

**How to develop programs Metrowerks/Tech Arts 9S12C32 board**

Jonathan Valvano, valvano@mail.utexas.edu, January 7, 2004

First, you need to install Metrowerks CodeWarrior for HC(S)12. You can go to the Metrowerks web site <http://www.metrowerks.com/MW/download/default.asp> get the CodeWarrior for the 6812 (you can download it or request a CD in the mail). Follow the Metrowerks instructions about downloading, installing and registering the application. Second, you put the 12K learning edition "license.dat" file in your Metrowerks folder. The first few lines look like

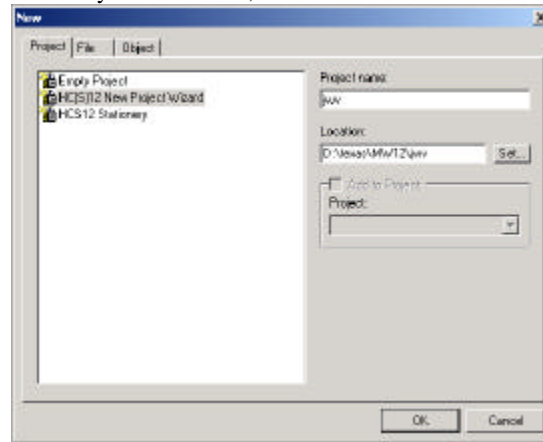
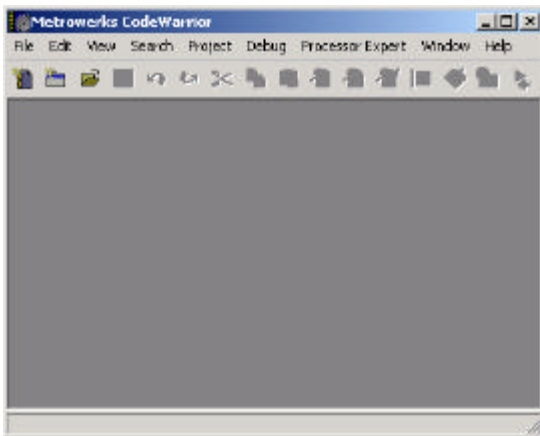
```
FEATURE Win32_CWIDE_Limited metrowks 5.5 permanent uncounted 2589EF7E8174 HOSTID=ANY
#####
# ( 436): HC12 Special Edition for V3.x
# IDE: learning edition (max 32 files, no subprojects).
# Build/Debug: Unlimited Assembly/Hex/S19. C code up to 12K. ELF/Dwarf object file format.
```

**A) To open an existing Metrowerks project**

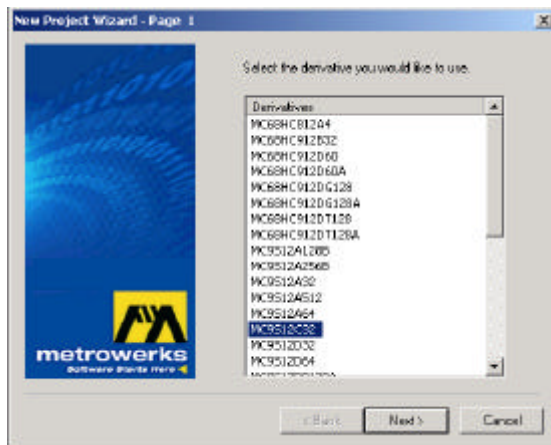
- 1) Start Metrowerks CW12 3.0
- 2) Execute File->Open, navigate to an existing \*.mcp file, and click "OK"

**B) How to configure create a new Metrowerks project**

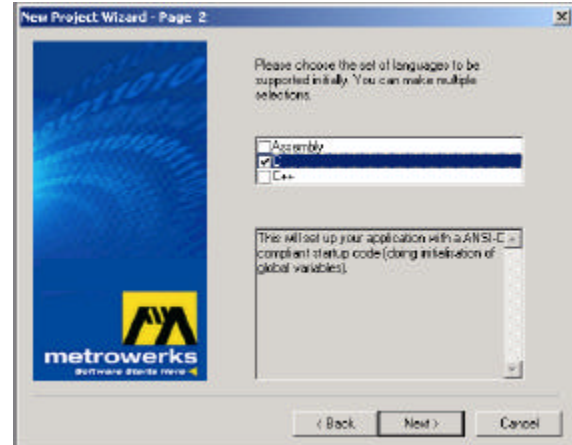
- 1) Start Metrowerks CW12 3.0
- 2) Execute File->New, click "Project" Tab select "HC(S)12 New Project Wizard" specify the "Project name" verify its "Location", click "OK"



