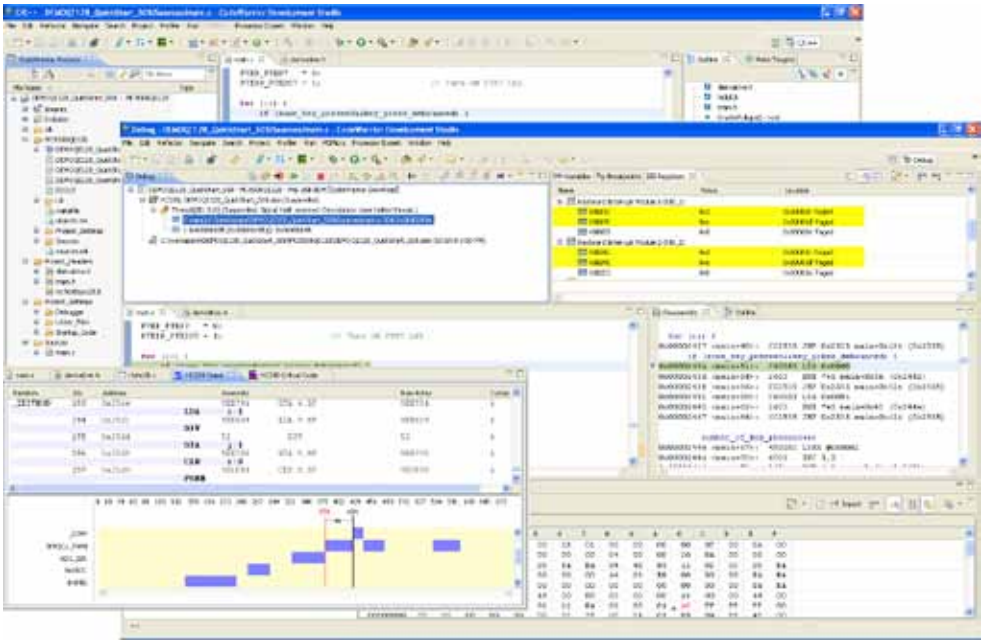
Controller Continuum

# CodeWarrior Development Studio for Microcontrollers v10.0

### Flexible Tools to Maximize Your Market Impact

Freescale's CodeWarrior Development Studio for Microcontrollers v10.0 integrates the development tools for the RS08, HCS08 and ColdFire architectures into a single product based on the Eclipse open development platform. Eclipse offers an excellent framework for building software development environments and is becoming a standard framework used by many embedded software vendors. Whether your design is an 8-bit, entry-level application (e.g. smoke detector) or a 32-bit, high-end application (e.g. fire alarm control panel), CodeWarrior Development Studio for Microcontrollers provides optimized tools to take full advantage of the Freescale microcontroller you selected for your design.



### Re-Target Your Application in Six Mouse Clicks

The award-winning CodeWarrior tool suite goes well beyond basic code generation and debugging. If market requirements change mid-project, the MCU Change Wizard allows you to re-target the project to a new microcontroller/microprocessor in as few as six mouse clicks. Simply select a new device (from the same or a different architecture RS08, HCS08 or ColdFire), select the default connection and the CodeWarrior tool suite automatically reconfigures your project for the new device with the correct build tools (compiler, assembler, linker) and the appropriate support files (header files, vector tables, libraries and linker files).

### Easy Migration with Processor Expert

If you use Processor Expert, a rapid application design tool integrated into the CodeWarrior tool suite, migrating between Freescale microcontrollers is a breeze. Just define the functionality you need for your application and Processor Expert generates tested, optimized C-code tuned for your application and the selected processor. When you change the processor with the MCU Change Wizard, Processor Expert maps the software and peripheral components that describe your application's functionality to the resources available on the new processor. All you have to do is resolve any resource issues flagged by Processor Expert and you're finished.

### Build System

The CodeWarrior build system helps you develop applications with the smallest code size and fastest execution time. The build system for HCS08, RS08 and ColdFire have been in-production devices for well over 15 years and represent the robust, reliable tools you can trust will come from Freescale.

