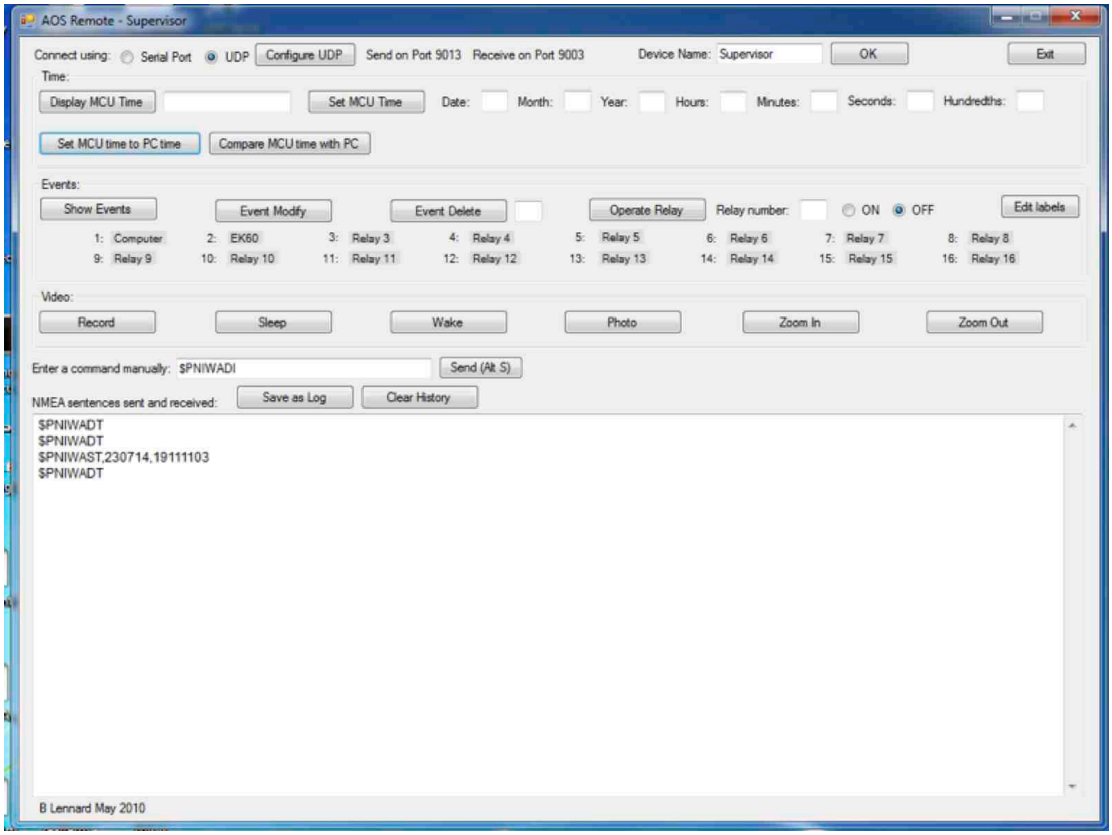
A summary of some of my projects

Applications:

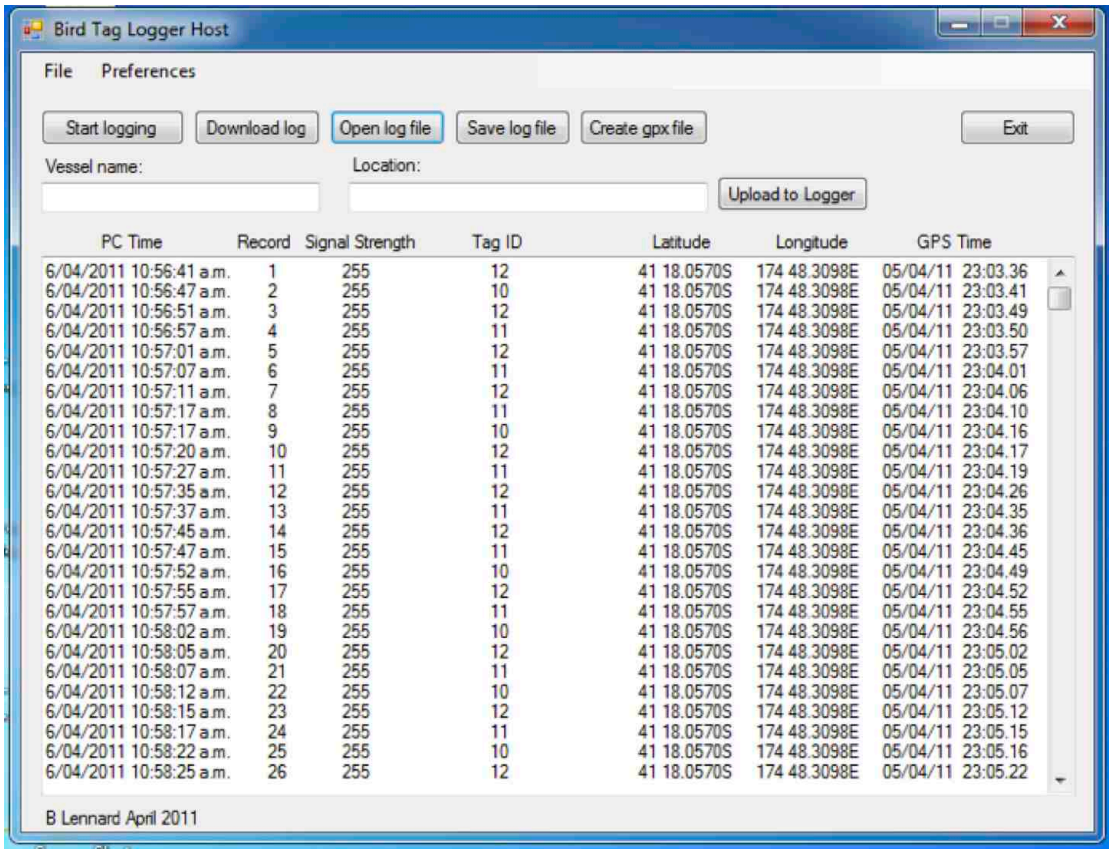
AOS Remote

- A Windows application, written in C# (.NET).
- Purpose:
    - To set up Events, locally or remotely control circuits, and read telemetry for Niwa's "Acoustic Optical System".



