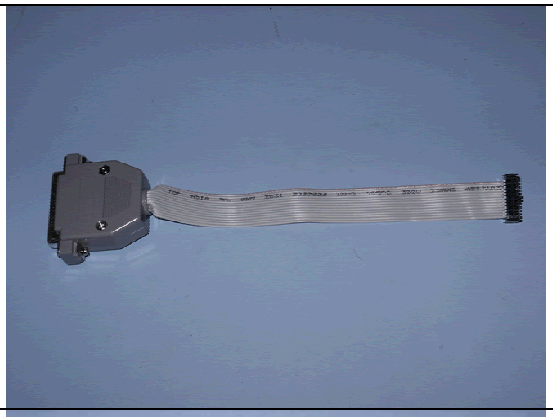
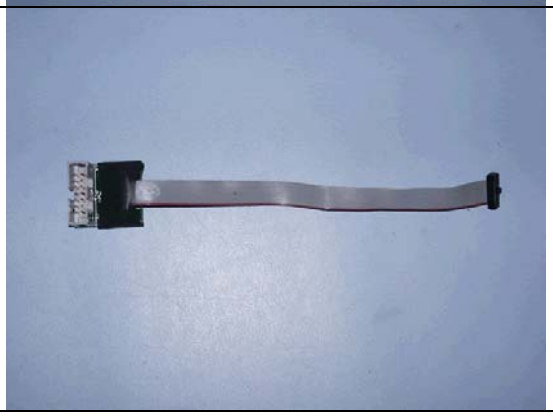
MBARI PUCK Firmware Programming Procedure

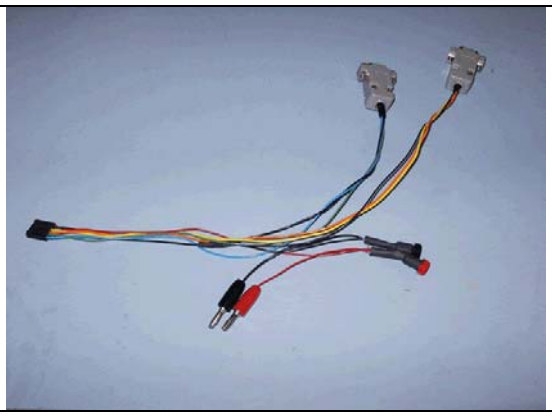
Synopsis

This document describes the procedure for updating MBARI PUCK firmware.

Required Materials

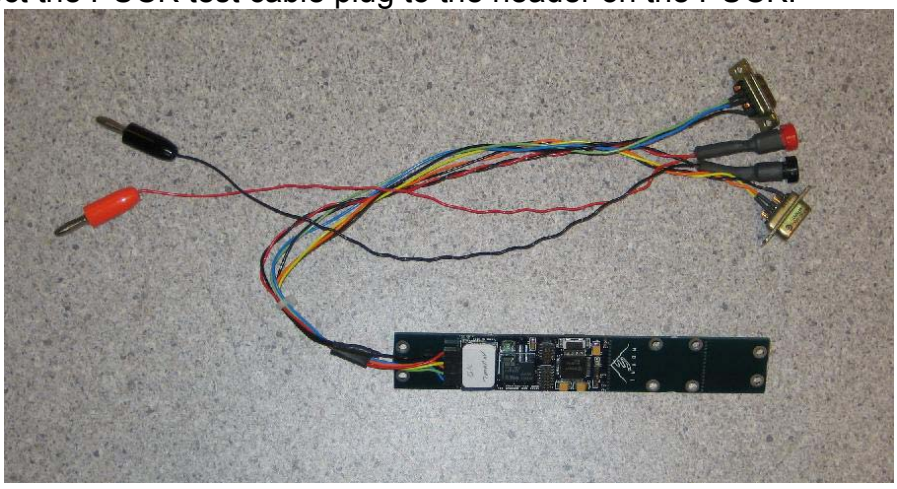
(See appendix for supplier list)

MSP430 Programming Software	Quadravox AQ430 Development Tools
PUCK firmware binary file	.rxc file produced by AQ430 toolchain
Computer • Parallel communications port • Win2000/XP	
MSP430 Programmer	
MSP430 Programming Adapter Cable	

