CATNIP II – Electronics Upgrades

Part 1

I purchased and commissioned CATNIP II more than 10 years ago. Prior to my first launch, I did my very first electronics upgrade. The VHF radio that came with the boat did not have Digital Selective Calling (DSC). I replaced it with a Raymarine VHF radio with DSC. A year or two later, I installed a Lowrance HDS8 sonar/chartplotter. A large color screen was a giant improvement over the small grey scale screen on the original Lowrance LMS-240.

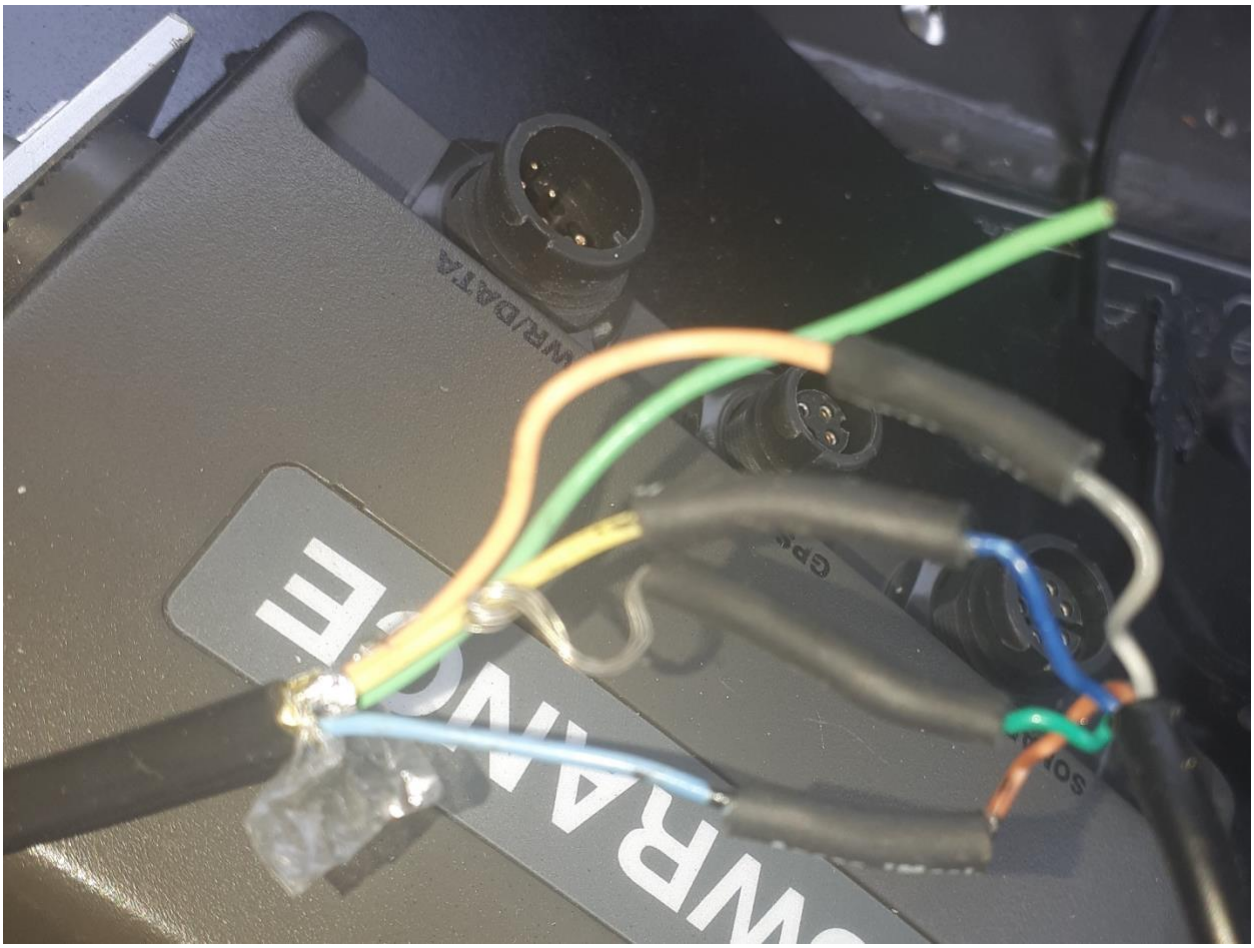
A few years ago, I replaced the Raymarine VHF radio with a Standard Horizon GX2150. In addition to DSC, this radio receives Automatic Identification System (AIS) signals. By connecting it a chartplotter, AIS equipped vessels are displayed directly on the chartplotter screen. This is a big help in avoiding commercial vessels. The GX2150 also includes an automated fog signal using the loud hailer - a great convenience when navigating in poor visibility.