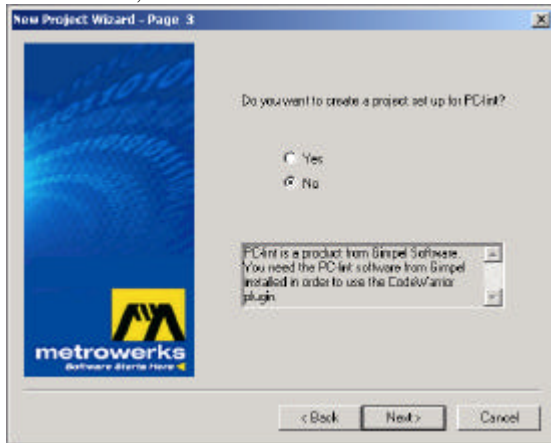
- 3) Select the derivative you want to use "MC9S12C32", click "next"



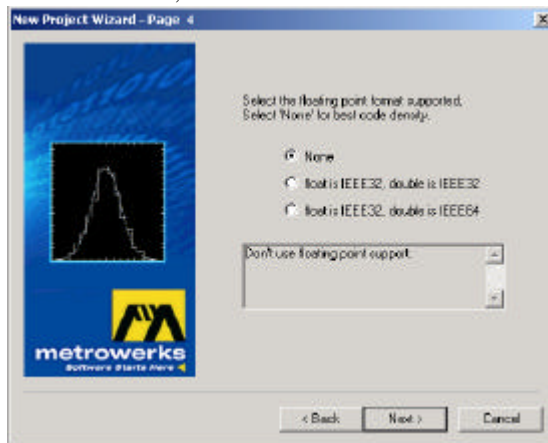
- 4) Choose the set of languages supported select "C", click "next"



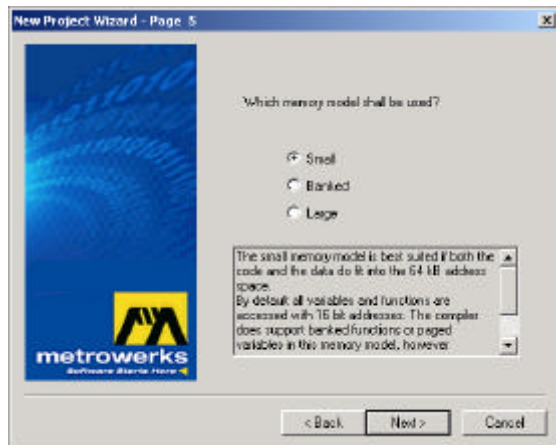
5) Do you want to create a setup for PC-lint select "no", click "next"



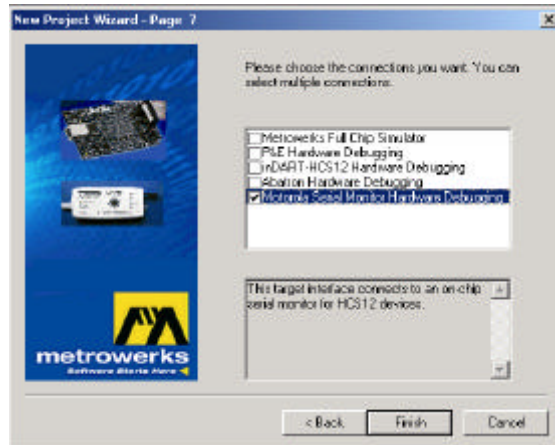
6) Select the floating point format supported select "None", click "next"



7) Which memory model should be used? select "Small" click "next"



8) Please choose the connections you want select "Serial Monitor Hardware Debugging" click "Finish"



