BaseLineHD

User Guide

Part No. 875-01-0166 Rev. D1

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

(1) This device may not cause harmful interference, and

(2) this device must accept any interference received, including interference that may cause undesired operation.

Notice to Customers
Contact your local dealer for technical assistance. To find the authorized dealer near you, call or write us at:

Hemisphere GPS	Telephone number:	(800) 247-3808
2207 Iowa Street	Fax number:	(785) 742-4584
Hiawatha, KS 66434	E-mail address:	info@hemispheregps.com
USA		www.hemispheregps.com

Footnotes: The OUTBACK eDriveTC™ GPS assisted steering system is protected under U.S. Patent No. 7,142,956. Other U.S. and international patents pending.

Warranty Notice

Covered Products

This warranty covers all products manufactured by Hemisphere GPS (the "Products").

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Hemisphere GPS hereby warrants solely to the end purchaser of the Products, subject to the exclusions and procedures set forth herein below, that the Products sold to such end purchaser shall be free, under normal use and maintenance, from defects in material and workmanship for a period of 12 months from delivery to such end purchaser. Repairs and replacement components are warranted, subject to the exclusions and procedures set forth below, to be free, under normal use and maintenance, from defects in material and workmanship for 90 days from performance or delivery, or for the balance of the original warranty period, whichever is greater.

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The end purchaser's exclusive remedy under this warranty shall be limited to the repair or replacement, at the option of Hemisphere GPS, of any defective Products or components thereof. The end user shall notify Hemisphere GPS or a Hemisphere GPS approved service center immediately of any claimed defect. Repairs shall be made through a Hemisphere GPS approved service center only.

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Hemisphere GPS does not warrant damage occurring in transit or due to misuse, abuse, improper installation, neglect, lightning (or other electrical discharge) or fresh/salt water immersion of Products. Repair, modification or service of Hemisphere GPS products by any party other than a Hemisphere GPS approved service center shall render this warranty null and void. Hemisphere GPS does not warrant claims asserted after the end of the warranty period. Hemisphere GPS does not warrant or guarantee the precision or accuracy of positions obtained when using Products. Products are not intended for primary navigation or for use in safety of life applications. The potential accuracy of Products as stated in Hemisphere GPS literature and/or Product specifications serves to provide only an estimate of achievable accuracy based on:

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In order to obtain warranty service, the end purchaser must bring the Product to a Hemisphere GPS approved service center along with the end purchaser's proof of purchase. For any questions regarding warranty service or to obtain information regarding the location of any of Hemisphere GPS' approved service centers, contact Hemisphere GPS at the following address:

Outback Guidance

2207 Iowa Street
Hiawatha, Kansas 66434
Phone 800.247.3808 Fax 785.742.4584
techsupport@hemisphergps.com
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Product Overview

Congratulations on the purchase of an Outback BaseLineHD™. BaseLineHD is a Real-Time Kinematic (RTK) GPS system that uses a base station (stationary) to broadcast corrections over a wireless link to a rover radio (mobile) or multiple rover radios. The localized corrections from the rover radio are processed in the rover GPS system to achieve accuracy and repeatability that is not possible with WAAS, beacon, e-Dif™ or most other differential methods. BaseLineHD's main advantage is that it allows work to be done with one highly-portable base station and several rover radios.

What Is Included

BaseLineHD uses a base station and rover radio. The base station is the stationary unit in the field. The rover radio is attached to the GPS system in the vehicle.

The following equipment is included with the BaseLineHD system:

- Base station (DGPS receiver, radio transmitter, battery, GPS antenna, radio antenna/bracket and cable)
- Tripod
- External power cables
- Battery charger
- Rover radio (radio antenna, radio receiver, power/communication cable)

Figure 1-1. Outback BaseLineHD and equipment

Parts List

Table 1-1: BaseLineHD Cables

Part Number	Description
050-0011	Serial cable data cable, 3 m (9.84 ft)
051-0126	S2/S3 radio data/power cable
054-0085	Power cable
054-0086	Power cable battery clips
054-0095	AC power cable (U.S)

Table 1-2: BaseLineHD Parts

Part Number	Description
150-0010	Antenna, 900 Mhz
427-0032	Battery charger
750-0050	BaseLineHD tripod
802-1024	BaseLineHD base station, 900 MHz
802-1025	BaseLineHD rover radio, 900 MHz

Table 1-3: BaseLineHD Documentation

Part Number	Description
875-0165	BaseLineHD quick reference guide
875-0166	BaseLineHD user guide

2: Installation

Product Overview

This chapter provides the following:

- Setup
- Powering the base station
- Base station port information
- LED information
- Battery life and charging

Setup

Base station

To set up the base station:

1. Attach the base station to the tripod using the 5/8-inch thread port on the bottom of the base station enclosure.

Figure 2-1. Base station on tripod

2. Place the base station at the edge of the field with no obstructions between the rover radio and base station. (See Figure 2-1 above and Figure 2-2, on page 8.)

Note: Do not place the base station near metal objects.

Note: Make sure the unit is at least 50 meters (160 feet) from obstructions to provide a clear view of the sky to the GPS antenna. (See Figure 2-2, on page 8.)

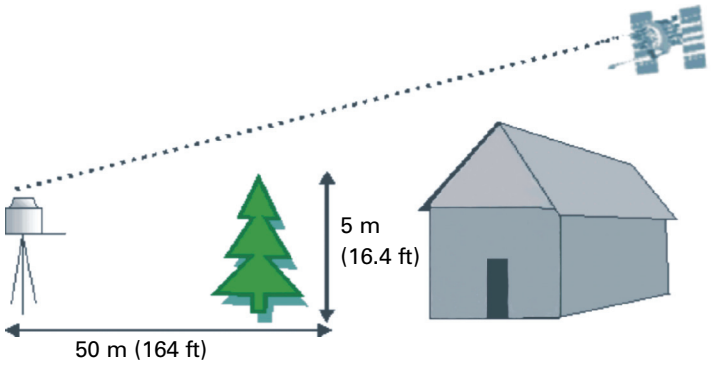


Figure 2-2. Location of base station

Note: Make sure the base station and rover radio have a "clear line of sight" up to 5 kilometers (3 miles) or less when operating the BaseLineHD. (See Figure 2-3.)

