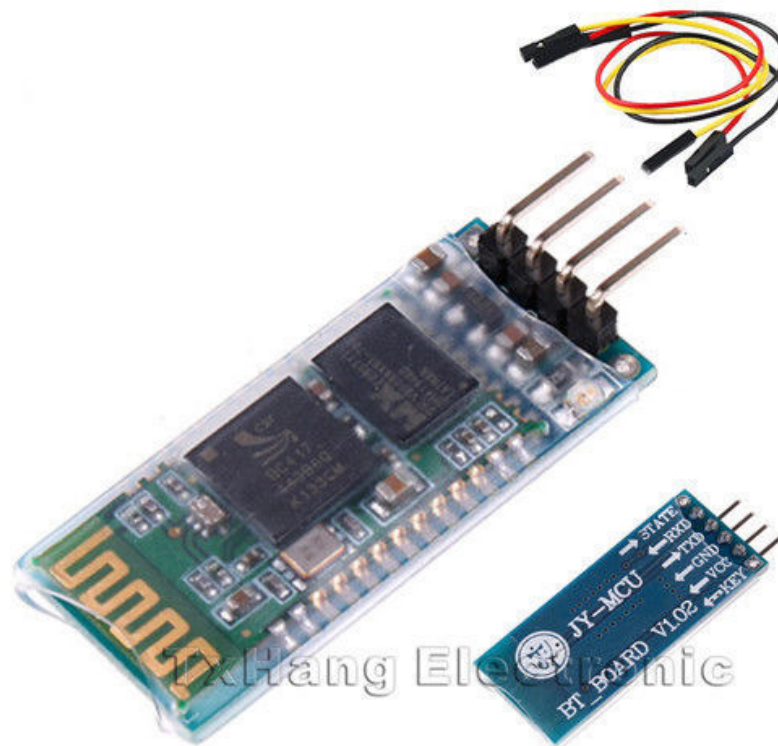


Connecting a HC-06 Bluetooth Module to the Eggfinder RX

The standard Eggfinder RX receiver comes with a USB cable that's designed to plug into a Type I USB connector, typically found on laptop computers. There are adapters available so you can use it with a mini/micro USB connector, common on Android and Windows tablets. The advantage of the cable is that your computing device can provide the power for the receiver, as well as the data connection, so it's a very low cost option. The disadvantage is that... well, it's a wire, and wires can come loose.

As an alternative, instead of the USB data cable you can provide power to the unit with some kind of battery pack (a 2S/7.4V LiPo pack works well, as does a 4xAA battery box) and make the connection to your device wirelessly with a readily-available HC-06 Bluetooth module. Using Bluetooth and the appropriate software (more on that later), you can connect your Eggfinder RX to your Windows or Android tablet/phone unfettered by wires. You can find these modules for about \$6 on eBay, they're pretty much universal. (Sorry, it won't work with Apple devices... they don't support external Bluetooth and/or GPS devices. Rats.)

Below is a typical HC-06 Bluetooth module, they usually have four pins: VCC, GND, TXD, and RXD. (One some of them, the VCC pin may be marked 3.3V or 3.6V). They are almost always shipped with a convenient default of 9600 baud, 8 bits, no parity, and 1 stop bit. Since these are the exact same settings as the RF module, it's a simple plug-in upgrade.



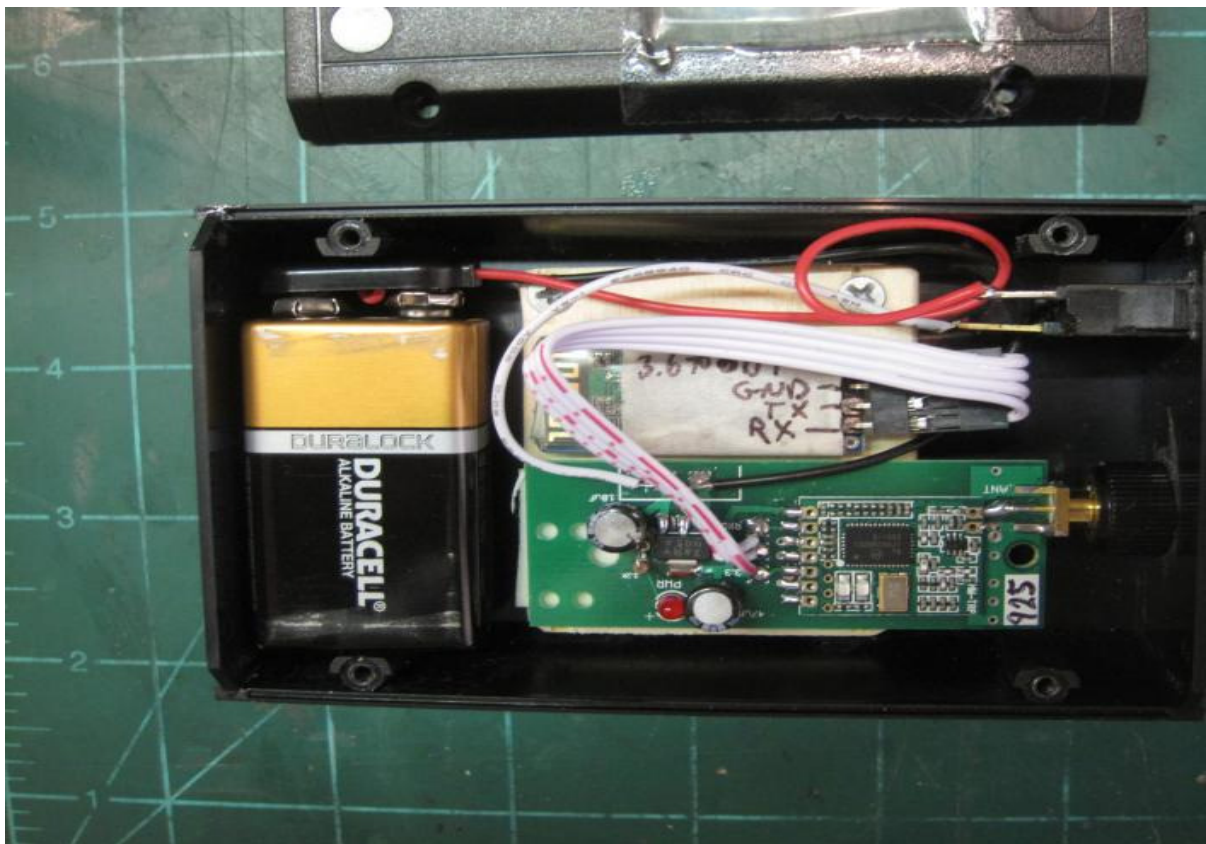
To connect the HC-06, you'll use the three pads next to the RF module on the Eggfinder RX. Connect the HC-06 to your Eggfinder RX as follows:

<u>Eggfinder RX</u>	<u>HC-06</u>
3.3V	VCC (or 3.3V/3.6V if it's labeled that way)
GND	GND
RXD	RXD
(not connected)	TXD

You'll also need to connect a battery pack of some kind, preferably with some kind of switch, minimum 4.5V. You can use a 2S/7.4V LiPo pack, we recommend at least 750 mA/H since the Eggfinder RX with the HC-06 will draw over 100 mA. You'll connect the battery leads to the BATT +/- pads, just like you would if you were going to use the USB cable.

Finally, you'll want to put it in some kind of box, there are plenty of them around but the Radio Shack project boxes are easy to come by if you're in a hurry.

Here's a picture of an Eggfinder RX with the HC-06 in a box, courtesy of Wayne Comfort from TRAPHX:



You can't really see it from this picture, but there's a clear window opposite the RF module so you can see the LEDs. He used a 9V battery, that's OK but you want to remember that a 9V battery is only going to be good for a few hours' use, and you don't want it to go dead before you can find the rocket. It fits in a nice small package, though...

OK, now that you have the hardware part taken care of, it's time for the software...

Software for a Bluetooth Interface

Just like you needed the Prolific PL2303 driver for the USB-Serial cable, you'll need some kind of driver software for the Bluetooth connection too. In the case of Windows, Microsoft has conveniently provided the Bluetooth-serial driver for you. With an Android, you'll need to download the Bluetooth GPS app so that the external Bluetooth GPS device can be recognized and replace the internal GPS in your Android device.

Windows

For Windows, you'll need to select Bluetooth Devices (NOT Bluetooth Networking!) Turn on your Eggfinder TX transmitter and your Eggfinder RX receiver with the HC-06 module, you'll see the LED on the HC-06 blink in sync with the Eggfinder TX transmitter's LED. Open the Bluetooth Devices application, and run through the Add Devices... wizard. If your Windows device isn't set to be discoverable, go ahead and turn it on for now. You should see an "HC-06 device", when it asks for a Passkey, enter "1234" (the default for HC-06 modules). Select Finish, and your device is set up.

You may also optionally need to change the COM port that is assigned to the HC-06, depending on the GPS mapping software that you're using with your Windows device. In the case of MapSphere, it doesn't matter because it will pick up whatever port is streaming the NMEA GPS data, but some other software programs want you to specify the COM port explicitly, so take note of the port that's being used by the HC-06.

We won't go into the use of MapSphere here since it's covered at length in the Eggfinder User's Guide, the only difference is that the COM port comes from a Bluetooth Device COM port instead of a USB COM port.

Android

Most Android devices have a GPS built in, so they have native support for GPS. There are a zillion navigation programs for Androids, basically designed to turn your device into a moving map/breadcrumb tracker similar to a Garmin. What you need to do is to replace the GPS module in your Android with the GPS feed from your Eggfinder so that it tracks your rocket instead of your Android device's GPS.

Fortunately, there is an app for Androids that does just that, it's called Bluetooth GPS. Look it up on the Google App Store, and install it. After you run it for the first time, you'll need to pair your Android with the HC-06 module; the Passkey will be "1234". When you connect, you'll be able to see the latitude/longitude from your Eggfinder, the satellite map, the NMEA raw data log, and a map of your Eggfinder's location (if you have Internet access).

Now that you have your Eggfinder connected to your Android device, you'll need some kind of tracking/mapping software. What you need to do is to have the software track your Eggfinder's position in relation to the internal GPS, and give you a track to follow.

If you have a phone, you can try Polaris Navigator; it works very well but unfortunately won't install on some tablets. There is also a program that was designed especially for this kind of thing, it's called Rocket Locator. We've used it, it works OK but it's a little quirky; you need to make sure that the internal GPS is turned on after you get the landing coordinates.