8-bit Microcontrollers

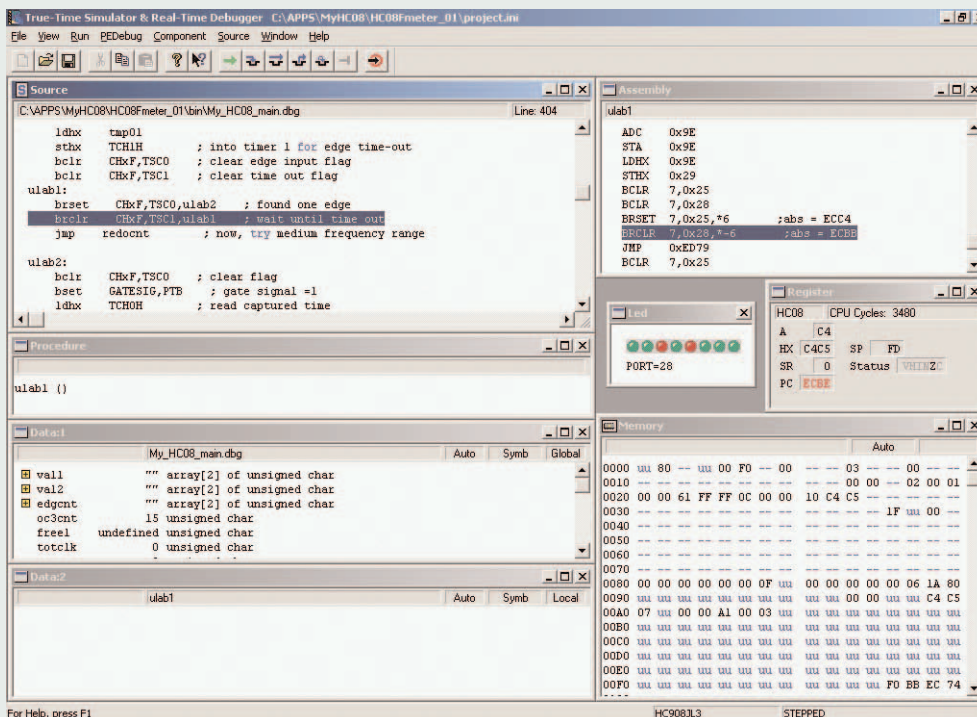# CodeWarrior™ Development Studio for HC(S)08

Overview

The comprehensive, highly visual CodeWarrior™ Development Studio for HC(S)08 Microcontrollers, Professional Edition enables engineers to build and deploy HC(S)08 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 simple applications, consumer white goods, industrial control or automotive body controllers, the CodeWarrior environment provides you with everything you need to exploit the capabilities of the HC(S)08 architecture.

The award-winning CodeWarrior integrated development environment (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

> Supports the new extended debug module of HC(S)08 members of the family

> Sophisticated project manager

> Build system with optimizing C/C++/cC++/EC++ compilers

> Assembler (absolute, relocatable, mixed and in-line)

> Graphical source-level debugger

> Flash programming support

> Full-chip simulation

> Cycle-accurate simulator with code coverage, profile analysis and trace capabilities

> Data visualization

> Encryption support

> Processor Expert™ technology with Bean Wizard™ and components for HC(S)08 CPUs, on-chip peripherals, external peripherals and software algorithms