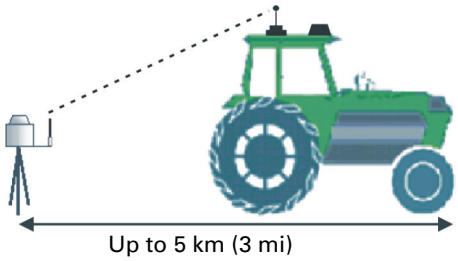


Figure 2-3. Base station and tractor distance

3. Attach the radio antenna bracket and antenna to the base station. (see Figure 2-4)

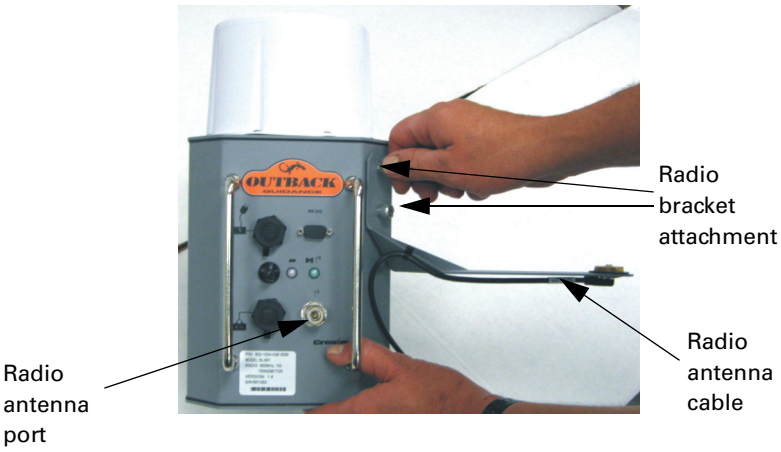


Figure 2-4. Antenna cable bracket attached

4. Connect the radio antenna cable to the radio antenna port. (See Figure 2-5)

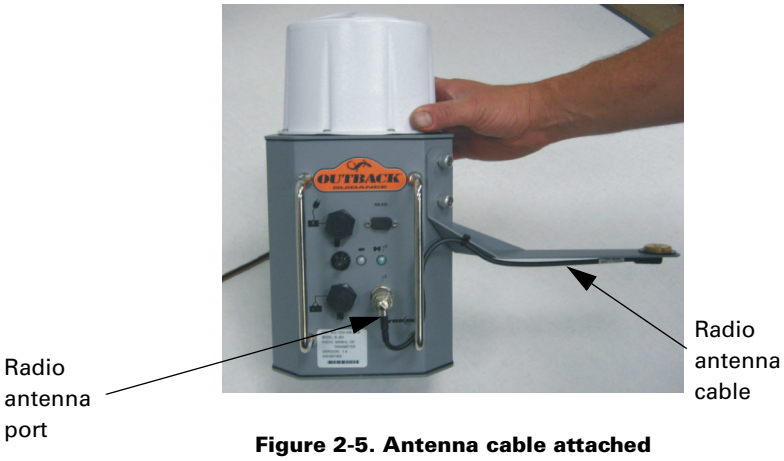
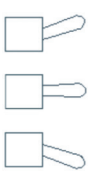


Figure 2-5. Antenna cable attached

Powering the Base Station

To power the base station:



ON: Internal battery

OFF

ON: External battery

1. Turn the power switch up to use power from the internal battery.
2. Turn the power switch down to use power from an external battery.
3. Wait for the power status indicator LED to turn red to indicate power. This will take up to 10 seconds. The unit will automatically compute a new position, or use a previously saved position, and start broadcasting. (Figure 2-6 is an example of the Outback S2™ screen when it is receiving corrections from a broadcasting base. Figure 2-7, on page 11, is an example of the Outback S3™ when it is receiving corrections from a broadcasting base.) (See the "Base Station Position" section on page 27 for more information.)

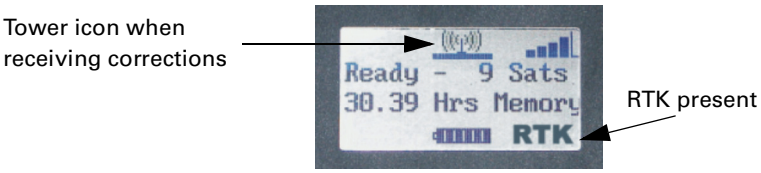


Figure 2-6. Example of the S2 screen when it is receiving corrections from a broadcasting source

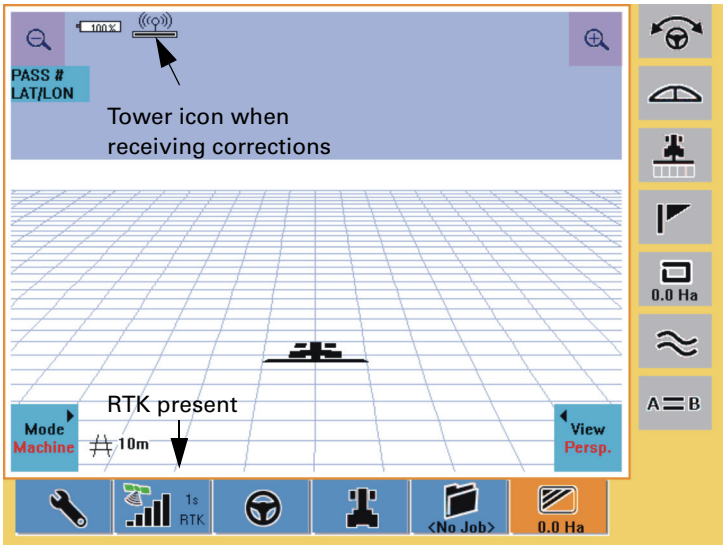


Figure 2-7. Example of the S3 screen when it is receiving corrections from a broadcasting source

Note: Make sure both the rover radio and base station are on the same channel or frequency in order for the rover radio to receive corrections from the base station.

Base Station Port Information

The base station's control panel has four ports:

- Internal battery charge port
- External battery port
- 9-pin serial communication port
- Radio antenna port
  (See Figure 2-8)

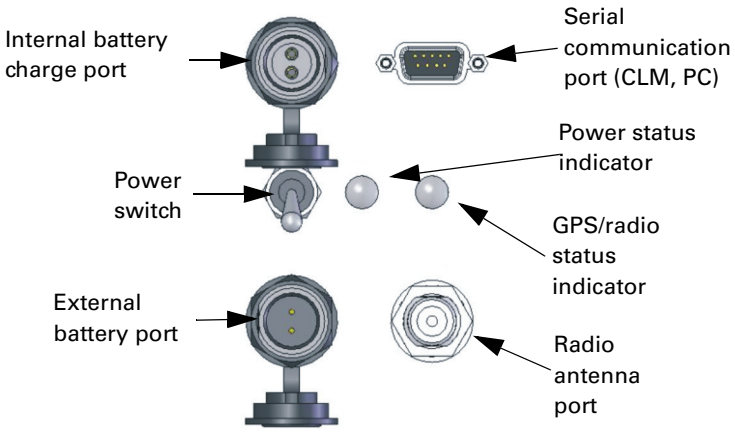


Figure 2-8. Control panel

The serial communication port is used for radio configuration, base point editing, advanced diagnostics and firmware updates through the Crescent Link Manager (CLM) program. See Chapter 3 for further information on the CLM program. The radio antenna port is used to attach the radio antenna to the base station for transmission. The internal battery port and external battery port are discussed at the end of this chapter.

LED information

There are two LEDs on the base station control panel:

- Base power status indicator
- Base GPS/radio indicator

Base power status indicator -

Power off | Power on (red) | Low battery (flashing)

Base GPS/radio indicator -

No GPS | Tracking GPS (green) | Broadcasting GPS corrections (flashing)

Rover radio -

The rover radio is attached to the top of the vehicle by magnetic mount. The rover radio includes:

- Radio receiver
- Antenna
- Power/communication cable

Rover radio installation on the vehicle:

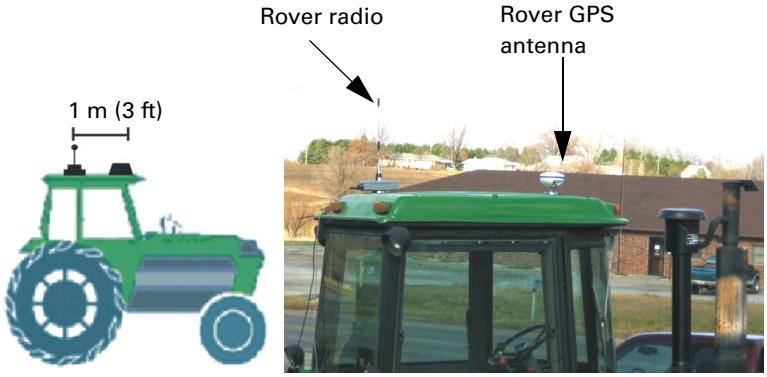


Figure 2-9. Rover radio installed on vehicle

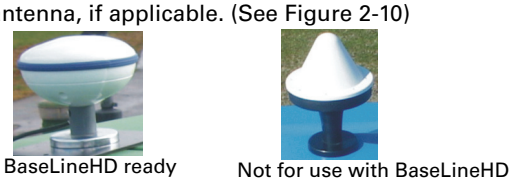
1. Attach the rover radio, with the antenna, to the roof of the vehicle. (See Figure 2-8) If the roof is not a magnetic material, then attach

the metal plate with adhesive pad to the roof in the place where the radio will be mounted.

Note: Make sure the rover radio and the GPS antenna are 1 meter (3 feet) from each other. (See Figure 2-9, on page 14.)

