

Mainship Pilot 34 Engine gauges to NMEA 2000

Following in the footsteps of several others, I have converted the Engine Gauges on my '07 Mainship Pilot 34 with twin Yanmar 240hp engines to NMEA 2000. Here is a picture of the original dash.



For reference here is a thread on Trawler Forum from Pau Hana about his project:

<http://www.trawlerforum.com/forums/s4/project-engine-gauges-analog-nmea-2000-a-43803.html>

Here is another thread on The Hull Truth by Skybolt that details his conversion:

<https://www.thehulltruth.com/marine-electronics-forum/881525-chetco-digital-sea-gauge-g2.html?881525=#post10682820>

Lastly, here are two entries on the Panbo Marine Electronics highlighting the advantages of NMEA 2000 for engine monitoring and alarming:

<https://www.panbo.com/mfd-engine-monitoring-better-but/>

<https://www.panbo.com/actisense-emu-1-analog-engine-gauges-to-nmea-2000-happiness/>

All of these were very helpful in working through my project.

My issues began with an intermittent alarm signal on my port engine. Mainship did not use the Yanmar control panel, and the only indication of an alarm signal is the buzzer sounding. It is even very difficult to tell which engine is alarming. This frustration led me to a post here from Rgano where he installed a panel with indicator lights in his single engine Pilot.

<http://www.trawlerforum.com/forums/s11/yanmar-6lpa-after-market-alarm-panel-29566.html>

I found a twin engine version of the panel he installed and was ready to go that route. Then, my tachs started getting flaky, which turned out to be a loose ground post inside the starboard tach. I was able to get the tachs working again but felt uncomfortable that the fix would last. Now I'm looking at installing an indicator panel, and trying to replace a tach that is no longer made. Enter NMEA 2000.

After much internet research, I found several options for digitizing the analog signals from my engines and converting it to NMEA 2000. These included Actisense EMU-1, Noland RS-11, Alba-Combi, and

Chetco Digital Seagauge G2. Based on users feedback, number of inputs and price, I decided to go with the Chetco shown here.



I also decided to use Maretron DSM-410 displays for the engine monitors as shown. These have up to 16 favorite screens, each with up to 4 readouts. I set mine up with Tach, Oil Pressure, Temp and Volts. On additional favorites I have fuel, position info, depth and engine hours. These secondary favorites can be configured to scroll automatically, or you can scroll thru them manually, which is what I chose. As Ben Ellison on Panbo explains in the article I linked to the Maretron allows for very sophisticated warnings and alarms, either from the alarm switches on the engine, or by user defined limits on the gauge readings.



In addition to the Maretrons, I added a second Garmin MFD to supplement my Garmin 1040xs. For this I used a Garmin 7507xsv that I got as a great deal on a refurb unit. This is the inevitable project creep, "while I'm at it, I might as well...". This unit will allow me to display Radar, Sounder, Chart, or even engine gauges. It also provides better capability than the now discontinued, but less than 3 year old 1040xs.



Here is the overall new layout. The black acrylic panels mounting the new gear, and covering old holes were ordered custom from BoatOutfitters.com



One issue I ran into was on the alarm switches on the motors for over Temp, low Oil Pressure and Gear Temp. These all function by switching to ground which triggered the old buzzer. The Chetco was configured for a signal to go to 12v for alarms. I've been told by others that this is specified at ordering, but I did not know that at the time. After discussing with Skybolt on The Hull Truth, he told about using a small relay board to rectify a similar problem he was having. He later added the details to the thread I referenced earlier. The relay board is jumper configured for either high or low trigger, and helps to eliminate any false or intermittent triggers. I enclosed the relay board in a small project box with clear lid as shown. I used one for each engine.



The next issue I had to work thru was how to power everything. I originally powered the Maretrons, 7607, Chetco and relay boards from the helm supply using a small fuse panel for supply and ground. Everything worked great, except the alarms were on whenever the helm supply was powered. Not good. So, the Chetco and relays are powered from each engine's on switch. The 7607 is on the helm supply and the Maretrons are powered from the NMEA network which is on the helm supply also.

I originally connected the old gauge wiring to the Chetco using terminal strips, but did not have a good mounting place for them, and did not like that they were uncovered. I switched that to Deutsch plugs like the one's Chetco uses shown here. This cleaned the wiring up considerably.



I've been using this new setup for about a month and am quite happy. Thanks for the help of those that have gone before me, and hopefully this will help someone looking to follow this path.