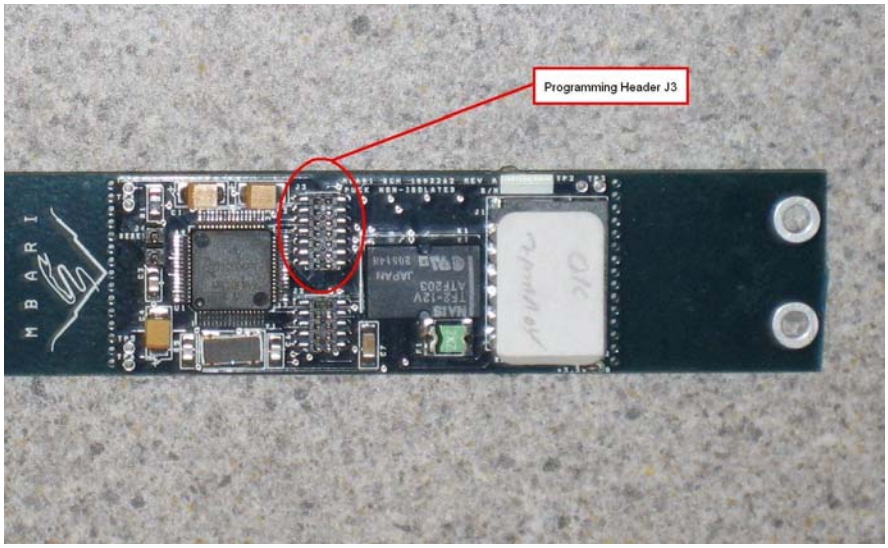
PUCK Test Cable	
DC Power Supply • 12V, 1A min	

Procedure

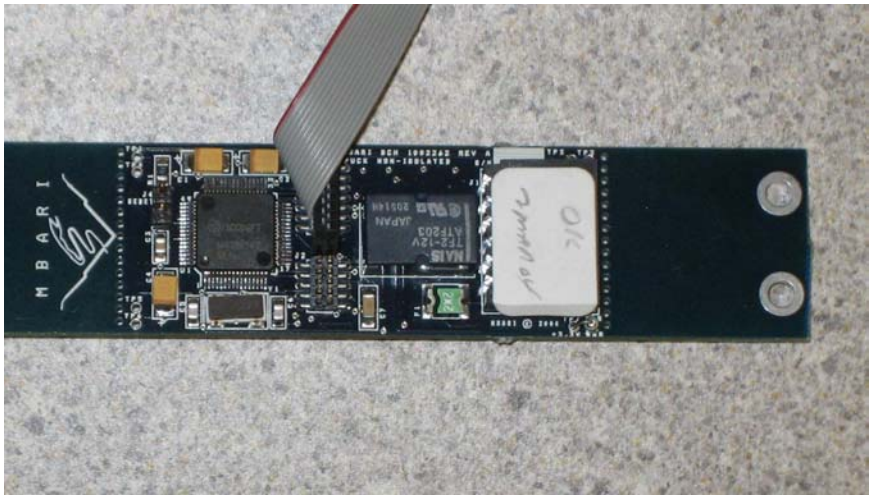
1) Connect the MSP430 programmer ribbon cable connector to the header on the programming adapter cable.
2) Connect the MSP430 programmer DB25 connector to the computer's parallel port
3) Start the AQ430 IDE.
4) Connect the PUCK test cable plug to the header on the PUCK.



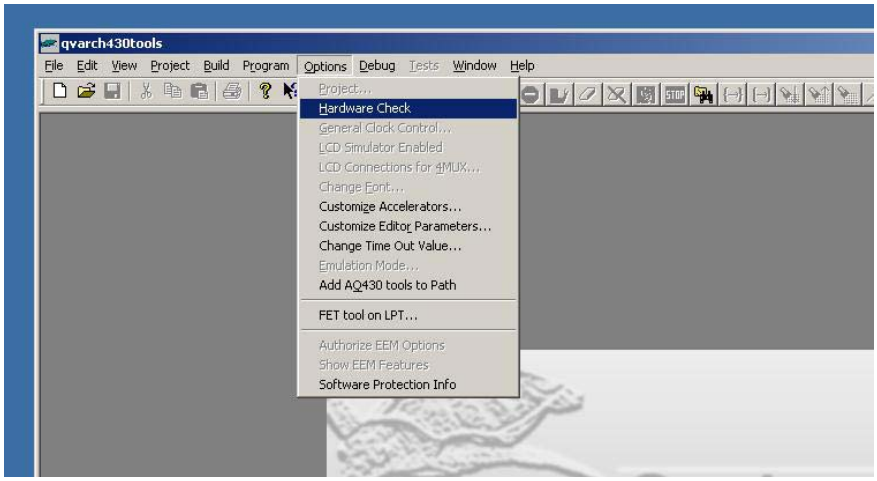
5) Before connecting anything to the DC power supply, set the power supply output to12 volts and current limit it to 100 milliamps if possible. After the lab DC power supply has been set, power it down and connect the PUCK lab cable banana plugs to it.
6) Locate programming header J3 on the PUCK



7) Connect the programming adapter cable to it as shown below
   Note: make sure the connector orientation with respect to the programming header is correct, as the programming connector and header are not keyed.