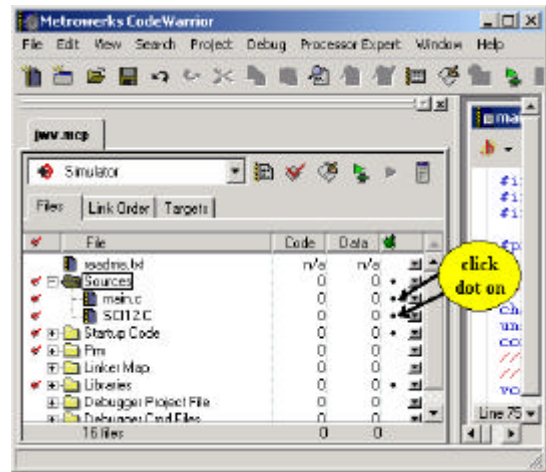
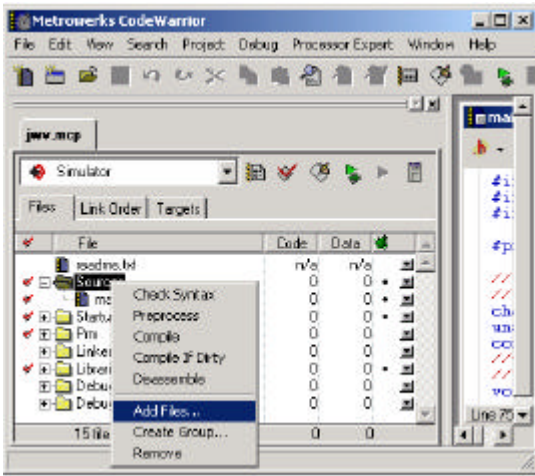
9) Create or copy program files \*.c and \*.h place them into the "Sources" directory of your project

10) Add the necessary C files to project

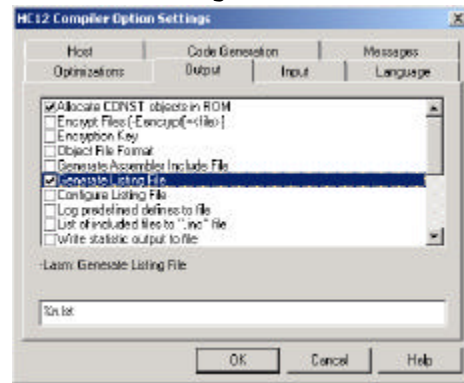
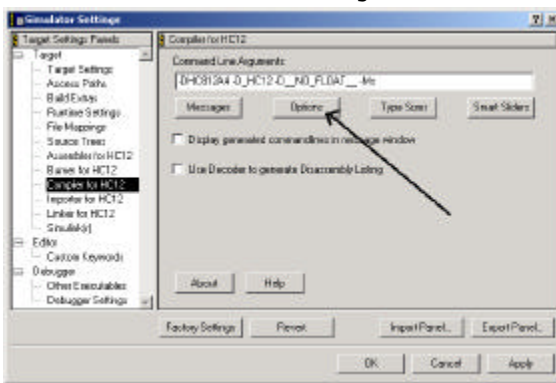
click on Sources in the "mcp" window

right click and execute "Add Files..."

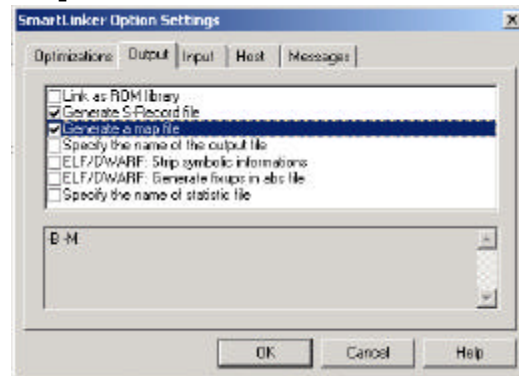
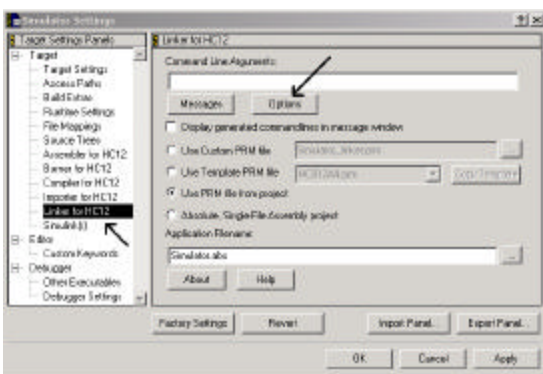
"click dot on" in the field associated all C source files under the "bug" icon



- 13) Change compiler/linker options
  - click the right-most toolbar ICON called "Simulator settings"
  - click "Compiler for HC12" choice
  - click "Options"
  - click "Output" tab
  - select "Allocate CONST objects in ROM" and "Generate Listing File"