Note: The rover radio must receiver consistent corrections from the base station for up to 15 minutes to achieve an RTK lock (maximum accuracy).

2. Replace the standard GLA3 GPS antenna with the new CDA3-RTK antenna, if applicable. (See Figure 2-10)



BaseLineHD ready

Not for use with BaseLineHD

Figure 2-10. CDA3-RTK antenna and GLA3 GPS antenna

If using the S2, then proceed to step 3. If using the S3, then proceed to step 6.

3. Power up the S2.
4. Change the correction type to LOCRTK. (See Figure 2-11)

Figure 2-11. Correction type

5. Connect the rover radio to the L-Dif connector on the back of the S2 console using the supplied power/communication cable. (See Figure 2-12)

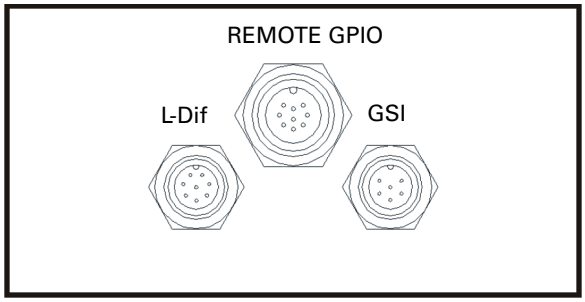
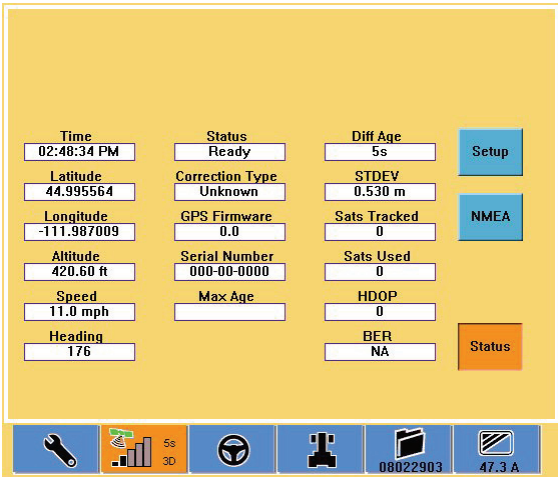


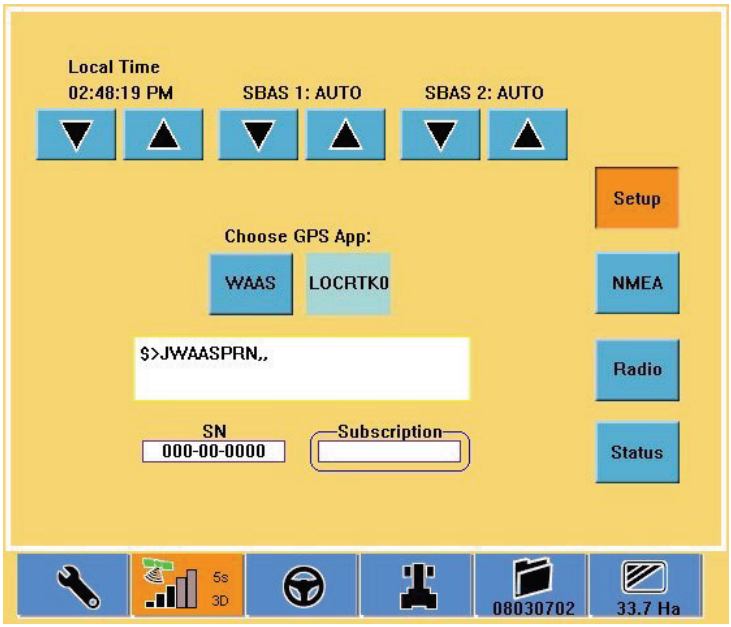
Figure 2-12. S2 Console

Note: The rover radio power LED will illuminate when the Outback S2 is powered on.

6. Power up the S3.
7. Access the GPS Setup screen in the S3 by pressing the Setup button on the GPS Status screen.



8. Select LOCRTK as the correction on the GPS Setup screen on the GPS screen.



Note: The rover radio must receive consistent corrections from the base station for up to 15 minutes to achieve RTK lock (maximum accuracy).

Battery Use and Charging

The base station has two options for a power source:

- Internal battery
- External battery

The power source can be chosen with the 3-position power switch. (Refer to “Powering the Base Station” on page 10.)

Internal Battery - The internal battery provides up to 24 hours of field operation. The typical battery charge time is 6 hours with a 4 amp charger. The base station can run continuously if it is plugged into the battery charger. A battery charger with AC adapter is included with the base station. The internal battery can be charged at any time with the power switch in any position.

To recharge the internal battery:

Note: Make sure the power requirements on the charger matches the power on the AC outlet. This will be 110 volts or 220 volts, depending on the AC source.

1. Attach the 12 volt charger to the base station charge port. (See Figure 2-13)

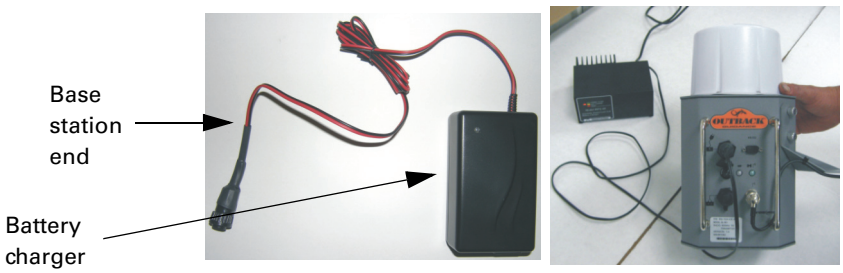


Figure 2-13. Internal battery charger

2. Plug the AC cord from the battery charger into a wall AC outlet.

Figure 2-14. AC Cord

Note: When the internal battery shuts off due to a low battery condition, the power switch should be placed in the “off” position for a minimum of 5 to 10 seconds. This needs to be done prior to placing the switch in either of the “on” positions in order to reset the internal circuitry.

The battery charger has a multi color LED to indicate the charging status when operating the battery charger.

- Red indicates the battery is charging
- Orange indicates the battery is 80 percent charged
- Green indicates the battery is 100 percent charged and in standby

To extend the overall internal battery life:

- The internal battery should be fully charged beforehand.
- When storing the unit or running it in the external power mode for extended periods (more than one week), the internal battery should be fully charged prior to storage. The power switch should be placed in either the “off” position or the external power “on” position.
- The unit should never be stored with the switch in the internal “on” position even if the unit shuts itself off, unless it is connected to an automatic, float charger.
- The battery should not be stored in a discharged state or at elevated temperatures.
- Although the base station battery has a low self-discharge rate, which permits storage of a fully charged battery for up to a year, it is recommended that a battery be charged 6-9 months after receipt to account for storage from the date of manufacture to the date of purchase. Otherwise, permanent loss of capacity might occur as a result of sulfation. To prolong shelf life without charging, store batteries at 10° C (50° F) or less.
- For best results and generally acceptable performance and longevity, keep operating temperature range between -20°C and +40°C (-4° F to 140° F).

The base station battery is the equivalent of the Power-Sonic model #PS-12120-F2 battery. General battery information can be found at http://power-sonic.com.

An external 12 volt automotive battery can be used to extend the field operation time.