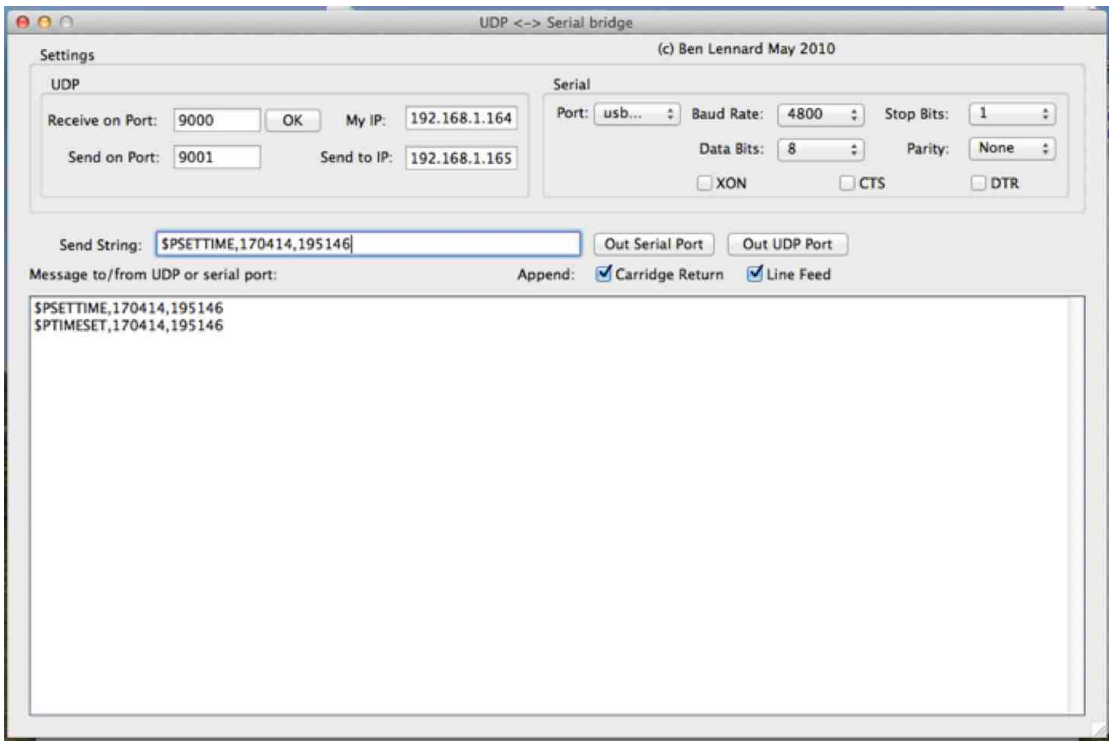
Bird Tag Logger

- A Windows application, written in C# (.NET).
- Purpose:
    - To read logged data from an SD card and create gpx data so that a ship's track, along with logged tags, can be shown in Google Earth.



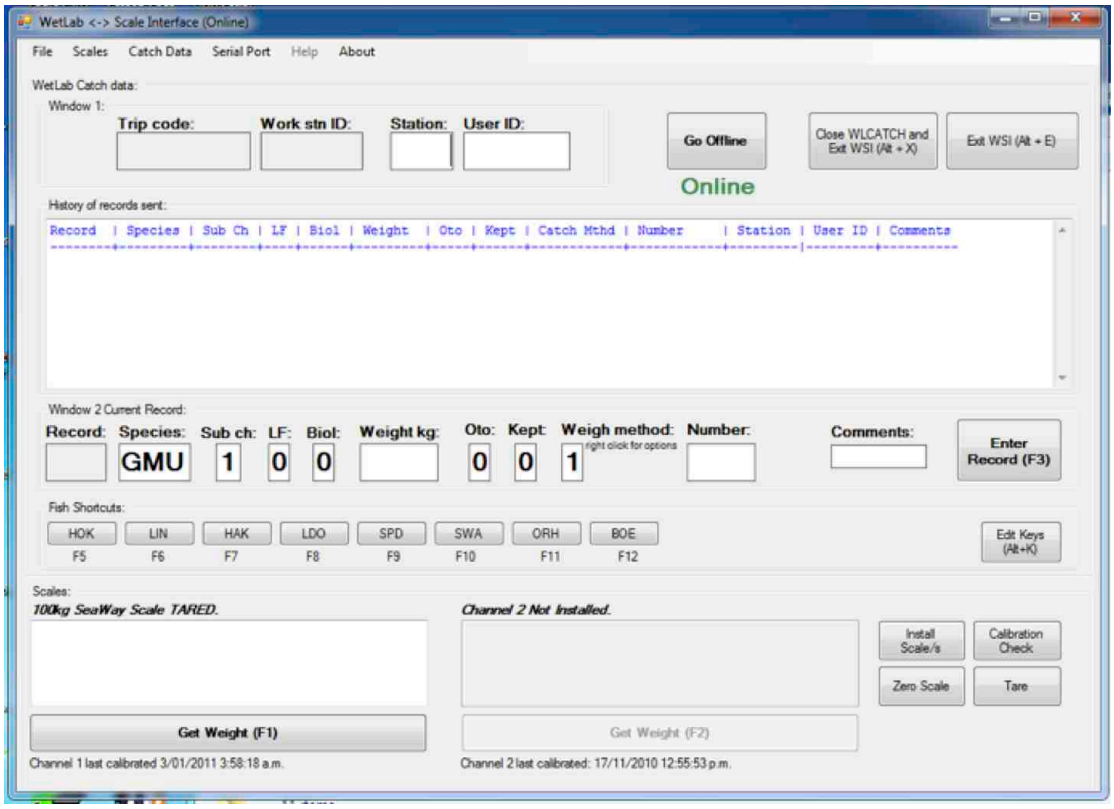
UDP-Serial bridge

- A Macintosh and Windows application, written in Object Oriented Basic using Xojo.
- Purpose:
    - A software version of an Ethernet to Serial adapter. UDP data on an Ethernet port is sent out the serial port. Data on a serial port is sent out the Ethernet port as UDP packets.



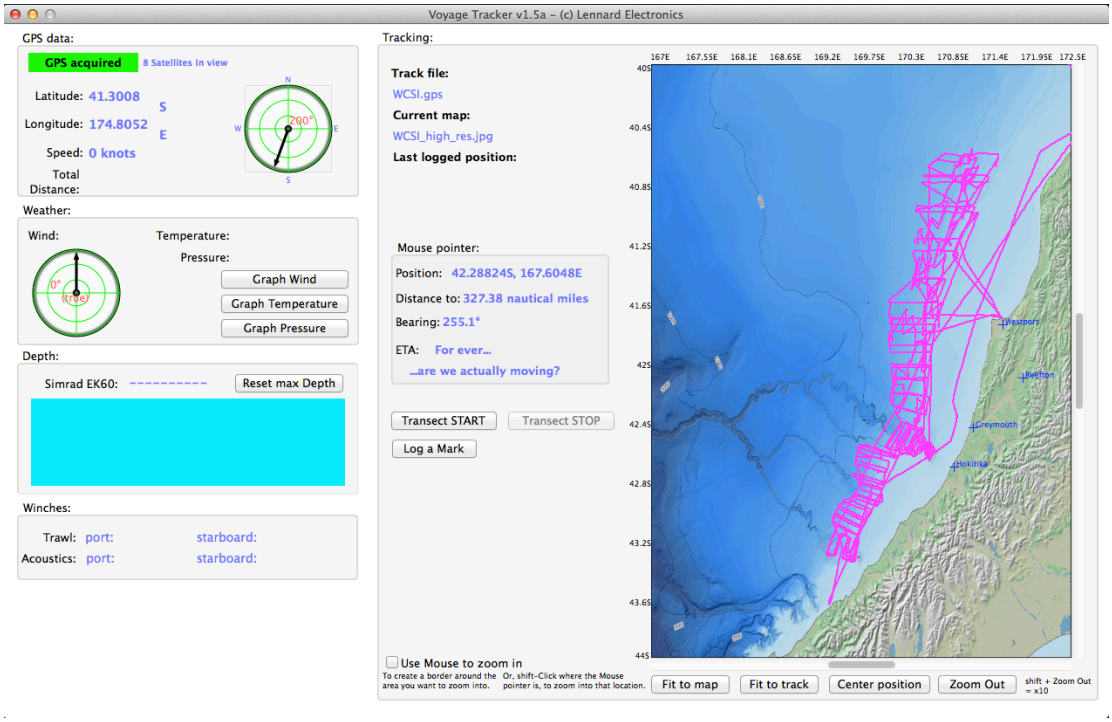
Wetlab Scale DAQ

- A Windows application, written in C# (.NET).
- Purpose:
    - Weigh catches of fish, with various scientific parameters, for stock assessment.



