Continued

6.3.4 Recording Data

Recording Data Follow this two-step procedure to store a point when in the graphic screen.

Step	Action	Display
1	<p>In the Graphic Screen,</p> <ul style="list-style-type: none"> Press the R button to read the target. <p>In the display, notice the  for the point measured.</p> <ul style="list-style-type: none"> Confirm the PT ID, Description (Desc) and Height (HT) of target. Press the S button to store the measurement. 	
2	<p>Continuing in the "SS/TRAV" screen:</p> <p>Continue collecting data.</p> <p>Repeat:</p> <ul style="list-style-type: none"> Aim at the target Press the R button and then the S button, or the ENTER button to read and store the data for each new point surveyed. 	

Summary






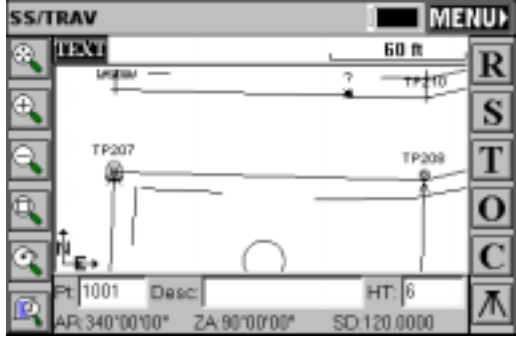
In this chapter *Collecting Data*, we explored the screen icons and views, the methods of storing data in the field, and some options available to help the user with faster data collection and alternate ways to access the setup screens.

End of Recording Data

6.4 Moving to the Next Station

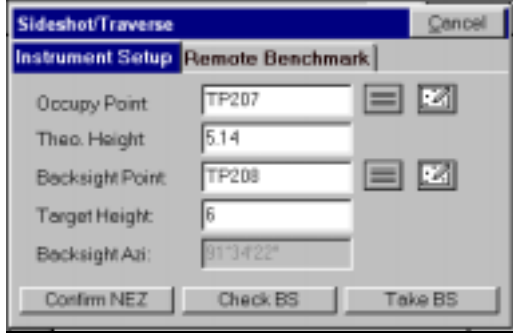
Moving to the next station

The following steps will guide the user on how to move the instrument to a new occupy point.

Step	Action	Display
1	<p>In the SS/TRAV screen:</p> <p>There are two methods to move the instrument to a new occupy point.</p> <ul style="list-style-type: none"> • Press the  button, or • Press the  button. <p>Note: When using the  button you must first press the  button to read the data for the new occupy point.</p> <p>In this example</p> <ul style="list-style-type: none"> • Press the  button. <p>This takes you to the “Instrument Setup screen:</p>	

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6.4 Moving to the next Station, Continued

Step	Action	Display
2	<p>In the "Instrument Setup" screen:</p> <ul style="list-style-type: none"> • Enter the "Occupy Point". • Enter the "Theo. Height". • Enter the "Backsight Point". • Enter the "Target Height". <p>Note: Follow the rest of the setup instructions from <i>6.2 Occupying a Point</i> to establish the new orientation.</p>	

Helpful Hints

Some Important Reminders:

Moving to a new Station can be accomplished through several methods.

- 1) Known coordinates.
- 2) Known coordinate and a reference azimuth.
- 3) Taking a SideShot to a new occupy point and then the Traverse Point button.

It is important to remember that proper Traversing is accomplished through Sets of Angles to a BS and FS. This is found in the Surv main menu. This can be accessed any time by exiting from the Sideshot/Trav screen.

This process is discussed in detail in chapter *10 Traversing with Leica TPS*.

Data collection methods and linework are also discussed in a separate chapter of this workbook.


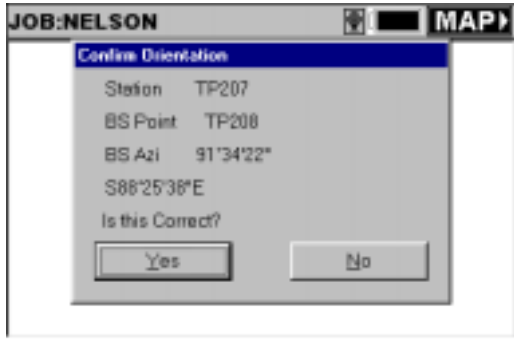

Summary

We have explored methods of moving the instrument to a new occupy point.