To use an external battery:

1. Attach the external battery cable to the standard power cable. (See Figure 2-15)

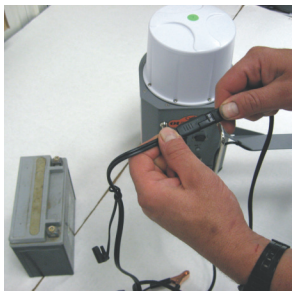


Figure 2-15. External battery cable to the standard power cable

2. Connect the external battery cable to a 12 volt automotive battery. (See Figure 2-16)

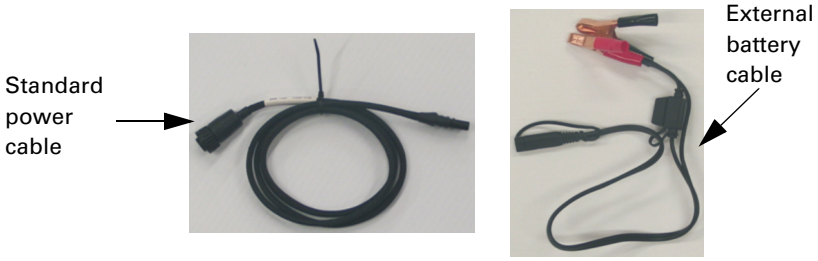


Figure 2-16. Standard power cable and external battery cable

3. Attach the standard power cable to the base station external battery port.
4. Turn the base station power switch to the down position to supply external power to the base station. (See Figure 2-17).

Figure 2-17. Base station connected to the battery

3: Crescent Link Manager and Base/Radio Configuration

Introduction

As mentioned in Chapter 1, the BaseLineHD includes:

- Base station
- Rover radio

Hemisphere GPS' Crescent Link Manager (CLM) program is used to:

- Configure the base station
- Configure the base station radio
- Configure the rover radio

The CLM program offers several advantages:

- It allows surveyed (known) positions to be added to the base station
- It allows coordinate positions to removed, edited, add and saved

The following equipment is required to manage the reference points and to configure the base radio:

- Base station
- PC
- CLM program
- 9-pin serial cable

Base Station Position

Note: This information is only important for users that need repeatable accuracy from one application to the next application or from season to season.

The base station will record a reference point at the location the first time it is used in a field. Ideally, the base station will remain at the exact, same position between applications. However, if the base station needs to be moved, please follow these guidelines when setting up the base station again:

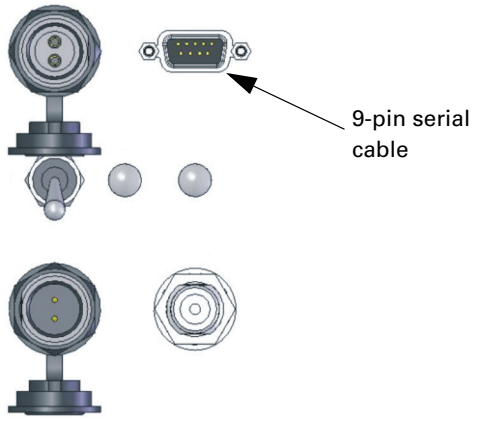
- For repeatable accuracy (day-by-day, season-by-season, etc.) compared to the last use, always put the base station at the exact location. The use of a permanent mount, such as a post, is recommended.

Note: Use the line Shift A=B and Snap A=B features in the S2/S3 guidance to provide repeatability in applications where visual indicators, such as crop rows or strips, are available. This reduces the need for consistent base positioning, application to application. In applications where no visual indicators are available to reposition the vehicle (rover station) using the Shift/Snap functions, it is important to return the base station to the same surveyed position to achieve repeatability from the previous application. Any error in the base station's placement will be present in the vehicle (rover station) position.

- For a fast start-up without the need for repeatable accuracy, always set-up the base station within a 5 meter (16.4 feet) radius of the previous location.
- To establish a new reference position, place the base station at a location at least 10 meters (32.8 feet) away from previous locations, or use the CLM program.

Using Crescent Link Manager

The PC communicates with the base station through a 9-pin serial cable when running the CLM program.



A USB to serial adapter can be used if the PC does not have a serial port.

The connector is a 9-pin female and requires a standard “straight” serial connection, not a null modem.

Base Configuration

Using Crescent Link Manager

The operator uses the CLM program to manage the BaseLineHD reference points.

To use the CLM program to create a reference point:

Note: The receiver must be powered on to communicate with the CLM program.

1. Open the CLM program.

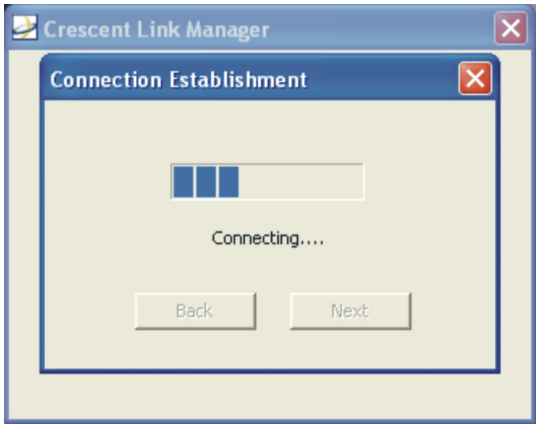
2. Select the language from the Language drop down menu.

3. Select Base Configuration.

   The Base Configuration allows for the following:

   - Manage coordinates
   - Manage base station settings

4. Click the Connect button to open the Connection Establishment window and connect to the base station.



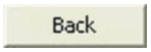
The progress bar will move from left to right and "Connecting...." will appear below it when attempting to connect to the base station.

A “Fail to Connect” message and an error message will appear under the progress bar if the CLM did not connect to the base station. There are three errors that can happen:

- “Invalid Mode, Must be connected to Base.”
  Scenario: Attempted to configure the base station, but either a rover is connected or no base station is connected.
- “Connection failed on COM PORT [port number]”
  Scenario: The PC com port is in use by another application.
- “Connection Failed, Radio is not responding.”
  Scenario: Attempted to configure the rover radio but no rover radio was detected.

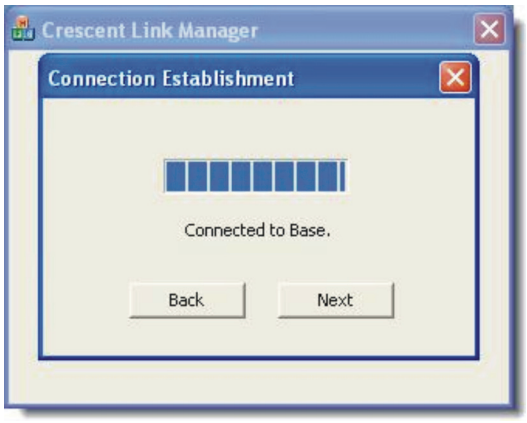
If an error is received, correct the problem, then:

1. Click the Back button after correcting the error.

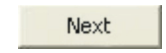


2. Click the Connect button to connect again.

3. The progress bar will stop and “Connected to Base.” will appear after connecting to the base station.



4. Click the Next button to open the Base Configuration window.



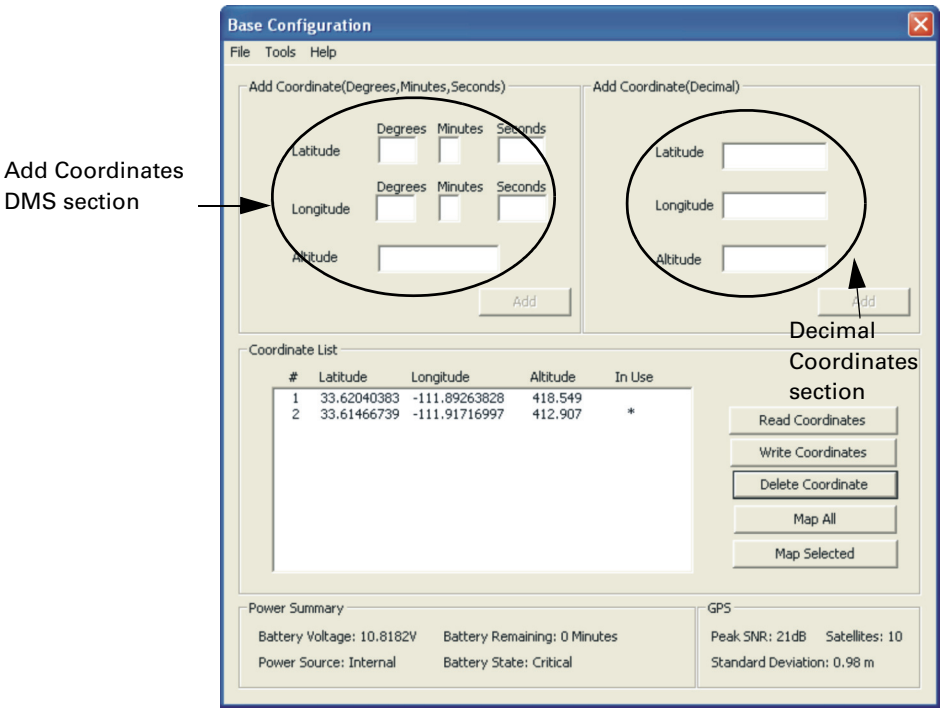


Figure 6-1. Base Configuration window

The Base Configuration screen will display coordinates currently in the base station. The Add Coordinates(Degrees,Minutes,Seconds) section (Add Coordinates DMS section) provides the user a facility for manually adding coordinates to the surveyed coordinates list. Coordinates are defined by three values: Latitude, Longitude and Altitude.