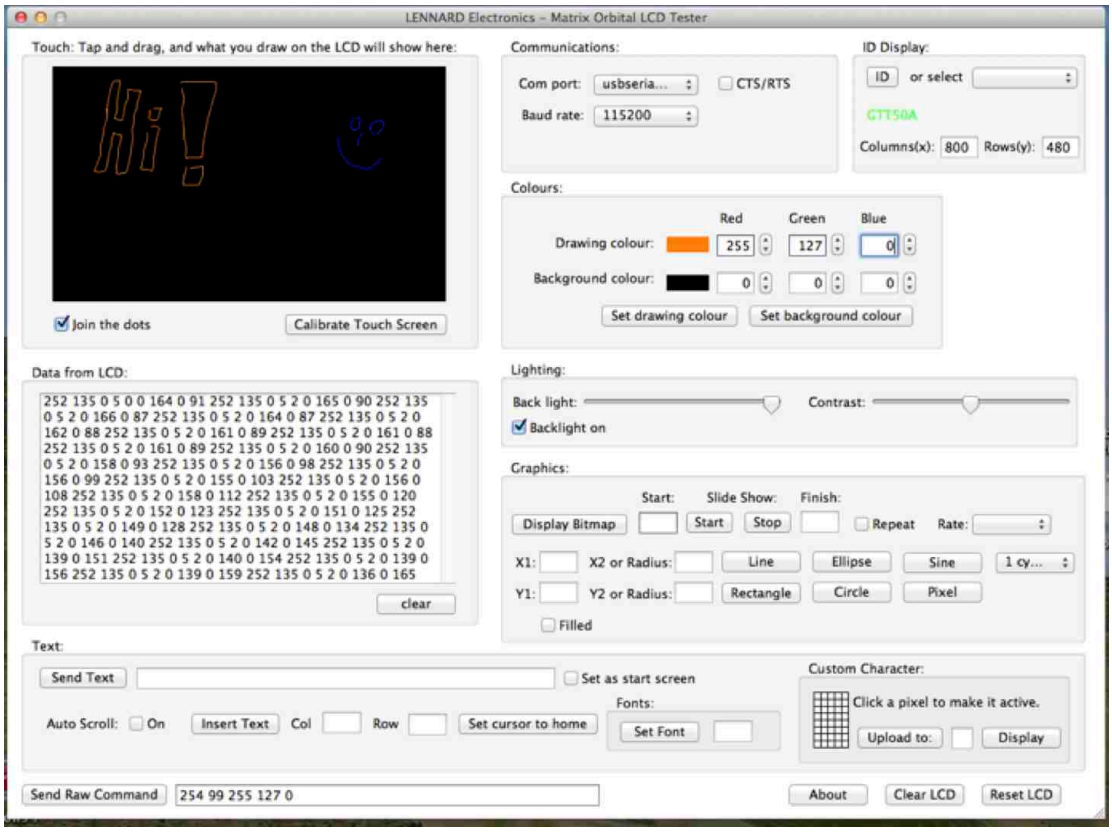
Navigation software

- A Macintosh and Windows application, written in Object Oriented Basic using Xojo.
- Purpose:
  - Show, and log, current position, speed and direction.
  - Show, and log, current weather conditions, and other scientific data.



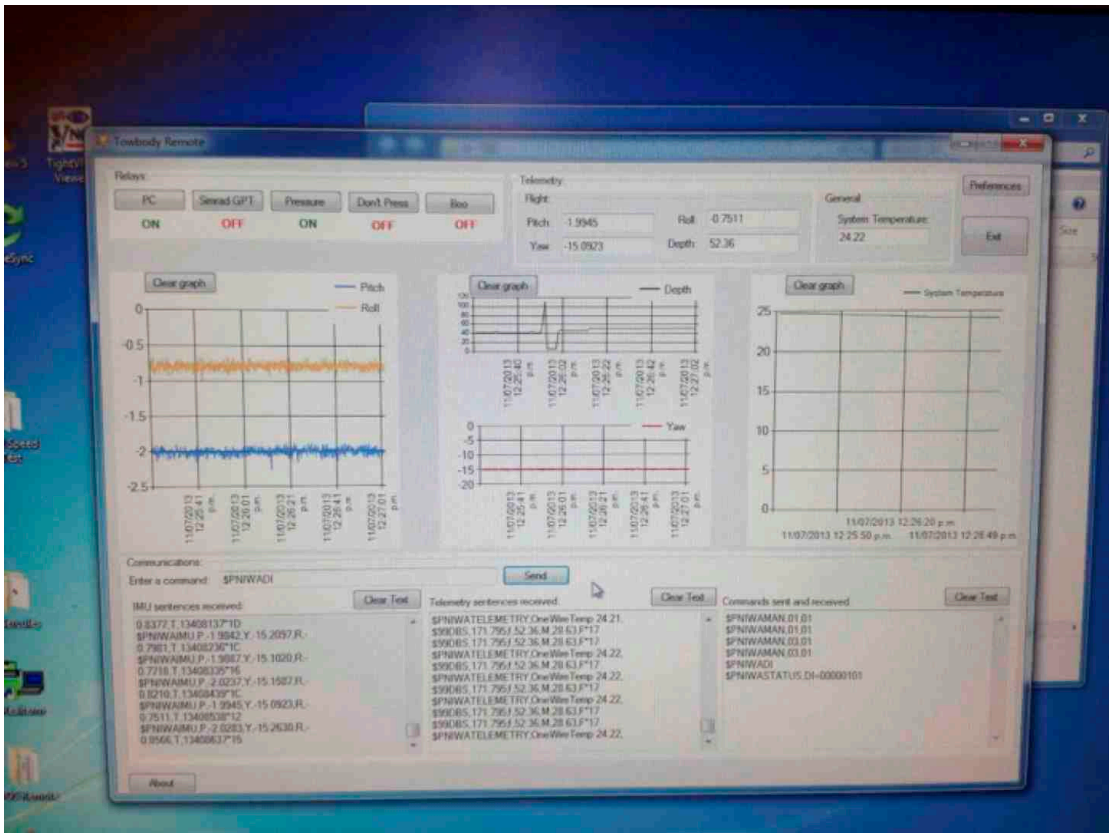
Matrix Orbital LCD test software

- A Macintosh and Windows application, written in Object Oriented Basic using Xojo.
- Purpose:
    - Test the entire range of Matrix Orbital Displays.
    - Development tool for working with the Matrix Orbital range.



