Oceanic Geo2.0 DIY data cable

So, after a long break, I decided to get back into scuba diving, and after a few dives, celebrated by getting my own computer. I looked at the cost of the official data cable and then spent roughly half that on blood pressure medication.

So, here's how you make your own.   Before you do anything, disclaimer time. I've done this. It works for me fine for download. I've not tried to upload settings to my device, and I have no actual official documentation on how this works. I take no responsibility for any damage you cause to yourself, others, your property or anything else, directly or indirectly, to the maximum extent permissible by law. If you mess this up, you can break things. If I've messed this up, you can break things. This is all at your own risk. I take no responsibility for errors in this document.

Firstly - you'll need a 3.3V USB-UART cable based on the FTDI FT232 platform. I used this one from one of my old Arduino projects. Note that it has a 5V Vcc (power supply) line. That's fine - you won't be connecting it. The IO levels are 3.3V, which is what we want. Make sure you don't get a version with 5V IO levels.
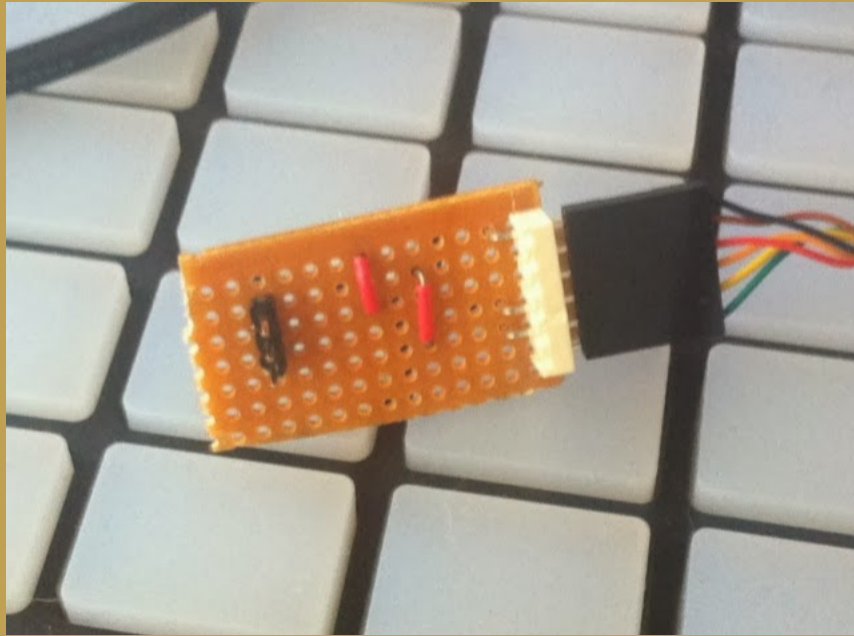
Next, check the pinout. This is the pinout for my cable. Yours will probably differ so make sure you check from the source where you got your cable - don't just rely on my pinout.

The lines you want to connect are TXD (Transmit Data), RXD (Receive Data) and GND (Ground). All the others should be cut off and you should make sure that they can't touch.   If you connect the Vcc wire to the wrong thing, you can damage either your dive computer, or your computer's USB port. So, for this cable TXD is the orange wire, RXD is the yellow wire, and GND is the black wire.

Now all you need to do is to make up some kind of connector that connects the top pin on the back of your GEO2 to RXD, the middle pin to GND and the bottom pin to TXD. Orient as below.

To RXD
To GND
To TXD

data port

The spacing between these pins is 0.1" (2.54mm) so you should be able to get a wide variety of different options (even a big clothes peg). I used a bit of veroboard with pin headers because I still want to use my cable for Arduino stuff, but I'll leave it to your option how you actually connect it.
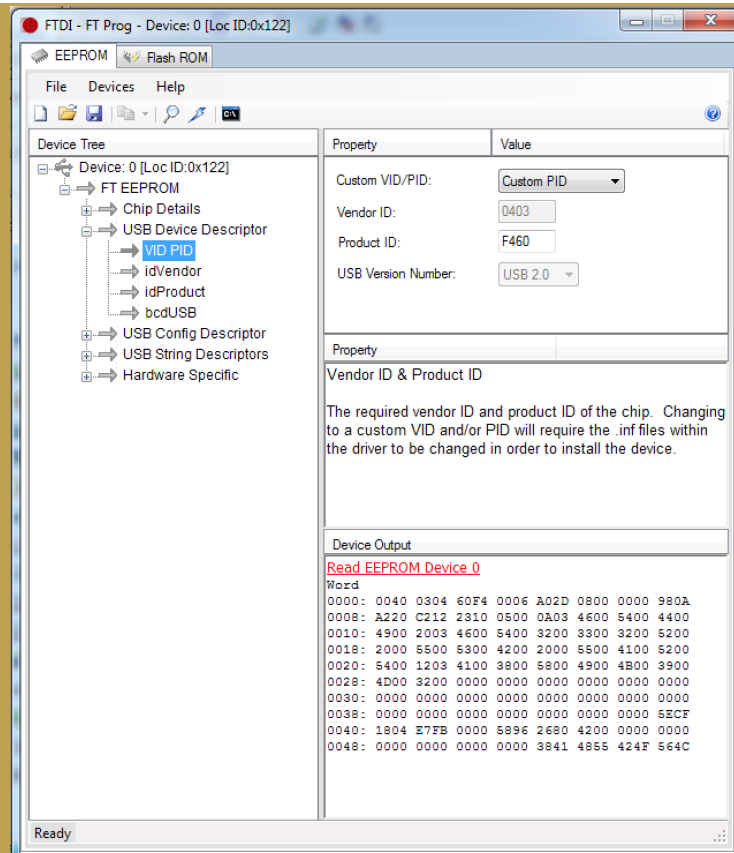
Total cost - about $15 including the FTDI cable.

