

Carlson Software Technical Bulletin

SS900 Radio system with Geodimeter Robot



This workflow shows how to use the Carlson SS900 Base Radio and Carlson Explorer 600+ with SS900 radio pack to control the Geodimeter and Trimble robotic instruments. This method reduces the amount of cables and radio accessories at the pole. It also provides a high performance, low power consumption base radio module at the tripod.

SS900 Radio System

6100.426	Carlson Explorer 600+ Jett Pack Connect	\$430.00
6100.427	Carlson Explorer 600+ SS900 Rover Radio	\$1,480.00
6100.428	Carlson Explorer 600+ SS900 Base / Repeater Radio	\$2,190.00

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1. Connect the SS900 base radio to the robotic instrument by connecting a cable from the 9-pin serial port of the base radio to the battery housing of the robotic instrument, then connect a second cable from that battery housing up to the robotic com port.



2. Power on the robotic instrument, level the instrument and confirm the environmental parameters.



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Leveling indicator screen



Confirm Temperature



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Confirm Pressure.



Confirm Offset.



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Confirm HA reference.



3. Confirm that the robotic total station is configured to work with a Serial connection at 9600 baud, 8, N, 1.

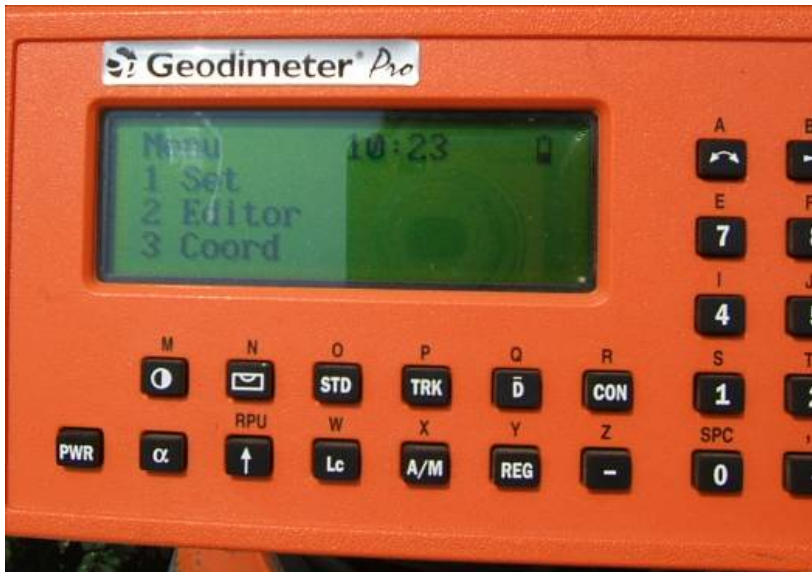
Press the MNU key,
then ENT key,
4 (Data Com),
1 (Select Device),
2 (Serial),
ENT key,
ENT key again to confirm (Com=1.8.0.9600).

The screen shots to follow, go through these key strokes.

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Press the MNU key,



then ENT key,



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4 (Data Com),



1 (Select Device),



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2 (Serial),



ENT key,



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ENT key again to confirm (Com=1.8.0.9600).



ENT key,



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ENT key,



4. Then, once the angle screen is visible, enter RPU mode by pressing the RPU key.



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5. Then press 3 for Remote.



6. Then press 1 for OK.



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7. Then press No or Yes to define a search window.



8. No for Measure Ref obj.



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9. Press any key and the unit will power down.



10. It is now safe to remove the faceplate.



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Setting up the base and rover radios

1. Use the SS900 utility to configure the communication parameters of the rover and base radios.

Note: When the base and rover radios were packaged for shipping they were programmed with the serial number of the base radio. The serial number of the base radio can be found on the back of the base. (Example below is #1035) This 4-digit serial number is used to program the radios to be a mated pair. This prevents any radio step-on by other Carlson SS900 radios. Review the directions at the end of this document if you need to alter the serial number for some reason. A possible reason would be to use more than one rover off the same base radio.