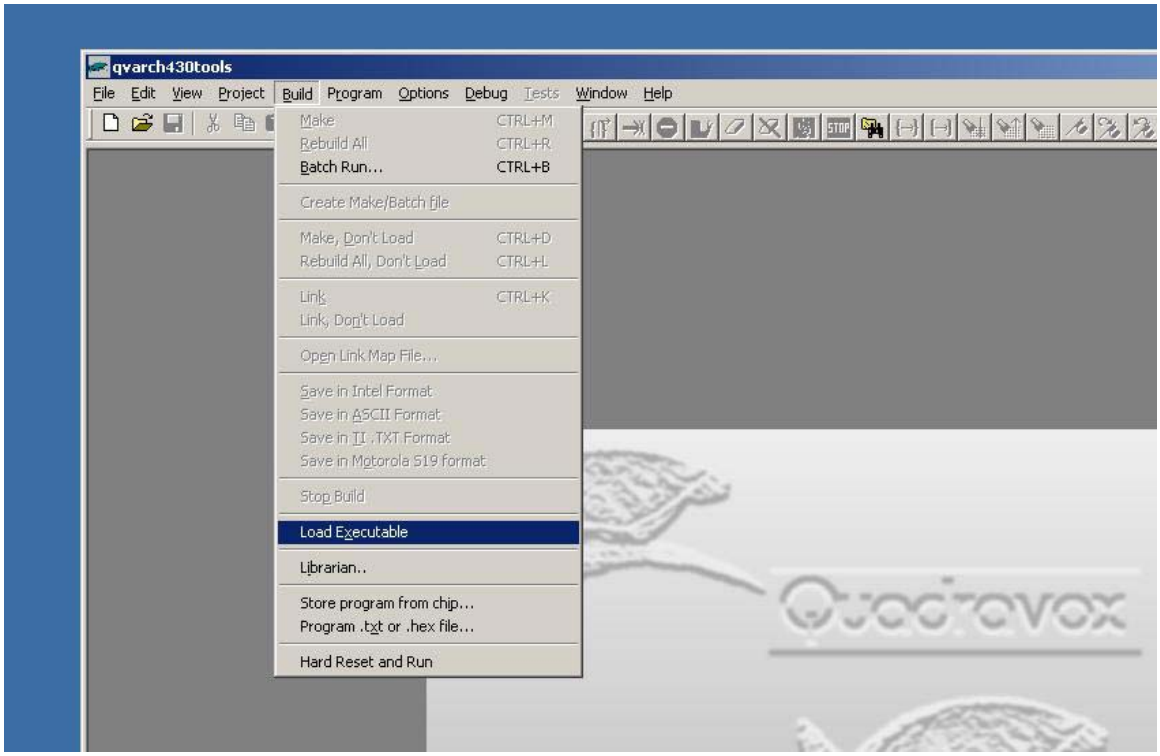


8) Power up the lab DC power supply and check that the JTAG cable and programming adapter have been connected correctly by doing a "Hardware Check" with the AQ430 IDE (Options>>Hardware Check).



The AQ430 IDE should respond with the following dialog box if the PUCK is powered up and the JTAG and adapter cable are connected correctly.

9) When the PUCK "Hardware Check" has been completed select "Load Executable" from the "Build" menu and choose an ".rcx" file to load using the "Open" dialog box. PUCK ".rcx" files are stored in the MBARI CVS repository at http://moonjelly.shore.mbari.org/cgi-bin/cvsweb.cgi/siam/native/msp430/puck/bin/puck.rxc



10) When the ".rcx" file is opened the AQ430 IDE will display a dialog requesting to "Erase Info Memory?", select yes.
11) Another dialog will appear requesting to "Erase Main Memory?", select yes.
12) A dialog will then appear showing target programming progress as the PUCK firmware is being loaded. Another dialog may appear indicating that the ".ddf" file for the chip could not be located, simply acknowledge this dialog.
13) After the PUCK firmware is loaded exit the AQ430 IDE, power down the DC power supply, and remove the programming cable from the J3 header. The PUCK firmware should now be loaded onto the PUCK.
    a. There may be a conflict between the quadravox development environment and certain USB-RS232 converters (IOGear). For best results, exit the AQ430 application before testing the PUCK.
14) The PUCK may be tested by turning the lab DC power supply on and using the attached PUCK lab cable and a terminal emulator (e.g. Hyperterm)
    a. Configure the terminal emulator for 9600N81, no flow control
    b. Note that the PUCK does not echo typed characters
    c. When power is first applied to the PUCK, it returns the prompt (RDY or PUCKRDY)
    d. PUCKVR (or VER for older firmware versions) command should return puck firmware version and prompt. Any non-command should return and error code (ERR nnnn) and prompt.
    e. Consult the appropriate version of the PUCK protocol specification for complete PUCK command set (CVS repository PUCK project doc/ or SIAM repository docs/puck/)

Appendix

Supplier List

Item	Supplier
Quadravox AQ430 Development Tools	Available from Quadravox http://www.quadravox.com/AQ430.htm
MSP430 Programmer	Spark Fun Electronics P/N MSP430-JTAG http://www.sparkfun.com
MSP430 Programming Adapter Cable	Available from MBARI technical support MBARI drawing numbers: 1002921 (schematic) 1002922 (layout)
PUCK Test Cable	Available from MBARI technical support MBARI Drawing numbers: 1002936 (non-isolated) 1002937 (isolated)