Prosurv CE

Version 3.8.0

With Leica Robotic Support!

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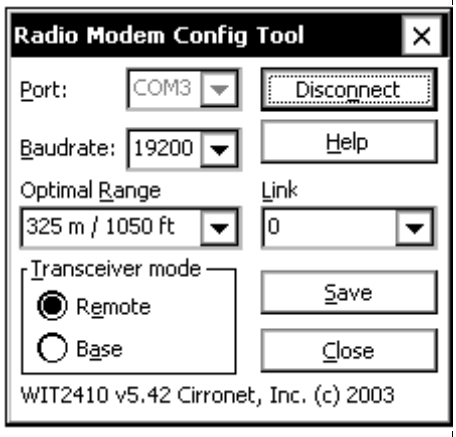
Congratulations on purchasing Prosurv CE with Leica Robotic support! Together with the Allegro CE with internal radio modem, and a Leica Series 1100 Robotic instrument, you will enjoy a faster, easier surveying experience!

This guide will demonstrate the myriad capabilities that Prosurv CE Data Collection has to offer when used with the Leica Robotic system.

Important: If you've received your package with Prosurv CE already installed on your Allegro CE for use with a Leica Robotic system, then you won't need to change or set any parameters. *Prosurv CE is already READY TO GO!*

Configuring your Allegro CE and it's internal radio modem (for reference)

1. Follow the installation instructions in the ***Prosurv CE for Allegro CE Quick Start and Installation Guide*.**
2. Your Prosurv CE installation has been **pre-configured** for use on an Allegro CE device, and to operate the Leica Series 1100 Robotic instrument. The pre-configured comm port parameters (for informational purposes) are:
   - **19200 baud**
   - **Parity: None**
   - **8 data bits**
   - **1 stop bit**
   - **Com Port 3 using the internal radio modem**
   - **In Data Collection->Instruments, the selected instrument should automatically appear as Leica TCA/TCRA 1100 Robotic, and the "Activate DTR Line" should already be checked.**
3. The first time you use your Allegro, or after a hard-reset, you should check the internal radio modem parameters in the Allegro by running the RM_CFG_All... program, which should be located on your Allegro's 'desktop'. The com port of the RM_CFG program should be the same as the com port being used by Prosurv CE. Be sure that Prosurv CE is not running (look at the taskbar to see), then enter the RM_CFG program. Select **COM3** and tap the **Connect** button. If your screen looks like the one shown here, tap the **Save** button and then **Close.**

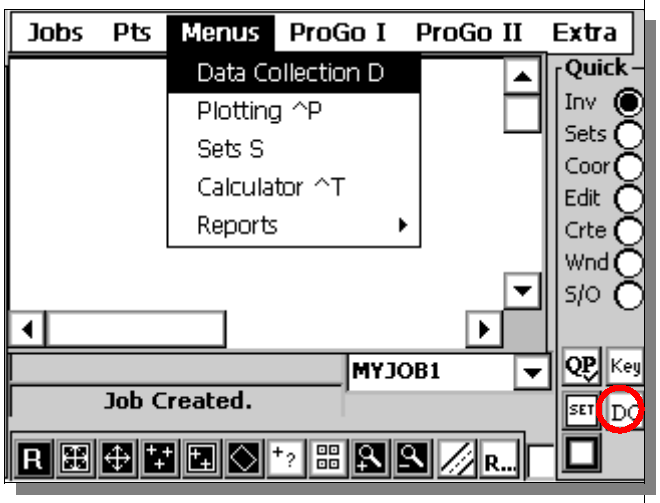


Setting Up the Leica Robotic Instrument

1. Connect the 'Y' cable to your external radio modem and the instrument and power source.
2. Once you're leveled and over your point, from the **Main menu (on the Leica Robotic), select #5 (Configuration).**
3. In the next screen, select **#2 (Communication Mode).**
4. Then, select **#3 (GeoCom On-line Mode).**
5. You should now see "Notice 59—Switches to GeoCom on-line mode". Answer Yes by pressing the **F4** button.
6. Now, the Leica Robotic instrument is ready to communicate with your Allegro CE and Prosurv CE Data Collection!

Checking out Prosurv CE and it's communication with the Leica Robotic

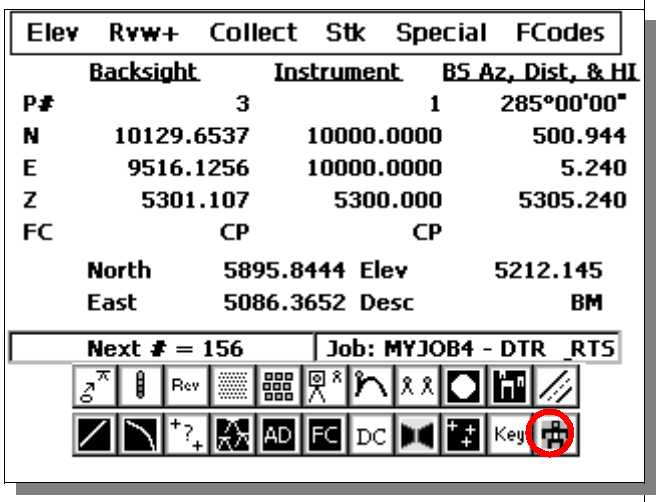
First, create or open a job. Then, go into Data Collection by tapping the **DC** button as shown on the right.