Latitude is represented in degrees, minutes and seconds. The range in the latitude is as follows:

- Degrees: -90 to +90
- Minutes: 0 to 59
- Seconds: 0 to 59

Longitude's degrees, minutes and seconds' range is as follows:

- Degrees: -180 to +180
- Minutes: 0 to 59
- Seconds 0 to 59

Altitude is a decimal value in meters.

The Add Coordinate(Decimal) section (see the Table Figure 6-1, on page 32.) provides the user with a facility for manually adding coordinates to the surveyed coordinate list. Coordinates are defined by three values:

- Latitude is represented in decimal degrees. The latitude may range from -90 to +90.
- Longitude is represented in decimal degrees. The longitude may range from -180 to +180.
- Altitude is a decimal value in meters.

The coordinates list provides the user with the ability to manage the coordinates list stored on the base station. The coordinates list is a list of surveyed positions at which the base station will lock onto if it is within a 5 meter (16.4 feet) radius. This feature provides increased precision in applications on a field when the base station is moved between applications.

- Read Coordinates: Downloads the coordinate list from the base station to the CLM software
- Write Coordinates: Overwrites the coordinate list stored in the base station with the list displayed in the CLM program.

Warning!

Any coordinates stored on the base station that are not in the current CLM list will be lost.

- Delete Coordinate: Deletes highlighted coordinate(s) from the CLM application coordinate list.

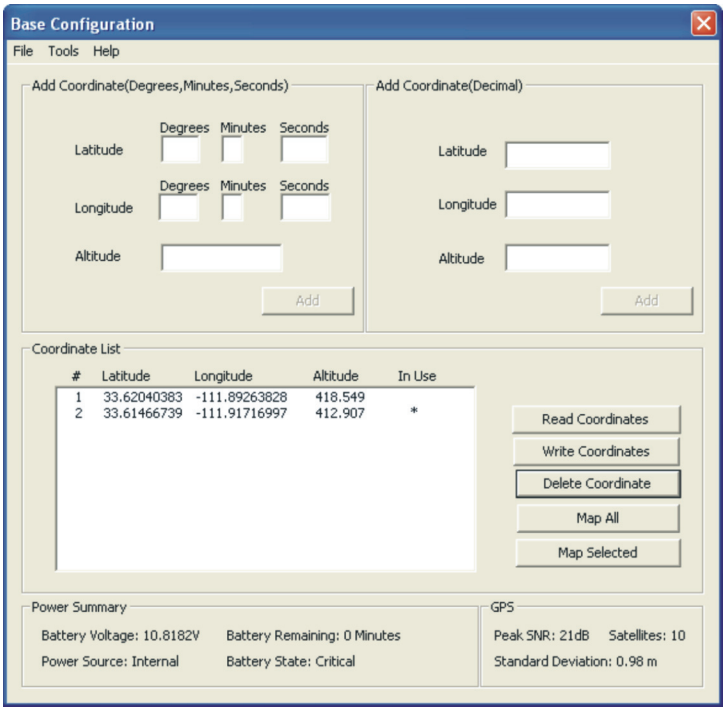
Note: These changes will not be reflected on the base station coordinate list until the coordinates list is written back to the base station.

The Power Summary section in the Base Configuration window provides the user feedback on the base station's power supply status.

- Battery Voltage: is the current voltage reading on the selected power supply (internal battery/external power).
- Power Source: displays the selection of the power source (internal battery/external power). Internal power is selected when the switch is in the up position.
- Battery Remaining: If internal power is selected, an estimate of remaining run time before a critical operating threshold of approximately 11 volts is met and the unit must shut down.
- Battery State: The power sources state. Enumerations of this value are "Operational" and "Low Battery."

The GPS section in the Base Configuration provides the status of the base station GPS solution to the user.

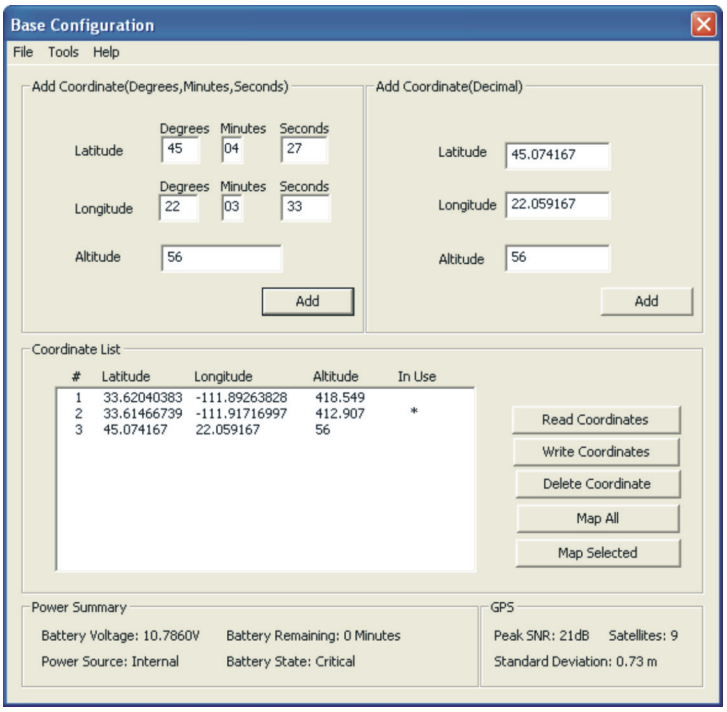
- Peak SNR: The greatest Signal-to-Noise ratio (SNR) of any space vehicle being tracked by the GPS receiver
- Satellites: The number of GPS satellites being tracked by the GPS receiver.
- Standard Deviation: The standard deviation monitors the GPS quality and accuracy.



To add reference coordinates to the base station:

1. Enter the base station's coordinates into the Latitude, Longitude and Altitude field of the Add Coordinates(DMS) section. The base station's coordinates can be entered into the Latitude, Longitude and Altitude field of the Decimal Coordinate section if the coordinates are known. Entering values into either section will automatically compute the values for the other section. The coordinate system adheres to the WGS-84 standard.

2. Click the Add button to add the coordinates to the coordinates list.



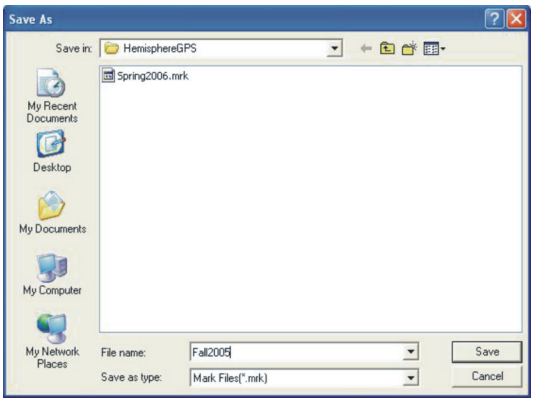
3. Repeat steps 1 and 2 to add multiple points.

Note: Clicking on the Read Coordinates button appends the list of coordinates with the points in the base station.