My latest electronics upgrade is replacement of my HDS8 sonar/chartplotter. Although several generations of technology behind current units, it still works perfectly and does everything I need it to do. So why upgrade? Two words - touch screen.

These days, touch screens are everywhere. They are on our phones and tablet computers. We find them on bank machines and gas pumps. Touch screens are reliable and user friendly. The HDS8 uses an Up/Down/Left/Right rocker switch to move the cursor around the screen. This requires considerable time and the operator's complete attention. Talk about distracted driving!! It also has Soft Keys - buttons that change function depending on what is on the display. Every spring, I have to refresh my memory as to which button does what when. With a touch screen, all functions are can be accessed at any time with a touch or two. Larger, sharper screens are kind to aging eyes.

The final upgrade trigger was a problem with the Standard Horizon VHF radio. The channel change knob suddenly quit working. Changing channels using switches mounted on the microphone was a nuisance. When I hauled the boat in the fall of 2018, repair or replacement of the VHF radio was at the top of the to-do list.

I don't trust crimp connectors, even the marine grade variety. When I installed the radio, I made connection to the HDS8 by soldering the wires. To remove the radio I had to take off the dash plate and cut the wires.



With the boat in storage, I started investigating radio repair. Naturally the warranty was over. Radioworld directed me to Standard Horizon in the USA. At first it looked like l would have to ship the radio to California for repair. This would involve all sorts of hassles with international shipping and customs. I wasn't sure it would be worth the effort and expense. As it turned out, there is a Standard Horizon repair depot in BC. At the end of November 2018, I boxed up the radio, crossed my fingers and shipped it to Vancouver.

With the dash and wiring completely taken apart, there would never be a better time to upgrade the sonar/chartplotter. Just after Christmas, I found a Lowrance HDS9 Carbon on sale at Radioworld. It has a touch screen that slightly larger than the HDS8. It is also compatible with my existing sonar transducer and electronic charts. This is a significant saving compared to purchasing a different brand that might not be compatible.

A while ago I built a rig to run my HDS8 for demonstrations in Electronic Navigation classes. It turned out to be compatible with the HDS9. I was able to power up my new toy and begin to familiarize myself with it. Initially it seemed pretty complex but the touch screen and intuitive controls make it quite easy to use. I verified that my electronic chart was indeed compatible. I also transferred all of my waypoints from the HDS8 to the HDS9.

I considered keeping the HDS8 and connecting it to the HDS9 with an Ethernet cable. My idea was to use one for the chart and the other for sonar. I went as far as buying a cable and verifying that the two could be connected. In the end I decided not to do it. The deciding factor was space.

