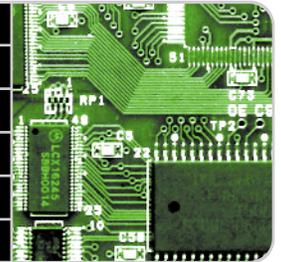


# CodeWarrior™ Development Studio

for Motorola 68HC12/HCS12  
Microcontrollers

Embedded Systems  
Development Tools  
from Metrowerks

Version 2



## Overview

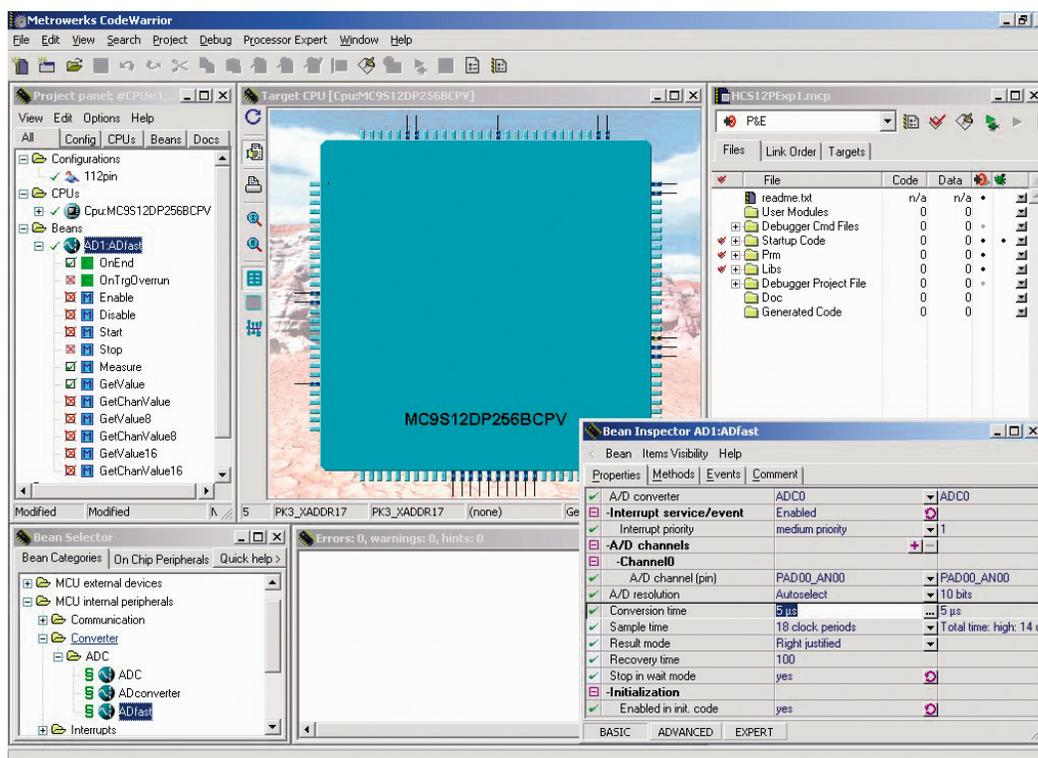
The comprehensive, highly visual CodeWarrior Development Studio for Motorola 68HC12/HCS12 Microcontrollers, Professional Edition enables engineers to build and deploy 68HC12/HCS12 systems quickly and easily. This tool suite provides the capabilities required by every engineer in the development cycle: from board bring-up—to firmware development—to final application development. With a common, project-based, development environment reuse becomes a natural by-product as each team builds on the work already completed by the previous team. Whether the application is targeted at consumer white goods, industrial control or automotive body controllers, the CodeWarrior environment provides you everything you need to exploit the capabilities of the 68HC12/HCS12 architecture.

The award-winning CodeWarrior IDE goes well beyond basic code generation and debugging, streamlining applications design from the moment you open the box. It features an intuitive, state-of-the-art project manager and build system; a highly optimized compiler; a graphical, source-level debugger; integrated profiling capabilities, a cycle-accurate, instruction-set simulator; and more.

## Features

- Sophisticated project manager
- Build system with optimizing C/C++/cC++/EC++ compilers
- Graphical, source-level debugger
- Flash programming support
- True-Time Simulator
- Cycle-accurate, True-Time simulator with code coverage, profile analysis, and Soft Trace
- Data visualization
- Encryption support
- Processor Expert® from Unis with Bean Wizard and components for 68HC12/HCS12 CPUs, on-chip peripherals, external peripherals and software algorithms

*The tool suite for every engineer in the  
development cycle: from board bring-up—to firmware  
development—to application development.*



## Why develop applications with CodeWarrior tools?

### Get to Market Fast

Speed your time to market by creating, compiling, linking, assembling, and debugging within a single, integrated development environment. Use our tightly-integrated tools to speed your development time or plug-in familiar third-party editors, compilers and debuggers.

