

## Carlson BRx5 GNSS Receiver Base/Rover Quick Start Guide

### Internal UHF Radio Configuration

This Quick Start Guide outlines the steps to follow using SurvCE/SurvPC 4.01 or higher to setup and configure the BRx5 GNSS receiver as a base and rover using the internal UHF radios for communication.

#### **Install the Batteries**

Before configuring the BRx5, you will need to install the two batteries in each unit. To install a battery:

1. Remove the battery tray by squeezing the thumb lever down and with your fingers placed under the lip on the bottom of the battery tray, pull the battery tray Straight out from Brx5. Some users find it easier to turn the BRx5 upside down and use their fingers to pull the battery tray release lever up while hooking the thumb on the battery tray lip and pulling out.



2. If there was already a battery installed, remove it from the tray.



3. Insert the new (charged) battery into the battery tray making sure the end of the battery with the leads (on top) points away from the tray as shown below.



4. Replace the tray, making sure the tray snaps into place. Repeat this process for the other battery tray.

#### **Powering the BRx5 On and Off**


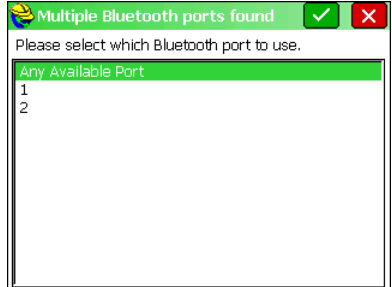
**Power On:** Press and hold the **Power** button until the S320 powers up (until you hear one beep).

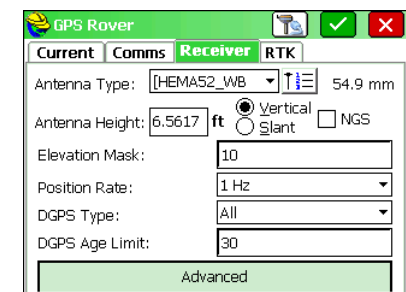
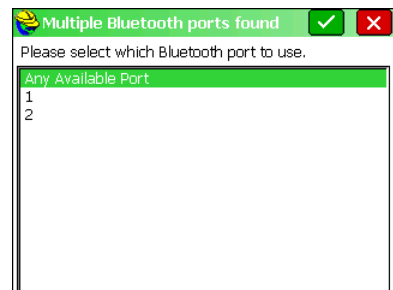
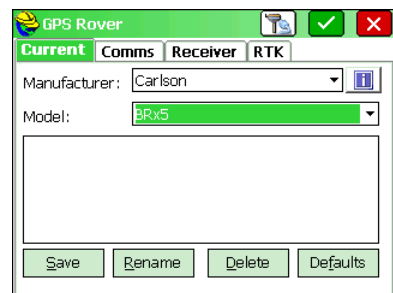
**Power Off:** Press and hold the **Power** button for 3 seconds (until you hear three beeps or see the External Power Status LED (#4) flash).

**Note:** When you power on the BRx5 the LEDs go through a 'heartbeat' sequence; during this time the modules power up and the devices initialize.

**Note:** This quick start guide configures the Rover first and then configures the Base receiver. This order was chosen as the simplest way to insure that a first-time user properly configures and pairs both the Rover and the Base receiver to the data collector using SurvCE. In actual day-to-day field work, the experienced surveyor will typically set up the base first and then rover. While experienced SurvCE users may successfully use different steps to configure the base and rover, it is strongly recommended that first-time users of the BRx5 follow the steps outlined below.

### **Rover Receiver Setup**

- 1) Select the correct radio antenna (Three ranges are supplied: 410-430Mhz, 430-450Mhz, 450-470Mhz) for your licensed frequency. The 450-470Mhz range is the most common and that is label shown on the right. Thread one of the antennas onto the BRx5 receiver which will be used as the Rover.
 