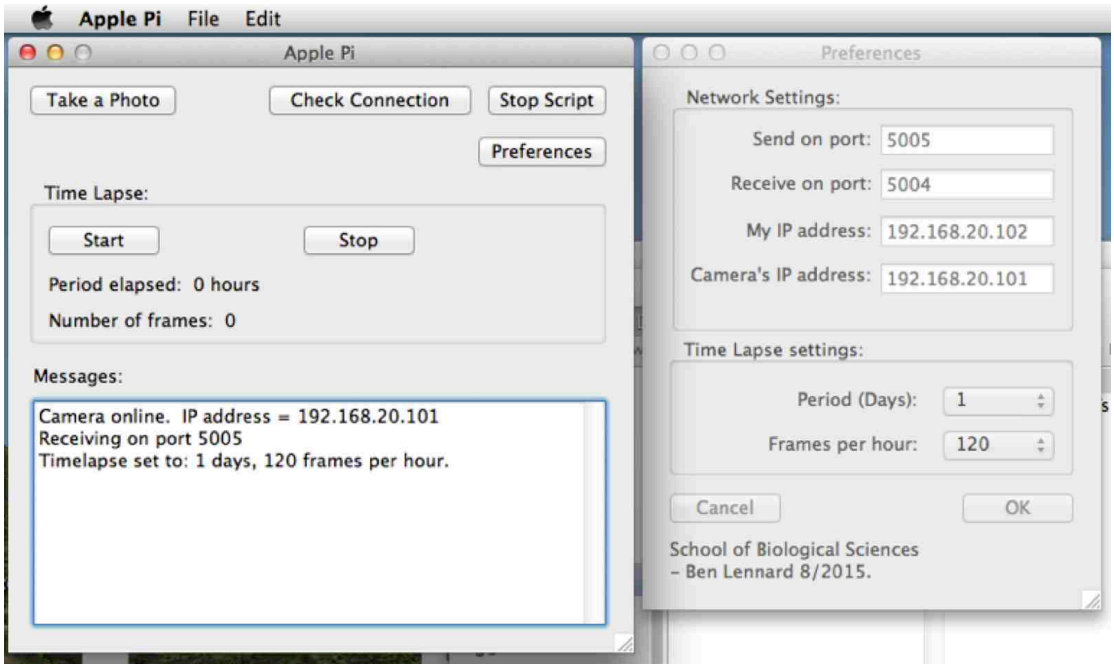
Telemetry Software

- A Windows application, written in C# (.NET).
- Purpose:
    - To set up Events, locally or remotely control circuits, and read telemetry for Niwa's "Acoustic Towbody System".



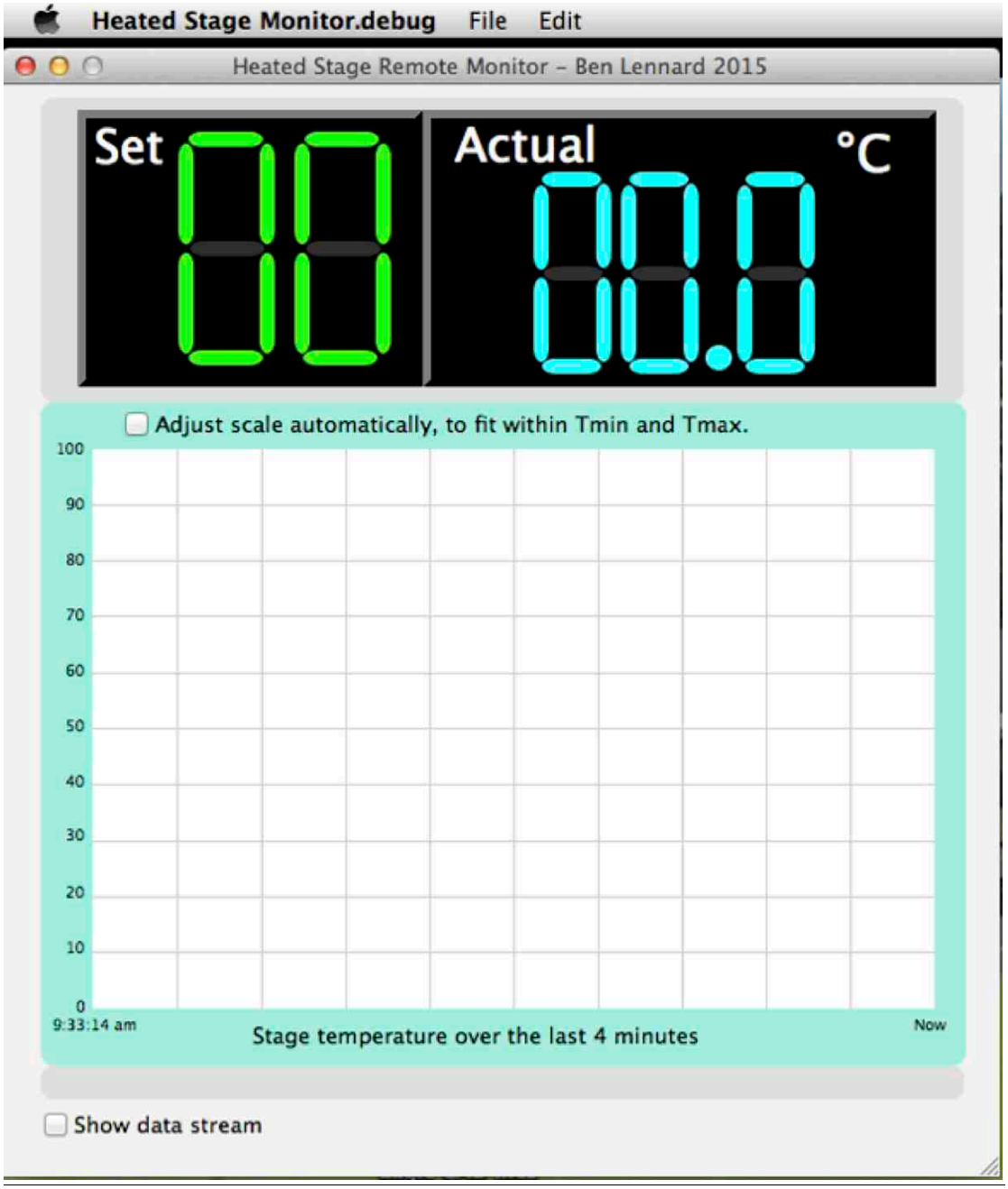
Time-lapse Photography

- A Macintosh and Windows application, written in Object Oriented Basic using Xojo.
- Purpose:
    - Remotely setup the camera's frames/hour, and period to run.
    - Start/Stop time-lapse.
    - Take a photo (separate to the time-lapse).
- The Time-lapse Camera was based on a Raspberry Pi (hence the Mac application is called "Apple Pi"), which automatically logged on and started a python script written by me.