Primary features include:

- Optimizing ANSI C compilers for HCS08, RS08 and ColdFire that:
  - o Operate off a standard front-end for consistent syntax
  - o Generate standard ELF/DWARF files for execution and debugging
  - o Include ANSI C compatible standard libraries and compact runtime libraries
- HCS08 C++ compiler includes support for EC++ guidelines
- ColdFire Embedded Warrior Libraries provide scalable C/C++ standard libraries and a librarian with a simple interface to select functionality
- Macro assemblers for HCS08, RS08 and ColdFire processors
- Linkers that dead-strip unused code for the optimal code size

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CodeWarrior Development Studio provides the capabilities required by every engineer in the development cycle, from board bring-up to firmware development to final application development.

| Features | Benefit | Special Edition | Basic Edition | Standard Edition | Professional Edition |
|---|---|---|---|---|---|
| **IDE** | | | | | |
| Eclipse CDT v3.4 | Open development platform, fast becoming the industry standard framework | Yes | Yes | Yes | Yes |
| New Project Wizard | Allows you to create a new project in as few as six clicks | Yes | Yes | Yes | Yes |
| MCU Change Wizard | Allows you to retarget your application in as few as six clicks | Yes | Yes | Yes | Yes |
| **Build Tools** | | | | | |
| Macro Assemblers | For specific optimizations only you can provide | Unlimited | Unlimited | Unlimited | Unlimited |
| Optimizing Compilers | Allow you to reduces code size and maximize the capabilities of the processor to achieve top performance | | | | |
| - RS08 | | C: 32K | C: 64K | C: Unlimited | C: Unlimited |
| - HCS08 | | C: 32K | C: 64K | C: Unlimited | C: Unlimited, C++: Unlimited |
| - V1 ColdFire | | C: 64K | C: 128K | C: Unlimited | C: Unlimited, C++: Unlimited |
| - V2–V4 ColdFire | | C: 128K | C: 512K | C: Unlimited | C: Unlimited, C++: Unlimited |
| Librarian Tool Chain | Allows you to reuse and maintain your code in libraries | Yes | Yes | Yes | Yes |
| **Debug Tools** | | | | | |
| Source-Level debugger | Provides you with tools to speed up application development | ASM: Unlimited | ASM: Unlimited | ASM: Unlimited | ASM: Unlimited |
| - RS08 | | C: 32K | C: 64K | C: Unlimited | C: Unlimited |
| - HCS08 | | C: 32K | C: 64K | C: Unlimited | C: Unlimited, C++: Unlimited |
| - V1 ColdFire | | C: 64K | C: 128K | C: Unlimited | C: Unlimited, C++: Unlimited |
| - V2–V4 ColdFire | | C: 128K | C: 512K | C: Unlimited | C: Unlimited, C++: Unlimited |
| Flash Programmer | Fully integrated to improve the build-test-debug cycle | Yes | Yes | Yes | Yes |
| Simulator | Reduces costs and eliminates possible hardware issues during development | | | | |
| - RS08 | | Yes | Yes | Yes | Yes |
| - HCS08 | | Yes | Yes | Yes | Yes |
| - V1 ColdFire | | No | No | No | No |
| - V2–V4 ColdFire | | No | No | No | No |
| LiveView | Allows you to monitor registers, memory and global variable as your application executes | Yes | Yes | Yes | Yes |
| Kernel-Aware Debug | Allows you to debug your application at the task level when using a kernel/real-time operating system | | | | Yes |
| **Advanced Tools** | | | | | |
| Profile and Analysis | Provides visibility into your running application to allow fine tuning and better quality metrics | | | | |
| - RS08 | | Not Applicable | Not Applicable | Not Applicable | Not Applicable |
| - HCS08 | | Yes | Yes | Yes | Yes |
| - V1 ColdFire | | Yes | Yes | Yes | Yes |
| - V2–V4 ColdFire | | No | No | No | No |
| Device Initialization | Provides graphical interface to allow you to setup CPU and peripheral registers and generate initialization code (ASM or C) tailored to your application | Yes | Yes | Yes | Yes |
| Processor Expert | Provides a graphical interface to allow you to select functionality and generate optimized, microcontroller/microprocessor-specific code (C) tailored to your application | Yes | Yes | Yes | Yes |
| - Basic Components | | Yes | Yes | Yes | Yes |
| - Software Components | | | | Yes | Yes |
| - Advanced Components | | | | | Yes |
| - Built-in Knowledge Base | Only provides valid choices and immediately flags potential resource conflicts allowing you to resolve problems during the initial design phase | Yes | Yes | Yes | Yes |
| - Component Wizard | Allows you to create reusable software components, which can be used with Freescales microcontrollers/microprocessors | | | | Yes |

Service Packs, which add support for new devices, are also available at **freescale.com/codewarrior/downloads**.