End of Moving to the Next Station

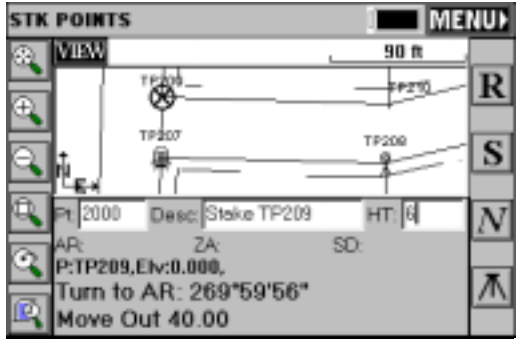
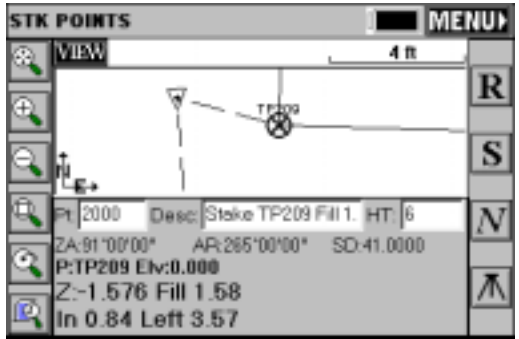
6.5 Staking out a Point

Stake Out The following steps will describe the different methods of staking out points.

Step	Action	Display
1	<p>From the SurvCE main menu:</p> <ul style="list-style-type: none"> Press the Surv tab. Press the 2 Stakeout Points button. <p>This will take you to the "Confirm Orientation" screen.</p>	
2	<p>In the "Confirm Orientation" screen:</p> <ul style="list-style-type: none"> Press the Yes button if the orientation is correct. Press the No button if the orientation is incorrect. <p>For this example we pressed the Yes button.</p> <p>This take us to the "Stakeout Points" screen.</p>	
3	<p>In the the "Stakeout Points" screen:</p> <ul style="list-style-type: none"> Select a point to stakeout. <p>Points can be selected from the Point List, the graphic screen, or entering a point in the data field.</p> <ul style="list-style-type: none"> Press the OK button. <p>This will take you to the "STK POINTS" screen, which is also the Graphic Stakeout view.</p>	

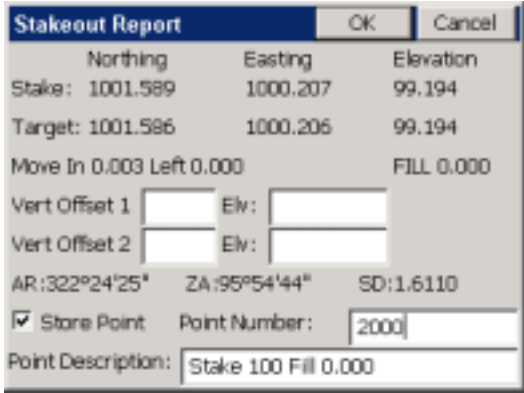
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6.5 Staking out a Point, Continued

Step	Action	Display
4	<p>In the "STK POINTS" screen:</p> <p>The display shows the target point in relation to the instrument.</p> <p>The bottom of the display shows the angle to turn from the backsight and the distance to move from the instrument to arrive at the target point.</p> <ul style="list-style-type: none"> Press the R button to READ to the target. 	
5	<p>After taking a measurement, the display updates to show current position and graphically indicates direction to target.</p> <p>The bottom of the view displays the In/Out and Left/Right indicators along with the Cut/Fill information (if doing a 3D survey).</p> <ul style="list-style-type: none"> Repeat the previous step as needed to achieve the desired target position. Press the S button to STAKE the target point. <p>Note: The Description is updated and includes the Cut / Fill for the point.</p> <p>This takes us to the "Stakeout Report" screen.</p>	