Locate the **Robot** icon in the data collection screen. This is where you can modify almost any parameter of the Leica instrument *remotely*.

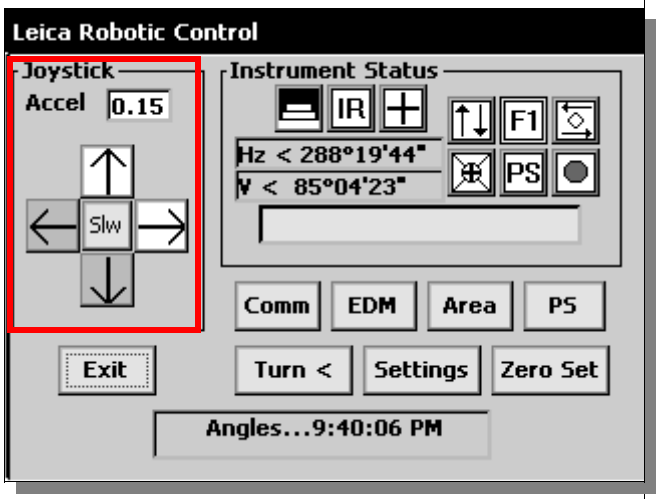
When starting out, you just go into the Robot routine to check your communication. You can skip to the next section, and use this section later for reference.

Continue the Leica Quick Start by going to PAGE 7 NOW.



The Joystick section gives you full remote-control of the instrument. Each time you tap an arrow, the speed in that direction increases. You can slow the speed by tapping the **Slw** button (each tap slows it down a notch).

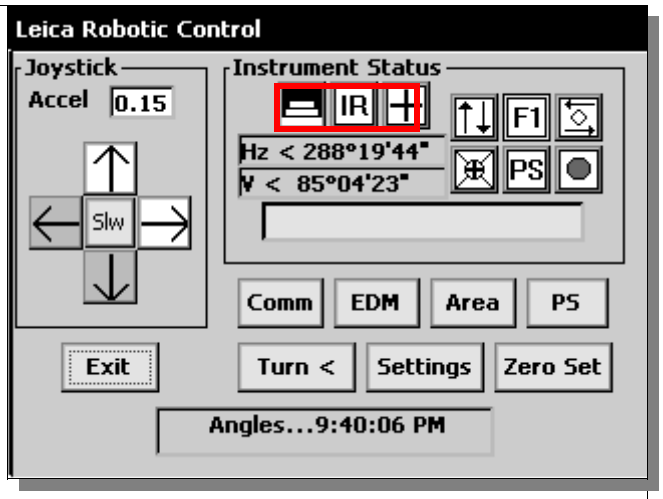
This special Parameters screen keeps a constant connection to the instrument. It obtains the current instrument angles about every 1 second.



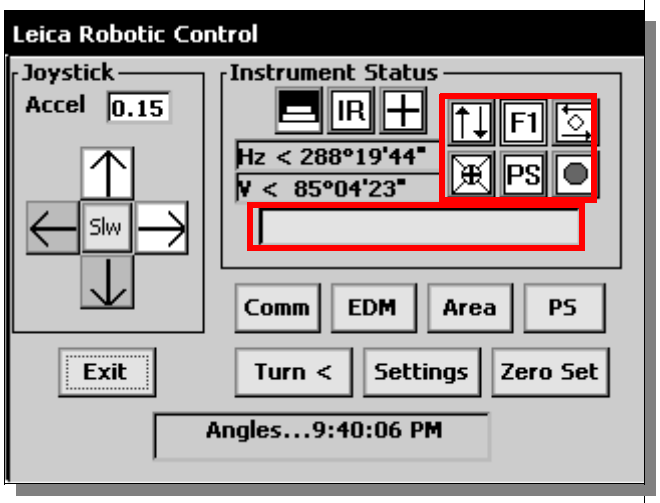
In **Instrument Status**, there is:

- **A Battery Indicator**
- **EDM Mode Indicator**
- **Current Lock/ATR status**

Each of these are *active* buttons that you can tap to either change settings or get the latest status.