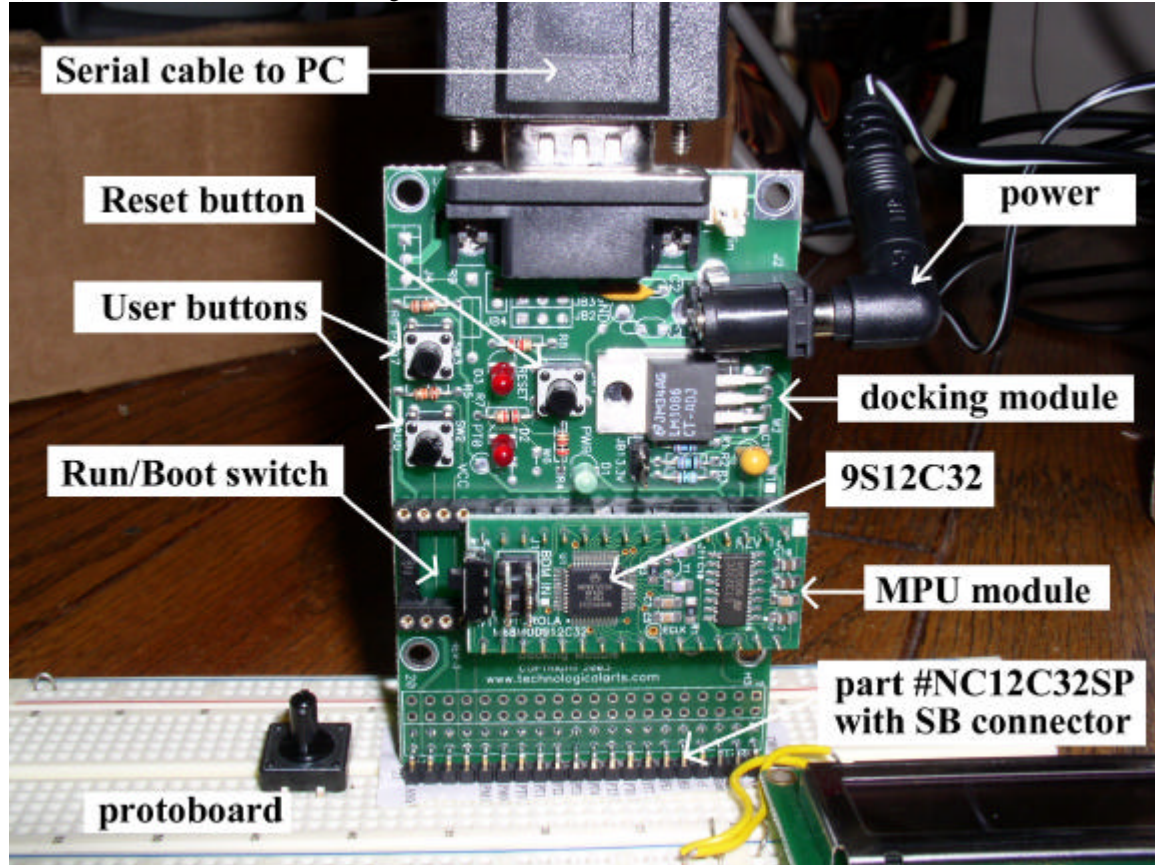
- click "Linker for HC12" choice
- click "Options"
- click "Output" tab
- select "Generate S-Record" and "Generate a map file"



### C) How to run Metrowerks on the Real 9S12C32 board

*Do this once*

- 1) Connect PC-COM1 to the 9S12C32 docking station,
- 2) Place the Run/Boot switch on the 9S12C32 board in Boot mode
- 3) Connect power to 9S12C32 docking station.
- 4) Touch the reset switch on the docking station



*For each edit/compile/run cycle for software that does not use SCI*

- 1) In Metrowerks, perform editing to source code
- 2) In Metrowerks, compile/Link/Load  
Execute **Project->Debug**
- 3) Click the green arrow in the debugger to start. Runs at 24 MHz.

*For each edit/compile/run cycle for software that does use SCI*

- 1) set the Run/Boot switch to Boot mode, push the reset button on the 9S12C32 docking station
- 2) execute Project->Debug (compiles and downloads code to 9S12C32)
- 3) quit MW debugger once programming complete. Quitting the debugger will release the COM port.
- 4) start a terminal program (like HyperTerminal)  
specify proper COM port, 19200 bits/sec, no flow control
- 5) set the Run/Boot switch to Run mode and push the reset button on the 9S12C32 docking station. Runs at 4 MHz.
- 6) when done, quit terminal program. Quitting the terminal program will release the COM port.