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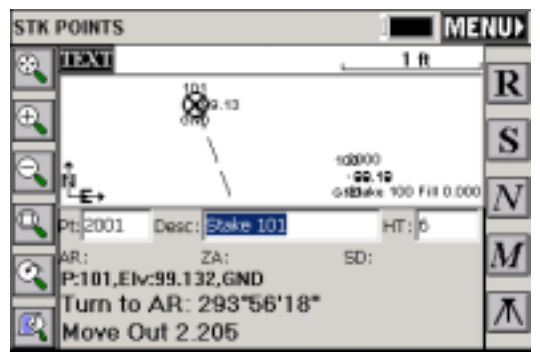

6.5 Staking out a Point, Continued

Step	Action	Display												
6	<p>In the "Stakeout Report" screen:</p> <p>The user is able to verify the following information before accepting data:</p> <ul style="list-style-type: none"> Proposed versus Staked values. Point Number. Point Description. <ul style="list-style-type: none"> Press the OK button to STORE the staked point data. Or you can press the Cancel button to attempt the Stakeout again. <p>Note: Vertical offsets can be entered here.</p> <p>This takes you to the "Stakeout Points" screen to enter a new point id to stakeout.</p>	 <p>The screenshot shows a 'Stakeout Report' dialog box with the following data:</p> <table border="1"> <thead> <tr> <th>Stake</th> <th>Northing</th> <th>Easting</th> <th>Elevation</th> </tr> </thead> <tbody> <tr> <td>Stake</td> <td>1001.589</td> <td>1000.207</td> <td>99.194</td> </tr> <tr> <td>Target</td> <td>1001.586</td> <td>1000.206</td> <td>99.194</td> </tr> </tbody> </table> <p>Move In 0.003 Left 0.000 FILL 0.000</p> <p>Vert Offset 1 [] Elv: []</p> <p>Vert Offset 2 [] Elv: []</p> <p>AR:322°24'25" ZA:95°54'44" SD:1.6110</p> <p><input checked="" type="checkbox"/> Store Point Point Number: 2000</p> <p>Point Description: Stake 100 Fill 0.000</p>	Stake	Northing	Easting	Elevation	Stake	1001.589	1000.207	99.194	Target	1001.586	1000.206	99.194
Stake	Northing	Easting	Elevation											
Stake	1001.589	1000.207	99.194											
Target	1001.586	1000.206	99.194											

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6.5 Staking out a Point, Continued

New Icons Below is an explanation of two new icons in the "STK POINTS" screen.

Notes	Display
<p>There are two new Icons on the display:</p> <p>TEXT will switch the view to the TEXT screen for stakeout.</p> <p>N will skip the current point and prompt for a new point to Stakeout.</p> <p>As in the SideShot/Traverse program, there are two display screens.</p> <p>In the TEXT screen, the STAKEOUT graphic is a Bulls Eye.</p> <p>There are also options for changing the REFERENCE and STAKE POINT method.</p> <p>Explore these settings to find your preferred method.</p>	 <p>The top screenshot shows the 'STK POINTS' screen with a 'TEXT' icon highlighted. The display shows a Bulls Eye stakeout graphic for Point 2001. The data displayed includes: Desc: Stake 101, HT: 6, AR: P:101, Elv: 99.132, GND, Turn to AR: 293°56'18", and Move Out 2.205. The screen also shows a scale of 1:1000 and a menu button.</p>  <p>The bottom screenshot shows the 'STK POINTS' screen with a 'REFERENCE' icon highlighted. The display shows a Bulls Eye stakeout graphic for Point TP210. The data displayed includes: STAKE PNT: TP210, PT: 2001, HT: 6, DESC: Stake TP210, TURN(MOVE TO STK), TURN(AR): 345°04'07", and MOVE OUT: 155.24. The screen also shows a scale of 1:500 and buttons for BS/SET, NEXT, and AR: ZA: SD.</p>

Summary We have covered how to select a point to stakeout, how to toggle screen views, and how to change Reference and Stake Point method.

End of Staking out a Point

6.6 Using Robotics

Robotics In this section we will describe the robotic functions as they apply to collecting data and staking out a point with the SurvCE device mounted all on the pole. At the end of this robotic guide, you will be comfortable with connecting your SurvCE device, the robotic settings, and the robotic functions.