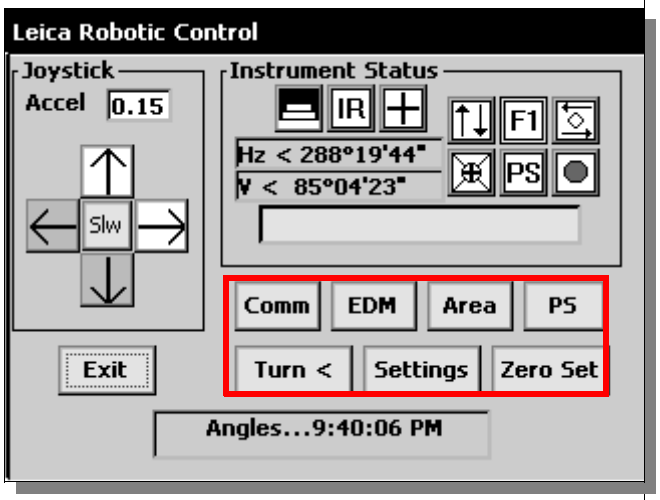
Most of the 6 buttons shown to the right are *active* buttons that you can tap to perform certain functions. From top left to bottom right they are:



- **Flop the Gun (change from F1 to F2 or F2 to F1)**
- **F1/F2 indicator (simply indicates which face the instrument is currently in)**
- **Perform a Search based on your search settings**
- ***Lock the Target.* This tells the Leica to Lock onto the target, if it can**
- **Perform a PowerSearch®. This is the button that starts the PowerSearch**
- **Stop. This stops all current functions so you can use the Joystick.**

The red rectangle is the signal strength button. Just tap anywhere on this large button to view the current signal strength.

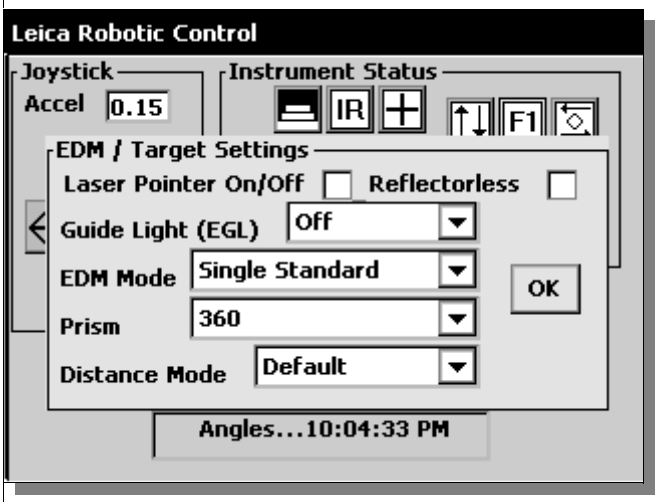
The remaining buttons on this screen are:



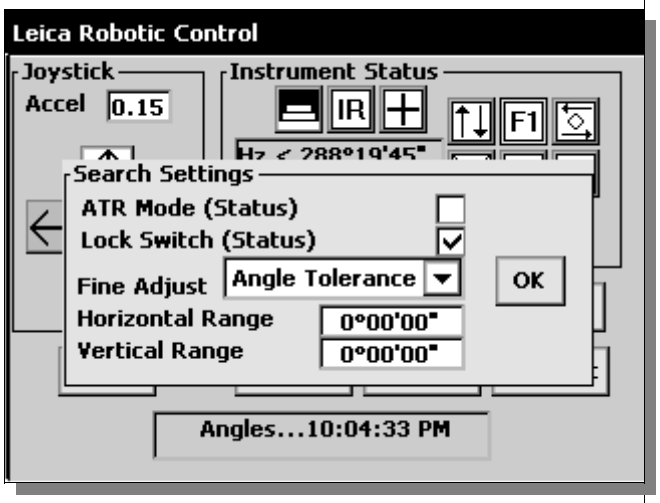
- **Comm—**Checks the communication between the instrument and Prosurv CE. If all is well, the instrument's Serial # will be displayed.
- **EDM—**Contains EDM Settings as shown below
- **Area—**Settings for the active search area
- **PS—**Settings for PowerSearch
- **Turn <—**Turns the gun to any given Horizontal and Zenith angle (or point #)
- **Settings—**Other relevant settings
- **Zero Set—**Instantly sets Zero in the gun