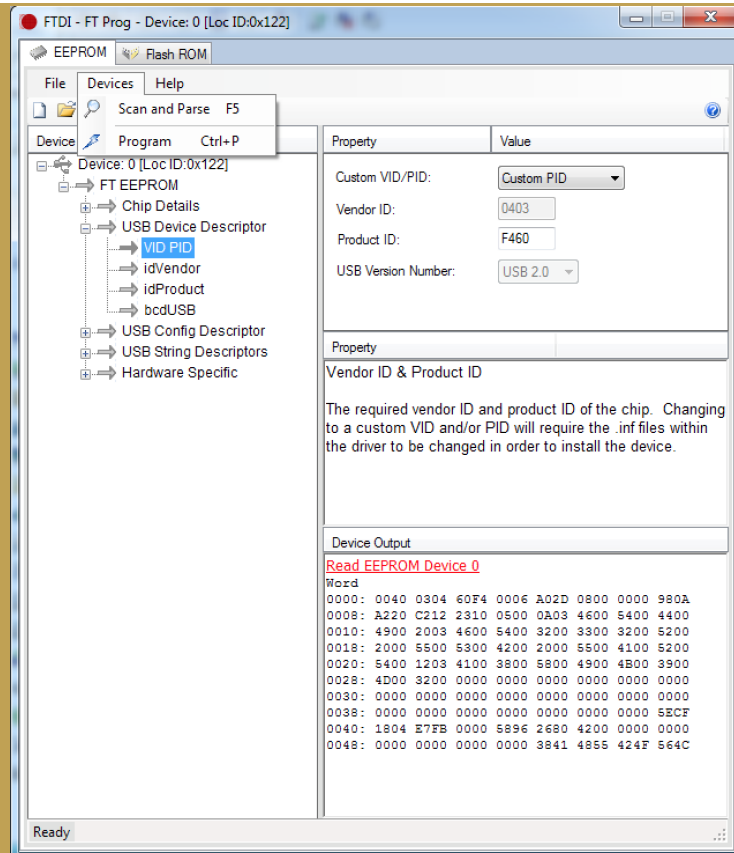## Making your cable ID just like the official one:
If you use Oceanic's OceanLog program and drivers (and there's heaps better programs out there), you'll need to adjust the product ID on the cable to F460. You probably don't need to do this for third party logging programs; at least the DiveLog DT program on Mac doesn't require you to do this step - it uses the default FTDI Virtual Com Port drivers, as does MacDive.

To do this, first download the FTDI native drivers for your particular Windows version from http://www.ftdichip.com/Drivers/D2XX.htm and install them. Make sure you know whether you've got a 32 bit or 64 bit version of Windows.

Next, download the FTDI programming utilities (FT_Prog) from http://www.ftdichip.com/Support/Utilities.htm and install them.   Run and you should see the following screen.   Navigate through the tree to USB Device Descriptor -> VID/PID and set Custom VID/PID to Custom PID, and change Product ID to F460.   Your screen should look like below.   DO NOT CHANGE ANYTHING ELSE IN THIS UTILITY, YOU CAN BRICK YOUR CABLE, DAMAGE YOUR GEAR, ETC

Finally, reprogram your cable by selecting Program from the Devices menu (or click the lightning bolt)

FTDI - FT Prog - Device: 0 [Loc ID:0x122]

EEPROM | Flash ROM

File | Devices | Help

Scan and Parse   F5
Program   Ctrl+P

Device: 0 [Loc ID:0x122]
  FT EEPROM
    Chip Details
    USB Device Descriptor
        VID PID
        idVendor
        idProduct
        bcdUSB
    USB Config Descriptor
    USB String Descriptors
    Hardware Specific

Property	Value
Custom VID/PID:	Custom PID
Vendor ID:	0403
Product ID:	F460
USB Version Number:	USB 2.0

Property

Vendor ID & Product ID

The required vendor ID and product ID of the chip. Changing to a custom VID and/or PID will require the .inf files within the driver to be changed in order to install the device.

Device Output

Read EEPROM Device 0
Word
0000: 0040 0304 60F4 0006 A02D 0800 0000 980A
0008: A220 C212 2310 0500 0A03 4600 5400 4400
0010: 4900 2003 4600 5400 3200 3300 3200 5200
0018: 2000 5500 5300 4200 2000 5500 4100 5200
0020: 5400 1203 4100 3800 5800 4900 4B00 3900
0028: 4D00 3200 0000 0000 0000 0000 0000 0000
0030: 0000 0000 0000 0000 0000 0000 0000 0000
0038: 0000 0000 0000 0000 0000 0000 0000 5ECF
0040: 1804 E7FB 0000 5896 2680 4200 0000 0000
0048: 0000 0000 0000 0000 3841 4855 424F 564C

Ready

You'll now need to go and install the official Pelagic systems drivers off the Oceanic website, since you've just changed how the cable identifies itself.   It should detect as 2002 Design, Inc. USB Download Interface