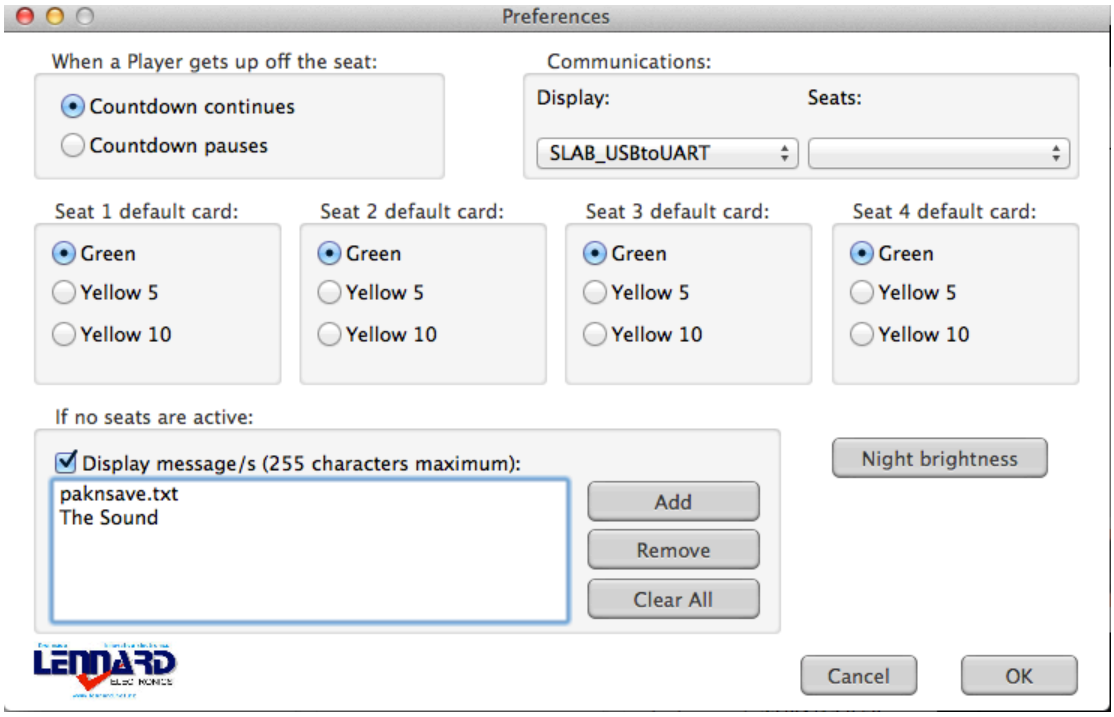
Heated Microscope Stage Monitor

- A Macintosh and Windows application, written in Object Oriented Basic using Xojo.
- Purpose:
  - Remotely monitor the temperature of the heated stage
  - Provide a graph of the temperature over time
  - Provide data on individual temperature sensors, fan status, over temperature cutout relay, to aid in fault finding.



Penalty Box Management system (aka "Sinbin system")

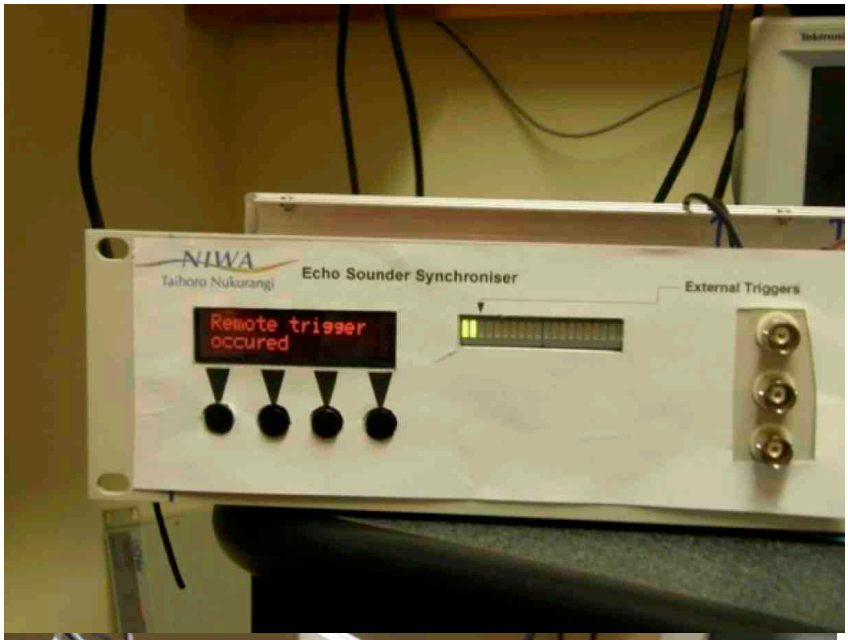
- A patented Macintosh, Windows, and Linux application, written in Object Oriented Basic using Xojo.
- Purpose:
  - Automatically manage players sent off during a game of Hockey
  - Allows Umpires and technical bench officials to concentrate on the game
  - Fully override-able by the technical bench
  - Displays advertising on an external display when no one is in the Sinbin

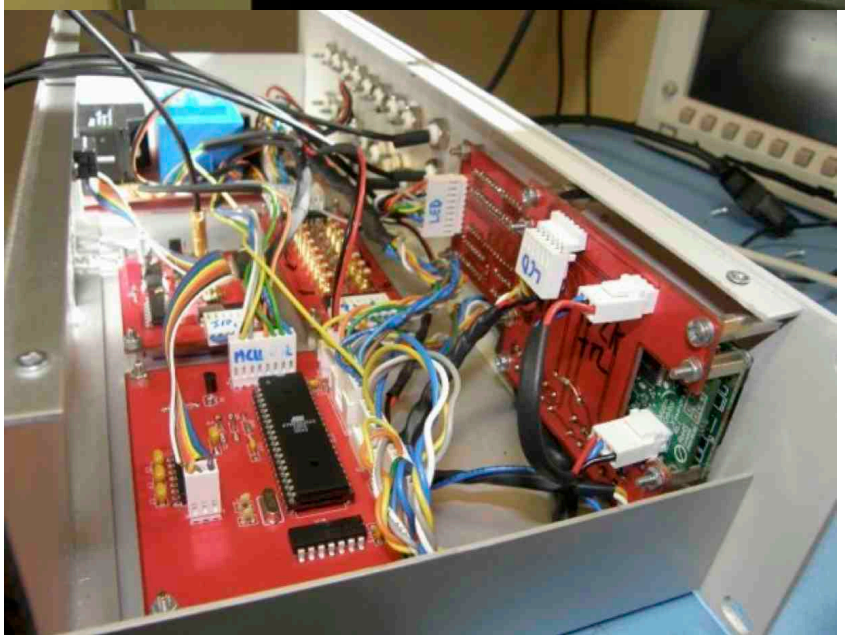


Hardware

Echo Sounder Synchroniser

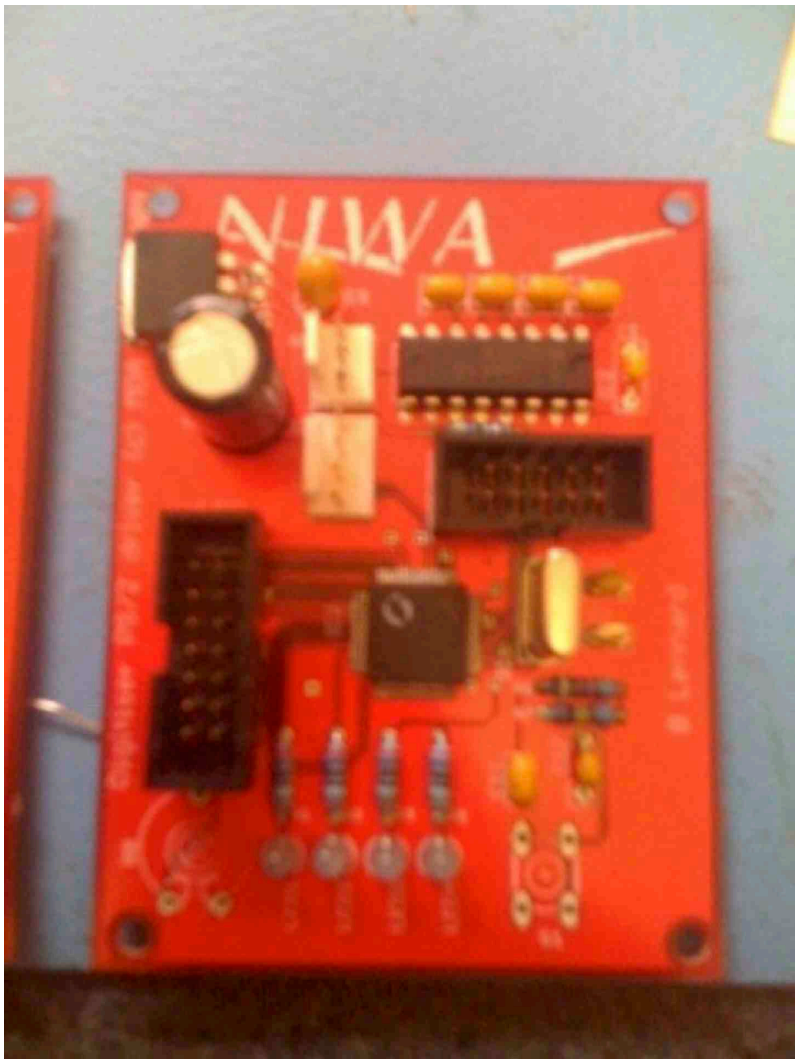
- A system for synchronizing up to 16 different echo sounders on Niwa's research vessel RV Tangaroa. It can be setup via a keypad on the front panel, or remotely via a web based program.
- Main processor is an ATmega programmed in C.