Skip the endless debug cycles at the end of a project and the frantic search through the silicon documentation to find the single bit that is set incorrectly; causing your application to crash. Just define the functionality you need for your application and Processor Expert within CodeWarrior Studio generates tested, optimized C-code tuned for your application and the particular 68HC12/HCS12 derivative you have chosen.

### Maximize Performance/Minimize Silicon Cost

Create the most highly optimized code in the market with our industry leading ANSI C/C++ and compact C++ compilers. These compilers are designed to take full advantage of the 68HC12/HCS12 architecture, with more than 60-advanced optimization strategies specifically designed to boost performance and reduce code size. So, you can extract maximum performance from lower cost silicon and reduce your overall product cost.

### Develop Software Ahead of Hardware

Start software development immediately. The cycle-accurate, True-Time simulator in CodeWarrior development studio provides the most powerful tool short of actual hardware. Long before hardware is available you can detect and repair design and requirement errors with the simulator and integrated data visualization, code coverage, profile analysis, and Soft Trace tools. These tools provide you with clear, meaningful insight into your program's run-time behavior. Armed with this data, you can tailor your application for optimum performance and reliability.

## The CodeWarrior Advantage

### Project Manager

The CodeWarrior project manager gives you everything you need to configure and manage complex projects including:

- Complete control of source files, libraries and dependencies to reduce project complexity
- Automatic dependency management to eliminate the need for complicated makefiles
- Multi-threading support to allow you to work on one project while building another
- Built-in "stationery" templates help you create new projects faster

### Edit and Code Navigation System

The editor in CodeWarrior development studio is the ideal tool for creating and modifying your source code. With customizable syntax coloring and styling, the CodeWarrior editor enables you to view your source in a way that makes sense to you. In addition, the editor maximizes the use of advanced features:

- Pop-up menus for easy project navigation to improve you productivity
- Built-in drag-and-drop support makes source code editing a snap
- Special tools and shortcuts to help you organize your code and set custom markers

### Build System

Develop applications with the smallest code size and fastest execution time.

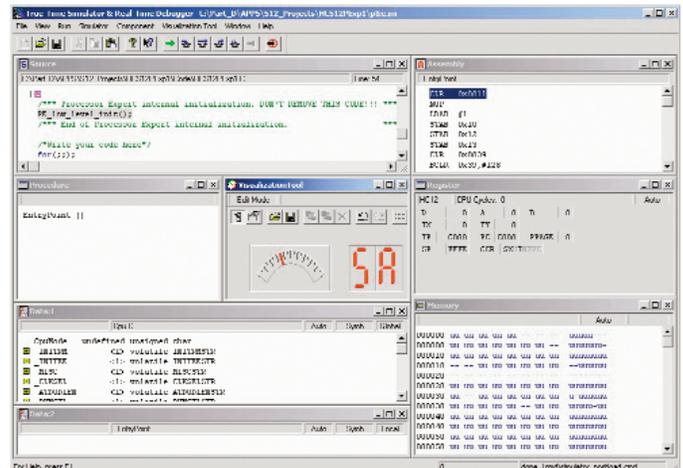
Features include:

- Industry-leading ANSI C/C++ and compact C++ compilers, which support EC++ guidelines for embedded C++ development and generate ELF/DWARF files for execution and debugging
- More than 60 optimization strategies
- Compiler optimization menu that allows you to easily define the optimization level with sliders for code density, execution speed, complexity, compilation time, and information
- Macro assembler
- Linker dead strips unused code

### Graphical Source-Level Debugger

The CodeWarrior IDE includes a state-of-art source-level debugger with a wide array of sophisticated features that help you troubleshoot and repair your application faster. The debugger provides the power you need with the simplicity of a Windows based point-and-click environment for fast and easy execution. Key capabilities include:

- Graphical display of complex data structures and expressions to speed run-time analysis
- Fast, flexible and comprehensive run control capabilities for complete target control
- Precise breakpoints help solve sophisticated problems



### Processor Expert from Unis

Processor Expert is a rapid application design tool (RAD) that combines easy-to-use component based application creation with an expert knowledge system. CPU, on-chip peripherals, external peripherals and software functionality is encapsulated into components called Embedded Beans. You can tailor each component's functionality to fit your application requirements by modifying the component's properties, methods, and events. When you build the project, Processor Expert automatically generates highly optimized C code and places the files into your CodeWarrior project.