What you will need When using full robotic mode you will need brackets to attach your Allegro CE with internal radio modem to the pole.


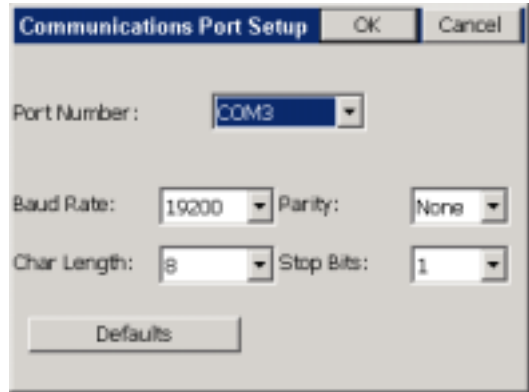
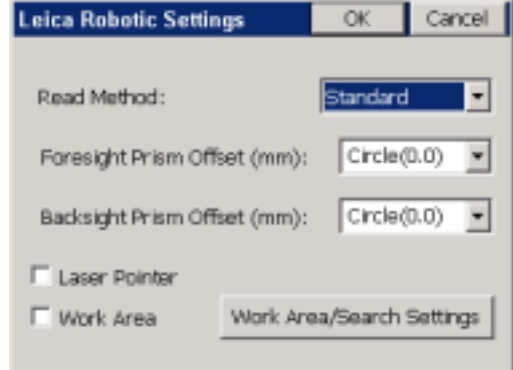
The components are listed below and used on standard Leica Pole Prism Pole.

Qty	Part Number	Description
1	8211598	Pole Bracket Quick Release
1	8212364	Cradle for Allegro CE RCS

Important Note When using the Allegro CE RCS unit, you must put the instrument into **GEOCOM mode** and set the GEOCOM parameters to match the ones given in Step 2 of this section. You should also note that you do not have to put the instrument into RCS mode as you normally would if you were using the Leica RCS1100 controller.

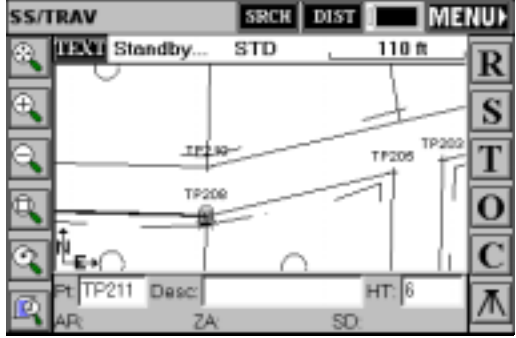


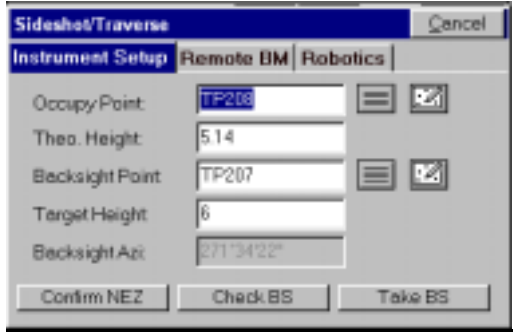
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6.6 Using Robotics, Continued