freescale™
semiconductor

Feature	Benefit	Special Edition	Standard Edition	Professional Edition
IDE				
Project Wizard	Gets you up and programming fast	Yes	Yes	Yes
Program Manager > Projects > Sub Projects	Eliminates confusing and often complex make files with visual preference panels	Up to 32 files No	Unlimited Yes	Unlimited Yes
Build Tools				
Macro Assembler	For specific optimizations only you can provide	Yes	Yes	Yes
Optimizing Compiler	Reduces code size and maximizes the capabilities of the microcontroller to achieve top performance	C—16 KB	C—Unlimited	C—Unlimited C++—Unlimited
Libmaker	Allows reuse and maintenance of code through libraries		Yes	Yes
Debug Tools				
Source-level Debugger	Speeds debug cycles by viewing the source code as it executes	ASM—Unlimited C—16 KB	ASM—Unlimited C—Unlimited	ASM—Unlimited C—Unlimited C++—Unlimited
Flash Programming	Fully integrated Flash programming improves the build-debug cycle because it automates your downloads	Yes	Yes	Yes
Simulator	Reduces costs and eliminates possible hardware issues during development	Yes	Yes	Yes
Data Visualization and I/O Stimulation	Lets you see how your program affects peripherals and responds to outside input	1 components 3 elements	Unlimited	Unlimited
Decoder	Allows you to create listings of ELF files		Yes	Yes
OSEK awareness	Ready to work with OSEK for RTOS-aware debug capabilities			Yes
Session Record and Play	Automates repetitive debug cycles during program validation			Yes
Advanced Tools				
Processor Expert > Basic Beans > Software Beans > Advanced Beans	Abstracts the hardware layer and generates optimized, microcontroller-specific code tailored to your application, so you can concentrate on design	Yes	Yes Yes	Yes Yes Yes
Bean Wizard	Allows you to create reusable software components, which can be easily retargeted to any Freescale controller, HC(S)08 or HC(S)12 microcontroller			Yes
Profile Analysis and Code Coverage	Gives you visibility into your running program to allow fine tuning and better quality metrics			Yes
PC-lint Plug-in	Ensures compliance with MISRA and other code quality and style guidelines			Yes

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 IDE. Use our tightly integrated tools to speed your development time or plug-in familiar third-party editors, compilers and debuggers.

Even the design of small applications is done in less time and for less money than with cost-effecitve tools.
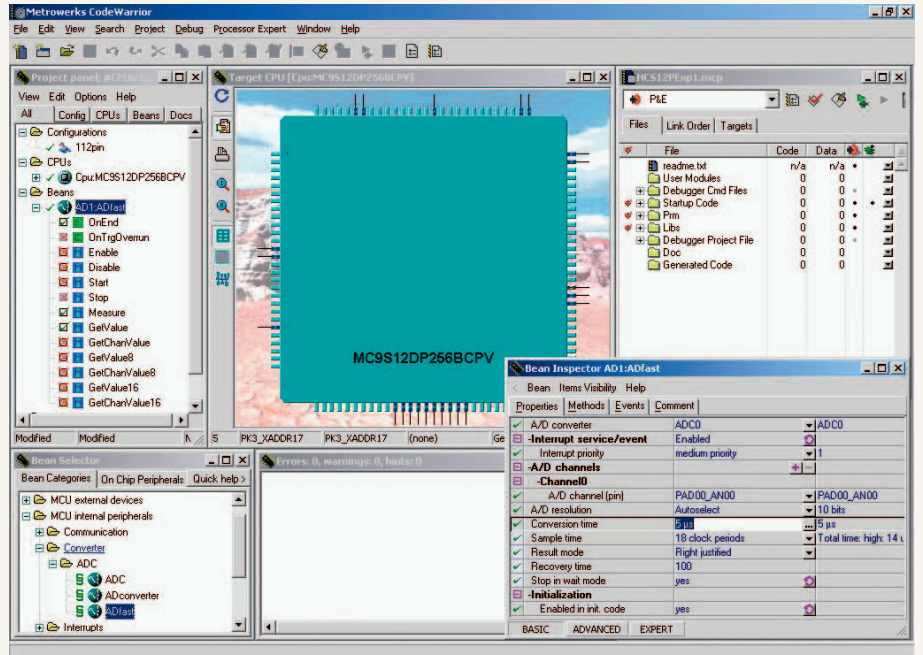
Skip the endless debug cycles at the end of a project and the frantic search through the silicon documentation to find the single bit that is set incorrectly, causing your application to crash. Just define the functionality you need for your application, and Processor Expert technology within CodeWarrior tools generates tested, optimized C code tuned for your application and the particular HC(S)08 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 HC(S)08 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 simulator in CodeWarrior Development Studio provides the most powerful Development Tool short of actual hardware. Long before hardware is available, you can detect and repair design and requirements errors with the simulator and integrated data visualization, code coverage, profile analysis and 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.