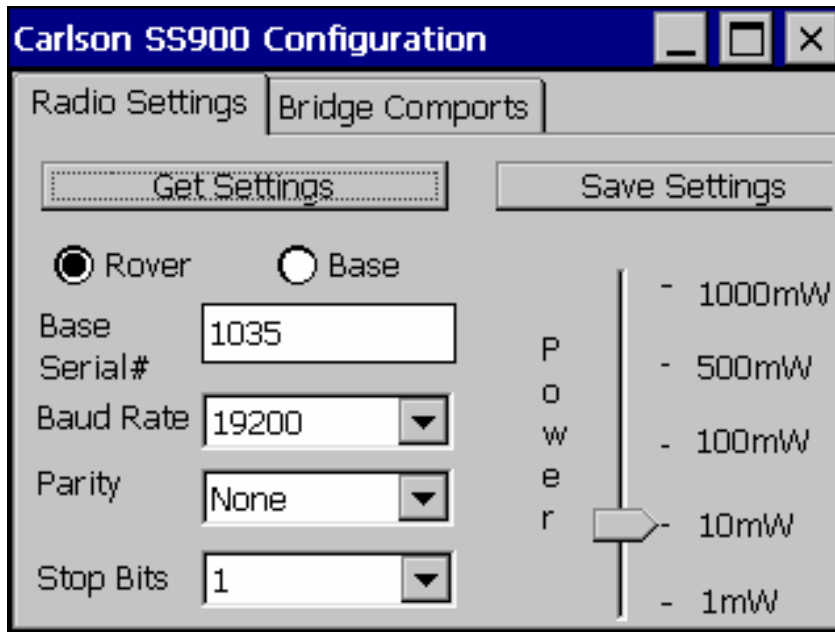
From the desktop screen select the Carlson SS900 icon, or from the Programs list select Carlson SS900.



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2. Program the base and rover radio Baud Rate, Parity and Stop Bits To do this, select Base or Rover Radio, and then “Get Settings” button. Then, fill in the Base Serial number field with the correct serial number displayed on the back of the base radio. This example is serial #1035. Select the proper Baud Rate, Paity, and Stop Bit to correspond with the robotic instrument. Press “Save Settings”, and the selected parameters will be written back to the radio.



In order to program the base radio, you must connect the 600+ to the base radio via a null modem cable. See the picture below.



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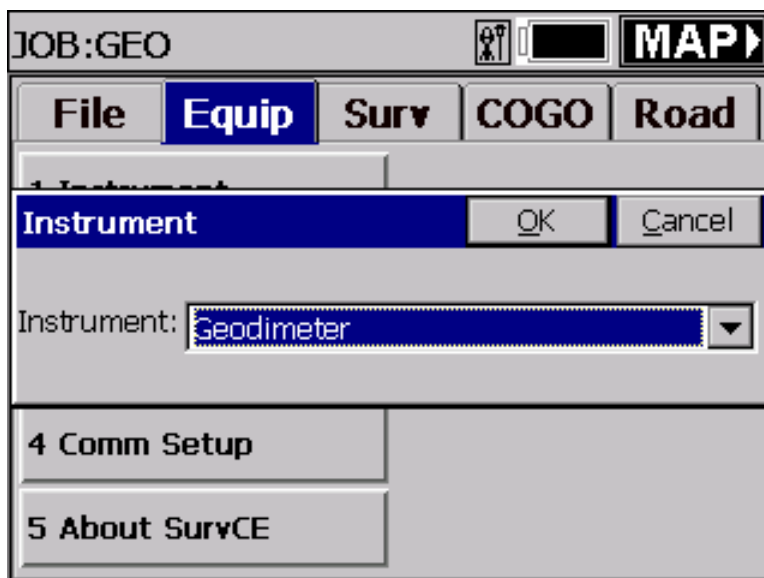
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Setting up the data collector

Note:

The data collector must be connected directly to the robotic instrument to initialize the robotic functions. This is done through the 9-pin cable of the Explorer which is Com 1. After the instrument is initialized, then you can disconnected the cable from the Explorer and connect that cable to the SS900 base radio.

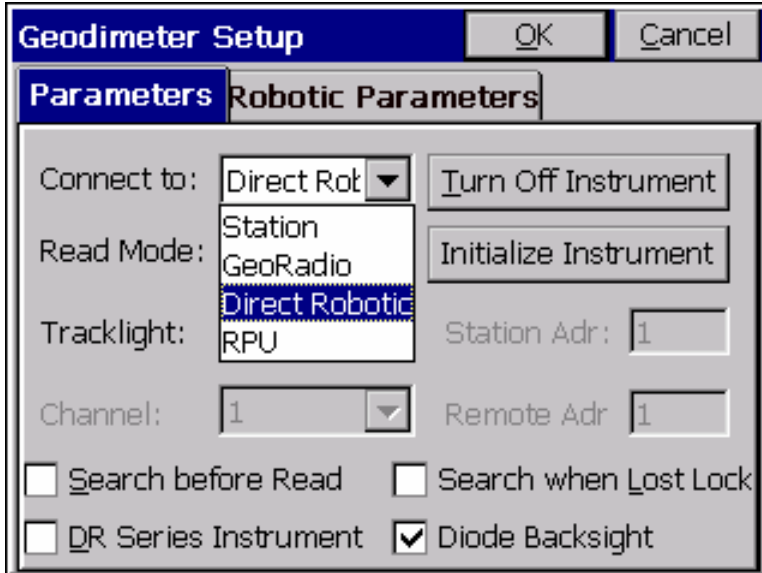
1. Connect the cable from the robotic instrument to the Explorer.
2. Enter SurvCE and select Geodimeter from the Instrument list.