Step	Action	Display
1	<p>From the SurvCE main menu:</p> <ul style="list-style-type: none"> • Press the Equip tab. • Press the 1 Instrument button. • Use the down arrow to highlight the “Leica Robotic Total Station” selection. • Press the OK button. <p>This takes you to the “Communication Port Setup” screen.</p>	 <p>The screenshot shows the SurvCE main menu with the 'Equip' tab highlighted. A dialog box titled 'Instrument' is open, showing a dropdown menu with 'Leica Robotic Total Station' selected. Below the dialog, there are buttons for '4 Comm Setup' and '5 About SurvCE'.</p>
2	<p>In the “Communication Port Setup” screen:</p> <p>The parameters should be set to the following:</p> <p>“Port Number”: COM 3. “Baud Rate”: 19200. “Parity”: None. “Char Length”: 8. “Stop Bits”: 1.</p> <ul style="list-style-type: none"> • Press the OK button to accept these values. <p>This will take you to the back Equip tab menu.</p>	 <p>The screenshot shows the 'Communications Port Setup' dialog box. The 'Port Number' is set to 'COM3'. The 'Baud Rate' is set to '19200', 'Parity' is 'None', 'Char Length' is '8', and 'Stop Bits' is '1'. There is a 'Defaults' button at the bottom.</p>
3	<p>From the Equip menu:</p> <ul style="list-style-type: none"> • Press the 2 Settings button. • Set robotic functions for Read Method, Prism Offsets, and the Work Area Settings. • Press the OK button when finished. <p>Note: It is important to keep the “Read Method” at the default Standard or Fast setting.</p>	 <p>The screenshot shows the 'Leica Robotic Settings' dialog box. The 'Read Method' is set to 'Standard'. The 'Foresight Prism Offset (mm)' and 'Backsight Prism Offset (mm)' are both set to 'Circle(0.0)'. There are checkboxes for 'Laser Pointer' and 'Work Area', both of which are unchecked. A 'Work Area/Search Settings' button is visible at the bottom right.</p>

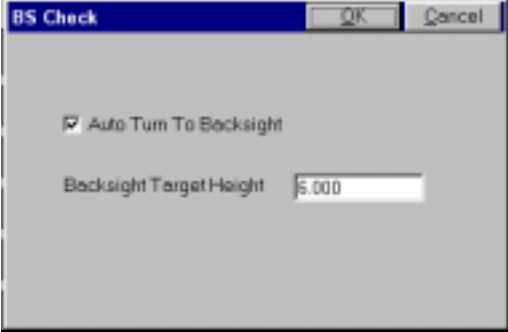

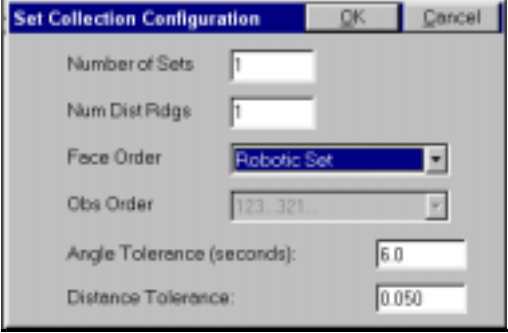
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6.6 Using Robotics, Continued

Step	Action	Display
4	<p>Continuing with Robotic functions:</p> <p>When collecting data in Sideshot / Traverse, there is a new screen icon.</p> <p>Press the SRCH button to start the instrument search, for the target.</p> <p>Note: Remember that the search area can be defined with the "Work Area" screen under Settings.</p>	
5	<p> Press the Backsight /Settings icon to open the "Robotic Settings" screen.</p> <p>Here you can search, put the instrument in standby, change settings, turn the instrument by a specific angle, and turn the instrument using the arrow keys.</p>	
6	<p>Also remember that Instrument Setup is accessible from the Backsight / Settings icon.</p> <p>Here you can Check the BS.</p> <ul style="list-style-type: none"> • Press the Check BS button. <p>This takes you to the "BS Check" screen.</p>	

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6.6 Using Robotics, Continued

Step	Action	Display
7	<p>In the “BS Check” screen:</p> <p>With robotics, the instrument can turn to backsight and take a check shot.</p> <ul style="list-style-type: none"> • Press the OK button to check BS. • Confirm BS information. 	
8	<p>Robotics can be used to automate the Set Collection process.</p> <p>From the SurvCE main menu:</p> <ul style="list-style-type: none"> • Press the Surv tab. • Press the 9 Set Collection button. <p>This takes you to the “Set Collection Configuration” screen.</p>	
9	<p>In the “Set Collection Configuration” screen:</p> <p>Select the Face Order for the set collection. In this example we chose Robotic Set.</p> <p>Using the Robotic Set mode will automate the Set Collection process by having the instrument turn to the points defined by the user.</p>	

Summary

In this chapter you were shown the components needed for full robotics usage and some of the key robotic functions that are available in Carlson SurvCE.

If using robotics, it is important to become as familiar with all tools available to make the fieldwork process as efficient as possible.

End of Using Robotics