### Graphical Source-Level Debugger

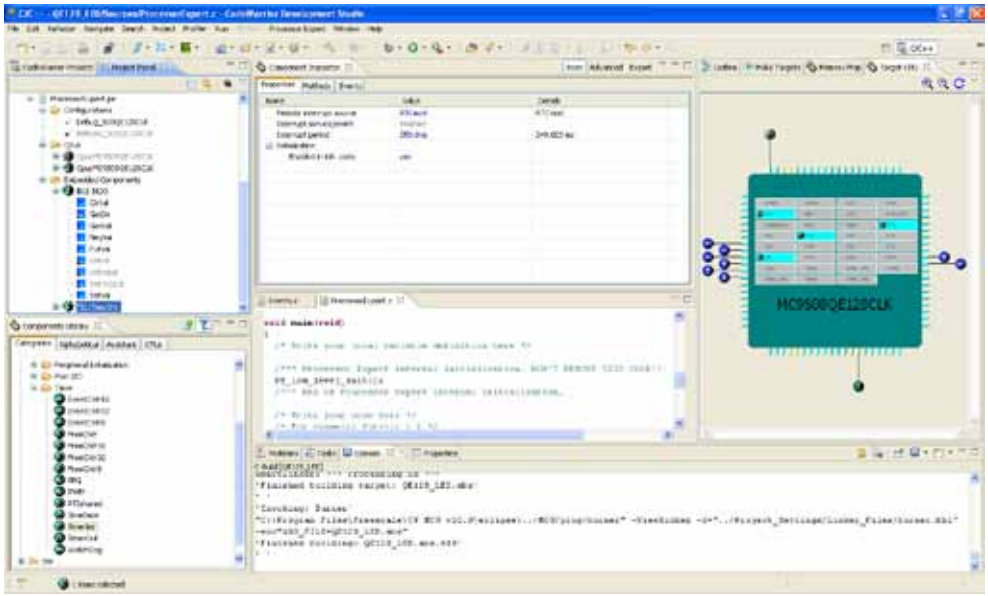
The CodeWarrior tool suite includes the Eclipse C/C++ Development Tools (CDT) with extensions to provide a wide array of sophisticated features that help you troubleshoot and repair your embedded application faster. This common debugger gives you consistent debug tools for the Controller Continuum. The debugger provides the power you need with the simplicity of a point-and-click environment for fast and easy execution. Key capabilities include:

- C and assembly source code windows provide debug support for HCS08 RS08 and ColdFire processors
- Precise breakpoints help solve sophisticated problems
- Complex, emulator-like debug capability using HCS08 and V1 ColdFire on-chip trace features
- Display of data values, complex data structures and expressions to speed run-time analysis, without stopping or single stepping the processor
- Detailed information on every aspect of your project: break points, watch points, stack, symbol table
- Full-chip simulation for most HCS08 and RS08 microcontrollers, including CPU instruction set, peripherals, interrupts and I/O
- Support for kernel-aware debugging with OSEK, MQX™* or Linux® real-time operating systems
- Fast flash programming support
- Ability to preserve a memory range during programming
- Ability to program user-selectable TRIM values with P&E Microcomputer Systems' MultiliInk and Cyclone Pro hardware interfaces
- Support for open-source BDM connection interfaces
- Support for P&E Microcomputer Systems' Cyclone Pro/Max stand-alone programmers and Multilink hardware interfaces

** Available as a separate download.*

### 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 embedded components. You 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 embedded C-code and places the source 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 (e.g. pin muxing, invalid timer settings), allowing you to resolve the problems during the initial design phase.

### Device Initialization

If you prefer a more hands-on approach to development, then the Device Initialization tool is for you. It provides a fast and easy way to configure and generate initialization code for HCS08, RS08 and ColdFire microcontrollers/ microprocessors. The Device Initialization tool contains only one set of components: peripheral initialization components.

You control how the generated code is added to your project. The Device Initialization tool can add the code directly to your project or it can create a separate text file—it's your choice. If you decide to create a separate text file, you can easily add the code to your project by cutting and pasting the code to an existing file in your project or adding the text file to your project.

### Features

- Eclipse IDE 3.4
- New Project Wizard to create a new project in as few as six clicks
- MCU Change Wizard to port a project to a new device in as few as six clicks
- Build system with optimizing C compiler for RS08 derivatives
- Build system with optimizing C/C++ compilers for HCS08 and ColdFire derivatives
- Assembler (absolute, relocatable, mixed and in-line) for HCS08, RS08 and ColdFire derivatives
- Graphical, source-level debugger
- HCS08 and V1 ColdFire on-chip trace support
- Flash programming support
- Full-chip simulation for HCS08 and RS08 derivatives
- Device Initialization tool to generate HCS08, RS08 and ColdFire CPU and peripheral initialization code
- Processor Expert with Component Wizard and components for HCS08, RS08 and ColdFire CPUs, on-chip peripherals, external peripherals and software algorithms