The following screens are shown for your reference

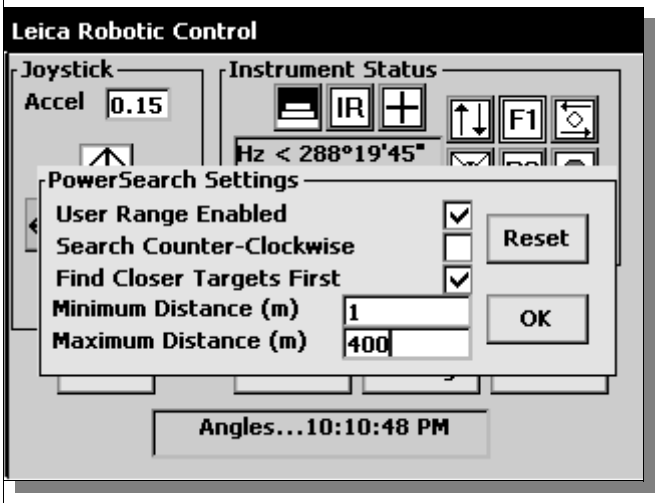
EDM Settings



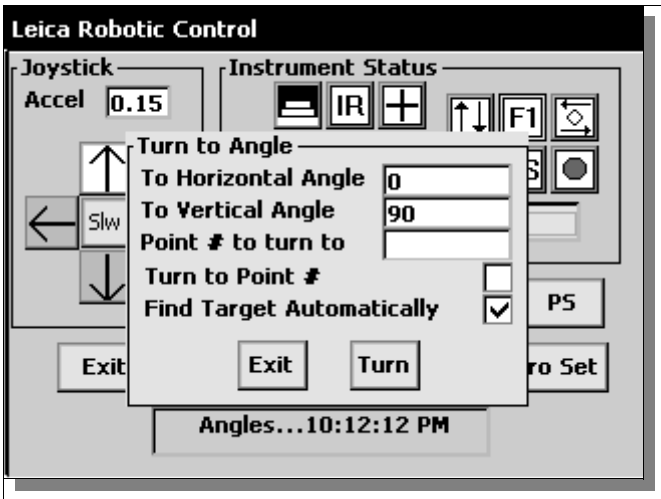
Search Area Settings



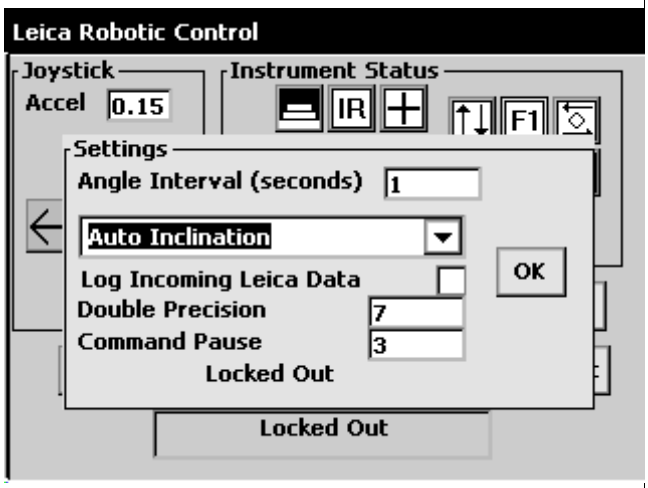
PowerSearch Settings



Turn to Angle



Other Settings



Notes:

Settings are read from the instrument when you tap the EDM, Area, PS, or Settings buttons. If you change a setting, the changes are made when you exit the window by tapping **OK**. **It is prudent to check to see if the changes were accepted by the instrument by going back into the settings window, and verifying that the changes were made.**

Leica PowerSearch®

Many Prosurv Data Collection routines now have PowerSearch buttons built right in. This means that when you need to do a PowerSearch, you don't have to leave your function and go into the Robotic Parameters screen. The following routines have built-in PowerSearch buttons:

- **Setup**
- **Close the Horizon Traverse**
- **Radial Stakeout**
- **Stake to a Line**
- **Topo/Sideshot (Take Shot)**

At any time, while you're in these routines, you can activate the PowerSearch function by simply tapping either PowerSearch button. The **left** PowerSearch button will activate a **counter-clockwise PS**, while the **right** button will activate a **clockwise PS.**

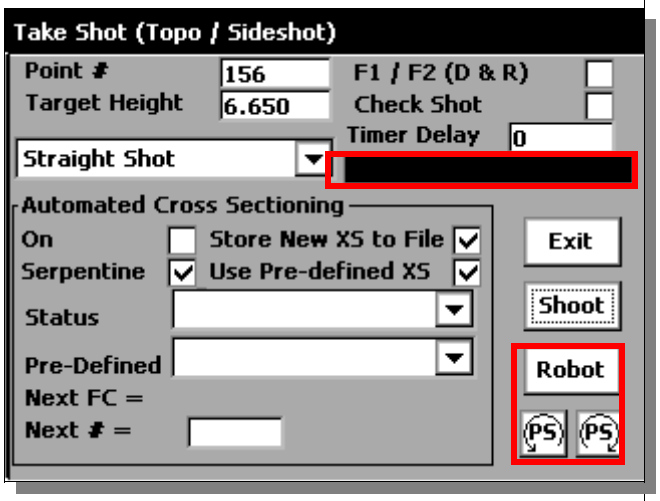
Normal Data Collection functionality

All Prosurv Data Collection routines will function as they normally would with any regular total station. For example, you can simply tap the **Shoot** button to have the Leica Robotic instrument take a shot on your target. Naturally, however, a fully robotic instrument offers much more than simply taking a shot. Prosurv has a number of very speciallized functions that are made to take full advantage of this robotic capability. Special robotic functionality is found in the following routines:

1. **Topo/Sideshot—Continuous Auto Topo**
2. **Radial Stakeout—Continuous Auto Stakeout**
3. **Stake to a Line—Continuous Auto Stake to Line**
4. **Close the Horizon Traverse—Auto wrapping of angles of up to 8 sets**

Topo/Sideshot

Most obvious are the **Robot** and **PS** buttons. First, the **PS** buttons will activate a PowerSearch clockwise or counter-clockwise. A successful PowerSearch will show **"Target Acquired"** followed by **"Target Locked"** in the black box shown to the right.