UNIS Processor Expert™

Processor Expert is a rapid application design tool that combines easy-to-use component-based application creation with an expert knowledge system. CPU, on-chip peripherals, external peripherals and software functionality are 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 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 knowledge base 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

Build System

The CodeWarrior build system helps you 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 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

Full-Chip Simulator from P&E Microcomputer Systems

The P&E Microcomputer Systems Debug module is built into CodeWarrior Development Studio for HC(S)08 and provides full-chip simulation, in-circuit simulation, real-time debug and Flash programming for most general market HC(S)08 devices. P&E Microcomputer Systems Debug module capabilities include:

> Simulate full CPU instruction set, peripherals, interrupts and I/O for most HC(S)08s

> Real-time debug/fast Flash programming via the HC(S)08 Extended Debug Module

> Supports Cyclone Pro standalone programmer and Multilink hardware interfaces

Specifications

> IDE Version: 5.6

> Host Platforms: Microsoft® Windows® XP/2000/98

> Language Support: Assembly, C/C++, cC++, EC++

> Build Tools Output Formats: ELF/DWARF 2.0, Hiware, Freescale S-Record, Intel® hex, binary

> Target Support HC08: AB, AP, AS, AZ, BD, EY, GP, GR, GT, GZ, JB, JG, JK, JL, KX, LD, LJ, LK, MR, QB, QL, QT, QY, RF, RG, RK, SR families

> Target Support HCS08: GB, GT, RC, RD, RE families

> Board Support: ICS, MMEVS, MMDS, FSICE, Lauterbach Emulator, HITEX Emulator

> Host Target Interfaces: Multilink08, CYCLONE08

> Third Parties:

  ▪ USB inDART (SofTec Microsystems)

  ▪ Cyclone Pro, MON08 Multilink, USB MON08 Multilink, USB BDM Multilink (P&E Microsystems)

System Requirements

> 133 MHz Intel Pentium® or AMD K-6® class processor or higher

> Microsoft® Windows® XP/2000/98

> 64 MB RAM

> At least 500 MB hard disk space

> CD-ROM drive for installation

Support Policy

> Online help and documentation

> Includes 12-month technical support

> Free 30-day evaluation license available

Products	Part Number
CodeWarrior for HC(S)08, Standard Edition	CWS-H08-STDED-CX
CodeWarrior for HC(S)08, Professional Edition	CWS-H08-PROED-CX
Support	
CodeWarrior for HC(S)08, Standard Edition	CWT-H08-STDED-TX
CodeWarrior for HC(S)08, Professional Edition	CWT-H08-PROED-TX
Upgrades	
32 KB C upgrade for Special Edition	CWS-H08-C32K-CX
64 KB C upgrade for Special Edition	CWS-H08-C64K-CX
HC(S)08 upgrade to Standard Edition	CWX-H08-STDED-UX
HC(S)08 upgrade Standard to Professional Edition	CWX-H08-PROED-UX
Add-on Options for Standard Edition	
HC(S)08 C++/cC++/EC++ compiler option	CWX-H08-ENHNC-KX
HC(S)08 encryption option	CWX-H08-ENCRY-KX
HC(S)08 code coverage option	CWX-HXX-CODEC-KX
HC(S)08 profile option	CWX-HXX-PROFL-KX

Other products exist such as floating licenses and migration. Contact your local Metrowerks representative for more information.

Learn More: For more information about Freescale products, please visit **www.freescale.com**.

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