

Using Garmin GPS with Differential Receiver

To collect GPS waypoints with real-time differential correction (DGPS):

1. Connect the GBR23 Beacon Receiver to the battery pack with the white data cable. To avoid draining the batteries, unplug the unit when finished.
2. Connect the GPS unit to the battery pack with the black data cable. (You won't actually use the battery to power the GPS unit, which has its own AA batteries; you just need to connect the cables with the DGPS receiver.)
3. Go to the **Navigation** menu from the Garmin's main Setup menu (see pp. 39-41 in Garmin manual).
 - a. Select **hddd.dddd**^o (latitude and longitude in decimal degrees) as the position format and select **NAD83** (North American Datum 1983) as the datum. We will actually use the UTM (Universal Transverse Mercator) projection instead of latitude/longitude, but this format seems to be the most reliable way to capture GPS coordinates, and can be subsequently converted to other projections without much difficulty. This setting should remain the same unless you change it, so you should only have to do it once.
 - b. You don't need to worry about the CDI Scale or Heading settings, but make sure that the **units** are set to **meters**.
4. Go to the **Interface** menu from the Garmin's main Setup menu (see pp. 42-43 in Garmin manual).
 - a. Select **RTCM/NMEA** as your transfer mode. RTCM stands for Real Time Correction Measure. NMEA stands for National Marine Electronic Association and refers to a data transfer protocol originally developed for marine instruments.
 - b. Select **NMEA 0183 2.0** (for NMEA protocol 0183, version 2.0) as the NMEA setting and **4800 baud** as the transfer rate.
 - c. For the base station that we are using (Point Blunt), the **frequency** field needs to be set to **310 kHz** and the **bit rate** should be **200**. If you are outside the Bay Area, you will need to find out the name of the nearest base station (see <http://www.ngs.noaa.gov/CORS/Dgps.html>) and look up the frequency and bit rate settings on the Garmin DGPS Beacon Reference Card.
5. When you have set the proper settings, you should see a "Receiving" message on the Interface Setup screen. If you go back the satellite status page, it should say "DGPS" instead of "NAV" in the upper left-hand corner.
6. Mark your waypoint in the standard fashion (see pp. 23-24 in Garmin manual) and unplug the DGPS beacon when you are finished. The Garmin unit will not store differential correction information for your waypoints, so you will have to record in your notebook whether your waypoint was DGPS or not.