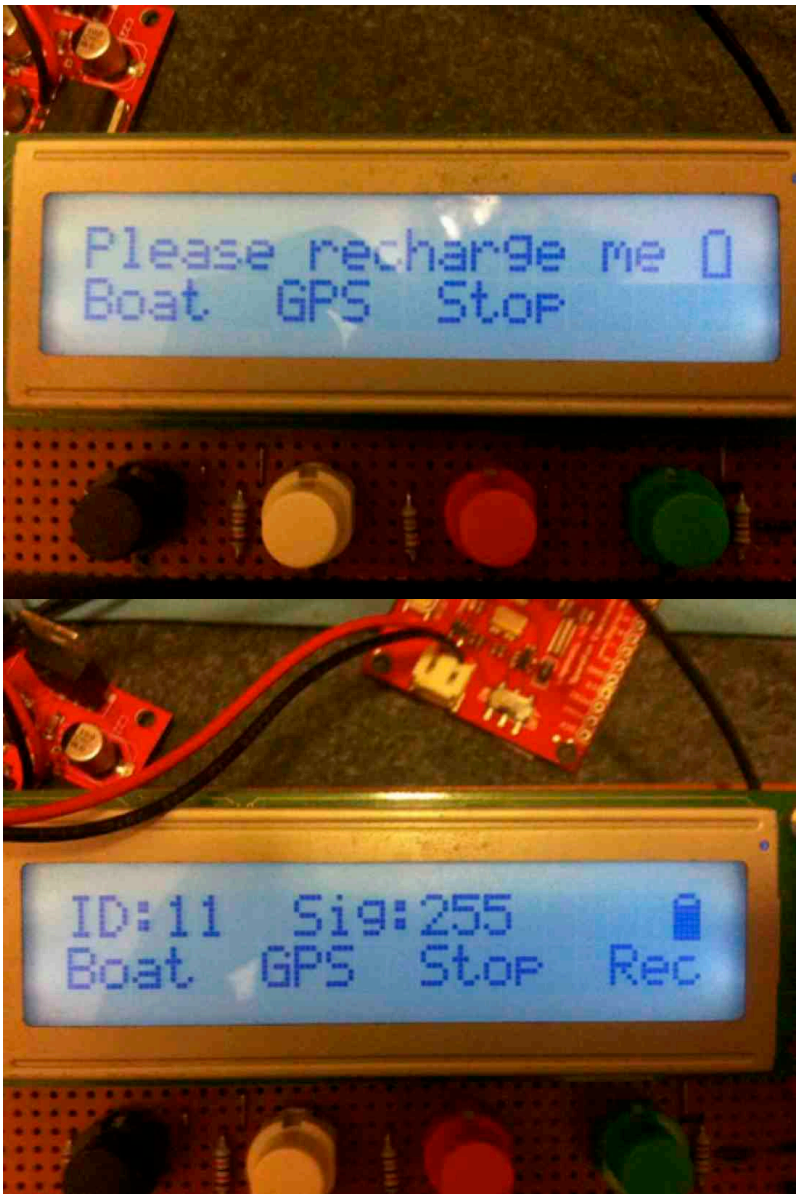
Keyboard Emulator

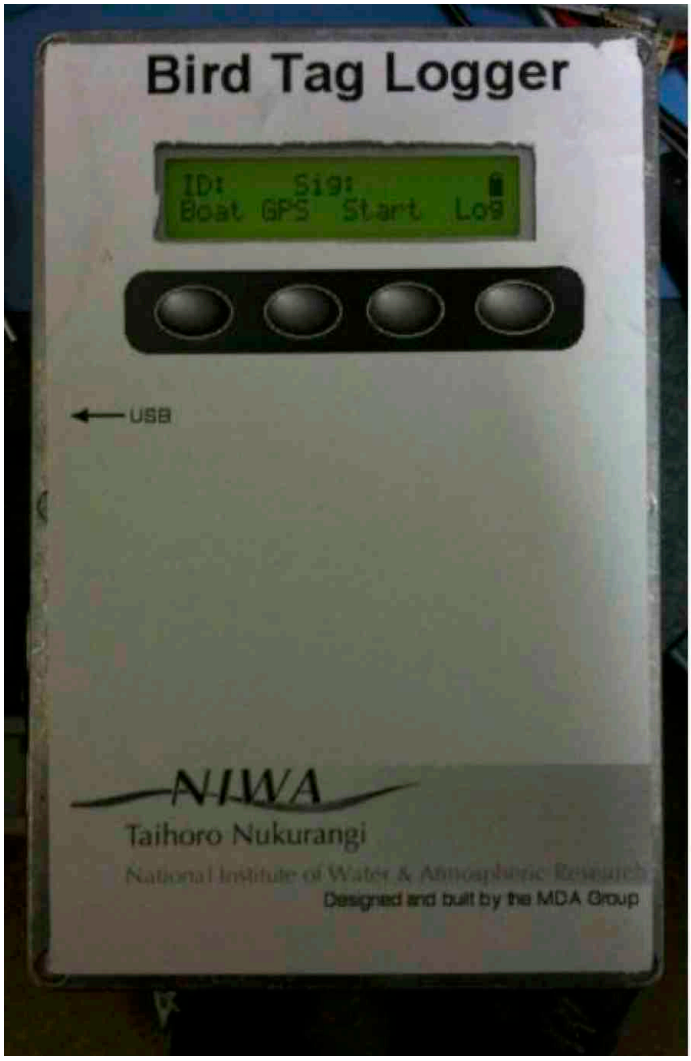
- 8051 based, programmed in C.
- Purpose:
    - Takes x/y data from a digitizer board that uses an inductive stylus, and converts those coordinates into keyboard scan codes and sends the data out to a PS2 port (USB via a PS2-USB adapter).



Bird Tag Logger

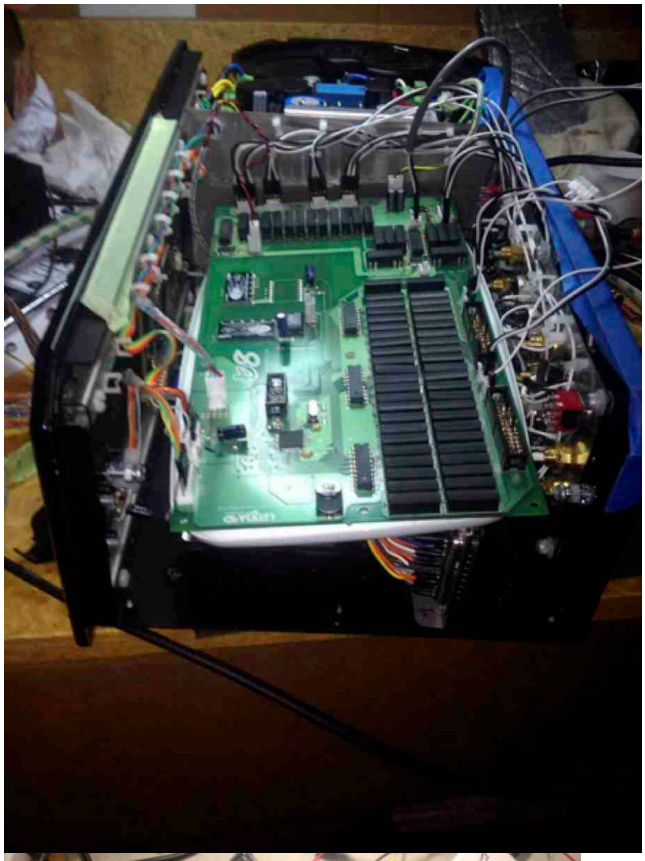
- 8051 based, programmed in C.
- Purpose:
    - Log bird tags, and a ship's GPS position, to study the impact of the Petral population due to the Snapper fishing industry.