- Assembly and C example projects to use as templates for a new project
- Tutorials to minimize the learning curve
- Project Importer to convert CodeWarrior Classic projects (CW MCU v6.x, CW CF v7.x) to CodeWarrior Eclipse projects

### Specifications

- Eclipse IDE version: 3.4
- Host platforms
  - o Microsoft® Windows® XP 32/64-bit (Business)
  - o Microsoft Windows Vista 32/64-bit (Business and Home Premium)
  - o Microsoft Windows 7 32/64-bit (Professional and Home Premium)
  - o Red Hat Enterprise Edition v5.2 32-bit
- Language support
  - o Assembly
  - o C/C ++
- Build tools output formats
  - o ELF/DWARF 2.0
  - o Freescale S-Record (previously Motorola S19 files)
  - o Intel® hex
- HCS08 device support: AC, AW, DE, DN, DV, DZ, EL, EN, FL, GB, GT, JE, JM, JR, JS, LC, LG, LH, LL, MM, MP, QA, QB, QD, QE, QG, RC, RD, RE, RG, SC, SE, SG, SH, SL, SV, MC1321X, MPXY families
- RS08 device support: KA, KB, LA, LE
- V1 ColdFire device support: AC, AG, CN, EM, JE, JM, MM, QE
- V2 ColdFire device support: MCF520x, MCF521x, MCF523x, MCF524x, MCF525x, MCF527x, MCF528x, MCF521x0, MCF5221x, MCF5222x, MCF5223x, MCF5225x, MCF5227x
- V3 ColdFire device support: MCF530x, MCF532x, MCF537x, MCF5301x
- V4 ColdFire device support: MCF540x, MCF5445x
- V4e ColdFire device support: MCF547x, MCF548x
- Host target interfaces
  - o Freescale open source BDM (based on HC9S08JM60 platform)
  - o CodeWarrior USB TAP
  - o CodeWarrior Ethernet TAP
  - o Cyclone MAX (P&E Microcomputer Systems)
  - o Cyclone Pro (P&E Microcomputer Systems)
  - o USB BDM Multilink (P&E Microcomputer Systems)
  - o USB ColdFire Multilink (P&E Microcomputer Systems)
  - o BDI1000 BDM/JTAG (Abatron)
- System Requirements
  - o 1.6 GHz Pentium compatible processor or better
  - o 1 GB RAM
  - o 2 GB hard disk space, 400 MB on Windows system disk
  - o DVD drive for installation
  - o USB port for communications with target hardware
  - o Ethernet port for communications with target hardware (optional)

### Support Policy

- Online help and documentation
- Includes 12-month technical support
- Free 30-day evaluation license available

CodeWarrior Development Studio for Microcontrollers is included in the CodeWarrior Development Tool Suites. To order the product, select the part number for the CodeWarrior Development Tool Suite that meets your needs.

| | |
|---|---|
| **Special Suite—CodeWarrior for Microcontrollers, Special Edition** | |
| Special Edition | CWX-HXX-SE |
| **Basic Suite—C Compiler Upgrade** | |
| **Perpetual** | **$995** |
| • Node Locked | CWP-BASIC-NL |
| • Floating | CWP-BASIC-FL |
| • Tech Support *After first year* | CWT-BASIC $195 |
| **Annual Subscription** | **$395** |
| • Node Locked | CWA-BASIC-NL |
| • Floating | CWA-BASIC-FL |
| **Standard Suite—CodeWarrior for Microcontrollers, Standard Edition** | |
| **Perpetual** | **$2495** |
| • Node Locked | CWP-STANDARD-NL |
| • Floating | CWP-STANDARD-FL |
| • Tech Support *After first year* | CWT-STANDARD $495 |
| **Annual Subscription** | **$995** |
| • Node Locked | CWA-STANDARD-NL |
| • Floating | CWA-STANDARD-FL |
| **Professional Suite—CodeWarrior for Microcontrollers, Professional Edition** | |
| **Perpetual** | **$4995** |
| • Node Locked | CWP-PRO-NL |
| • Floating | CWP-PRO-FL |
| • Tech Support *After first year* | CWT-PRO $995 |
| **Annual Subscription** | **$1995** |
| • Node Locked | CWA-PRO-NL |
| • Floating | CWA-PRO-FL |

**Contact your local Freescale representative for more information.**

*Note: Support for new derivatives is added with service packs.*

**Learn More:** For more information on CodeWarrior Development Studio v10.0, visit **www.freescale.com/cwmcu10.**

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