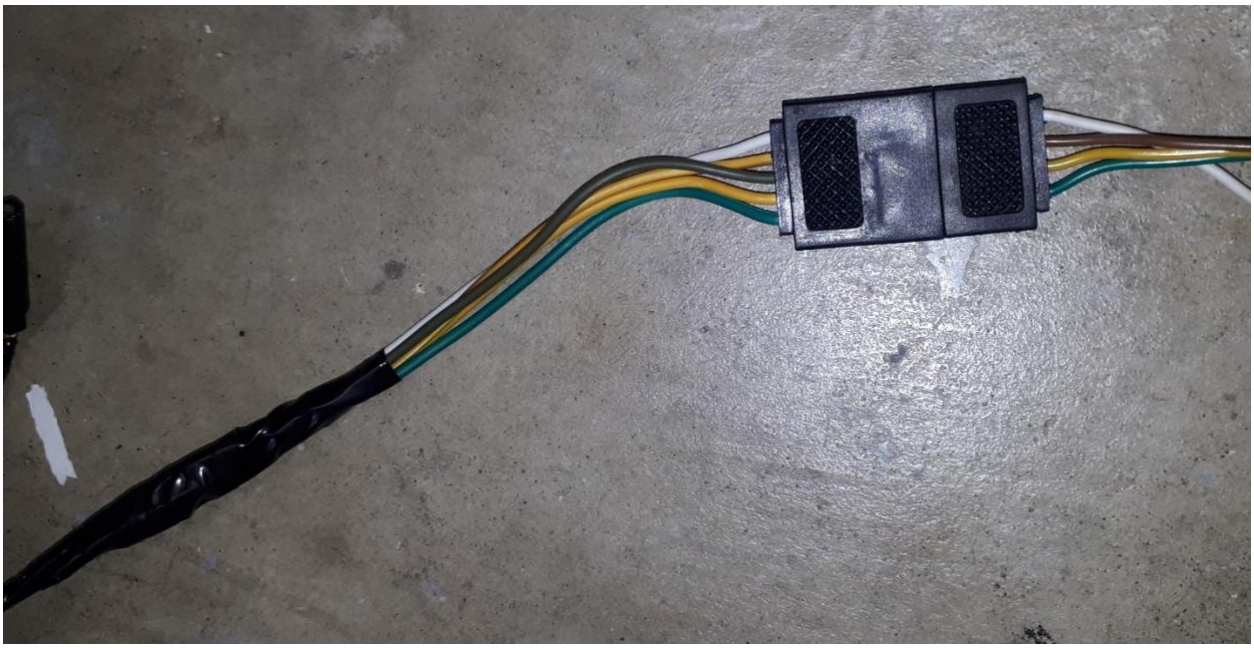
When I first bought the boat, I fabricated a new dash panel and flush mounted the original LMS-240 sonar/chartplotter and the Raymarine VHF radio. When I purchased the HDS8 I installed it in a bracket in front of the LMS-240. This avoided modifications to the dash panel and allowed me to retain the LMS-240 for backup. Also I could easily remove the HDS8 for winter storage. With the dash completely disassembled, I decided to flush mount the HDS9, the LMS-240 and the VHF radio in the dash panel.

In early January, I got the VHF radio back. First I powered it up to make sure it worked. After some experiments, I decided that the dash panel would (barely) accommodate the all three units. This was eventually accomplished, but not without effort. The ½" thick Plexiglas that I used to make the dash panel is NOT easy to cut.

To make things easier in the spring, I wanted to test the connection between the VHF radio and the HDS9. To do this, I needed to power them both up and connect the NMEA 0183 wires. I laid the dash panel on top of a cardboard box and cut matching holes to let the equipment sit down properly. Then I cut a hole in the side of the box to access the wiring.

First I hooked the radio and the HDS9 to 12V power. When I removed the radio, I cut the NMEA 0183 wires on the GPS side. This made it easy to reconnect them. I just twisted the wires together matching the colors from the HDS8. Since I was in the basement, the GPS couldn't get signals to calculate a real position. I set the HDS9 to simulate mode. The simulated position and speed displayed on radio screen indicated that connection was correct.

Rather than hardwiring the connection, I decided to install a plug. This allows the HDS9 and the VHF radio to be installed and removed separately. The connection uses four wires so I used flat 4 trailer light connectors. To avoid errors, I soldered the wires one color at a time. I insulated all the connections with marine grade heat shrink. Then I taped over them to bind the wires into a cable.



I put both units back in the panel, plugged them together and they worked like a charm. The flat 4 connectors don't have marine grade wire but it is pretty dry behind the dash. I am confident that it will be OK. During final installation, I sealed the joint between the two parts with electrical tape.