Bird Tag Logger
ID:
Sig:
Boat GPS Start Log
USB
NIWA
Taihoro Nukurangi
National Institute of Water & Atmospheric Research
Designed and built by the MDA Group

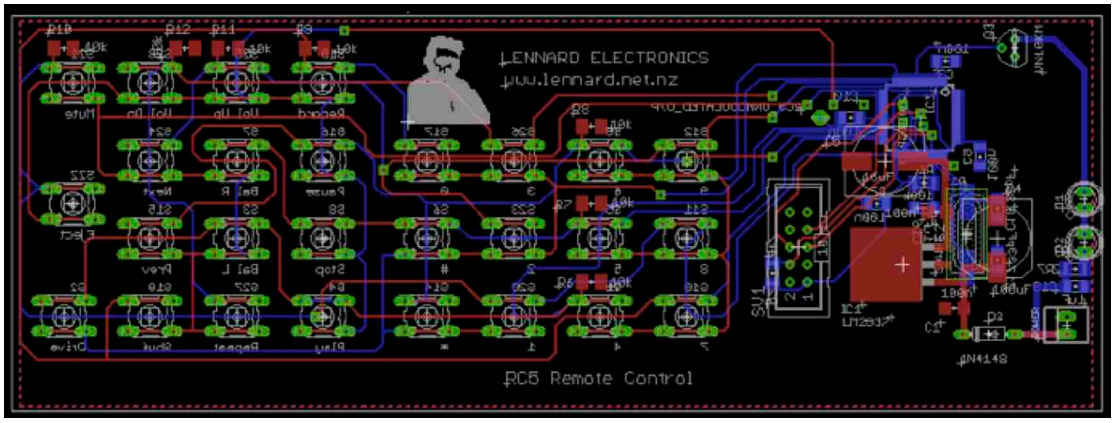
Amplifier Controller

- 8051 based, programmed in C.
- Old school electronics, with a modern twist. The amplifier is a valve system, but all its functions are controlled via a touchscreen LCD, and remote control. Future versions will include iPhone control and USB audio support.

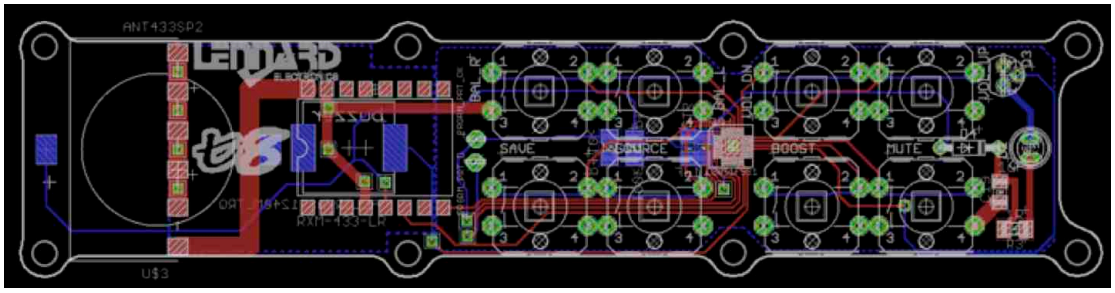


RC5 compatible Remote Control

- 8051 based, programmed in C.
- Designed to use with a multi-deck CD player kit that did not have a remote control supplied.

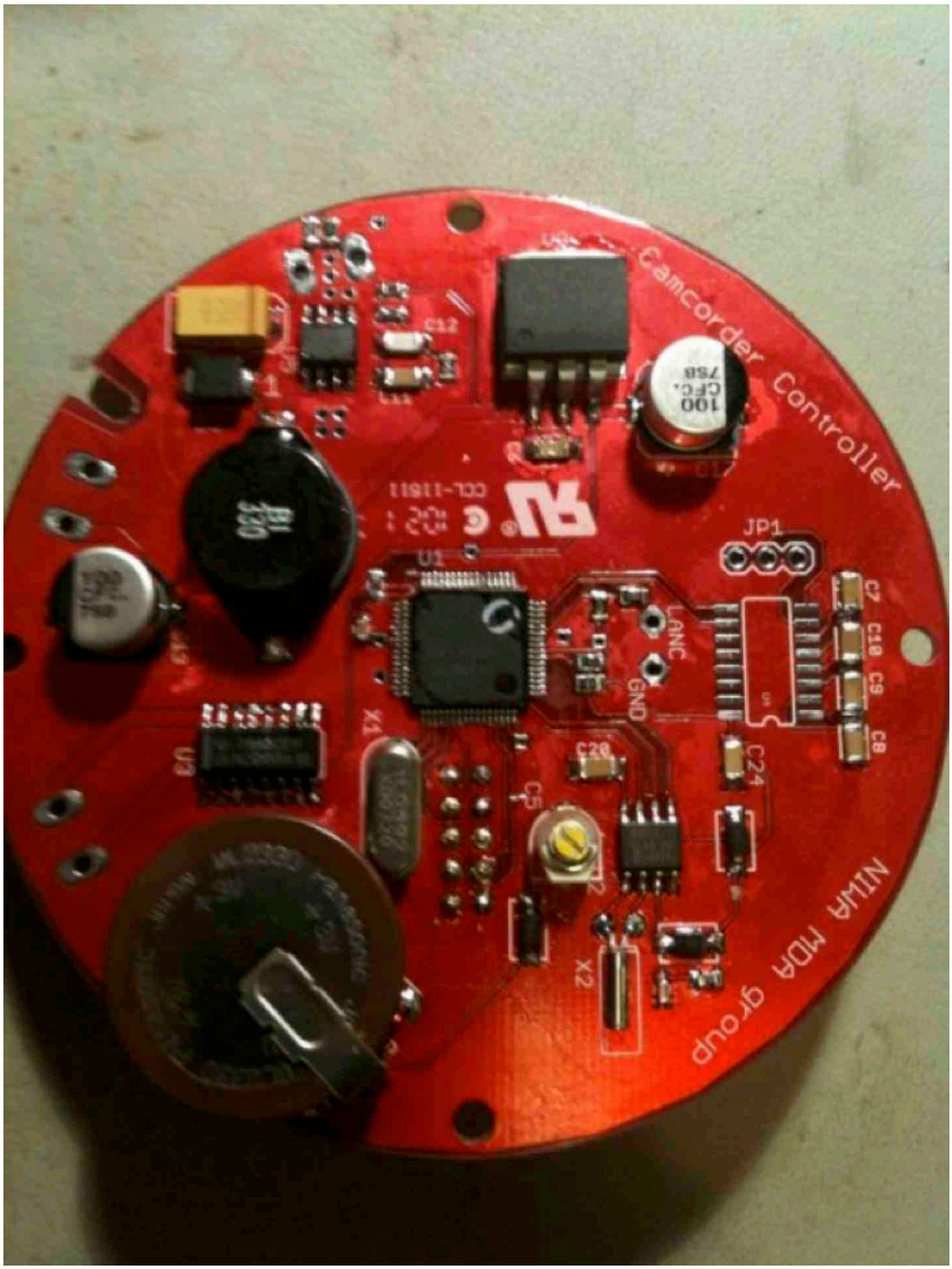


  - A more compact and battery friendly version was designed for the Amplifier controller shown above.