- 2) Power on just the Rover receiver by holding the power button until the lights show on the front then release it. *Leave the other receiver powered off.*
- 3) Run SurvCE/SurvPC 4.01 or higher and go into Equip / GPS Rover
- 4) Set it to Manufacturer: Carlson and Model: BRx5
- 5) Tap the Comms tab and set it to Type: Bluetooth and tap the “wrenches” icon next to “BT Type: Windows Mobile”
- 6) Tap “Find Device” and tap on “HGPS S320 xxxxxxxx” (xxxxxxx is the serial number of the BRx5 and can be found on the bottom on the receiver if you need to verify it) to highlight it and then tap Green Check.
- 7) Tap the Green Check again to use “**Any Available Port**”
 
- 8) Tap the Bluetooth icon in the top Right to bond to the Rover Bluetooth. If this is the first time you have paired the data collector with this BRx5, you will be asked if you want to add this receiver to your device list. Tap “Yes” to add this receiver to your device list. Enter “0000” (four zero’s) for the pass code, if prompted (only prompted the first time you pair the data collector with the BRx5). Tap Next. Tap Done if notified that the BRx5 was successfully added to the device list.
- 9) Tap the Receiver tab and type in **6.5617** feet for the 2 meter fixed height pole (you can also enter 2M for a 2 meter height) and tap next to “**Vertical**”.



- 10) Tap the RTK tab and set Device: to “**Internal nL400 Microhard**” then tap the “**wrenches**” icon to the right to configure the internal radio.



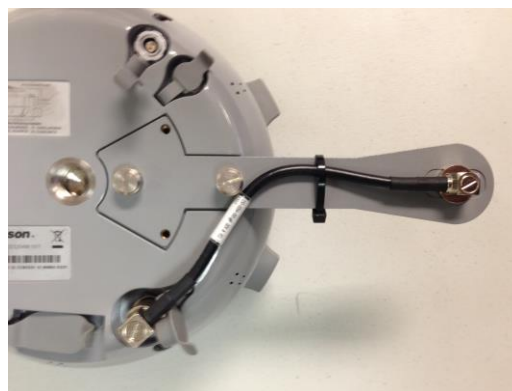
- 11) The default settings are: Power - 1 watt, Frequency - 465.00 and Radio Mode - PC1 (FEC On). Configure the radio settings as desired, setting the Frequency to your licensed Frequency. The lower the power setting, the longer the battery life. Generally the Rover power is set lower than 1 watt, 500 mw is a good choice for the first time user. Tap the Green Check.

- 12) Once you are back in the RTK tab tap the Green Check again to save your Changes

- 13) **Power off the Rover receiver** by holding down the power button until the LED flashes red. Set it aside before continuing to the next step

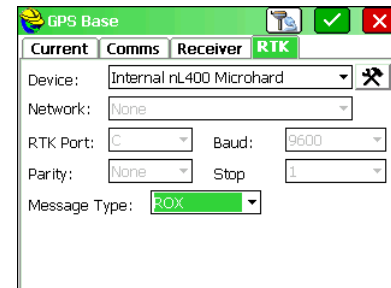
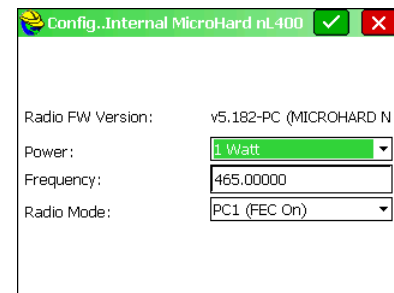
### Base Receiver Setup

- 1) Pick up the **second GPS receiver** and attach the Antenna Bracket to the bottom of the BRx5 as shown then connect the Antenna Bracket cable to the BRx5 antenna connector. Using the antenna marked the same frequency range as the Rover antenna; attach the antenna to the connector on the end of the Antenna Bracket. (Note: The antenna can also be attached directly to the BRx5 when used as a Base. The Antenna Bracket will typically provide improved reception and range. If you are not using the antenna bracket, attach the antenna directly to the BRx5.).



- 2) **Power on the GPS Base** receiver
- 3) Configure the base using SurvCE by tapping “GPS Base” in the Equip tab and then set the Manufacturer as Carlson and the Model as BRx5.
- 4) Tap the Comms tab and set it to Type: Bluetooth and tap the “wrenches” icon next to “BT Type: Windows Mobile”