4. Click the Write Coordinates button to save the coordinates list to the base station.

Saving a coordinates list

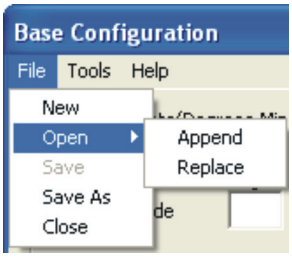
1. Click *File* > *Save As...* to save a coordinates list.



2. Choose a file name for the coordinates list.
3. Click the Save button to save the file.

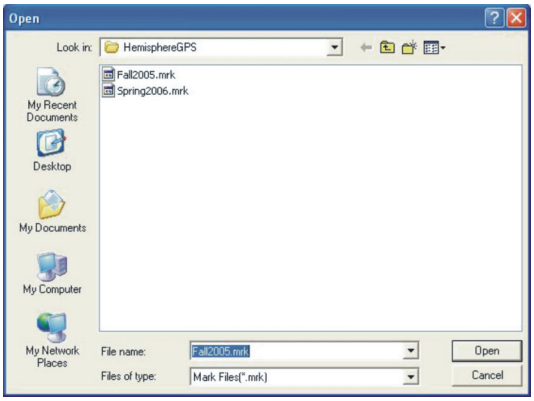
Opening a coordinates list

1. Click *File* > *Open* to bring up the Open menu.



2. Select *Append* to add a coordinates list's points to the existing list.

3. Select *Replace* to replace the existing list with a new list.
4. Select the coordinates list file that needs to be opened.



Deleting Points in Coordinates List

1. Click on the points in the Coordinate List that are to be deleted.
2. Click the Delete Coordinates button to delete the coordinates.

Changing Radio Configuration

The CLM program provides a mechanism for configuring the radio settings for multiple base stations and rover radios, allowing them to operate in close proximity without interfering with each other. The CLM program allows the following items to be configured:

- Base and rover maxstream radios (900 mHz)
- Base and rover satel radios (450 mHz)

Note: The CLM program automatically determines the configuration (base and rover) and radio type (Maxstream or Satel).

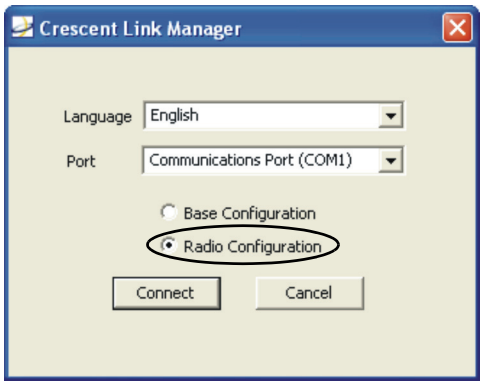
Base Station Maxstream Radio

The CLM program allows the base station and rover ID to be changed. The base station radio ID may be configured to not interfere with other base stations operating in close proximity. The rover radio's Radio ID must match the base station's Radio ID. If they do not match, they will not communicate. The Base Maxstream Radio is typically used in North America, South America, New Zealand and Australia.

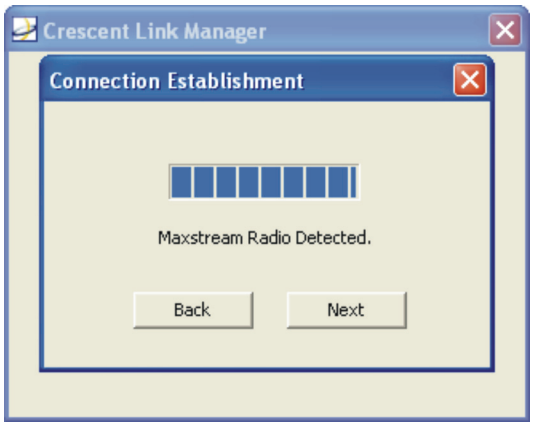
To change the Radio ID:

1. Open the CLM program.

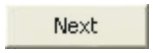
2. Click on the Radio Configuration option button.



3. Click the Connect button to connect to the Connection Establishment window.



4. Click the Next button to go to the Base Station Maxstream Radio window.



5. Select the Radio ID from the drop down menu that will be used. Values range from 0 to 9.

6. Click the Commit Changes to accept the Radio ID.

Any changes made to the base station ID must be made to the rover radio ID. This can be done through the CLM program, the S2 service menu or the S3 Radio screen.

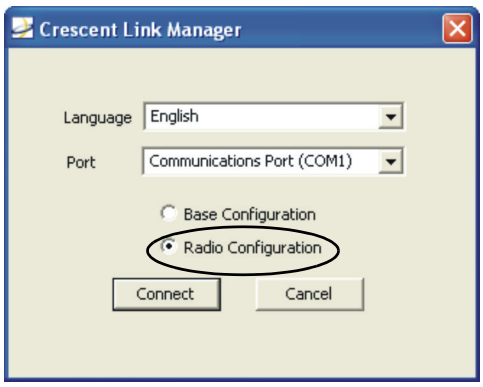
Rover Maxstream Radio Configuration

This feature allows for the rover radio's radio ID on the rover Maxstream radio to be configured to match the Base Maxstream Radio.

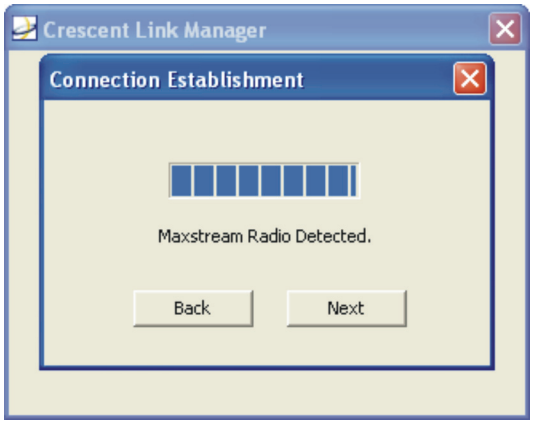
To change the Radio ID:

1. Connect the 9-pin serial cable to the rover receiver (S2 or S3).
2. Open the CLM program.

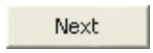
3. Click on the Radio Configuration option button.



4. Click the Connect button to open the Connection Establishment window.



5. Click the Next button to go to the Rover Maxstream Radio configuration window.



6. Select the desired Radio ID from the drop down menu. Values range from 0 to 9. This should match the value chosen for the base station.
7. Click the Commit Changes button to the accept the Radio ID.

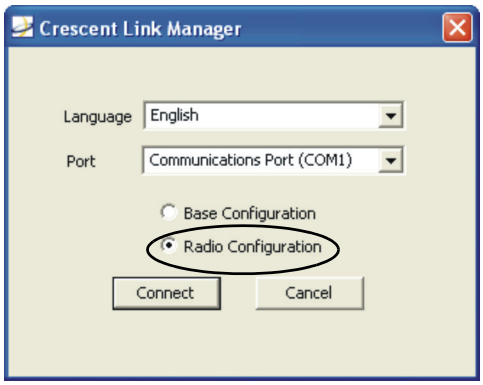
Base Station Satel Radio Configuration

The CLM program allows base station and rover radio frequency to be changed. The base station radio frequency may be configured to not interfere with other base stations operating in close proximity. The base station's frequency must match the rover radio's frequency. If they do not match, they will not communicate. Change the frequency if interference from neighbor rover radios occurs. The Satel Radio is typically used in Europe. A license to operate may be necessary to legally operate the Satel Radio. It is the responsibility of the user to obtain the license from the local authorities and to operate the system within the appropriate legal limits.