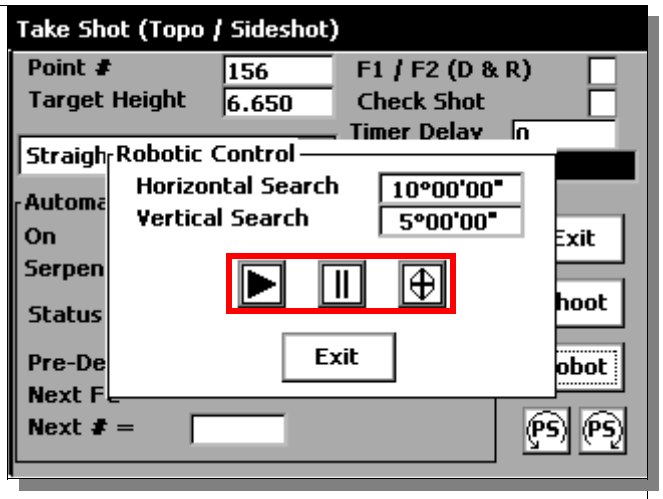


Once the target is acquired by PowerSearch, Prosurv CE automatically locks onto the target and is ready for a shot.

Next, the **Robot** button allows for a more conventional (non-PowerSearch) automatic target searching and acquisition, with search parameters.

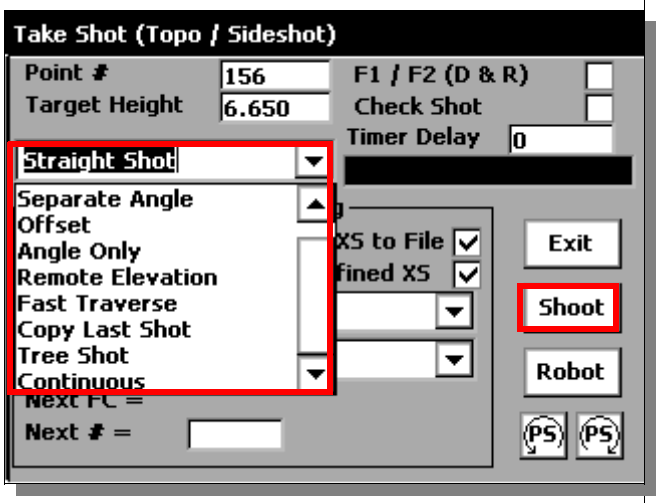
The **Play** button (if the instrument is currently "paused"), performs an automated search, acquisition, and locking on the target. The **Pause** button deactivates the Lock on the target.

The **"Locked on Target"** indicator shows whether the instrument is locked on the target. The icons for this button are purposely similar to those found on the Leica instrument itself, to make it easy to identify the status.



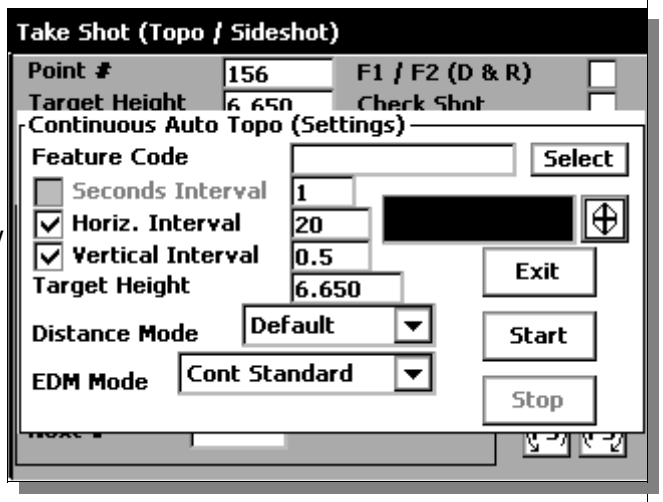
Finally, and most important, an additional Type of Shot is added to the list when using a Robotic instrument. Scroll down the list to find the **Continuous** type of shot.

Once selected, press the **Shoot** button to go to the **Continuous** screen.



You may enter or select a feature code that will be stored automatically with each recorded point. And, you can select to have Prosurv **store a point every *n* seconds. Or, you can have Prosurv store points at horizontal and vertical intervals.** For example, you can indicate that you want to store a point every 20' *and* whenever there's a vertical difference of more than 0.5' (as shown).