Endless troubleshooting cycles are a thing of the past! Processor Expert's knowledge-base only provides valid choices and immediately flags potential resource conflicts, allowing you to resolve the problems during the initial design phase.

Processor Expert also makes porting a breeze. Simply select the new MCU and Processor Expert maps the software and peripheral components that describe your application's functionality to the resources available on the new MCU. All you have to do is resolve any problems flagged by Processor Expert and you're finished.

Processor Expert features include:

- An intuitive, graphical, user interface tightly-integrated with CodeWarrior tools
- Ready-to-use, tested hardware and software components with complete documentation
- Hardware independence and inheritance, which make your applications portable
- A knowledgebase that is constantly checking CPU dependent settings
- Automatic C-code generator
- Bean Wizard, which allows you to encapsulate your own software IP and build a library of reusable components

### Specifications

IDE Version	4.2.6
Host Platforms	Windows® 98/Me/2000/XP/Windows NT® 4.0
Language Support	Assembly, C/C++, cC++, EC++
Build Tools	
Output Formats	ELF/DWARF 2.0, Hiware, Motorola S-Record, Intel hex, Binary
Target Support	<b>Version 2.0</b> MC9S12DP256B MC9S12DT256B/DT128B MC9S12DJ256B/DJ128B/DJ64 MC9S12DG256B/DG128B MC9S12DB128A MC9S12D64/D32 MC9S12A256B/A128B/A64/A32
Board Support	Motorola MC68HC9S12DP256 Evaluation Board Elektronik-Laden HCS12 T-Board Future Electronics 9S12 Badge Board Axiom CML125-DP256 Board
Host Target Interfaces	Multilink 12



### Standard Edition

If you are budget conscious, Metrowerks also offers the Standard Edition with the following features:

- Sophisticated project manager
- Build system with optimizing C compiler
- Graphical, source-level debugger
- Flash programming support
- True-Time Simulator
- Data Visualization
- Processor Expert from Unis with components for 68HC12/HCS12 CPUs, most on-chip peripherals, external peripherals and software algorithms

Professional capabilities can be added to the Standard Edition as you need them with add-on options or you can upgrade to the Professional Edition at any time.

### Special Edition

If you would like to evaluate CodeWarrior Development Studio for Motorola 68HC12/HCS12 Microcontrollers, Motorola and Metrowerks offer the Special Edition at no cost. The

Special Edition features include:

- Sophisticated project manager
- 12 K code-size limited C Compiler
- 12 K code-size limited C Source Level Debugger
- Macro Assembler
- Assembly Source Level Debugger
- Flash programming support
- True-Time Simulator
- Processor Expert from Unis with components for 68HC12/HCS12 CPUs and most on-chip peripherals

**Part Numbers**

<b>Products</b>	<b>MOT Part#</b>
CodeWarrior for HC12, Standard Edition	CWHC12STD
CodeWarrior for HC12, Professional Edition	CWHC12PRO
<b>Support</b>	
HC12 C Compiler Upgrade Support	CWHC12CUPSPT
CodeWarrior for HC12, Standard Edition Support	CWHC12STDSPST
CodeWarrior for HC12, Professional Edition Support	CWHC12PROSPST
<b>Upgrades</b>	
HC12 32K C Compiler Upgrade	CWHC12C32UPG
HC12 64K C Compiler Upgrade	CWHC12C64UPG
HC12 Upgrade to Standard Edition	CWHC12STDUPG
HC12 Upgrade to Professional Edition	CWHC12PROUPG
<b>Add-on options for Standard Edition</b>	
HC12 C++/cC++/EC++ Compiler Option	CWHC12ENHCKEY
Code Coverage Option	CWCODECOVKEY
Profiler Option	CWPROFILEKEY
HC12 Encryption Option	CWHC12ENCRYPTKEY
HC12 Trace Option	CWHC12TRACEKEY

**Metrowerks Support Policy**

- Online help and documentation
- Includes 90-day New User installation support
- 12-month maintenance contracts available
- Free 30-day evaluation license available

**System Requirements**

- 133 MHz Intel® Pentium® or AMD K-6® class processor or higher
- Microsoft® Windows® 98/2000/XP/Windows NT® 4.0
- 64 MB RAM
- At least 500 MB hard disk space
- CD-ROM drive for installation

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