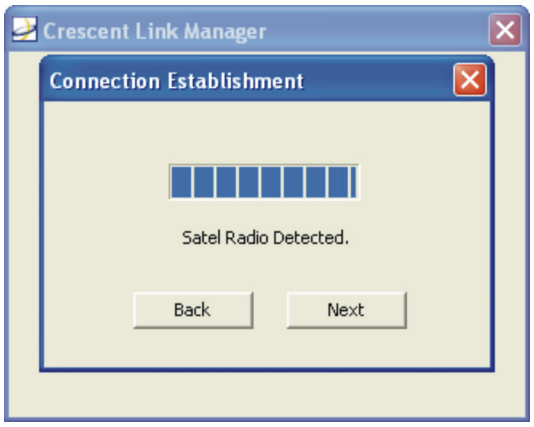
To use the Satel Base Radio Configuration:

1. Open the CLM program.

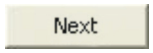
2. Click on the Radio Configuration option button.

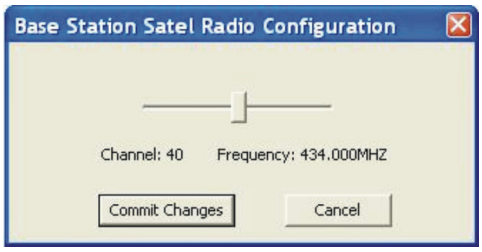


3. Click the Connect button to open the Connection Establishment window.



4. Click the Next button to open the Base Station Satel Radio Configuration window.





5. Move the slider left or right to select the desired frequency.

6. Click the Commit Changes button to accept the frequency.

Any changes to the base radio frequency must be made to the rover radio frequency through the CLM program, S2 service menu or the S3 Radio screen.

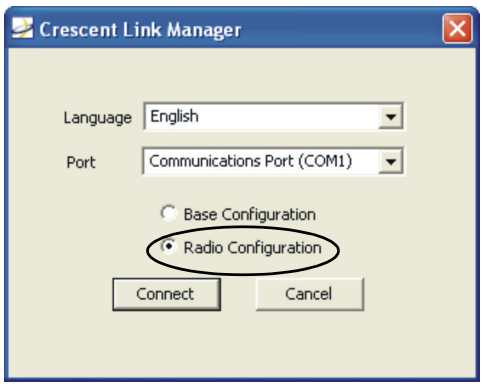
Satel Rover Radio Configuration

This feature allows the rover radio's frequency to be changed using the Satel.

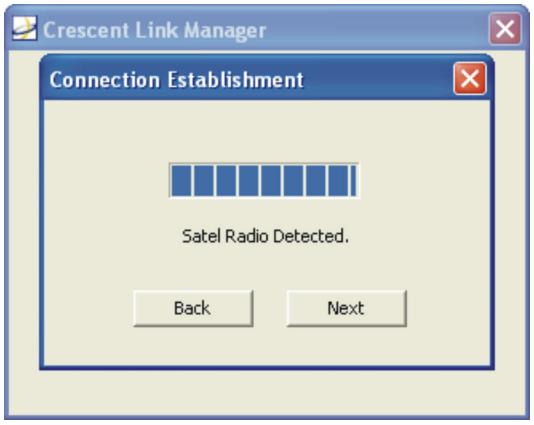
To change the frequency:

1. Connect the 9-pin serial cable to the rover receiver (S2 or S3).
2. Open the CLM program to the main menu.

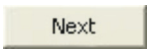
3. Click on the Radio Configuration option button.

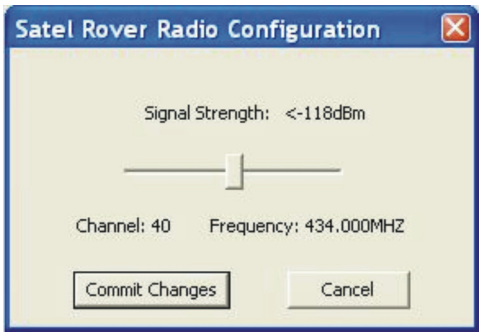


4. Click the Connect button to open the Connection Establishment window.



5. Click the Next button to open the Satel Rover Radio Configuration window.





6. Move the slider left or right to select the desired frequency.

7. Click the Commit Changes button to accept the frequency.

Configuring the Rover Radio using the S2 - The rover radio can also be configured using the S2.

Note: Proper installation is very critical to achieving high accuracy. Carefully install the local base unit, rover radio, S2 and GPS antenna according to their individual instructions. See the S2 User Guide for information on S2 installation. For radio configuration using the S3, skip to the next section on page 52.

1. Ensure that the base unit radio and the rover radio channel match by selecting the Radio Link ID in the S2 Service Menu. Scroll down to “Service Menu” in the Setup menu to get to the Radio Link ID.

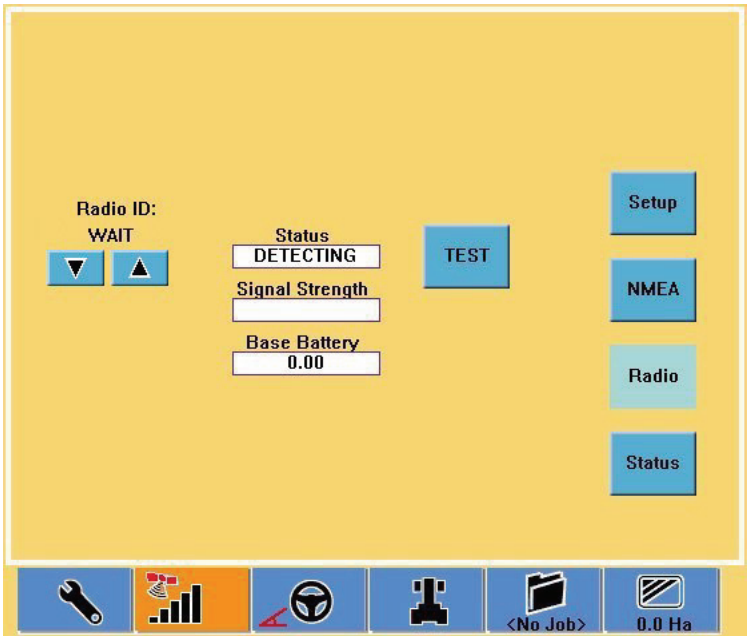
2. Change the Radio Link ID in the Service Menu if necessary.
3. Press the Enter button to set the change in the Radio Link ID.

Note: When entering the Radio Link ID menu item in the Diagnostics or Service Menu, the S2 stops receiving corrections from the local base unit until the Radio Link ID selection is exited. Staying in the Radio Link ID field for an extended period of time will cause the accuracy of the system to temporarily degrade. Remain in these menus only as long as necessary.

Configuring the Rover Radio Using the S3 - The rover radio can be configured using the S3.

Note: Proper installation is very critical to achieving high accuracy. Install the local base unit, rover radio, S3 and GPS antenna strictly according to their individual instructions. See the S3 User Guide for information on S3 installation.

1. Ensure that the base unit radio and the rover radio channel match by pressing the Radio button on the right side of the GPS Status screen. The Radio screen appears.



2. Change the channel by pressing the Down Arrow (v) or the Up Arrow (^) buttons in the Radio ID field on the Radio screen if necessary.

3. Press the Test button to see the Radio ID channel.

Note: When changing the Radio ID on the Radio screen, the S3 stops receiving corrections from the local base unit radio until you have made your selection.

Appendix

Frequently Asked Questions
Sales and Service Information

Frequently Asked Questions

Why does the S2 screen show the battery symbol and the pulsating tower but no RTK symbol?

The pulsating tower means the rover is communicating with the base station. For the RTK symbol to appear, the S2 must calculate an RTK solution which may take up to 15 minutes of constant communication with the base station. To achieve a high level of accuracy, the S2 must acquire an RTK solution (the RTK symbol will appear).

Can more than one tractor operate on one BaseLineHD simultaneously?

Yes, one BaseLineHD base station can supply correction to multiple machines, provided the machines are:

- Equipped with an RTK compatible receiver such as an S2 or S3
- Equipped with a rover radio set to the appropriate frequency
- Within radio range of the transmitting base

How long does the base station battery last?

A new BaseLineHD battery will operate for 24 hours continuously on a full charge. The operation time may decrease slowly with age and multiple charging cycles as with any battery.

When using the BaseLineHD, the passes seem to weave like a snake. What should be done?