Press the **Start** button to begin shooting in continuous mode. Constant beeping will be heard from the instrument, and the data collector will beep each time a point is stored. You will also hear a 'ticking' sound from the collector, indicating that Prosurv is "in synch" with the instrument. A higher pitched beep will be heard when recording vertical-difference-based points.



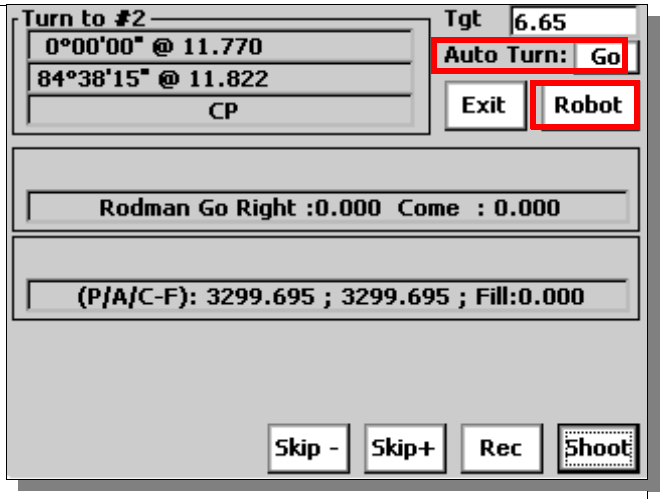
Continuous Auto Stakeout

To perform continuous auto stakeout, go into the Radial Stakeout routine. Then enter the points you need to stake in the Include #'s line and tap **Begin**.

You can take a regular stakeout shot on the target by tapping **Shoot**.

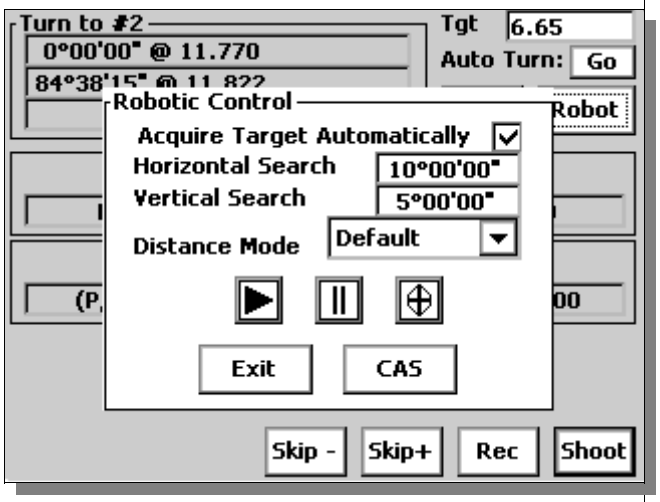
By tapping the **Go** button, Prosurv CE will activate the instrument to **turn to the point being staked.** It will then search for a prism there, and attempt to acquire and lock onto a target.

Or, you can go into the fully continuous robotic stakeout mode by tapping the **Robot** button.



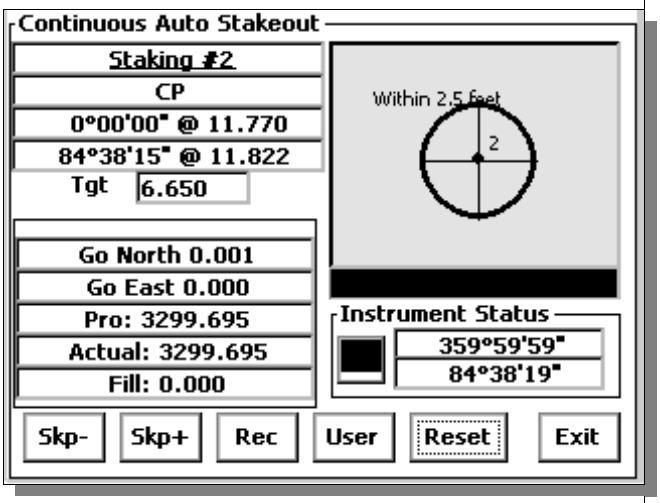
Just like the Topo Robotic button, there are **Play, Pause, and Target icons** shown on the screen.

Tap the **CAS** button to see the **Continuous Auto Topo screen…**

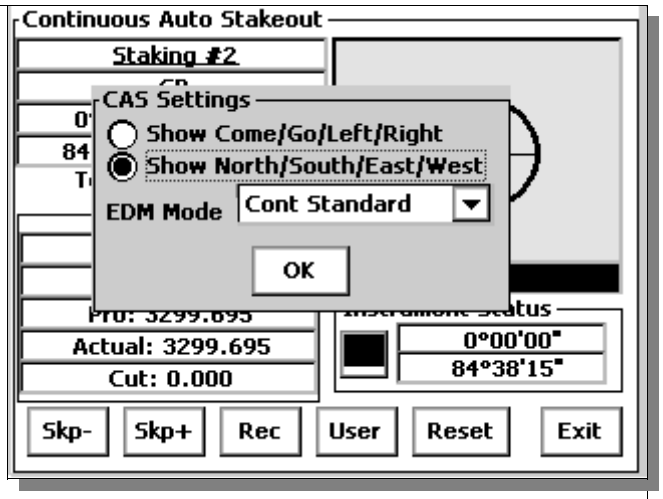


This routine guides you to the point that you're trying to stake, giving you continuously updated information, including come/go/left/right or Go North/South/East/West, as well as the Cut/Fill.