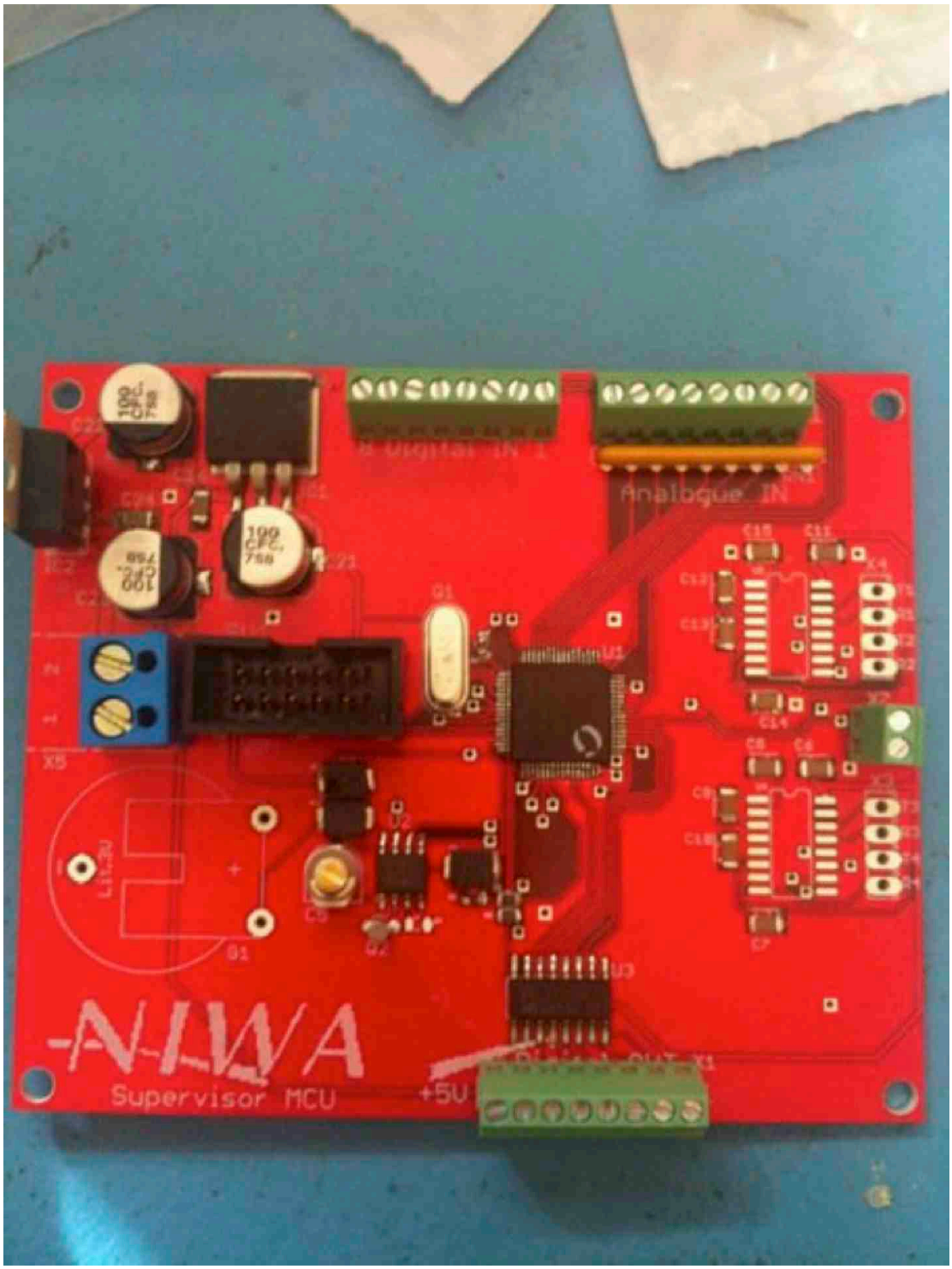
Camcorder controller

- 8051 based, code written by a colleague, hardware designed by me.
- Designed to work with the AOS Remote software shown above.
- Controls a Sony CamCorder or GoPro, in an underwater housing.



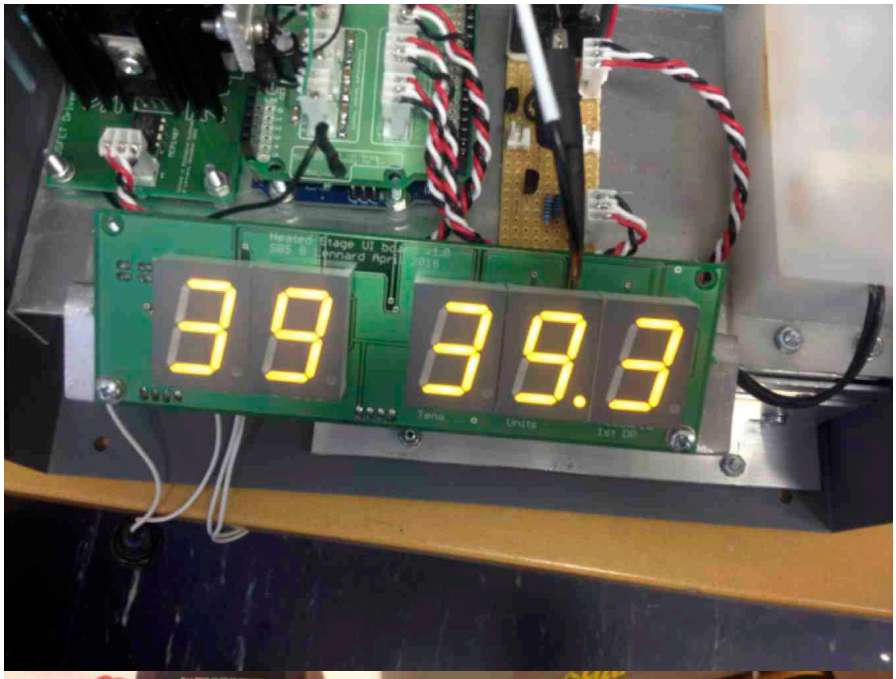
System Supervisor

- 8051 based, code written by a colleague, hardware designed by me.
- Designed to work with the AOS Remote software shown above.
- Controls an Atom PC, Simrad EchoSounder, lights, and cameras, in an underwater housing.



Heated Microscope Stage

- PID control of a stage to keep samples at the right temperature while being examined under a microscope.
- Arduino based microcontroller, and very precise temperature control up to 75 °C.
- Sends data out the USB port for external monitoring or fault finding.



Penalty Box Management system (aka "Sinbin system")

- Touch Screen Controller, based on a Raspberry Pi
- Four seats with sensors built into them, plug into the controller

- Controller displays sinbin information or advertising on an external display, via Bluetooth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