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3. From the SurvCE Settings screen, select Direct Robotic.



Geodimeter Setup [OK] [Cancel]

Parameters **Robotic Parameters**

Connect to: Direct Rot [v] [Turn Off Instrument]

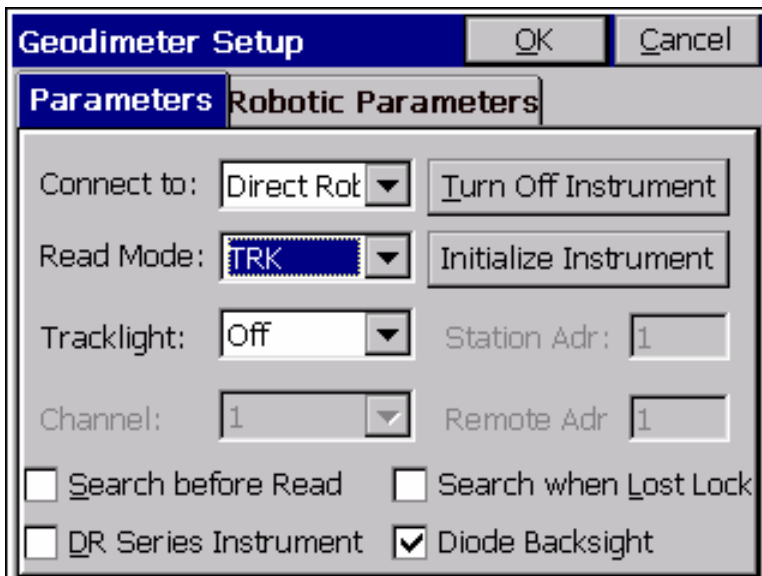
Read Mode: Station
GeoRadio
Direct Robotic
RPU [Initialize Instrument]

Tracklight: [Station Adr: 1]

Channel: 1 [v] [Remote Adr: 1]

Search before Read Search when Lost Lock

DR Series Instrument Diode Backsight



Geodimeter Setup [OK] [Cancel]

Parameters **Robotic Parameters**

Connect to: Direct Rot [v] [Turn Off Instrument]

Read Mode: **TRK** [v] [Initialize Instrument]

Tracklight: Off [v] [Station Adr: 1]

Channel: 1 [v] [Remote Adr: 1]

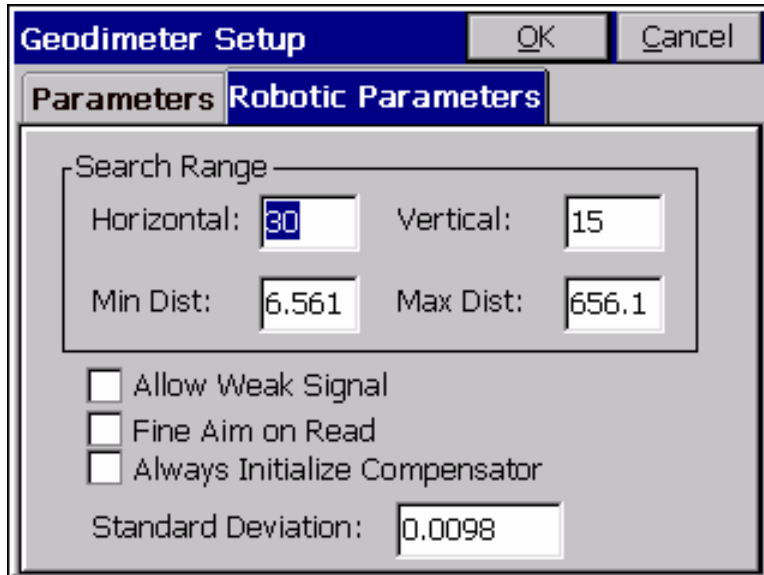
Search before Read Search when Lost Lock