Note: Occasionally, Prosurv CE may get 'out of synch' with the instrument, such as after recording a point. Simply tap the **Reset** button to re-synchronize the continuous mode readings.



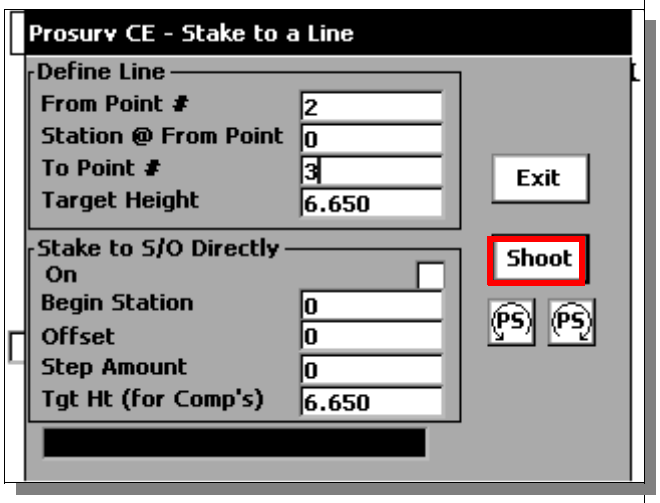
User settings are shown to the right.



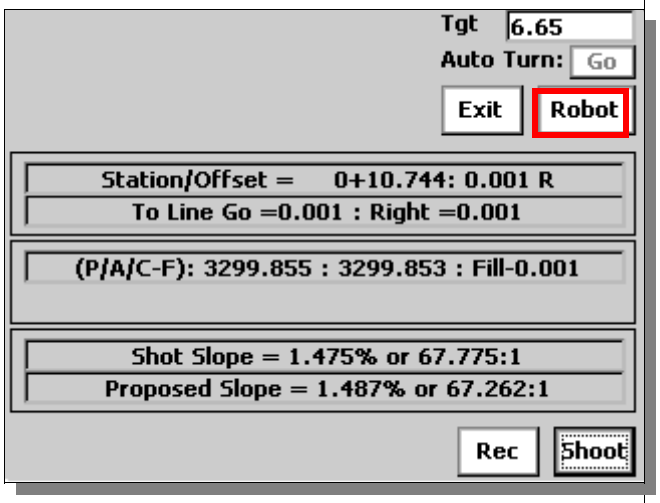
Continuous Auto Stake to a Line

First, enter the Stake to a Line routine from Data Collection. Enter your points that define the line and tap the **Shoot** button.

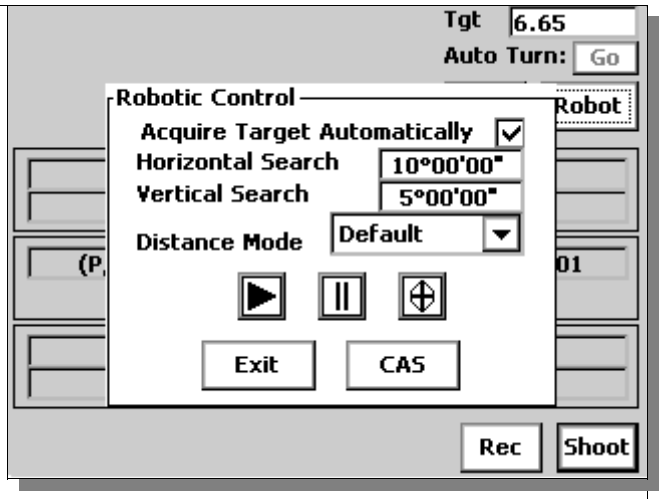
A shot will be taken on the target, and the relevant station/offset information will be shown.



You may now enter the Continuous stake to a line routine by tapping the **Robot** button.

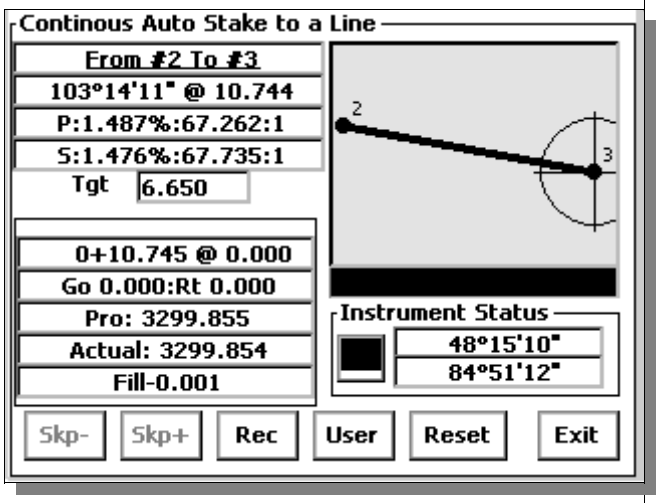


Again, the familiar **Robotic Control** window will appear. Now tap the **CAS** button to go into continuous mode.