- 5) Tap “Find Device” and tap on “HGPS S320 xxxxxxx” (xxxxxxx is the serial number of the BRx5 and can be found on the bottom on the receiver if you need to verify it) to highlight it and then tap Green Check.
- 6) Tap the Green Check again to use “**Any Available Port**”
- 7) Tap the Bluetooth icon in the top Right to bond to the Rover Bluetooth. If this is the first time you have paired the data collector with the BRx5 base, you will be asked if you want to add this receiver to your device list. Tap “Yes” to add this receiver to your device list. Enter “0000” (four zero’s) for the pass code, if prompted (only prompted the first time you pair the data collector with the BRx5). Tap Next. Tap Done if notified that the BRx5 was successfully added to the device list.
- 8) Tap the Receiver tab and type in **your Slant Base antenna height** and tap next to “**Slant**”
- 9) Tap the RTK tab and set Device: to “**Internal nL400 Microhard**” then tap the “**wrenches**” icon to the right
- 10) The default settings are: Power - 1 watt, Frequency - 465.00 and Radio Mode - PC1 (FEC On). Configure the radio settings as desired, setting the Frequency to your licensed Frequency. The radio settings should be the same as previously set for the Rover. Tap the Green Check
- 11) Set the Message Type: to “**ROX**”. The other message types are “CMR” and “RTCM V3.0”. ROX can only be used with the BRx5 or Hemisphere S320 receivers. CMR and RTCM can be used with most other receivers.
- 12) Tap the **Green Check** to initialize your Base then tap “Read from GPS” to take 10 readings, which will be averaged to establish your Base position. Continue with the SurvCE prompts to finish configuring the Base.
- 13) **Power on your GPS Rover.** In SurvCE tap GPS Rover in the Equip tab, and then tap the Green Check to reconnect to and initialize your Rover. Your BRx5 receiver is now receiving RTK corrections from your BRx5 base (The leftmost LED on the Brx5 will be flashing when receiving RTK corrections from the Base).



The BRx5 GNSS receivers are now configured as a Base/Rover pair and ready to collect points using SurvCE. SurvCE provides many additional options for configuring the BRx5 units, details of which can be found in the BRx5 User Guide and the SurvCE manuals. Experienced SurvCE users may successfully follow a different workflow than described in this document.

The BRx5 control panel overview below describes the LED and buttons in the control panel.

### BRx5 Control Panel Overview



Diagram	Item	Name Description
A	Power button	<ul style="list-style-type: none"> <li>• If unit is Off, press and hold until unit powers up (until you hear one beep)</li> <li>• If unit is On, press and hold for 3 seconds (until you hear three beeps) to power off the unit</li> </ul>
B	Select button	(for Bluetooth/UHF/GSM/SD modules) Allows you to review module status or change the status (power on/off) of a module
1	UHF/GSM radio	<ul style="list-style-type: none"> <li>• Off – UHF radio or GSM module is OFF; or no RTK status LED position computed</li> <li>• On (yellow) – floating point RTK position achieved</li> <li>• On (green) – fixed ambiguity RTK position achieved</li> <li>• Blink (green) – UHF radio or GSM module transmitting/receiving data</li> <li>• Pulse (red) – error condition with UHF radio or GSM Module</li> </ul>
2	GPS position status LED	<ul style="list-style-type: none"> <li>• Off – no position</li> <li>• On (yellow) – valid position</li> <li>• Blink (yellow) – operating as a base station and converging on reference coordinates</li> </ul>
3	DGPS position status LED	<ul style="list-style-type: none"> <li>• Off – no differential corrections available</li> <li>• On (green) – differentially corrected position computed</li> </ul>
4	External power status LED	<ul style="list-style-type: none"> <li>• Off – external power not present</li> <li>• On (red) – external power present and in use</li> </ul>
5 and 6	Battery status LED	<ul style="list-style-type: none"> <li>• Off – battery not present</li> <li>• On (green) – battery charge full</li> <li>• On (yellow) – battery charge &lt; 50%</li> <li>• On (red) – battery charge depleted</li> <li>• Blink – battery in use</li> </ul>
7	Bluetooth status LED	<ul style="list-style-type: none"> <li>• Off – Bluetooth inactive</li> <li>• On (blue) – active Bluetooth connection</li> <li>• Blink (blue) - Bluetooth active and transmitting/receiving data</li> </ul>
8	SD logging status LED	<ul style="list-style-type: none"> <li>• Off – SD card not inserted</li> <li>• On (yellow) – SD card inserted, not logging data</li> <li>• Blink (yellow) - SD card inserted and reading/writing data to SD card</li> <li>• Pulse (yellow) at 5 Hz - SD card inserted and low free space</li> </ul>