DR Series Instrument Diode Backsight

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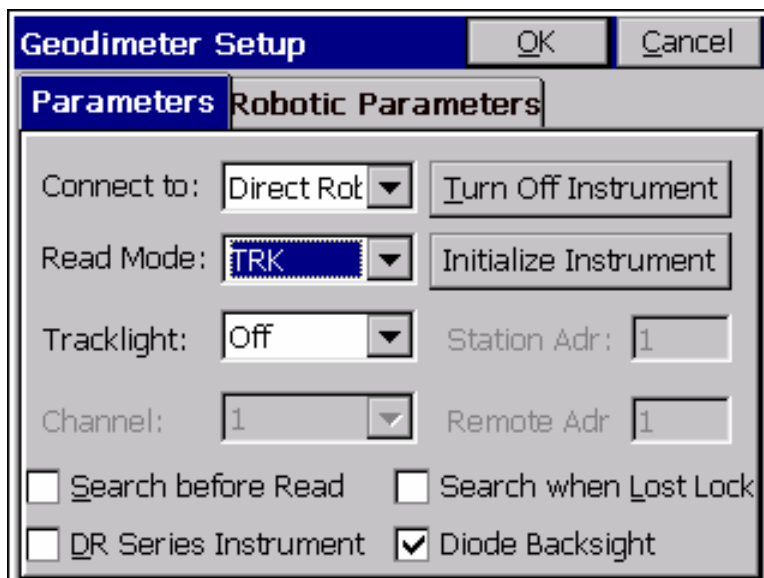
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Confirm Search Range.



The screenshot shows the 'Geodimeter Setup' dialog box with the 'Robotic Parameters' tab selected. The 'Search Range' section contains four input fields: 'Horizontal' (30), 'Vertical' (15), 'Min Dist' (6.561), and 'Max Dist' (656.1). Below this are three unchecked checkboxes: 'Allow Weak Signal', 'Fine Aim on Read', and 'Always Initialize Compensator'. At the bottom, the 'Standard Deviation' is set to 0.0098. 'OK' and 'Cancel' buttons are at the top right.

4. Now Initialize Instrument and wait to hear the instrument confirm with a double beep.



The screenshot shows the 'Geodimeter Setup' dialog box with the 'Robotic Parameters' tab selected. The 'Connect to:' dropdown is set to 'Direct Rot' and the 'Turn Off Instrument' button is visible. The 'Read Mode:' dropdown is set to 'TRK' and the 'Initialize Instrument' button is visible. The 'Tracklight:' dropdown is set to 'Off' and the 'Station Adr:' field is set to 1. The 'Channel:' dropdown is set to 1 and the 'Remote Adr' field is set to 1. At the bottom, there are four checkboxes: 'Search before Read' (unchecked), 'Search when Lost Lock' (unchecked), 'DR Series Instrument' (unchecked), and 'Diode Backsight' (checked). 'OK' and 'Cancel' buttons are at the top right.

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5. After your robot has been initialized, disconnect the cable from the Explorer and plug the cable into the Radio port.

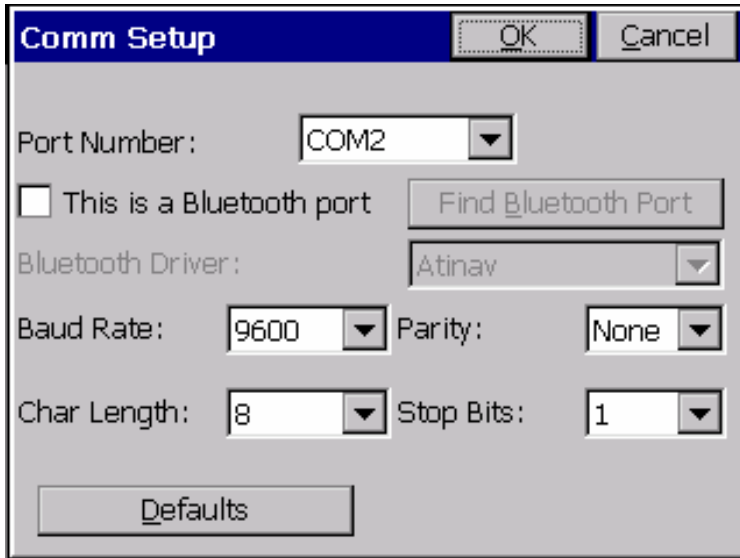
This picture shows the Geodimeter 600 robot connected to the power/comm supply and then the power/comm supply connected to the 9-pin connected of the Base SS900 radio.



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6. Now switch your Com port inside SurvCE to Com 2. This is the internal radio port associated with the radio pack.