Continuously updated information includes:

- **Shot % slope and ratio**
- **Current Station/Offset**
- **Amount to Come/Go**
- **Amount to go Left/Right**
- **Proposed elevation based on the current station**
- **Actual elevation (shot elevation)**
- **Cut/Fill to the Proposed elevation**
- **Current angles in the gun**



Notes:

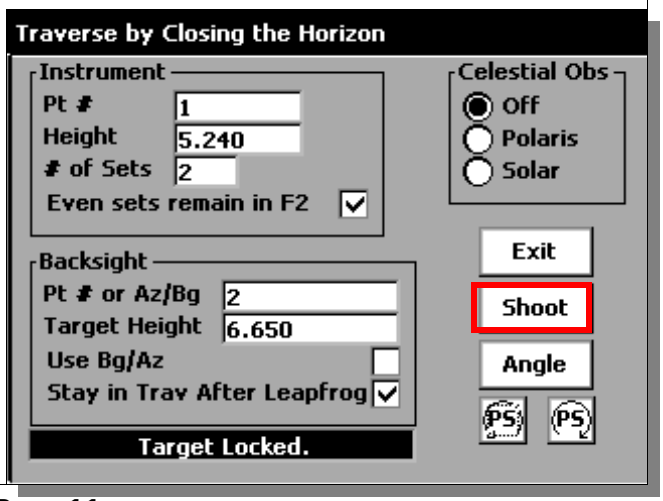
1. The current proposed elevation is based on the slope between the given points and the *station* of the current location. A cut/fill of zero would indicate that you're on the given slope. Therefore, you can easily use this routine for slope staking a line.
2. The Come/Go is versus Left/Right. Basically, you can Come this amount ***OR*** you can go Left or Right the other amount (at 90 from the line between the gun and you).

Traverse by Closing the Horizon

Prosurv CE has a powerful traverse routine that, when used with the Leica Robotic Instrument, will automatically wrap up to 8 sets of angles for each traverse point.

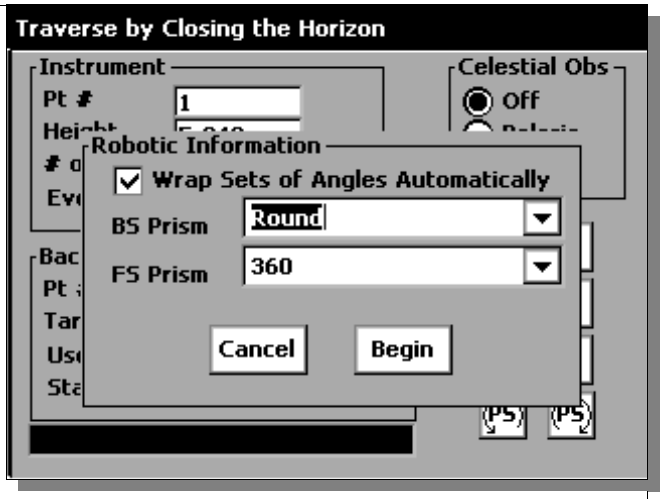
Start by entering your instrument and backsight information. You can backsight an existing point, or enter an Azimuth or Bearing for a new point that will be shot and stored during the traverse (for your backsight).

Tap the **Shoot** button to begin.



It is likely that your Backsight and Foresight prisms will not be identical. For example, your Backsight may be a regular **Round** prism while your Foresight is your **360** prism.

Since Prosurv CE and the Leica Robotic instrument will be wrapping the angles automatically, you can indicate the type of prisms before starting the sets of angles. Prosurv CE will automatically instruct the Leica instrument to change the prism type before each shot. The Prism changes are recorded in the Raw Data as PRISM = 360...



The method of shooting your traverse if fairly straightforward:

1. Use PowerSearch to locate your Backsight prism, then tap **Begin**. Prosurv shoots your backsight.
2. Now, use the PowerSearch buttons to find your Foresight point. Once it's found, and locked on, tap the **Shoot** button.
3. Prosurv CE now automatically wraps all of your angles for you...just sit back and relax!
4. At the conclusion of each set, Prosurv will show you closure information for that set.
5. At the conclusion of all the sets for the point, Prosurv displays a comparison of the first angle and the overall average angle.
6. The Foresight point is stored using the next Auto Point number. If a Backsight Azimuth or Bearing was used (instead of a BS point), then the computed coordinates for the backsight are stored as the next Auto Point. (So if your FS is 4, then your BS will be 5).