First of all, check the S2 or S3 and the eDriveTC to make sure they are both setup according their respective owners manual. If all settings are within the specifications, then change the correction type to SBAS and reboot. Use straight guidance and test the eDriveTC performance. If the performance does not change then the eDriveTC needs to be fine tuned using the oil flow setting until smooth straight lines can be achieved.

Once the straight line performance is appropriate, then change the correction type back to LOCRTK and reboot.

It is best to fine eDriveTC performance prior adding RTK and starting fieldwork. The precision of eDriveTC steering is not affected by correction type.

How should the sway blocks on the 3-point form mounted equipment be adjusted for use with eDriveTC and RTK?

In general, it is best to have the sway blocks set as tight as possible depending on the operation. In uniform soil conditions, tighter sway blocks will prevent the implement from moving independent of the vehicle.

In rough non-uniform conditions, where eDriveTC is required to make more aggressive corrections, performance would be better with the sway blocks set looser than normal. This allows the tractor to move quickly back and forth without jerking the implement off-line.

For best performance it is important to install large evenly spaced coulters to help stabilize the 3-point mounted implement behind the vehicle.

The green light on the BaseLineHD is flashing, but the S2 or S3 cannot receive signals?

- Make sure the S2 or S3 and rover radio are less than 2.5 miles (4.0 kilometers) from the BaseLineHD with a clear line of sight.
- Check the rover radio cable connections.
- Double check the radio channel ID on the base unit using a PC and Crescent Link Manager. Make sure the channel ID on the base radio matches the channel ID on the rover radio. Confirm both radio channel ID's and reboot the base and the S2 or S3.

How can the previous guidance line be matched with the next operation?

If the previous operation left visible marks in the field, then these marks can be used to re-align the machine. To accomplish this, simply use the same A+Direction line used in the previous operation and use Snap A=B as needed to line up on your previous marks.

Does the BaseLineHD need to be put back in the same location every time? Why?

No. However, if achieving absolute repeatability is desired, and there are no visible marks in the field for re-aligning the machine, then it is critical for the same base location to be used.

See the previous question seven for more information achieving accuracy and repeatability.

Can the BaseLineHD on top of a center pivot, grain bin or vehicle instead of the tripod?

This can be done but it is not typically recommended. The BaseLineHD must have a stable installation platform to prevent movement during operation. In addition, one must consider problems with multi-path interference in any installation, temporary or permanent. The BaseLineHD could potentially get multi-path signals when installed near any reflective surfaces.

What accuracy is expected with the BaselineHD?

With BaseLineHD and RTK correction, the accuracy to the GPS receiver is typically less than 3 centimeters. However, this accuracy is not always achievable as seen “in-the-dirt.” The steering error of the machine and the movement of your implement across the line will dominate the in-the-dirt results. Typically, the eDriveTC can steer a standard MFWD tractor within 10 centimeters of the GPS line in good conditions with no external error factors.

Sales and Service Information

Contacting the Factory

U.S:	Canada:
Outback Guidance	Outback Canada
Hemisphere GPS	Hemisphere GPS
2207 Iowa Street	3244 Portage Avenue
Hiawatha, KS 66434	Winnipeg, MB R3K 0Y9
USA	CANADA

ONLINE: http://www.outbackguidance.com

PHONE: Monday Through Friday 8AM-5PM U.S. Central Time

- **U.S:** 1-800-247-3808 (Customer Service & Ordering)
- **Canada:** 1-866-888-4472 (Customer Service & Ordering)
- **From all other countries:** 01-785-742-2976

E-MAIL: 24 hours/7 days a week, your inquiry will receive a response from one of our Customer Support Representatives within one business day.

- **Sales:** outbacksales@outbackguidance.com
- **Customer Service:** outbackcs@outbackguidance.com
- **Website Feedback:** outbackweb@outbackguidance.com

FAX: 24 hours/7 days a week, your inquiry will receive a response from one of our Customer Support Representatives within one business day.

- 1-785-742-4584

U.S. REGIONAL SALES OFFICES:

- Outback Nebraska - Hastings, NE 1-877-777-6142
- Outback Texas - Hewitt, TX 1-866-857-4448
- Outback Dakotas - Watertown, SD 1-888-825-6031
- Outback Illinois- Jacksonville, IL 1-888-477-6070

Outback BaseLineHD Extended Service Plan (ESP) Summary

U.S. and Canada Only

Item	Standard Term	Extended Term
Price	Free	$299
Term	1 Year ESP	3 Year ESP (Standard +2 Years)
Exchange Service	Yes	Yes
Software Revision Updates	No Charge	No Charge
Software Revision Installation	Provided by Customer or OGC™	Provided by Customer or OGC™
Damage During Shipments	Covered	Covered
Damage After Customer Receipt	Not Covered	Not Covered
Shipping, Outback to Customer	Outback Paid (Next Day Air & Saturday* Delivery)	Outback Paid (Next Day Air & Saturday* Delivery)
Shipping, Customer to Outback	Outback Paid (Ground Service)	Outback Paid (Ground Service)

* Saturday delivery may not be available in all service areas.

Limited Outback BaseLineHD Extended Service Plan

The Outback BaseLineHD ESP (U.S. and Canada only) applies only to the non-software portions of the electronic components of the product, including the console and related cables. Coverage for the mechanical portions of the Outback BaseLineHD is described in the warranty notice. The limited plan term is one-year standard, or three-years extended if purchased at the time of the original order, beginning on the date of invoice to the original purchaser.

Damage caused by shipping the product(s) to the original purchaser is covered under this limited plan. Otherwise, this limited plan does not cover damage due to external causes, including accident, abuse, misuse, problems with electrical power, servicing not authorized by Hemisphere GPS, usage not in accordance with product instructions, failure to perform required preventive maintenance and problems caused by use of parts and components not supplied by Hemisphere GPS.

This limited plan does not cover any items that are in one or more of the following categories: software (except for Hemisphere GPS authorized revision updates), external devices (except as specifically noted), accessories or parts added to an Outback BaseLineHD system after the system is shipped from Hemisphere GPS, accessories or parts that are not installed in the Hemisphere GPS factory.

Hemisphere GPS will provide, on an exchange basis and subject to the Hemisphere GPS Exchange Policy in effect on the date of the exchange, replacement parts (up to and including a complete Outback BaseLineHD system) for the Outback BaseLineHD product(s) covered under this limited plan when parts require replacement. To request service, you must call Hemisphere GPS (U.S. 800-247-3808, Canada 866-888-4472) or go to outbackguidance.com for information, within the plan period. If replacement is required, Hemisphere GPS will issue a Return Material Authorization Number and will ship by UPS Next Day Air & Saturday Delivery the replacement part(s) within 1 business day. You must ship by UPS Ground Service collect, the original product(s) back to

Hemisphere GPS in this packaging. For Canadian customers, Saturday delivery is not available and the shipping carrier is Purolator.

In any instance in which Hemisphere GPS issues a Return Material Authorization Number, Hemisphere GPS must receive the original part(s) prior to the expiration of the plan period in order for the replacement(s) to be covered by the limited plan. Failure to return original part(s), for which replacement(s) have been sent, within 30 days of initial shipment, will result in the issuance of an invoice for the cost of the sent part(s). Failure to pay the invoice, or return the part(s), will result in cancellation of this limited plan.

Hemisphere GPS owns all parts removed from repaired products. Hemisphere GPS uses new and reconditioned parts made by various manufacturers in performing service repairs and building replacement products. If Hemisphere GPS repairs or replaces a product, its plan term is the remainder of the limited plan term.

These provisions apply to the Limited Outback BaseLineHD Extended Service Plan only. Hemisphere GPS reserves the right to make improvements in design or changes in specifications at any time, without incurring any obligation to owners of units previously sold. No one is authorized to alter, modify or enlarge this Limited Outback BaseLineHD Extended Service Plan nor the exclusions, limitations, and reservations.

Appendix

www.hemispheregps.com
e-mail: info@hemispheregps.com