The photo below shows the SS900 Rover Radio Pack product #6100.427 (The black insert with the Carlson logo). The Radio Pack inserts into the Jett Pack Connect, product # 6100.426. (The blue tray that connects to the back of the Explorer 600+.)

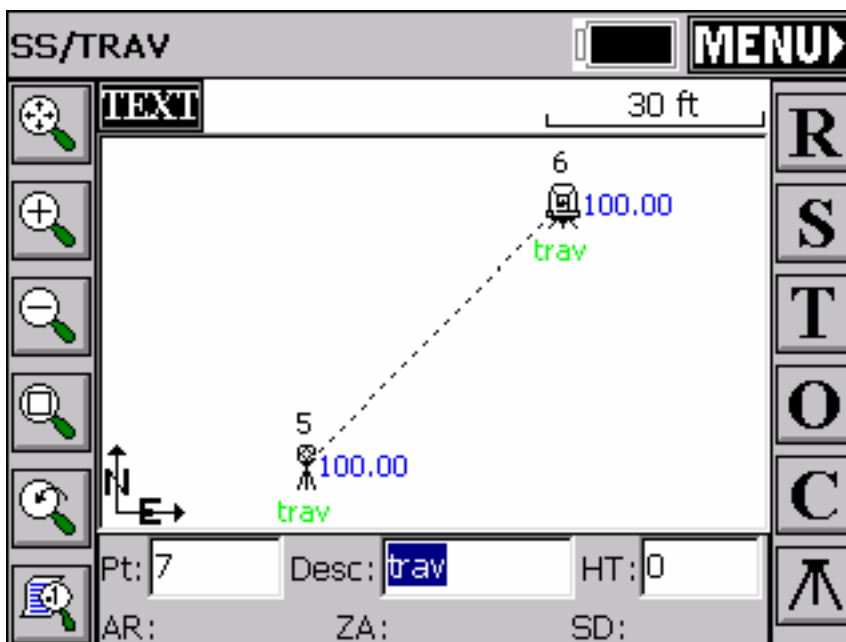
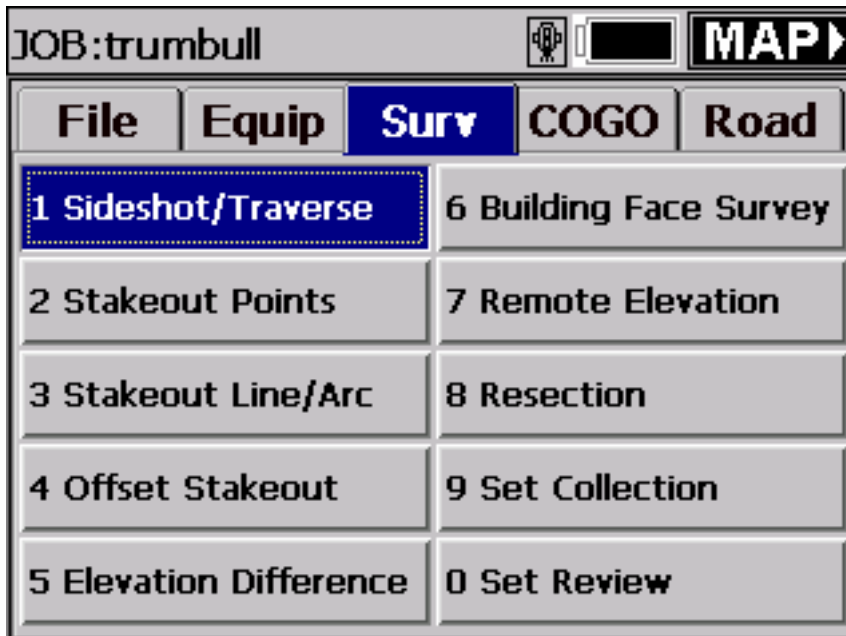
This assembly interfaces with the Explorer 600+ on Com 2.



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6. SurvCE has already initialized the robotic instrument while connected directly, now you can continue into Traverse Sideshots or any other collection or Stake Out procedure.



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SS/TRAV		MAP	MENU
GRAPH			
Raw Data:	Pt: 7	HT: 0	
AR: 0°00'00"	N:4864.2979		
ZA: 90°00'00"	E:4965.9999		
SD: 100.0000	Z:100.0005		
Desc:		trav	
READ	CONFIGURE	OFFSET	
STORE	TRAVERSE	BS/SET	

7. Caution about leaving SurvCE or powering down the data collector. The Robotic instrument will need to be re-Initialized by plugging the data collector directly to the robot. The biggest hazard here is exiting SurvCE while standing 500 feet away. You would have to walk back to the robot and re-initialize.